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The 2005 Gulf Coast Hurricanes' Effect on Food Stamp Program Caseloads and Benefits Issued

Kenneth Hanson and Victor Oliveira

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The 2005 Gulf Coast Hurricanes' Effect on Food Stamp Program Caseloads and Benefits Issued

Kenneth Hanson and Victor Oliveira

Abstract

In fall 2005, Hurricanes Katrina, Rita, and Wilma devastated areas along much of the Gulf Coast resulting in large increases in food stamp caseloads and benefits issued. In November 2005, the number of people receiving food stamps reached a record 29.7 million, or about 4 million more participants than just 3 months earlier. Most of the increase in caseloads occurred in the Gulf Coast States that were hardest hit by the hurricanes—Florida, Alabama, Mississippi, Louisiana, and Texas. The hurricanes' impact on caseloads in these States, in terms of both magnitude and duration, varied widely. States that received large numbers of evacuees from hurricane-affected areas also experienced disproportionate increases in caseloads relative to the other States. This study estimates that the hurricanes increased total food stamp benefits issued by about $1.2 billion, with most of it going to people located in the five Gulf Coast States.

Keywords: Food Stamp Program, Disaster Food Stamp Program, food stamp caseloads, food stamp benefits issued, hurricanes, Gulf Coast States, Food Assistance and Nutrition Research Program, FANRP

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Summary

In fall 2005, Hurricanes Katrina, Rita, and Wilma devastated areas along much of the Gulf Coast, resulting in greater demand for food stamps by millions of Gulf Coast State residents and evacuees. Hurricane Katrina came ashore in Louisiana on August 29. Hurricane Rita made landfall on September 24 near the Louisiana/Texas border. Hurricane Wilma hit Florida on October 24.

During disasters, USDA delivers emergency food assistance in two ways. Initially, emergency food commodities are provided to shelters, to other mass feeding sites, and directly to households when normal commercial channels of food distribution may be disrupted. USDA also issues emergency food stamps through the Disaster Food Stamp Program (DFSP), an extension of the regular Food Stamp Program. Under the DFSP, eligibility requirements are temporarily relaxed so that benefits can be quickly provided to households that may not ordinarily qualify for food stamps but suddenly need food assistance.

What Is the Issue?

The Federal response to the disasters has received much attention; information about food stamp use will help provide a more complete picture of the use of public assistance both during and after the hurricanes. To provide this information, we examined the effect of the hurricanes on food stamp caseloads and benefits issued.

What Did the Study Find?

One effect of the hurricanes was a dramatic spike in both Food Stamp Program caseloads and benefits issued. In November 2005, 29.7 million people received food stamps, the largest number ever to receive food stamps in a single month and about 4 million—or 15 percent—more than just 3 months earlier.

State-Level Impacts. During the peak-impact period of September to November 2005, the average Food Stamp Program caseload increased by 12 percent relative to the pre-hurricane period of March to August 2005. As would be expected, most of this increase in caseload occurred in the five Gulf Coast States hardest hit by the hurricanes—Florida, Alabama, Mississippi, Louisiana, and Texas. Average monthly caseloads in these Disaster States during the peak-impact period increased by 48 percent compared with only 2 percent for the other States. However, the hurricanes' impact in terms of both magnitude and duration differed widely among the five Disaster States. For example, the increase in caseload was largest in Florida, but the effect was brief, lasting only 1 month. Louisiana experienced a large increase in caseload lasting several months before dropping to below pre-hurricane levels. In Texas, caseload remained significantly above pre-hurricane levels even 5 months after hurricanes Katrina and Rita.

By March 2006, food stamp caseloads in the Disaster States were only 1 percent greater than the pre-hurricane caseloads in August 2005. Of the five Disaster States, Texas was the only one in which the food stamp caseload in March 2006 exceeded the caseload in August 2005.

The impact of the hurricanes also spread to other States because of their enrollment of hurricane evacuees in the Food Stamp Program. Average caseloads in the Major Evacuee States increased by 5 percent compared with only 2 percent in all other Unaffected States.

The hurricanes also affected the average food stamp benefit per person, which increased in Disaster States during the peak-impact period. In addition, the average size of food stamp households in Disaster States increased in November. However, this result was due to the situation in Florida, where the average size of households enrolling in the DFSP was larger than the average size of households participating in the regular Food Stamp Program.

National-Level Impacts. We estimate that the hurricanes increased food stamp benefits issued from September 2005 through January 2006 by almost $1.2 billion compared with what they would have been without the hurricanes. Although the hurricanes have had long-lasting effects on some local areas, this analysis suggests that, by February 2006, the effect of the hurricanes on food stamp caseloads and benefits issued at the national level had largely dissipated. The estimate of the hurricanes' impact on the Food Stamp Program reported here is more comprehensive than estimates derived solely from State administrative reports of disaster benefits issued.

We estimate that the difference between actual caseloads and what caseloads would have been without the hurricanes was 2 million people in September, due to Hurricane Katrina. In October, the estimated difference was 2.15 million people due to Hurricanes Rita and Katrina. Hurricane Wilma caused a large 1-month increase in caseload for Florida, resulting in an estimated difference of 3.74 million people in November 2005. The actual and estimated food stamp caseloads for the Disaster States converged in February 2006 at a level of 5.43 million, about equal to the pre-hurricane level in August 2005 of 5.38 million.

How Was the Study Conducted?

The study uses 13 months (March 2005-March 2006) of State-level data from USDA's Food and Nutrition Service (FNS) on Food Stamp Program caseloads and benefits issued to examine the hurricanes' impact on food stamp caseloads and benefits issued. The study analyzes caseloads for three groups of States—Disaster States, Major Evacuee States, and Unaffected States—over 3 distinct periods—6-month pre-hurricane period, 3-month peak-impact period, and 4-month post-hurricane period. Regression analyses were used to estimate what the national food stamp caseloads and benefits issued would have been in the absence of the hurricanes. The estimates of caseloads and benefits issued in the absence of the hurricanes were used to determine the impact of the hurricanes at the national level.

Introduction

In fall 2005, Hurricane Katrina—the most destructive natural disaster in U.S. history—along with Hurricanes Rita and Wilma devastated areas along much of the Gulf Coast (see box, "Timeline of the Gulf Coast Hurricanes"). One effect of the hurricanes was a dramatic spike in both Food Stamp Program caseload and benefits issued (fig. 1). In November 2005, 29.7 million people received food stamps, the largest number ever to receive food stamps in a single month and about 4 million—or 15 percent—more than just 3 months earlier.[1]

[1]The previous high was 28.0 million people in March 1994.

As of March 2006 (6 months after Hurricane Katrina struck the Gulf Coast), 26.3 million people participated in the program, only 2 percent more than the pre-hurricane caseload of 25.8 million in August 2005. Most of the increase and subsequent decrease in caseload during fall and winter 2005-06 occurred in the Gulf Coast States that were hardest hit by the hurricanes. However, the impact of the hurricanes on food stamp caseload was felt in other States as well via their enrollment of evacuees from Gulf Coast States.

This report examines the effect of the hurricanes on Food Stamp Program caseload—in terms of both magnitude and duration—for selected States, groups of States (according to the degree to which they were affected by the hurricanes), and the Nation as a whole. The hurricanes' effect on average food stamp benefits per person and average size of household is also examined. In addition, regression analyses were used to estimate what the Food Stamp Program caseload and benefits issued would have been without the disasters, which, in turn, were used to determine the total impact of the disasters at the national level.[2] The estimated effects of the hurricanes on food stamp benefits issued are compared with State administrative reports of benefits issued in response to the disasters.

[2]This report focuses on the effect of the hurricanes on food stamp caseload and benefits issued. It does not look at the issue of increased administrative costs to the Food Stamp Program due to the hurricanes.

