Supplemental Security Income Recipients Affected by Hurricanes Katrina and Rita: An Analysis of Two Years of Administrative Data[*]

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I. Introduction

On August 29, 2005, Hurricane Katrina struck the Gulf coast causing widespread damage and loss of life. One month later, Hurricane Rita struck the same region. While the effects of the hurricanes were felt by all residents of the affected gulf coast communities, among the hardest hit were the poor, elderly, and disabled. With a lack of resources, many of these individuals were unable to evacuate the affected areas. Many of these individuals are supported by Supplemental Security Income (SSI), the federal means-tested transfer program for the poor, elderly, and disabled.

The Census Bureau estimates that nearly 12 million people were directly affected by the hurricanes in Texas, Louisiana, Alabama, and Mississippi.[1] We identify hurricane-affected counties as those that were declared by the Federal Emergency Management Agency to be eligible for public assistance (see Appendix Table 1 for the list of affected counties in each state). In those counties of Texas, Louisiana, Alabama, and Mississippi, nearly 350,000 individuals were receiving SSI when Hurricanes Katrina and Rita struck. This represents approximately 3 percent of the total affected population cited by the Census Bureau.

In the days immediately following the hurricanes, SSA began providing daily reports to the White House on emergency response efforts, the number of SSI recipients and Social Security[2] beneficiaries in the counties affected by the hurricanes, outreach to affected beneficiaries, and the issuance of emergency payments to affected beneficiaries. Policy makers have expressed

[1] http://www.census.gov/acs/www/Products/Profiles/gulf_coast/tables/tab1_katrinaK0500US01v.htm Although Katrina also affected Florida, it made contact as a lower category storm and is not usually included among the counties designated by the Federal Emergency Management Agency as disaster areas.

[2] Social Security refers to the Old-Age, Survivors, and Disability Insurance program.

continued interested in the status of affected individuals and the responses by government agencies to serve those individuals (GAO 2007, 2008). Notably, the Social Security and SSI programs had service delivery disaster plans in place prior to the hurricanes. SSA had the flexibility to shift staff to places of need and was able to assist beneficiaries via its Internet application process and through its nationwide toll-free service number (GAO 2007 p. 3).

This paper is an extension of those immediate responses by SSA in the sense that it provides more detailed descriptive information about SSI recipients in the hurricane-affected counties in August 2005 and analyzes the status of those affected individuals two years after the hurricanes in August 2007. By understanding the impact these rare and catastrophic events have had on SSI recipients, SSA can better understand the needs of recipients should similar events occur again. Additionally, long-term health issues caused by the hurricanes may make several victims eligible for SSI and/or Social Security Disability Insurance (GAO 2007 p. 20). Given that the purpose of the SSI program is to assure "a minimum level of income to people who are aged, blind, or disabled and who have limited income and resources,"[3] it is important for SSA to understand how SSI recipients fare after a catastrophe that redefines their basic needs.

We examine these issues by examining the outcomes of SSI recipients in counties affected by the hurricanes relative to SSI recipients in unaffected counties and unaffected states. Outcomes analyzed at the August 2007 follow-up interval include SSI program status, mortality, earned and unearned income, and geographic location. In addition, we use multivariate techniques to analyze probabilities of dying or leaving SSI for other reasons after the hurricanes for recipients in affected counties relative to recipients in unaffected areas. Finally, we use survival analysis

[3] Social Security Handbook http://www.ssa.gov/OP_Home/handbook/handbook.21/handbook-2102.html.

techniques to explore differences between SSI recipients in affected and unaffected areas in the timing of SSI exits, re-entry to the SSI program, and death.

The remainder of the paper proceeds as follows. In the next section we provide background information on the SSI program and SSA's response to the hurricanes. We also discuss several potential ways the hurricanes may have affected SSI recipients, although we do not attempt to address all of these issues in the analyses presented later in the paper. This section is followed by a discussion of the unique data source we use (Section III). We then discuss the characteristics of the affected population and draw comparisons with the national population of SSI recipients (Section IV). Section V shifts to the outcomes analyses, focusing on changes in SSI status two years after the hurricanes for recipients in affected counties relative to recipients nationwide. This is followed by a discussion of how SSI payments and income (Section VI), earnings (Section VII), and location (Section VIII) have changed for the affected recipients compared with recipients nationwide. Section IX presents evidence on how the SSI rolls have changed. Section X presents a multivariate analysis of SSI status in August 2007 and Section XI discusses the timing of first SSI exit and any subsequent return to the SSI program over the two years since the hurricanes.

