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.

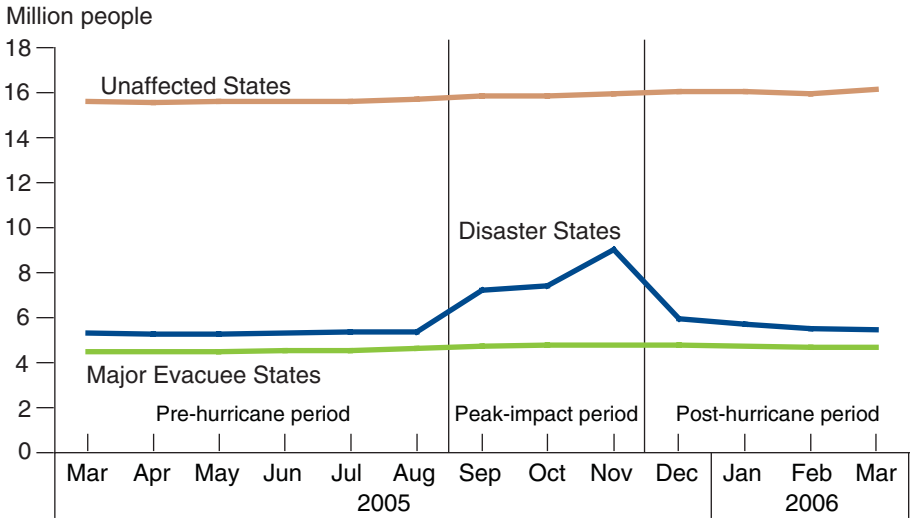
Disaster, Major Evacuee, and Unaffected Groups of States

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

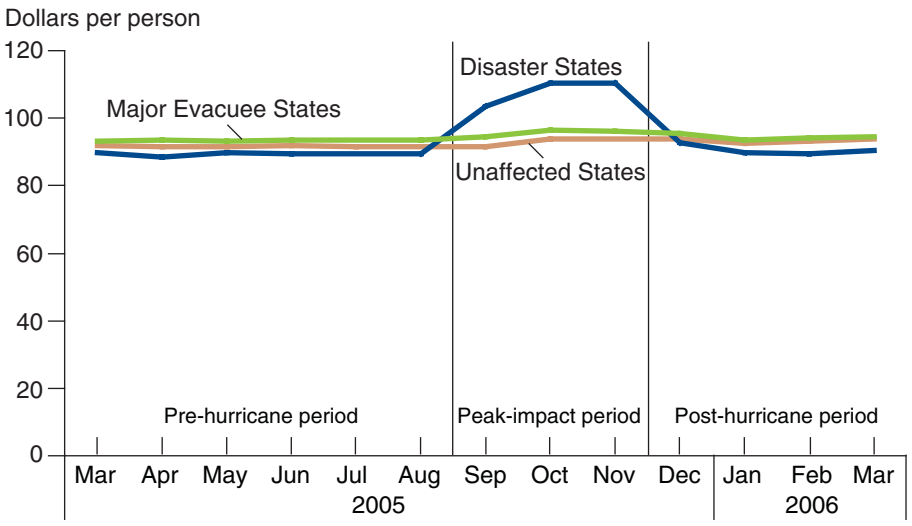
Area	Pre-hurricane period	Peak-impact period		Post-hurricane period	
	Average monthly caseloads	Average monthly caseloads	Change from pre-hurricane period	Average monthly caseloads	Change from pre-hurricane period
	Million people	*Million people*	*Percent*	*Million people*	*Percent*
Unaffected States	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

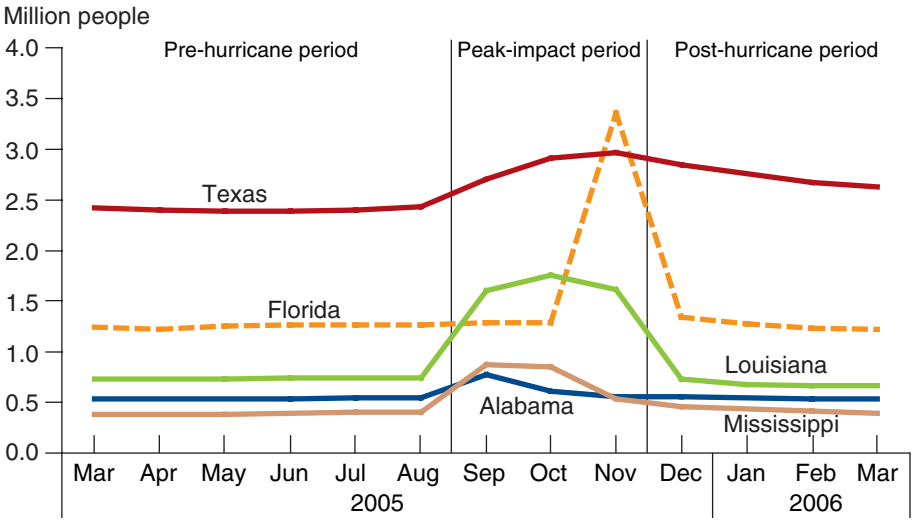
While caseloads in all five Disaster States significantly increased as a result of the hurricanes, the increase varied widely both in magnitude and duration among the individual States (fig. 4). Caseloads jumped the most in Florida as a result of Hurricane Wilma, increasing by 2.1 million people, or 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.