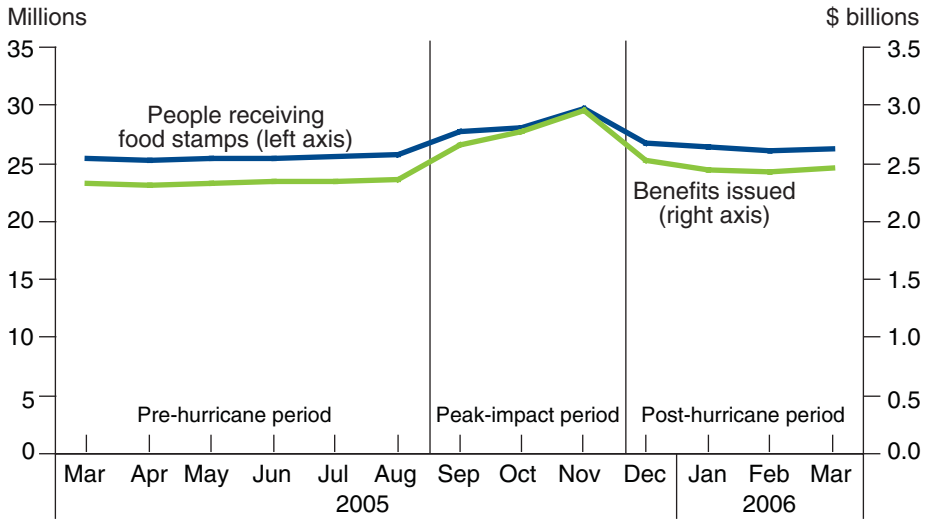
Timeline of the Gulf Coast Hurricanes

- August 29—Hurricane Katrina came ashore in Louisiana. Parts of Alabama, Louisiana, Mississippi, and Texas were declared Federal disaster areas.
- September 24—Hurricane Rita made landfall near the Louisiana/Texas border. Parts of Louisiana were declared Federal disaster areas.
- October 24—Hurricane Wilma hit Florida. Parts of the State were declared Federal disaster areas.

Source: U.S. Department of Commerce, 2006.

Figure 1

Food stamp caseloads and benefits issued, March 2005-March 2006



Source: USDA, Food and Nutrition Service National Data Bank.

The Food Stamp and Disaster Food Stamp Programs

The Food Stamp Program serves a vital role in helping many needy people avoid food insecurity and improve their diets. Each month, about 1 in 12 Americans participate in the program, which increases their food-purchasing power by providing benefits to purchase approved food items at retail food stores across the country. Unlike other food assistance programs that target specific population groups, food stamps are available to most needy households with limited income and assets, subject to certain work and immigration status requirements. Most households are eligible for the Food Stamp Program if their gross monthly income is less than 130 percent of the poverty line and they have less than defined resource limits. Food stamp benefit levels depend on household income and size—as a household's income decreases, food stamp benefits increase. As a means-tested entitlement program, the Food Stamp Program automatically responds to changes in the need for assistance.[3]

[3]The program caseload tends to decrease during economic expansions as unemployment rates fall and incomes rise. Conversely, it tends to increase during economic downturns as the unemployment rate increases.

During disasters, USDA delivers emergency food assistance in two ways. Initially, emergency food commodities are provided to shelters, to other mass feeding sites, and directly to households when normal commercial channels of food distribution may be disrupted. Once grocery stores and other retailers are operating again, USDA issues emergency food stamps through the Disaster Food Stamp Program (DFSP), an extension of the regular Food Stamp Program. Both programs are funded by USDA and administered by the States (USDA, May 1995; FRAC, 2005; and Congressional Research Service, 2006).

Under the DFSP, the Secretary of Agriculture approves State waivers to establish temporary eligibility standards for households not already enrolled in the Food Stamp Program that experience an adverse effect from the disaster. Eligibility verification and reporting requirements are temporarily relaxed so that benefits can be quickly provided to households that suddenly need food assistance but may not ordinarily qualify for food stamps.

To qualify for disaster food stamps, a household must meet the DFSP income and resource test. The household's income during the disaster period plus its accessible liquid resources (cash and checking and savings accounts) less a deduction for expected disaster-related expenses must not exceed the disaster gross income limit. The disaster gross income limit for a given household size is equal to the sum of the maximum monthly net income plus the maximum standard income deduction plus the maximum excess shelter expense deduction.

A number of requirements for the regular Food Stamp Program are dropped for the DFSP (USDA, May 1995). Households are not required to document or verify income, resources, or household composition, although verification of identity is still required. Unlike the regular Food Stamp Program, citizenship or alien status does not affect eligibility in the DFSP, there are no special restrictions on students or strikers, nor are there work or training requirements for anyone. Households approved for disaster benefits receive the maximum disaster benefit, which equals the regular maximum food

stamp allotment for their household size. All benefits must be issued by Electronic Benefit Transfer (EBT) unless service is disrupted, in which case a manual voucher process may be used. The normal rules governing the food products recipients may buy with food stamps apply to disaster food stamps, although waivers to allow the purchase of hot foods at retail food-stores licensed to accept food stamp benefits are often granted.[4]

[4]Under normal circumstances, food stamps cannot be used to purchase hot foods.

Flexibility in program regulations allows States to specify the disaster program to the needs of the circumstances. For example, States specify the period over which applications will be accepted, the length of time for benefits, and the geographic area the program will cover. Florida issued only 1 month of benefits through the DFSP to victims of Hurricane Wilma, while the DFSP in Alabama, Louisiana, Mississippi, and Texas issued anywhere from 1 to 3 months of benefits to victims of Hurricanes Katrina and Rita.

As special cases of the DFSP, two new national evacuee policies were instituted for evacuees who left Alabama, Louisiana, and Mississippi because of Hurricane Katrina. Under the National Enhanced Policy, evacuee households (households in a declared disaster area that move from home) could receive a 1-month maximum food stamp benefit (according to household size) based solely on evacuee status—that is, there were no income or resources eligibility tests. Under the Expanded Disaster Evacuee Policy, these same households could be issued up to 3 months of benefits.[5]

[5]Evacuees in Texas were automatically eligible for up to 3 months of maximum benefits. In the other States, benefit levels after the first month were based on regular Food Stamp Program rules.

The DFSP in the Gulf Coast States also affected existing food stamp households. For example, households in areas affected by the hurricanes who were already participating in the Food Stamp Program automatically received a 1-month supplement to bring their benefit amount to the maximum for their household size. Although not considered part of the DFSP, States under the regular Food Stamp Program could also provide replacement benefits (usually consisting of a half a month's worth of benefits) to current food stamp households who lost food in the disaster.

Sources of Data

Data for this study came from USDA's Food and Nutrition Service (FNS), the agency that administers the Food Stamp Program at the Federal level. The data were generated from the National Data Bank, which is based on data submitted by the State reporting agencies.[6] The data consisted of State-level estimates of food stamp caseloads (people and households) and benefits issued by month, from March 2005 to March 2006. The monthly data are reported for the Food Stamp Program and DFSP combined—that is, the data set does not separate the DFSP from the regular Food Stamp Program.

Data used in the analysis are limited to the 50 States and the District of Columbia (data on Guam and Virgin Islands were excluded) (see box, "Geographic and Temporal Categories"). Examination of Mississippi's reported food stamp caseloads for September-November 2005 suggests that it did not account for people enrolled through the DFSP. Therefore, we adjusted caseload data for this one State for September-November 2005 to account for the apparent underreporting.[7]

[6]All data are subject to revision as State reporting agencies finalize data. This analysis is based on data as of September 13, 2006.

[7]Although examination of the Mississippi data indicates that the benefits issued seemed reasonable, the benefits per person appeared to be excessively large at over $200 per person per month, which was about 70 percent larger than the benefits per person for Louisiana during the same peak-impact period. Furthermore, reported enrollment of new cases by the DFSP was as large as reported cases in the regular Food Stamp Program, which should have included the DFSP cases, along with the regular program cases. For these reasons, we adjusted the Mississippi caseload data for September-November 2005, assuming the reported benefits issued were correct. The new monthly caseload for September-November was estimated as the August caseload multiplied by the percentage change in monthly benefits issued between August and the adjusted month multiplied by the ratio of the percentage change in caseload to the percentage change in benefits issued for Louisiana over the same period. This adjustment increased the caseload by 416,348 people in September, 396,440 in October, and 72,256 in November.