II. Background

SSI Program and SSA's Response. The SSI program is administered by the Social Security Administration (SSA) and has provided means-tested cash payments to the poor, disabled, and elderly since 1974. Currently, over 7 million individuals receive SSI payments, almost 1 million (about 13 percent) of which live in the four states directly affected by Hurricanes Katrina and

Rita. To qualify for SSI benefits, an elderly individual must have income and assets below a certain level. Non-elderly individuals qualify if they have low income and assets and have a disability that limits their ability to perform in the national economy (ages 18-64) or have marked and severe functional limitations (ages 0-17). Because of the low resources and poor health of SSI recipients, they are among the most likely to be affected by the hurricanes.

SSA responded quickly to the needs of Social Security and SSI beneficiaries. Special immediate payments were made to individuals who lost access to their checks; new cases were given special priority in the determination decision queue; and electronic fund transfers were conducted as usual with paper checks handled through the US Postal Service and special mail stations. SSA's immediate payment procedures were invoked nationwide, giving all field offices the authority to make emergency benefits payments under previously established procedures. Despite the temporary closing of some field offices damaged by the hurricanes (and the permanent closing of the SSA district office in New Orleans), SSA processed over 110,000 immediate payments nationwide during the two months between August 31, 2005 and October 31, 2005, compared with nearly 24,000 immediate payments during the same period in 2004 (GAO 2007 p. 20).

Potential Impacts on SSI Population. The hurricanes may have affected SSI recipients in a variety of ways. In this section we describe several potential effects, although we do not intend to analyze each of them in this paper.

The elderly and the disabled in general were at a particularly high risk of fatality and loss of economic resources as a result of Hurricanes Katrina and Rita. Among other reasons, the elderly

have higher rates of chronic illness and use of assistive devices, are more likely to rely on others for care, and are generally more "frail," all of which increase the risk of adverse effects of the hurricanes and the evacuation process (Gibson and Hayunga 2006). Non-elderly individuals with disabilities also faced more and larger barriers to evacuation and preparation including: (1) there were no wheelchair lifts on some evacuation buses; (2) the disabled would be separated from medical supports necessary to maintain their health; (3) the communication of evacuation procedures did not comply with federal law regarding vision and hearing impairments; and (4) many Red Cross shelters did not provide shelter to individuals with disabilities—some were sent to Special Needs shelters, many of which were not prepared for disabled individuals (National Council on Disability 2006).[4] In addition to the immediate impact of disrupted health care, individuals with certain types of disabilities may never fully recover from the break in health supports available to them. For example, if an individual missed a kidney dialysis treatment they may suffer increased medical problems in the future. These issues are only exacerbated by the low income and resources of SSI recipients.

The poor health services available as a result of the hurricanes may intensify the disability, or lead to new disabilities, increasing reliance on SSI. For example, one year after Katrina, only half of New Orleans' hospitals were open (Liu, Fellowes, and Mabanta 2006). The poor environmental conditions of post-hurricane areas may also lead to individuals developing new disabilities, such as chronic asthma, which may qualify them for SSI benefits. Fields, Huang, Solomon, Rotkin-Ellman, and Simms (2007) found high levels of mold, contaminated drinking water, and other environmental health hazards that may result in long-term health issues in post-

[4] Most of the research on the effects of Katrina has focused on New Orleans, e.g., the Urban Institute (2006), but the problems there occurred in other locations as well, to varying degrees.

Katrina New Orleans. These issues could result in longer dependence on SSI, fewer months of non-payment, and higher payment levels for the months in current pay status. As a result, there may be increased applications or enrollment in affected areas.

The difficulties faced by the disabled and elderly poor are not limited to health issues, however. Rent prices in New Orleans increased in the following year by 39 percent (Liu, Fellowes, and Mabanta 2006), limiting the housing options of many elderly and disabled poor. Many of the apartments and trailers set up by FEMA were/are not readily accessible to those with disabilities (National Council on Disability 2006). However, there was a special act of Congress—the Assistance for Individuals with Disabilities Affected by Hurricanes Katrina and Rita Act of 2005—which provides $25.9 million for special vocational rehabilitation (Public Law 109-82, enacted September 30, 2005). The wide-spread destruction of housing and other assets may lead to more elderly and disabled individuals meeting the SSI resource and income criteria. While housing issues undoubtedly affected all victims of the hurricanes, they are likely to have affected the poor and those with low resources (e.g., SSI recipients) most.

The impact of the hurricanes on the economic situations of victims is ambiguous. Evacuees may have better economic outcomes in new locations. These new markets could have job openings that match their skills, leading to higher earnings, resulting in increased exits from SSI. However, it is likely that evacuees found it difficult to adjust, resulting in lower earnings and fewer exits. Research has found that in Houston, at least, the influx of Katrina evacuees reduced wages and the likelihood of employment among native Houstonians (McIntosh 2007). A possible

implication of this may have been the unintended consequence of *more* native Houstonians applying for SSI and other federal programs.