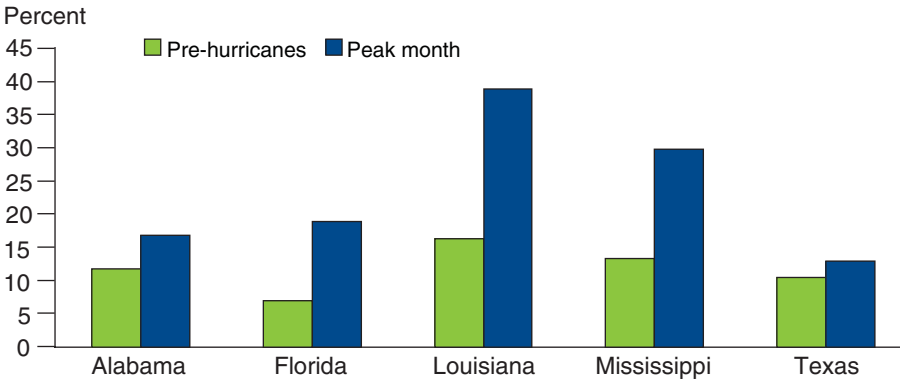
Compared with other Disaster States, Texas had the smallest average increase (19 percent) in caseloads from the pre-hurricane period to the peak-impact period.[15] However, in terms of duration, the hurricanes' effect was greatest in Texas; average caseloads in the post-hurricane period were 13 percent 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.

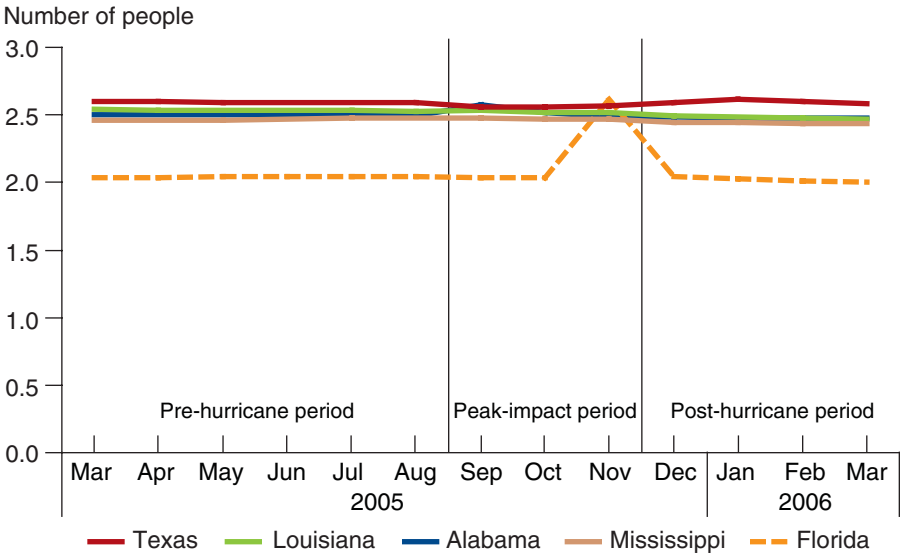
[16]A recent analysis identified Houston, TX, along with Baton Rouge, LA, as the two metropolitan areas in the hurricane-affected region with the greatest population gains between July 2005 and January 2006, much of it presumably due to the relocation of evacuees from Hurricanes Katrina and Rita (Frey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