Geographic and Temporal Categories

States were grouped into three categories according to the degree to which they were affected by the hurricanes (see figure):

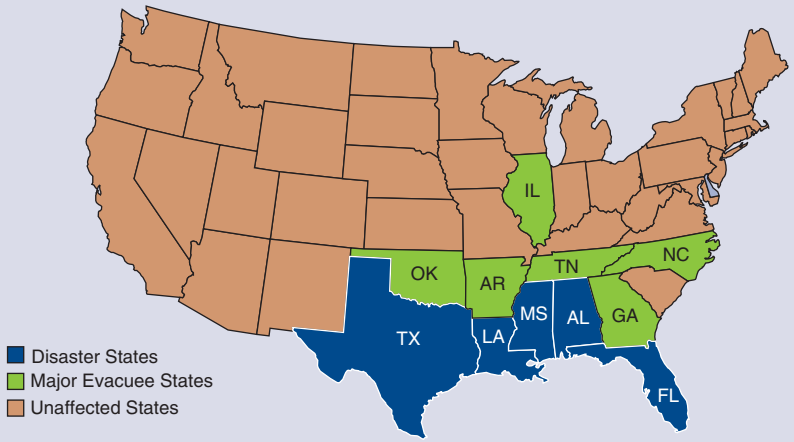
- "Disaster States." Gulf Coast States hardest hit by Hurricanes Katrina, Rita, and/or Wilma—Alabama, Florida, Louisiana, Mississippi, and Texas. These five States accounted for 21 percent of total food stamp caseloads during the pre-hurricane period.
- "Major Evacuee States." Six States (excluding the five Disaster States) that received large numbers of evacuees from the Gulf Coast States. These six States include the four States closest to the disaster areas—Georgia, Tennessee, Arkansas, and Oklahoma—and two other States that issued over $1 million in food stamp benefits to evacuees—North Carolina and Illinois.* During the pre-hurricane period, the Major Evacuee States accounted for 18 percent of total food stamp caseloads.
- "Unaffected States." The other 39 States and the District of Columbia not directly affected by the hurricanes. These States accounted for 61 percent of total food stamp caseloads during the pre-hurricane period. Although these States' caseloads may have been affected indirectly by the hurricanes via evacuees relocating to the State or via employees of firms that did business in a hurricane-affected area, the impact is thought to be small relative to the hurricanes' impact in the Disaster and Major Evacuee States.

The study period of March 2005 to March 2006 was divided into three distinct periods:

- "Pre-Hurricane." The 6 months immediately preceding the hurricanes (March 2005-August 2005).
- "Peak-Impact." The 3 months during which the storms' impact on the Food Stamp Program was greatest (September 2005-November 2005).
- "Post-Hurricane." The 4 months from December 2005 to March 2006.

*Four non-Disaster States reported providing over $1 million in benefits to evacuees: Arkansas ($5.3 million), Georgia ($4.6 million), Illinois ($1.4 million), and North Carolina ($1.2 million). The two other States included in our list of Major Evacuee States—Tennessee and Oklahoma—reported $0.7 million and $0.4 million in benefits to evacuees, respectively.

Disaster, Major Evacuee, and Unaffected States



Findings

Estimates of the hurricanes' impact on the Food Stamp Program are reported for three levels of geographic coverage: (1) aggregated State groups, (2) individual Disaster States, and (3) the Nation. Descriptive analysis is used for the aggregated State groups and individual Disaster States. Empirical analysis is used to estimate the impact of the hurricanes on food stamp caseloads and benefits issued at the national level.

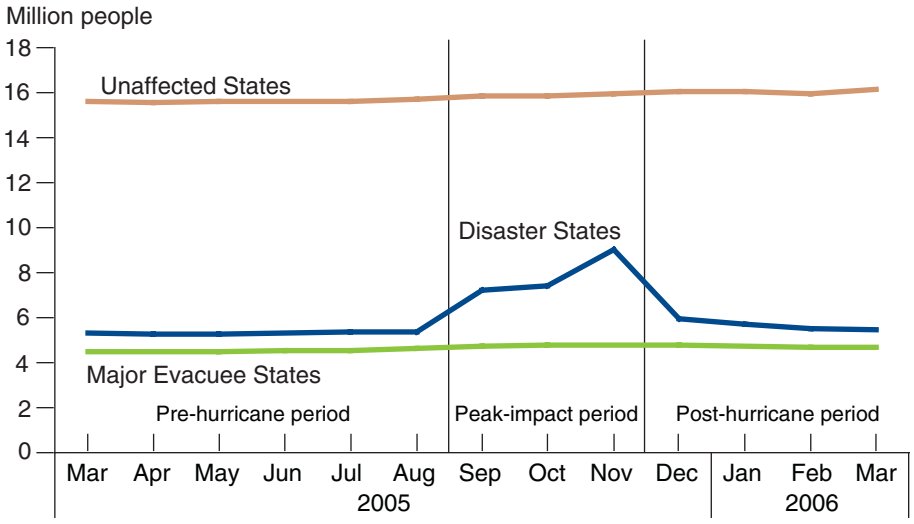
Disaster, Major Evacuee, and Unaffected Groups of States

Figure 2 shows the monthly food stamp caseloads for the three aggregated groups of States: the Disaster States, the Major Evacuee States, and the Unaffected States. In the 6-month pre-hurricane period, the caseload growth rate in both Disaster States and Major Evacuee States was similar to that in the Unaffected States. However, the rate of growth in food stamp caseloads in the three groups diverged significantly during the peak-impact period (September-November 2005). Average monthly caseloads in the Disaster States during the peak-impact period increased by 48 percent relative to the pre-hurricane period compared with only 2 percent in the Unaffected States (table 1). Although average caseloads in the Major Evacuee States increased at a much lower rate—5 percent—than in the Disaster States during the peak-impact period, the rate was still more than double that of the Unaffected States.[8] Overall, the five Disaster States accounted for 84 percent of the increase in national food stamp caseload during the 3-month peak-impact period. By comparison, the 39 Unaffected States accounted for 9 percent and the 6 Major Evacuee States accounted for 7 percent.

The rate of change in caseloads among the three groups also differed during the post-hurricane period. Average monthly caseloads in the Unaffected States continued to increase slightly during the post-hurricane period and were

[8]The average percentage increase in caseloads between the pre-hurricane period and the peak-impact period varied among Major Evacuee States: Georgia, 7.6 percent; North Carolina, 5.5 percent; Arkansas, 5.3 percent; Oklahoma, 4.3 percent; Tennessee, 3.8 percent; and Illinois, 3.3 percent. However, in every case, the increase exceeded the average 1.7-percent increase for all Unaffected States.

Figure 2
Food stamp caseloads, March 2005-March 2006



Source: USDA, Food and Nutrition Service National Data Bank.

3 percent greater than in the pre-hurricane period. Average caseloads in the Disaster States decreased substantially from their peak-impact level, although on average, they remained 6 percent above the average pre-hurricane caseload level. Average caseloads in the Evacuee States during the post-hurricane period decreased slightly—less than 1 percent—from the peak-impact period, and they remained 4 percent greater than in the pre-hurricane level.[9] The average pre- to post-hurricane growth rate in caseloads may have been larger in Major Evacuee States than in Unaffected States for two reasons. First, some food stamp cases may have transferred from Disaster States to Major Evacuee States. Second, some evacuees not participating in the Food Stamp Program before the hurricanes may have had difficulty finding employment in their new locations and entered the regular Food Stamp Program after their evacuee benefits ended.[10]

By March 2006, food stamp caseloads in Disaster States were only 1 percent greater than the pre-hurricane caseloads in August 2005.[11] Of the five Disaster States, Texas was the only one in which the food stamp caseload in March 2006 exceeded the caseload in August 2005. Thus, despite the widespread devastation caused by the hurricanes, in four of the five Disaster States, the number of food stamp participants in March was actually smaller than the number of participants in the month preceding Hurricane Katrina. Data suggest that this finding is primarily a result of a loss in population in Disaster States (presumably including some food stamp recipients). The U.S. Census Bureau (2006) estimated that, from July 1, 2005, to January 2, 2006, there were 387,000 fewer households in the 117 Federal Emergency Management Agency (FEMA)-designated disaster counties in Alabama, Louisiana, Mississippi, and Texas as a result of Hurricanes Katrina and Rita.[12] While population in disaster areas decreased, the number of employed people in the five Disaster States combined held steady (increasing by less than 1 percent between August 2005 and March 2006).[13] However, employment change over this period varied by State, increasing in Florida (2.5 percent), Alabama (1.2 percent), and Texas (1.6 percent) while decreasing in Louisiana (11.1 percent) and Mississippi (3.4 percent).