Research on evacuees is somewhat mixed, but among those who evacuated to Houston, a higher Houston wage reduced the probability of returning home (Landry, Bin, Hindsley, Whitehead, and Wilson 2007). Clayton and Spletzer (2006) find that evacuees from New Orleans working in Texas had lower earnings compared with the previous year. The numbers they report are also consistent with evacuees finding employment in other regions. Vigdor (2007), however, finds that non-returning evacuees have not, on average, experienced gains in employment. Nine months after Hurricane Katrina, the labor force participation rate was lower for evacuees than for those in the same residence as before Katrina; the unemployment rate of persistent evacuees was about 20 percent higher than for returnees (Cahoon, Herz, Ning, Polivka, Reed, Robison, and Weyland 2006). Overall, persistent evacuees do not appear to be having better labor market experiences than non-evacuees and returnees.

SSI recipients staying in affected areas also face ambiguous short- and long-term outcomes. The reconstruction process and jobs made available by people who left the area may increase employment opportunities and earnings, but the SSI population does not historically have a high attachment to the labor force. The average weekly wage in New Orleans increased 28.2 percent (Dolfman, Wasser, and Bergman 2007), potentially indicating new opportunities for SSI recipients or reduced payments to recipients. The distribution of occupations remaining in the New Orleans-Metairie-Kenner metropolitan statistical area in the months just after the hurricanes shifted slightly to fewer service, sales, and production jobs, but it is not clear if this is responsible

for the change in average weekly wages.[5] The large decline in the number of available jobs in Katrina-affected areas (Clayton and Spletzer 2006), however, may dampen any positive effect. The majority of individuals on SSI remaining in affected areas are less likely to see large gains in the sector that saw the most growth after Hurricane Katrina—construction (Garber, Unger, White, and Wohlford 2006)—due to their age and health. Vigdor (2007) gives some evidence that evacuees who returned to the New Orleans-Gulfport-Biloxi area after Hurricane Katrina are more likely to return to their previous employment situation, providing some degree of a return to normalcy.

A final factor that leads to ambiguous changes in SSI participation rates among evacuees, non-evacuees, and returnees is the effect of unearned income from charities and the government. While federal disaster assistance will undoubtedly increase the unearned income of those who receive it, such income is not countable under SSI rules in cases of presidentially-declared disasters and thus may have no effect on SSI participation

III. Data

The data for this project are derived from monthly extracts of the Social Security Administration's Supplemental Security Record (SSR). This is the master record for the SSI program and contains payment and eligibility information and other characteristics of SSI applicants and recipients. Because SSI is a monthly program that depends on living arrangements, the SSR records changes in location of residence on a monthly basis. It also records monthly data on earned and unearned income, which directly affect SSI eligibility and

[5] http://www.census.gov/acs/www/Products/Profiles/gulf_coast/tables/tab3_katrinaK0100US2203v.htm

payment levels. The SSR records were merged with information from SSA's Numident file, which contains information on dates of birth and death for all Social Security number holders.

The universe for this study is the population of SSI recipients in the month of August 2005, who were alive the day before Hurricane Katrina made landfall. This resulted in 7,093,190 cases. Focusing on the counties in Texas, Louisiana, Alabama, and Mississippi that were declared by the Federal Emergency Management Agency to be eligible for public assistance (see Appendix Table 1 for the list of affected counties in each state), we identify 348,377 of those 7.1 million individuals as receiving SSI in hurricane-affected counties when Hurricanes Katrina and Rita struck.[6] An extract from the SSR was created for each of the subsequent 24 months to track these 7.1 million individuals longitudinally through August 2007. These extracts contain information identifying location, eligibility status, payment amounts if eligible, income for each month, and other socioeconomic characteristics.

For the bulk of the analysis, an individual is considered to be on SSI if they are receiving payments in a given month (current-pay status). Individuals are considered off SSI if they are not receiving SSI in a given month (non-pay status). It is not uncommon for SSI recipients to vacillate between being on and off SSI. An individual is not officially terminated from the SSI program until he or she has had 12 consecutive months of non-payment status.[7] To determine

[6] We use the terms "receiving SSI in August 2005" and "SSI recipients in August 2005" to refer to program participants or individuals scheduled to receive a SSI payment in August 2005. It is possible that some SSI services were disrupted *before* Hurricanes Katrina and Rita struck. For example, if an individual was expecting to receive her SSI check in the mail, but was evacuated before the check arrived, she may not have physically received her check in August 2005. This is an important potential source of disruption cause by the hurricanes. Because we identify affected individuals as those who were scheduled to receive a SSI payment in August 2005, we correctly include these potential pre-hurricane effects in our analysis.