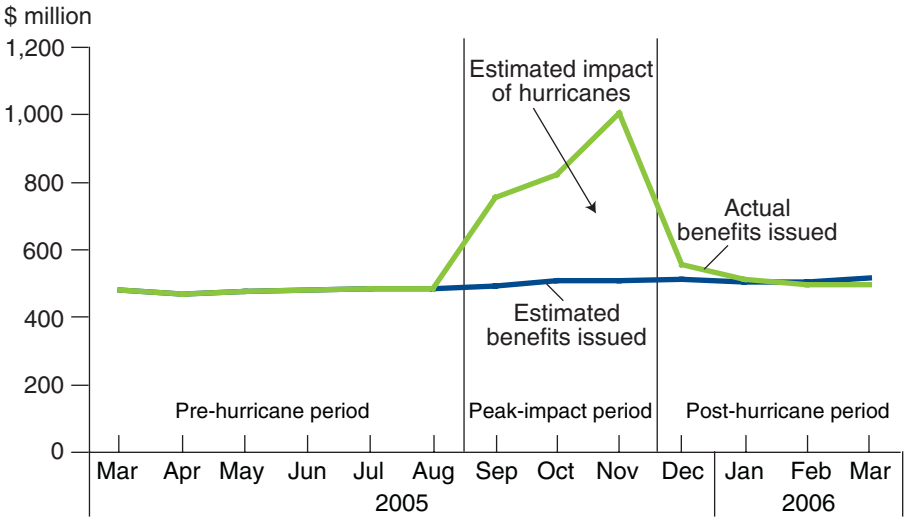
Benefits Issued

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

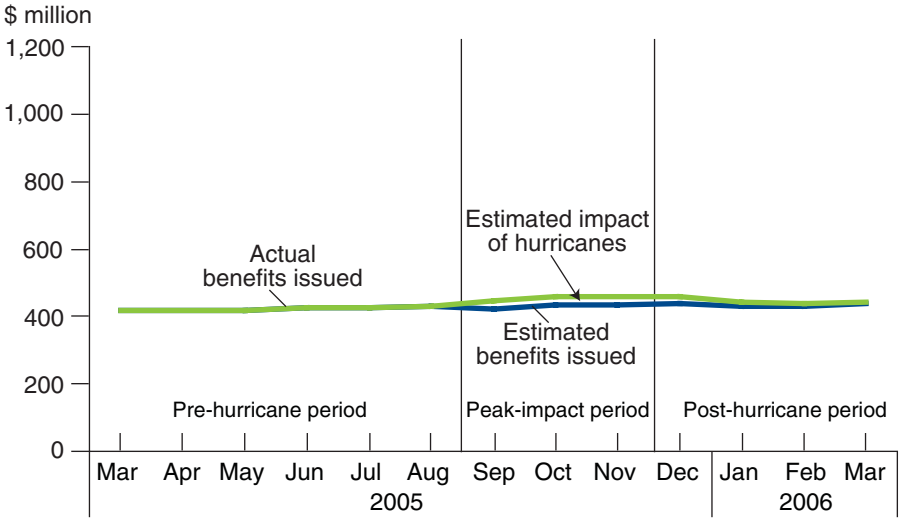


Source: USDA, Food and Nutrition Service National Data Bank and USDA, Economic Research Service estimates.

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

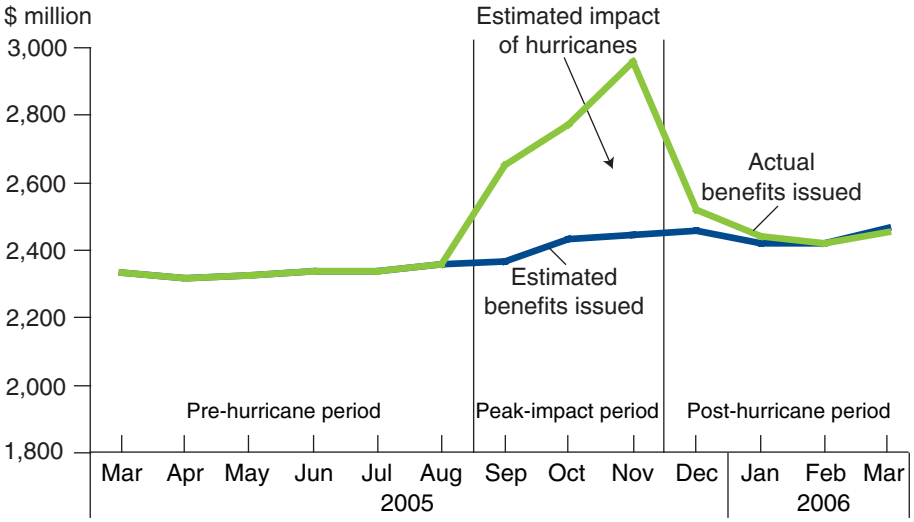
Figure 9 compares actual benefits issued for all States with the sum of estimated benefits issued by Disaster and Major Evacuee States and actual benefits issued by Unaffected States. During September 2005-January 2006, the cumulative impact of the hurricanes on benefits issued was $1,231 million for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