As food stamp caseloads in Disaster States increased during the peak-impact period, so too did the average food stamp benefit per person (fig. 3).[14] During the entire 6-month pre-hurricane period, the average food stamp benefit per person in Disaster States was slightly less than that in the Evacuee and

[9]In each Major Evacuee State, the percentage growth in caseloads between the pre- and post-hurricane periods (North Carolina, 6.3; Illinois, 4.9; Oklahoma, 3.6; Georgia, 3.5; Arkansas, 3.1; and Tennessee, 2.9) exceeded the average for all Unaffected States (2.7) during the same period.

[10]The U.S. Department of Labor (2006) reported that as of March 2006, about 1 million people ages 16 and older had evacuated their August residences, even temporarily, due to Hurricane Katrina (note that this number excludes children, as well as people residing in shelters, hotels, or places of worship). As of March 2006, 463,000 of these evacuees (45 percent) were not living in their pre-Katrina residences. The unemployment rate for this group of evacuees was 34.7 percent compared with 5.3 percent for evacuees whose residence in March 2006 was the same as in August 2005.

[11]Between August 2005 and March 2006, caseloads in the Unaffected and Major Evacuee States grew by almost 3 percent and 2 percent, respectively.

[12]By March 2006, some evacuees could have returned to a Disaster State or, conversely, additional residents of the Disaster States could have relocated to non-Disaster States.

[13]Based on seasonally adjusted employment data from the U.S. Department of Labor, Bureau of Labor Statistics.

[14]Monthly food stamp allotments are revised each October to reflect changes in the cost of food. The maximum monthly food stamp allotment for a family of four increased by 1.4 percent in October 2005.

Table 1
Average monthly food stamp caseloads by period

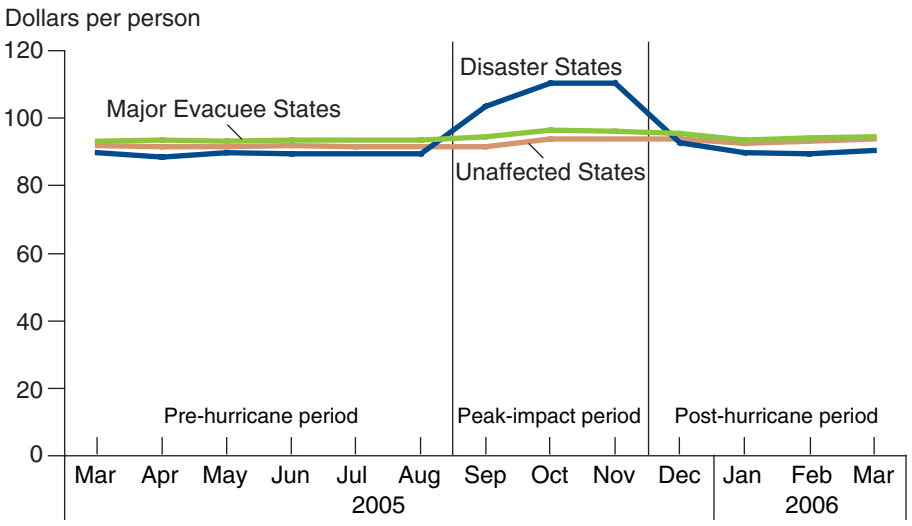
Area	Pre-hurricane period	Peak-impact period		Post-hurricane period	
	Average monthly caseloads	Average monthly caseloads	Change from pre-hurricane period	Average monthly caseloads	Change from pre-hurricane period
	Million people	*Million people*	*Percent*	*Million people*	*Percent*
Unaffected States	15.6	15.9	1.7	16.0	2.7
Disaster States	5.3	7.9	47.6	5.6	5.5
Evacuee States	4.5	4.8	4.9	4.7	4.2
United States	25.5	28.5	11.9	26.4	3.5

Source: USDA, Food and Nutrition Service National Data Bank.

Unaffected States. However, this relationship changed during the peak-impact period as the average food stamp benefit per person in Disaster States increased markedly. Compared with the August 2005 food stamp benefit of $90 per person in Disaster States, the average monthly benefit in the Disaster States was $14 higher in September and $21 higher in both October and November. Several factors help to explain this increase. First, households participating in the DFSP (and therefore new to the Food Stamp Program) received the maximum benefit based on household size. Second, already-participating households in some hurricane-impacted areas received a supplement to bring their benefit amount to the maximum for their household size. Third, households in some hurricane-impacted areas that were already participating in the Food Stamp Program received additional benefits to replace lost food. The average benefit per person in Disaster States fell during the next 3 months as the time limits for participating in the DFSP were met so that, during the entire post-hurricane period, it once again was below the average level in Evacuee and Unaffected States.

The average food stamp benefit per person in Major Evacuee States also increased slightly relative to Unaffected States during the peak-impact period (fig. 3). The average food stamp benefit per person in Major Evacuee States was on average $1.66 greater than in Unaffected States during the pre-hurricane period. However, the difference between the two groups rose to $2.85, $2.56, and $2.00 during the peak-impact months of September, October, and November. During the post-hurricane period, the difference in average food stamp benefits per person in Major Evacuee States was on average only $1.15 greater than in Unaffected States. This relative increase in average food stamp benefits per person in Major Evacuee States during the peak-impact period may be the result of national evacuee policies whereby evacuees from Disaster States temporarily received the maximum food stamp benefit for their household size. The relatively small effect on benefits per person for Major Evacuee States is due to the small share of these State caseloads that were evacuees.

Figure 3
Average food stamp benefit per person, March 2005-March 2006



Source: USDA, Food and Nutrition Service National Data Bank.

Individual Disaster States

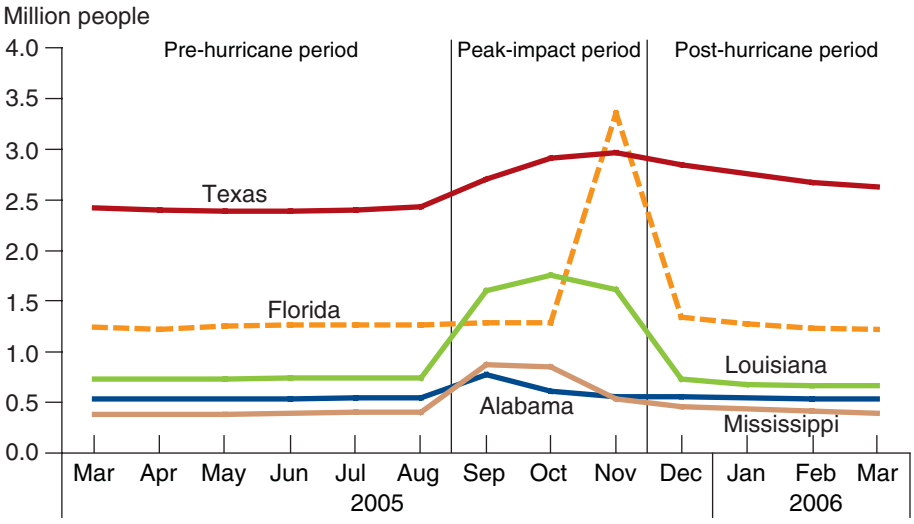
While caseloads in all five Disaster States significantly increased as a result of the hurricanes, the increase varied widely both in magnitude and duration among the individual States (fig. 4). Caseloads jumped the most in Florida as a result of Hurricane Wilma, increasing by 2.1 million people, or 162 percent, between October and November 2005. However, the increase was largely limited to the 1 month—November—that the DFSP in Florida operated. Compared with the pre-hurricane period, average caseloads in the post-hurricane period in Florida were only 1 percent greater.

Alabama also saw a 1-month spike (42 percent) in caseloads, this time in September, as a result of Hurricane Katrina. Average caseloads in the post-hurricane period were only 1 percent greater than during the pre-hurricane period.