[7] The point-in-time nature of our definition of SSI recipients, combined with the normal monthly movement of individuals into and out of current payment status, creates potential complications for our analyses. We will fail to

payment status, income and resources (and disability for those under age 65) are entered into the system and recorded on the SSR. The SSR records of individuals who are in non-pay status reflect the most recent information available to SSA. Thus, for these individuals, the location or earnings information may be up to 23 months old, depending on whether or not they have attempted to receive payments. Once an individual has had 12 consecutive months of non-payment, their SSR record is officially closed, no new information is gathered, and the individual must formally reapply to receive additional SSI payments. The SSR records of these individuals are missing for months after the record has been closed. We only lose about 70 individuals in this manner over the length of this study. Those who died on or before the last day of August 2007 are analyzed separately. For our income analyses, we focus on the income of all SSI recipients in August 2005 and the income of those who are receiving SSI in August 2007.

Strengths and Weaknesses of the Data SSA administrative records have substantial strengths for this study, but also a number of important limitations. The most obvious strength is that we can identify the universe of SSI recipients in the hurricane-affected counties at the time of the hurricanes and track the entire universe into the future. The monthly administrative data on payment eligibility, payment amounts, earned and unearned income, and location support analyses of the effects of the hurricanes on those individuals, such as the survival analyses presented below. Because the data are from administrative records, they do not suffer from the traditional survey data problems of nonresponse or reporting error (although there may be errors in the *recording* of the data). For data elements that are central to the administration of the SSI

include some individuals who did not receive a SSI payment in August 2005 but who did receive a payment in the months immediately before or after August 2005. Likewise, in our measures of SSI status in August 2007, we may misclassify as non-recipients some who had exited the program only in a temporary or transitory sense. In future work, we plan to conduct sensitivity tests by developing measures of SSI current-payment and non-payment status defined as 4 or 6 consecutive months of payment and non-payment of benefits, respectively.

program, such as payment amounts and monthly earned and unearned income, the administrative data are thought to be highly accurate. We also have the ability to match data on these individuals to other SSA administrative record systems (e.g., the Numident for death dates as mentioned above, the Master Beneficiary Record for information on Social Security program participation, and the Master Earnings File for information on annual earnings) and potentially to records maintained by other Federal agencies (e.g., the Centers for Medicare and Medicaid Services for information on Medicare and Medicaid participation and utilization).

The limitations of the administrative data are important to note as well. The data do not contain reliable information on important socioeconomic characteristics such as education, race, and ethnicity, which can limit the richness of our analyses. Data elements that are not central to program administration are less accurate. Most important for our analyses, data are not gathered for individuals who have left the SSI rolls. Thus, we do not have data on geographic location, earnings, or unearned income for former SSI recipients, as stated above. For such cases, we use the latest information recorded on the SSR. A related limitation is that the SSR does not contain information for non-recipients. This prevents us from developing a non-SSI comparison group for our analyses. Other SSA administrative data systems contain non-SSI recipients (e.g., Social Security beneficiaries; earners), but a data file from which to draw a random sample of all non-SSI recipients is not readily available. We return to some of these limitations in the discussion below.

IV. Characteristics of Affected SSI Recipients

In this section, we describe the characteristics of the population affected by Hurricanes Katrina and Rita. By comparing this group to the national SSI population[8] and recipients in unaffected counties we can eliminate certain factors from being the driving force in the observed differences between affected and unaffected counties discussed later in the paper. Before continuing our discussion, a few definitions are in order. "Affected counties" refers to those counties in Texas, Louisiana, Alabama, and Mississippi that were declared by the Federal Emergency Management Agency to be eligible for public assistance, as described above and listed in Appendix Table 1. We also refer to these counties as "Gulf counties" or the "Gulf region." "Unaffected counties in affected states" refers to counties in Texas, Louisiana, Alabama, and Mississippi (the affected states) that do not meet our definition of affected counties. "Unaffected states" refers to all states other than Texas, Louisiana, Alabama, and Mississippi. "All states" and "All SSI recipients" refer to the nation as a whole and to the national total number of SSI recipients, respectively.

Nearly 350,000 individuals in the affected counties were SSI recipients in current payment status in August 2005 (Table 1). Almost 60 percent of these were working-age recipients (aged 18-64), almost one quarter were elderly (aged 65 or older), and the remaining 19 percent were children (under age 18). The majority of affected SSI recipients were female. This is not surprising given that females outnumber males on the national SSI rolls, especially among the working age and elderly. Over 35 percent of SSI recipients affected by Hurricane Katrina or Rita were in Louisiana; almost as many (33 percent) were in Texas. Over three quarters of recipients resided in their own home.

[8] Although the national SSI population includes recipients affected by the hurricanes, recipients in affected counties make up less than 5 percent of the national population and are not likely to be driving those statistics. As will be shown below, the distribution of the national sample closely follows that of unaffected counties.

Insert Table 1 here

The affected population is slightly younger than the overall population of SSI recipients (18.9 vs. 14.6 percent are children). Accordingly, they were also more likely to live in a parent's household. Overall, slightly more than half of non-elderly recipients affected by the hurricanes had mental disabilities, less than the overall SSI population. Mental disabilities include mental retardation and other mental impairments such as affective disorders and learning disorders. Children in the affected counties were more likely to have a mental disability than a non-mental disability by a ratio of almost 2 to 1. Children in unaffected counties in affected states are more likely to have non-mental disabilities than children in unaffected states. Working-age adults on SSI in the hurricane-affected counties were equally likely to have a mental disability or a non-mental disability. On the whole, all groups (affected, unaffected, national total) are largely the same with respect to the distribution of characteristics available in administrative data. As such, it is unlikely that these characteristics drive any observed differences in the outcomes (e.g., SSI status, unearned income, earnings, death) of individuals in affected counties relative to unaffected counties.

V. Status of SSI Recipients Two Years after the Hurricanes

Table 2 presents the August 2007 situation of all SSI recipients and recipients who lived in affected counties in August 2005.[9] Since the hurricanes, individuals may have stayed on SSI, died, or left SSI for another reason. This taxonomy does not account for individuals who may

[9] Statistics by Unaffected State, Unaffected Counties in Affected States, and All Unaffected Counties are available from the authors upon request.

have spent a few months off SSI during the intervening years. By far, the majority of individuals (83 percent) were on SSI two years following the hurricanes while 12 percent left SSI for some reason other than death. Just over 5 percent of all SSI recipients died sometime during the two years.

Insert Table 2 Here

Recipients in affected counties were slightly more likely to die than SSI recipients overall (5.7 percent vs. 5.3 percent), although this masks a higher death rate among recipients in unaffected counties in affected states (not shown). Interestingly, recipients in affected counties were slightly more likely to leave SSI for reasons other than death (14 percent vs. 12 percent) and slightly less likely to remain on SSI (80 percent vs. 83 percent).

Working-aged recipients in affected counties were more likely to exit SSI after Katrina/Rita for reasons other than death than were working-aged recipients nationwide (18 percent vs. 15 percent). Child SSI recipients were the least likely to have died within two year after the hurricanes, with no real difference between the two groups. Over 12 percent of elderly SSI recipients in affected counties died within two years of Hurricanes Katrina and Rita compared with less than 11 percent in the national population of recipients. However, the fraction of all recipients who died that were elderly is greater in the SSI population nationwide (56 percent) than in affected counties (51 percent, statistics not shown).

A smaller percentage of Texans from affected counties left SSI after the hurricanes relative to other affected states (11 percent in Texas vs. 14-15 percent in Alabama, Louisiana, and Mississippi), but the differences from state-wide averages including unaffected counties in these states are small. Women in affected counties are more likely to leave SSI for any reason compared with men, but this is also true among SSI recipients nationwide and may be related to the high percentage of the elderly SSI population that is female. Females from affected counties are less likely to remain on SSI than females in the national population, though.

SSI recipients in affected counties in Medicaid institutions were the most likely to die within 2 years after the hurricanes, relative to other living arrangement categories. Over 18 percent of individuals in Medicaid institutions were dead two years later. One might expect institutionalized individuals to have been in poorer health prior to the hurricanes than other SSI recipients, all else equal. While it may be tempting to relate this result to anecdotal evidence of medically institutionalized individuals being left behind to die in the storms, this is actually lower than the 20 percent death rate for recipients in Medicaid institutions in all states. The 649 individuals in the unspecified "other" living arrangement category in affected counties left SSI at a very high rate—42 percent. This may be due to the function of these arrangements, e.g. jails and other public institutions, and is also apparent in the national population of SSI recipients. Individuals in the rest of the living arrangement categories exhibited exit rates similar to the relevant national averages.

SSI status in August 2007 by disability type (among recipients under age 65) for those from affected counties is similar to the overall recipient population, but reflects a lower propensity to

remain on SSI among working-age adults and a higher propensity to remain on SSI among children. Children in affected counties with either type of disability (mental or non-mental) were more likely to have died than their counterparts in the overall SSI population, although he difference is very small. Mentally disabled working-age adults were more likely to have left SSI for reasons other than death than their non-mentally disabled peers, but the reverse is true for children. This pattern is similar for the national SSI population.