Louisiana experienced a large increase in caseloads due to Hurricanes Katrina and Rita that lasted the entire 3-month peak-impact period. The average caseload over this period was 917,000 (124 percent) more people than the average during the previous 6-month period. At the caseload's peak in October 2005, 39 percent of Louisiana's population (measured as of July 1, 2005) received food stamps—more than in any other State (fig. 5). However, Louisiana experienced a large decrease in caseloads during the post-hurricane period; the average monthly caseload was 7 percent less than the average pre-hurricane caseload. The large number of evacuees who left Louisiana in the months following Hurricanes Katrina and Rita is a major reason for the lower caseload.

The effect of Hurricane Katrina in Mississippi was also large, but it mainly lasted only 2 months—September and October—during which caseloads were 121 percent greater than the average level during the previous 6 months. Average monthly caseloads during the post-hurricane period were 9 percent greater than during the pre-hurricane period.

Figure 4
Food stamp caseloads in Disaster States, March 2005-March 2006



Source: USDA, Food and Nutrition Service National Data Bank.

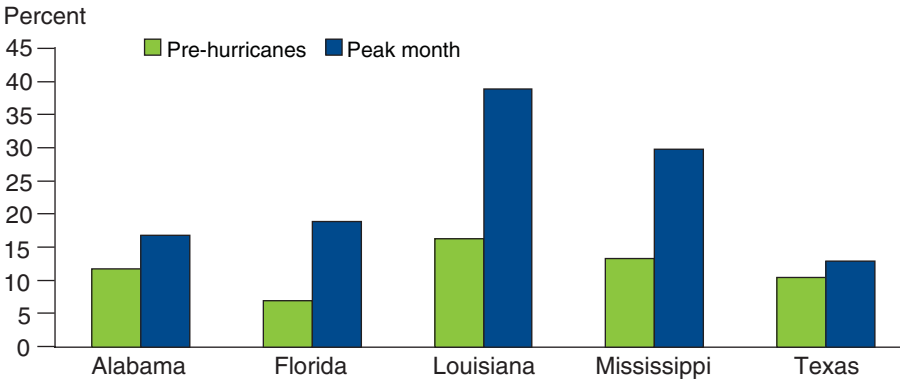
Compared with other Disaster States, Texas had the smallest average increase (19 percent) in caseloads from the pre-hurricane period to the peak-impact period.[15] However, in terms of duration, the hurricanes' effect was greatest in Texas; average caseloads in the post-hurricane period were 13 percent greater than in the pre-hurricane period. This result probably reflects, at least in part, the large number of evacuees who relocated to Texas.[16] These displaced people may have experienced difficulty finding employment in their new locations and either remained enrolled in the regular Food Stamp Program (that is, transferred cases from another Disaster State) or entered the regular Food Stamp Program after the DFSP benefits for evacuees ended.

The average size of food stamp households in Disaster States as a group increased greatly in November, due almost entirely to the situation in Florida (fig. 6). During the pre- and post-hurricane periods, the average size of food stamp households in Florida (2.0-2.1 people) was well below that of other Disaster States. The smaller average household size in Florida can be attributed to the large number of elderly—who tend to live alone—residing in the State.[17] However, in the month that the DFSP operated in Florida (November), the average household size increased to 2.6 people, larger than the household size for other Disaster States, indicating that households entering the DFSP in Florida were larger than those already participating in the regular Food Stamp Program. This result is supported by State DFSP data that show that the average size of households entering the DFSP in Florida during November was 3.2 people (USDA, August 2006).

National-Level Impacts: Benefits Issued and Caseloads

The descriptive analysis of the hurricanes' impact on the aggregate State groups and individual Disaster States just discussed focused on food stamp caseloads. However, the hurricanes also disrupted long-term trends in the amount of food stamp benefits issued, which has broad implications on

Figure 5
Food stamp recipients as a share of State population, 2005



Notes: Percentages are based on estimates of the State's population as of July 1, 2005 (U.S. Census Bureau). Peak month of food stamp caseloads during the peak-impact period differed by State: Alabama (September 2005), Florida (November 2005), Louisiana (October 2005), Mississippi (September 2005), and Texas (November 2005). Pre-hurricane period represents the average food stamp caseload during the 6-month pre-hurricane period.
Source: USDA, Food and Nutrition Service National Data Bank.

[15]The relatively small percentage increase in caseloads for Texas is partly due to Texas having the largest State caseload prior to the hurricanes and Hurricane Rita affecting only a small part of Texas.

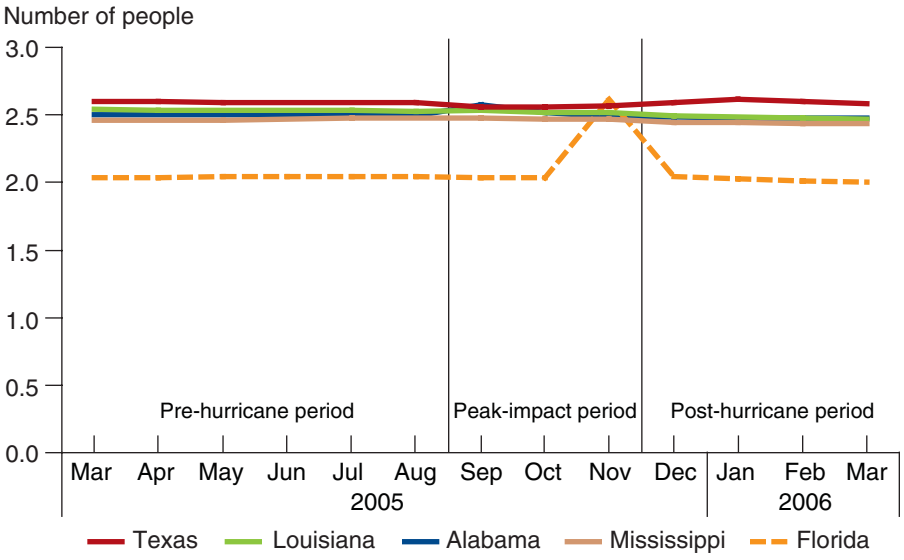
[16]A recent analysis identified Houston, TX, along with Baton Rouge, LA, as the two metropolitan areas in the hurricane-affected region with the greatest population gains between July 2005 and January 2006, much of it presumably due to the relocation of evacuees from Hurricanes Katrina and Rita (Frey and Singer, 2006).

[17]Twenty-nine percent of food stamp households in Florida in 2004 had an elderly person compared with only 17 percent in all States. In all States, the average size of food stamp households containing an elderly person was 1.3 people compared with 2.3 people for all food stamp households (USDA, September 2005).

recipients' welfare, local economies, and the budget of the Food Stamp Program. To determine the impact of the hurricanes on both benefits issued and caseloads at the national level, we estimated what the amount of benefits issued (caseloads) in Disaster States and Major Evacuee States would have been if the hurricanes had not occurred and subtracted that from actual benefits issued (caseloads) (see box, "Choosing the Preferred Regression Model").

First, we used pre-hurricane data to estimate a regression model of benefits issued (caseloads) for Disaster States and Major Evacuee States as dependent on benefits issued (caseloads) for Unaffected States.[18] Second, we assumed that the statistical relationship of benefits issued (caseloads) between Unaffected States, Disaster States, and Major Evacuee States during the pre-hurricane period would have persisted during the peak-impact and post-hurricane periods. We then used the estimated coefficient of the regression models to estimate what benefits issued (caseloads) for Disaster States and

Figure 6
Average size of food stamp households in Disaster States, March 2005-March 2006



Source: USDA, Food and Nutrition Service National Data Bank.

Choosing the Preferred Regression Model

To estimate what food stamp benefits issued (caseloads) would have been in the absence of the hurricanes, we used two different regression models—standard linear regression model and proportional zero-intercept model. In both models, we regressed benefits issued (caseloads) by Disaster States as dependent on benefits issued (caseloads) by Unaffected States. Similar regression models were also used to estimate benefits issued (caseloads) by Major Evacuee States. We chose to use the proportional zero-intercept regression model as the basis of analysis for this report. Both models resulted in the same general conclusions about the estimated impact of the hurricanes on benefits issued during the peak-impact period. However, the estimated cumulative impact was about 22 percent lower with the standard regression model. The regression results and the reasons for preferring the proportional model are discussed in the appendix.