VI. Program Payments and Income Pre- and Post-Hurricane

Tables 3 and 3a show mean income in August 2005 and August 2007 overall and by age group for the total August 2005 SSI recipient population and the recipients in affected counties in August 2005, respectively. SSI recipients in 2005 are distributed by SSI status in August 2007. Individuals with zero income are included in the calculations. As discussed earlier, data on income after the hurricanes are limited for those who left SSI. Thus, we do not discuss the corresponding means for August 2007 for those who died or left the program for other reasons after the hurricanes.

Insert Tables 3 and 3a Here

The average SSI payment for all recipients in August 2005 was $473, about $40 more than for recipients in affected counties. Recipients in affected counties also earned $5 less, on average, than the national average but had $5 more from unearned income. Individuals in affected counties who were on SSI two years after the hurricanes were also receiving lower SSI payments, higher unearned income, and lower earnings than the national average in August

2005. Individuals in affected counties who left SSI for reasons other than death received lower SSI payments in August 2005 than the average recipient. They also had lower earnings and unearned income.

Nationally, recipients who remained on SSI received an August 2005 SSI payment that was almost $40 less than those who left SSI for reasons other than death. Among those in counties affected by Hurricanes Katrina and Rita, this gap was about $67. Also among those in counties affected by the hurricanes, leavers had been earning $23 on average in 2005 while those remaining on SSI earned only about $6 in August 2005. Nationally, individuals who left SSI had almost $47 more unearned income in August 2005 than those who remained on SSI, while the gap in hurricane-affected counties was $15 dollars.

Average SSI payments decreased almost imperceptibly two years after the hurricanes for those who remained on SSI, both nationally and in affected counties. Interestingly, the change in non-SSI income for this group is almost completely the result of an increase in unearned income; the increase in earned income was modest. Total income for both groups grew by about $15.

Income by Age Group Children in affected counties received the highest SSI payments in August 2005 ($545). Working-age recipients received $471 while the elderly received only $261, though many of the elderly also receive Social Security benefits which reduce SSI payments.[10] When we focus on those in affected counties who were on SSI in both August 2005 and August 2007, we see that average SSI payments increased slightly for children and the elderly but decreased for the working age. Payments to children who remained on SSI increased by only $4

[10] About 57 percent of elderly SSI recipients also receive Social Security benefits (SSA 2007).

on average while payments to the elderly who remained on SSI increased by $15 on average. These increases fall below the annual cost-of-living-adjustment provided to all SSI recipients and Social Security beneficiaries. Unearned income fell between August 2005 and August 2007 for children in affected counties, but increased slightly for the elderly and working age. Similar patterns of changes in SSI payments and unearned income were observed for SSI recipients nationally.

The elderly, both nationally and from affected counties, who were still on SSI in August 2007 saw an increase in their total income (SSI + earnings + unearned income) of about $38. While both groups of children saw a decline in total income, the incomes of children in affected counties decreased more than children nationally ($11 vs. $8) Both groups of working-age recipients experienced slight increases in total income. Working-age recipients in affected counties, however, gained on the national average, increasing their total income by $15, to $622.

Overall, we find that 1) those who left SSI by August 2007 were more successful in the labor market in August 2005 than those who remained on SSI, as evidenced by their greater average earnings in August 2005; 2) leavers also were more successful in terms of the amount of unearned income received; and 3) among those who were on SSI in both August 2005 and August 2007, the pattern of changes in SSI payments, earnings, and unearned income was similar for those in affected counties and the national as a whole.

VII. Earnings Patterns of SSI Recipients

We now turn to a closer analysis of the earnings of working-age SSI recipients. Table 4 shows the earnings status and mean earnings among SSI recipients age 18 to 64 in hurricane-affected counties and among the entire SSI population in August 2005 and August 2007. It shows movements into and out of paid employment among individuals who were on SSI in both time periods. The top line of each cell contains the number of individuals. The second line contains the percentage of individuals based on the total from 2005 (row percentage). The third and fourth lines show the unconditional mean earnings (including zeros) for each cell in August 2005 and August 2007, respectively.

Insert Table 4 Here

As was shown in tables 3 and 3a, the earnings of those affected by the hurricanes were lower than the national average and grew by a slightly smaller amount. Among those aged 18 to 64 who received SSI in both periods, almost all who did not have earnings in August 2005 did not have earnings in August 2007 either. This applies to recipients in affected counties and recipients nationwide. For those who became employed over this time period, however, the decision was quite lucrative. On average, new earners in affected counties earned over $493 in August 2007, about $57 more than new earners in the SSI population overall.

Seventy percent of SSI recipients age 18 to 64 in hurricane-affected counties who received SSI in both periods and had earnings in August 2005 also had earnings in August 2007. Their earnings increased by about $12, on average, to $243. This increase is slightly greater than for

SSI recipients overall ($8). The 30 percent of recipients in affected counties who received SSI in both periods and had earnings in August 2005 but not in August 2007 lost $431 in earnings, on average, which is greater than the earnings lost by SSI recipients overall ($403).

Overall, the employment situation of those who received SSI in both periods appears worse for those affected by the hurricanes. Although those who moved into employment substantially increased their earnings (even more than the national average), those who were employed two years earlier saw an increase of only $4 over the national average. Those who moved out of employment lost more on average in affected counties than in the nation overall. Additionally, a smaller proportion of recipients in affected counties had earnings in 2007 compared with recipients nationwide (3 percent vs. 6 percent).

VIII. Location of SSI Recipients

As a result of the hurricanes, hundreds of thousands of individuals were evacuated from the Gulf coast. For Katrina alone, the Bureau of Labor Statistics estimates over 1.1 million persons over age 15 were evacuated form the affected region.[11] The lower panel of Table 5 shows the location in August 2007 of SSI recipients in affected counties in August 2005. For those who had died or left SSI by August 2007, the location in August 2007 represents the last known location recorded in SSA administrative records. Focusing on the bottom three rows, most SSI recipients (82 percent) did not change county of residence from August 2005 to August 2007.[12] An even higher percentage of those who remained on SSI resided in the same county (86 percent).

[11] Bureau of Labor Statistics, "Hurricane Katrina Evacuees, September 2006." http://www.bls.gov/katrina/200609status.htm, Accessed Aug. 31, 2007.
[12] They may have originally evacuated, but were back in their home county in August 2007.

Comparatively, 88 percent of the entire SSI population stayed in the same county over the two year period; 91 percent of those remaining on SSI did so (upper panel of Table 5).

Insert Table 5 Here

While 18 percent of August 2005 SSI recipients in affected counties relocated after the hurricanes, this is primarily driven by people who left SSI and were alive in August 2007. Almost 40 percent of those who left SSI left the affected states. An additional 8 percent moved to another county that was affected by the hurricanes. Comparatively, 32 percent of all August 2005 SSI recipients who left SSI moved away from their August 2005 state of residence. Another 7 percent moved to another county within the same state.

The cleanup and rebuilding may have opened jobs for some of the affected individuals who left SSI, or their new living situations may have disqualified them for SSI payments. Most of these individuals are missing a final SSI payment status in the data, which identifies the last payment status (or reason of nonpayment). Among those with a non-missing final payment status, after official termination of the SSI record, non-payment status due to excess income is the most common reason for not receiving a payment. However, the fraction of individuals from affected counties in non-payment status for this reason is lower than the national percentage (21 percent vs. 24 percent, statistics not reported).

Thus, it would appear that recipients in affected counties are more likely to have changed location in the two years since the hurricanes than recipients overall. This is the expected

finding given the massive evacuations that took place in the affected areas. However, the magnitude of the differences between recipients in affected counties and recipients nationwide is somewhat smaller than one might have anticipated.

IX. Changes in the SSI rolls in affected counties

Table 6 shows the total number of SSI recipients and how this number has changed over time. The number of SSI recipients in the affected counties increased by almost 7,000 between August 2004 and August 2005, but then dropped below the August 2004 level one year after the hurricanes in August 2006. By 2007, the SSI population in the affected counties was down 0.3 percent from 2005. In comparison, unaffected counties showed a 3.1 percent increase over 2005 levels. This is driven partially by increases in the SSI population in unaffected counties in affected states and partially by the movement or relocation of SSI recipients in affected counties to unaffected counties in affected states. In these counties, the SSI population in 2007 was 5.7 percent higher than in 2005.

The difference-in-differences (DID) column in Table 8 shows the change over time (first difference) for affected counties relative to unaffected counties (difference-in-differences). For the August 2004 to August 2005 period preceding the hurricanes, the DID estimate of 0.6 indicates that growth in the SSI rolls was faster in affected counties. In the first year after the hurricanes, however, the DID estimate is -4.0 percent. Growth in the affected counties returned to normal in the second year after the hurricanes (DID estimate of 0.6 percent for August 2006 to August 2007), but is still lower than in the unaffected counties for the entire post-hurricane period (DID estimate of -3.5 percent for August 2005 to August 2007).