[18]Benefits issued (and caseloads) in Disaster and Major Evacuee States increased at a similar rate as those in Unaffected States before the hurricanes. During the pre-hurricane period, the correlation coefficient for benefits issued between Unaffected States and Disaster States was 0.73 and between Unaffected States and Major Evacuee States 0.74. The correlation coefficient between caseloads in Disaster States and Unaffected States during the pre-hurricane period was 0.83 and between Major Evacuee States and Unaffected States 0.88.

Major Evacuee States would have been without the hurricanes. This estimation was done by multiplying benefits issued (caseloads) in Unaffected States during the peak-impact and post-hurricane periods by a regression model coefficient. This coefficient represents the pre-hurricane monthly average ratio of benefits issued (caseloads) in Disaster and Major Evacuee States to benefits issued (caseloads) in Unaffected States.

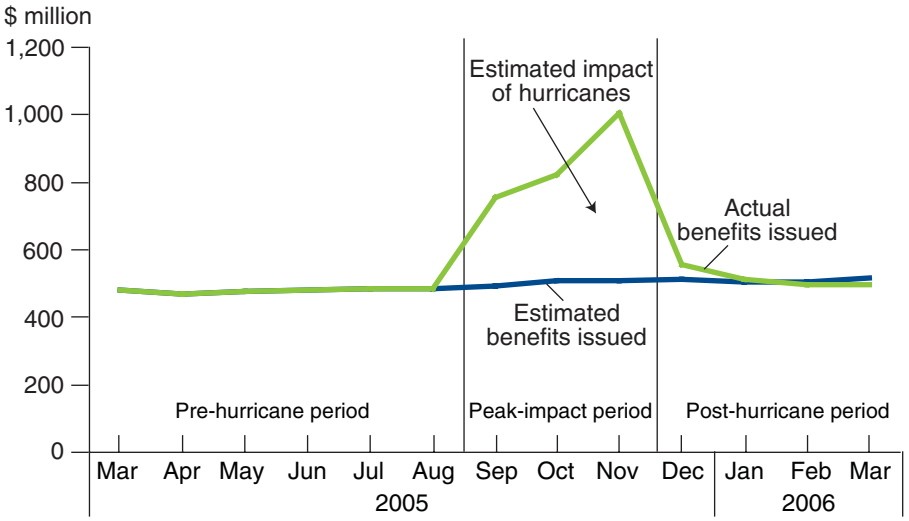
Benefits Issued

Actual benefits issued are compared with estimated benefits issued without the effect of the hurricanes (using the proportional regression model) for Disaster States, Major Evacuee States, and all States (figs. 7-9). As expected, estimated benefits issued, without the effect of the hurricanes, are lower than actual benefits issued from September 2005 through January 2006 in all three figures. In each figure, the area between actual benefits issued and estimated benefits issued represents the estimated cumulative impact of the hurricanes on benefits issued.

The cumulative impact of the hurricanes on benefits issued in Disaster States during September 2005-January 2006 was $1,162 million (fig. 7). The largest monthly impact on benefits issued was in November, the only month that benefits were issued for Hurricane Wilma in Florida. Most DFSP benefits for Hurricane Katrina were issued during September through November; consequently, there was a big decline in actual benefits issued in December and convergence with estimated benefits issued without the hurricanes starting in January.

The estimated cumulative impact of the hurricanes on benefits issued in Major Evacuee States was $69 million (fig. 8). This effect was much smaller than the estimated impact in Disaster States, reflecting the evacuees' relatively small share of food stamp caseloads in these States. Unlike in

Figure 7
Actual and estimated food stamp benefits issued in Disaster States, March 2005-March 2006

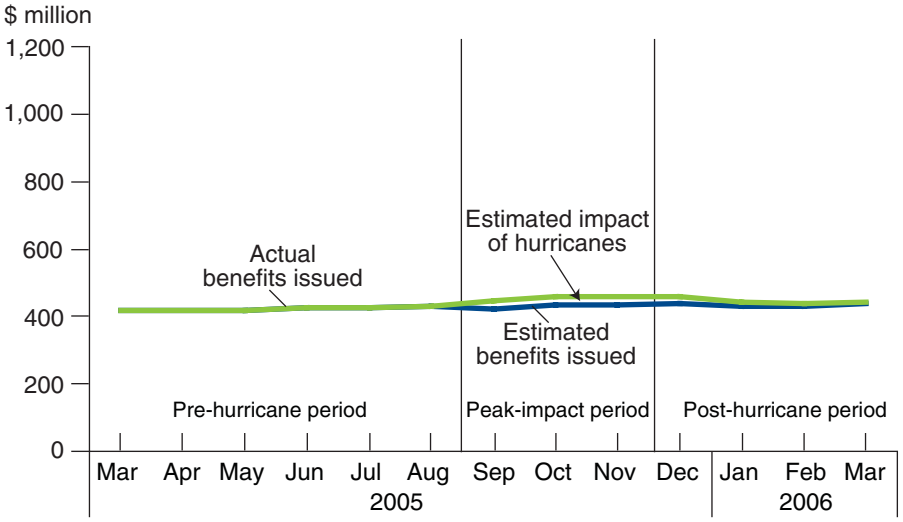


Source: USDA, Food and Nutrition Service National Data Bank and USDA, Economic Research Service estimates.

Disaster States, Major Evacuee States had no peak impact in November because Hurricane Wilma caused few or no evacuees to leave Florida.

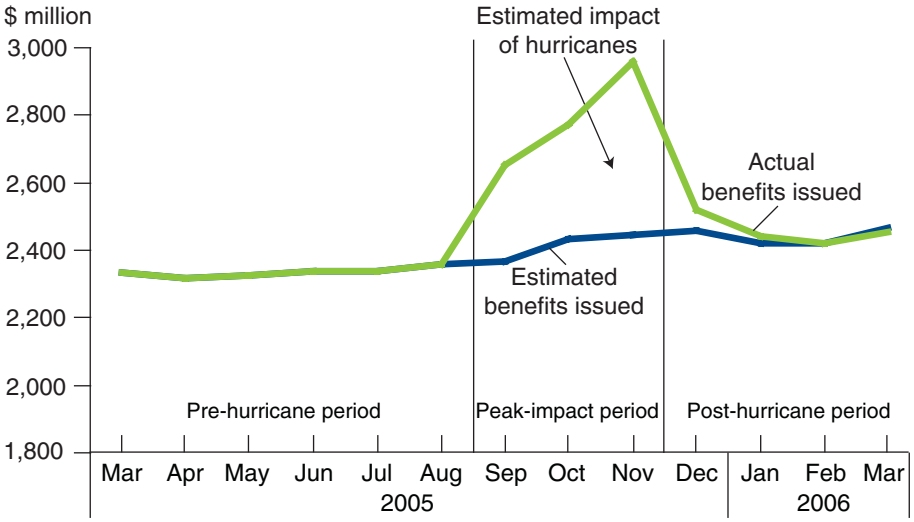
Figure 9 compares actual benefits issued for all States with the sum of estimated benefits issued by Disaster and Major Evacuee States and actual benefits issued by Unaffected States. During September 2005-January 2006, the cumulative impact of the hurricanes on benefits issued was $1,231 million for all States.

Figure 8
Actual and estimated food stamp benefits issued in Major Evacuee States, March 2005-March 2006



Source: USDA, Food and Nutrition Service National Data Bank and USDA, Economic Research Service estimates.

Figure 9
Actual and estimated food stamp benefits issued in all States, March 2005-March 2006



Source: USDA, Food and Nutrition Service National Data Bank and USDA, Economic Research Service estimates.

Our estimated impact of the hurricanes on benefits issued by the Food Stamp Program is larger than estimates from State administrative reports of benefits issued through the DFSP (USDA, August 2006).[19] Table 2 shows reported benefits issued through the DFSP by State and for the three hurricanes. Disaster and Major Evacuee States reported issuing almost $977 million in food stamp benefits under the DFSP as a result of Hurricanes Wilma, Katrina, and Rita. These benefits include $888 million issued to new households and $88 million in supplements to existing food stamp households. In addition, another $44 million in replacement benefits were reported to have been issued to existing food stamp households under the regular Food Stamp Program. Thus, a reported $1,021 million in benefits were issued as a result of the hurricanes, less than the $1,231 million estimated in our analysis.

Our estimates are larger because they are more comprehensive than the reported values in several ways. For example, our analysis takes into account the impact of previously ineligible households becoming eligible for the Food Stamp Program and enrolling in the program through the normal means in the months following the disasters. This situation could have been due to either a hurricane-related loss of income (via job loss or an interruption in employment) or a reduction in resources (such as, major expenses from the destruction of personal property or medical-related issues). Similarly, some households not previously participating in the Food Stamp Program participated in the DFSP until their benefits ran out and then transitioned into the regular Food Stamp Program. These people would not be accounted for in the State administrative reports of disaster-related assistance once their DFSP benefits ended. Our estimates also take into account households already participating in the Food Stamp Program in Disaster States that received less than the maximum benefit for their household size before

[19]DFSP data are reported by disaster and not by month, which limits the ability to compare the DFSP caseloads with the estimated monthly caseload effect from the hurricanes. However, the estimated effect from the hurricanes on benefits issued can be cumulated and compared with the reported DFSP benefits issued.

Table 2
State-reported disaster assistance benefits issued for hurricanes, 2005

Area	Disaster Food Stamp Program benefits issued			Food Stamp Program benefits issued	
	New	Supplement	Total	Replacement	Total
			$ million		
Hurricanes:					
Katrina	522.6	54.3	577.0	0	577.0
Alabama	21.2	4.3	25.5	0	25.5
Louisiana	280.9	25.9	306.8	0	306.8
Mississippi	110.8	24.1	135.0	0	135.0
Texas	91.3	0	91.3	0	91.3
Evacuee States	18.3	0	18.3	0	18.3
Rita	96.0	7.5	103.4	19.3	122.7
Louisiana	86.7	7.5	94.2	7.2	101.4
Evacuee States[1]	9.2	0	9.2	12.0	21.2
Wilma	269.9	26.3	296.2	24.9	321.2
Florida	269.9	26.3	296.2	24.9	321.2
Total	888.4	88.1	976.6	44.2	1,020.8

[1]Most Rita evacuees are in Texas (94 percent)

Source: USDA, Food and Nutrition Service summary of State Disaster Food Stamp Program reports, FNS-292, August 31, 2006.

the hurricanes hit and had their benefits increased through normal program channels (that is, not via supplements or replacements) due to a hurricane-related loss of income or reduction in assets.[20]

Note that the estimated benefit level converges with the actual benefit level in February 2006 in all three figures (figs. 7-9), suggesting that the effect of the disasters on benefits issued in the Disaster and Major Evacuee States had dissipated by this time.[21] For the group of all States, this convergence occurs at a level ($2,421 million) greater than the pre-disaster level of $2,357 million in August 2005, which is consistent with the general growth trend in the Unaffected States (fig. 9).

Caseloads

As we did with benefits issued, we estimated what caseloads for Disaster and Major Evacuee States would have been without the hurricanes. Details of the regression analysis used in the estimation procedure are discussed in the appendix. The regression results for food stamp caseloads were similar to those for food stamp benefits issued.[22] This is not surprising given that the amount of food stamp benefits issued is determined largely by food stamp caseloads.

The 2-million-person difference between actual and estimated caseloads in September is interpreted as the caseload impact from Hurricane Katrina. The difference in caseloads in October was 2.15 million, slightly more than in September as some left the program but others enrolled in the program following Hurricane Rita. The largest monthly difference between the actual caseload and the estimated caseload was 3.74 million people in November 2005. This difference was due to the effect of Hurricane Wilma in Florida on top of the remaining caseloads from Katrina and Rita in the previous months. So, during the peak-impact period, the average monthly increase in caseloads due to the hurricanes was 2.6 million people. In the 2 months following the peak in November, the caseload difference was 0.6 million, as those who enrolled from Hurricane Wilma stayed only 1 month and those from the previous hurricanes continued to leave the Food Stamp Program. Actual and estimated food stamp caseloads for Disaster States converged in February 2006 at a level of 5.43 million, about equal to the pre-hurricane level in August 2005 of 5.38 million.

[20]Another possible reason that the ERS estimate of the hurricanes' impact exceeds those reported by States is that not all Disaster States reported the replacement food stamp benefits issued to existing food stamp households. We also recognize that our regression-based estimates can be unbiased and yet have a degree of uncertainty—that is, our estimates could be higher or lower than the "true" comprehensive, but unobserved, hurricane effects.

[21]In March 2006, estimated benefits issued exceed actual benefits issued for Disaster States. This result can be attributed partly to statistical error in the regression analysis, which increases as the forecast period gets further from the estimation period. It could also be due to evacuees who already receive food stamps not returning to Disaster States, thus reducing actual caseloads and benefits issued below what past trends would predict in Disaster States. The trend in caseloads was slightly upward, so recipients leaving Disaster States would lead to lower actual caseloads and benefits issued than would be predicted by trend growth. This explanation is supported by actual benefits issued by Major Evacuee States being slightly higher than estimated benefits issued.

[22]The set of figures comparing actual and estimated caseloads are so similar to figures 7-9 comparing actual and estimated benefits issued that they are not included in the report.

Conclusions

The Federal response to the Gulf Coast Hurricanes of 2005 has received much attention (for example, see White House, 2006). This report about food stamp use helps to provide a more complete picture of the use of public assistance both during and after the hurricanes.

The hurricanes significantly affected the Food Stamp Program. Average monthly caseloads in Disaster States increased by 48 percent in the peak-impact period compared with those in the pre-hurricane period. During the same period, average caseloads increased by 5 percent in Major Evacuee States and 2 percent in Unaffected States.

While caseloads in all five Disaster States significantly increased as a result of the hurricanes, the increase varied widely both in magnitude and duration among individual States. For example, the largest increase (162 percent) in caseloads occurred in Florida in November due to Hurricane Wilma, but the increase was largely limited to the 1 month. Louisiana experienced a large increase in caseloads (124 percent) due to Hurricanes Katrina and Rita that lasted the entire 3-month peak-impact period. Compared with other Disaster States, Texas had the smallest average increase (19 percent) in caseloads in the hurricane period. However, in terms of duration, the hurricanes' effect was greatest in Texas; average caseloads in the post-hurricane period were 13 percent greater than in the pre-hurricane period, reflecting, at least in part, the large number of evacuees who relocated to Texas.

By March 2006, food stamp caseloads in Disaster States were 1 percent greater than caseloads in August 2005, whereas in Unaffected and Major Evacuee States, caseloads grew by almost 3 percent and 2 percent, respectively. A major reason for lower caseloads in Disaster States was the large number of evacuees exiting some of these States following Hurricanes Katrina and Rita. However, States that received large numbers of evacuees from hurricane-impacted areas experienced disproportionate increases in caseloads relative to the other States.

The hurricanes also impacted the average food stamp benefit per person, which increased in Disaster States during the peak-impact period. The average size of food stamp households in Disaster States also increased in November. However, this result was due to the situation in Florida, where the average size of households enrolling in the DFSP was larger than the average size of households participating in the regular Food Stamp Program.

Using regression analysis, we estimate that the cumulative impact of the hurricanes on benefits issued was $1.231 billion over the months of September 2005 through January 2006, most of which ($1.162 billion) occurred in Disaster States. This estimate of the hurricanes' total impact on benefits issued is greater than the $1.021 billion reported in the State DFSP reports, which include some replacement benefits. Our estimate accounts for people and benefits issued that would not show up in the State DFSP reports, such as people who enrolled in the regular Food Stamp Program or were already enrolled and had their benefit levels changed as a result of the hurricanes.

Food stamp benefits directly improve the well-being of disaster victims participating in the program. Hurricane-impacted communities also benefit, via the program's use of "normal channels of trade" for bringing food assistance into a disaster area. As recipients use food stamps to purchase food from local retailers, the benefits become revenue for the retailers and bring people back to work in both retail businesses and businesses that provide services to them, such as the wholesalers, transporters, etc. The food stamp benefits generate a multiplier effect as the dollars cycle through the local economy, contributing to the economic recovery of the community.

This analysis suggests that, by February 2006, the effect of the disasters on food stamp caseloads and benefits issued at the national level had largely dissipated, even though some individuals and local areas may still be experiencing disaster-related employment and economic hardships.

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Appendix: Method of Analysis at the National Level

State Food Stamp Program data by month were used to estimate what Food Stamp Program benefits issued at the national level would have been without the hurricanes. Subtracting estimated monthly benefits issued from actual benefits issued provides an estimate of the effect of the hurricanes on food stamp benefits issued. A similar analysis is applied to program caseloads, although we focus on benefits issued in the description to follow.

Various approaches could be used to estimate what food stamp benefits issued would have been without the hurricanes. For instance, pre-hurricane data could be used in a time series analysis to estimate peak-impact and post-hurricane benefits issued at the national level if the hurricanes had not occurred. Unfortunately, this approach would miss any structural change in the economy that was independent of the hurricanes and that might have affected the amount of food stamp benefits issued. To allow for potential structural change in the economy, we use the tendency of benefits issued for the three aggregate State-groups to move together during the pre-hurricane period. That is, during the pre-hurricane period, the correlation coefficient for benefits issued between Unaffected States and Disaster States was 0.73 and between Unaffected States and Major Evacuee States it was 0.74. The correlation coefficient between the caseloads in Disaster States and Unaffected States during the pre-hurricane period was 0.83 and between Major Evacuee States and Unaffected States it was 0.88.[23] For our regression analysis, we assume that the high correlation would have persisted during the peak-impact period and post-hurricane period if no hurricanes had occurred. Given this assumption, we regressed benefits issued for Disaster States with those for Unaffected States and for Major Evacuee States with Unaffected States using data for the pre-hurricane period. The regression results are used to estimate what benefits issued during the peak-impact and post-hurricane months would have been without the hurricanes. In these regressions, the independent variable—benefits issued by Unaffected States—accounts for any structural change in the economy.

[23]Although long-term trends between the groups of States were not so highly correlated, there is no evidence to suggest that the correlation in the pre-hurricane period would not persist during the peak-impact and the post-hurricane period.

We assume that benefits issued by Unaffected States are not affected by the hurricanes. We also assume that benefits that would have been issued by Disaster and Major Evacuee States if no hurricanes had occurred would be statistically related to benefits issued in Unaffected States and therefore can be predicted by them. Two linear regression models were estimated: a standard model with an intercept and a slope coefficient relating benefits issued in Unaffected States to benefits issued in Disaster States (and Major Evacuee States) and a linear regression model with a zero-intercept, which specifies that the change in benefits issued by the State groups are proportional to each other.

The coefficient estimates and t-values, where appropriate, for both caseloads and benefits issued regression models are reported in appendix table 1. In three out of the four standard regression models, the estimated coefficient for the intercept was not statistically different from zero (t-value less than 1.96). Only for the model of caseloads in Major Evacuee States was the intercept statistically significant.

The regression coefficients are use to estimate what benefits issued (caseloads) would have been without the hurricanes in Disaster and Major Evacuee States, respectively. For each of these State groups, we made this estimation by multiplying monthly benefits issued (caseloads) in Unaffected States during the peak-impact and post-hurricane periods by the regression model slope coefficient and adding the intercept value in the standard model. In the proportional regression model, the slope coefficient represents the pre-hurricane monthly average ratio of benefits issued (caseloads) in Disaster and Major Evacuee States to benefits issued (caseloads) in Unaffected States. To determine benefits issued (caseloads) at the national level during the peak-impact and post-hurricanes periods without the hurricanes, we summed estimated benefits issued (caseloads) by Disaster and Major Evacuee States derived from the regression analyses and added actual benefits issued (caseloads) by Unaffected States.

The analyses of the national-level impacts of the hurricanes on benefits issued (caseloads) discussed in the report are based on the proportional zero-intercept regression model. Reasons for preferring the proportional zero-intercept regression model over the linear regression model with an intercept are related to differences in the estimated values of benefits issued (caseloads) during the peak-impact and post-hurricane periods generated by these two models. Appendix figure 1 shows actual benefits issued at the national level, along with estimated benefits issued from the two models (with and without intercept).[24] Estimates of benefits issued from the zero-intercept model during the post-hurricane period converge with actual benefits issued in February and March 2006, whereas estimates from the model with an intercept diverges from actual values (model estimates are larger than actual values). It is unlikely that benefits issued without the hurricanes would be larger than actual benefits issued with the hurricanes during the post-hurricane period—one reason for preferring the proportional zero-intercept model. Convergence of estimated and actual benefits issued in the post-hurricane period results in the benefits issued at the national level returning to the pre-hurricane trend.

A second reason for preferring the proportional zero-intercept model is that we would expect our estimate of total benefits issued due to the hurricanes to be larger than benefits issued by Disaster and Major Evacuee States as reported through the DFSP. Our estimate is more comprehensive than benefits issued solely through the DFSP because it accounts for benefits issued to people who would not show up in the State DFSP reports, such as people who enrolled in the regular Food Stamp Program or were already enrolled and had their benefit levels changed as a result of the hurricanes. The estimated cumulative effect of the hurricanes on benefits issued using the regression model with the intercept is $962 million, less than the $1,020 million in DFSP benefits issued and replacement benefits reported by the States (table 2).[25] The estimated cumulative effect of the hurricanes on benefits issued using the zero-intercept regression model is $1,230 million, a more likely result.

[24]The national level estimates combine the estimates for the Disaster and Major Evacuee States with the actual data for Unaffected States.

[25]The cumulative effect is the area between actual benefits issued and the regression estimate of benefits issued in appendix figure 1.

Appendix table 1

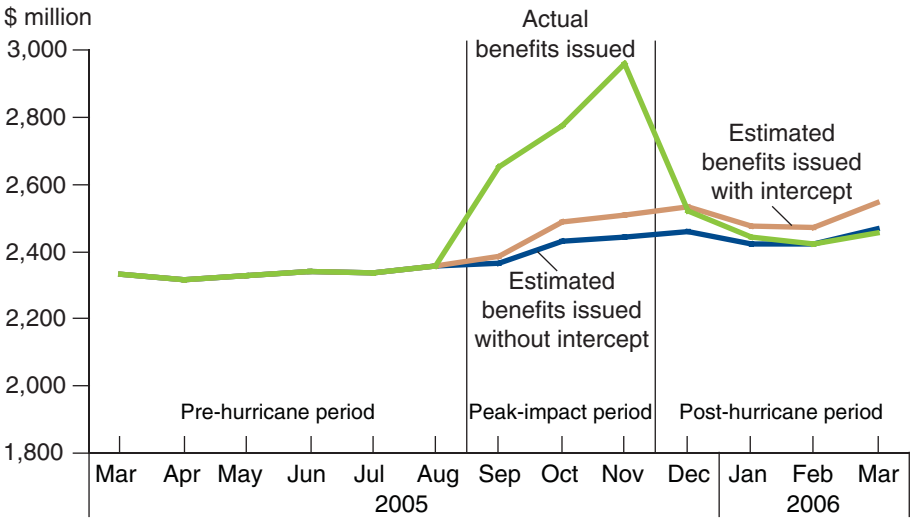
Coefficient estimates for the two regression models

Item	Standard model (with intercept) Intercept	Standard model (with intercept) Slope	Proportional model (no intercept) Slope
Benefits:			
Disaster States—			
Coefficient	-751.04	0.859	0.335
t-value	-1.30	2.14	NA
Major Evacuee States—			
Coefficient	-673.78	.766	.295
t-value	-1.34	2.17	NA
Caseloads:			
Disaster States—			
Coefficient	-4.787	.647	.341
t-value	-1.42	3.00	NA
Major Evacuee States—			
Coefficient	-7.444	.767	.290
t-value	-2.33	3.75	NA

NA = Not applicable.

Appendix figure 1

Actual and estimated food stamp benefits issued in all States, based on models with and without intercept



Source: USDA, Food and Nutrition Service National Data Bank and USDA, Economic Research Service estimates.