Insert Table 6 Here

Of the 342,102 SSI recipients in affected counties in August 2006, 33,986 (10 percent) were not on SSI the previous August. This is only slightly higher than the percentage increase in the national SSI population due to new entrants over the same period. In August 2007, an additional 17.2 percent (60,000 recipients) received SSI payments who were not receiving SSI one year earlier. Again, however, this is only slightly above the national average. This number likely includes some individuals who were on the SSI rolls prior to August 2005 but who did not receive a payment in August 2005 for one reason or another. For these reasons, 59,967 is likely to be an over estimate of the true number of new SSI entrants in the counties affected by hurricanes Katrina and Rita. Unaffected counties in affected states saw a larger percentage of new recipients than unaffected states in August 2006 and 2007, suggesting several evacuees may have started receiving SSI in their new locations. The percentage of new recipients in affected counties is also higher than the national level.

X. Multivariate Analyses

Tables 7 and 8 use a multinomial logit framework to estimate the probability of dying and the probability of leaving SSI for other reasons, respectively, relative to remaining on SSI in affected counties compared with unaffected counties. The models also control for living arrangement, gender, age group, presence of earnings, and disability diagnosis (mental vs. other). The first specification in both tables shows the main effects of location on the relevant outcome variable.

The second specification adds a full set of interaction terms to estimate how the control variables influence the outcome variables differently in affected counties relative to unaffected counties.[13]

Relative to recipients in unaffected states, we find that recipients in affected states were at a greater risk of dying than of remaining alive and on SSI. The odds are 21 percent higher for those in affected counties than for those in unaffected states; they are 9 percent higher for those in affected states but unaffected counties (Table 7, specification 1). The estimates also suggest that SSI recipients in Medicaid institutions faced greater odds of dying than recipients living in their own home (odds ratio = 4.49). Elderly recipients faced greater odds of dying by August 2007 than working-aged recipients (odds ratio = 1.93). SSI recipients with positive earnings and recipients with mental disabilities face lower odds of dying by August 2007 relative to recipients with zero earnings and recipients with non-mental disabilities, respectively.

Insert Table 7 Here

Specification 2, with the interaction variables, allows for a more complete understanding of the control variables. The odds of dying are significantly greater for SSI recipients living in Medicaid institutions, but the effect is lower in affected counties and in unaffected counties in affected states than in unaffected states. This supports the finding from our descriptive analysis that a smaller proportion of SSI recipients in Medicaid institutions died after the hurricanes in affected counties than in the national SSI population. Elderly recipients overall face greater odds of dying, but this effect is slightly lower in affected counties and slightly higher in unaffected

[13] Note that only two multinomial logit regressions were run—one without interaction effects and one with interaction effects—but that the results of each are split between tables 7 and 8.

counties in affected states, relative to unaffected states. SSI recipients with positive earnings and with mental disabilities are less likely to die following the hurricanes. These negative relationships are even stronger in affected counties and in unaffected counties in affected states than in unaffected states.

Those in counties affected by the hurricanes were also at a higher risk of leaving SSI for reasons other than death as opposed to staying on SSI, relative to recipients in unaffected counties. The odds are 17 percent higher for recipients in affected counties relative to those in unaffected counties (Table 8, specification 1). There relative risk of leaving SSI for reasons other than death between those in affected states but unaffected counties and those in unaffected states is almost the same, although the relative risk of leaving is still significantly higher for those in the unaffected counties of affect states. Elderly SSI recipients and children face lower odds of leaving SSI for reasons other than death by August 2007 relative to working-aged recipients. Recipients with positive earnings and recipients with mental disabilities are at greater risk of leaving SSI for reasons other than death relative to recipients with zero earnings and recipients with non-mental disabilities, respectively.

Insert Table 8 Here

Looking at the interaction effects in specification 2, the negative relationships between being elderly or being a child and the probability of leaving SSI for reasons other than death are stronger (more negative) in affected areas than in unaffected states. Likewise, the positive relationships between having positive earnings or being mentally disabled and the probability of

leaving SSI for reasons other than death are stronger (more positive) in affected areas than in unaffected states.

It is surprising that the relative risks of death and of leaving SSI are higher not only in affected counties, but also in the unaffected counties of affected states. Strong underlying state effects are probably not driving our results, however, since the differences between these two groups are themselves significant.

XI. Survival Analyses

The above analyses only address the question of whether or not an individual left SSI or died, not when that event occurred. Survival analysis allows us to move past the August 2007 snap-shot to look at when events occur. Here, we focus on the time to first exit from SSI (the number of months from August 2005 until a recipient's first non-payment month), the length of that first exit spell (the number of months between that first non-payment month and the next month payment is received), and the number of months until death (the number of months from August 2005 until death). First exit can be for either death or non-death reasons. For obvious reasons, we limit the analysis of the length of the first exit spell to recipients who left for reasons other than death.

It should be noted that we slightly change our concept of non-payment for this part of the analysis. In the previous sections, we counted an individual as "off SSI" if they did not receive a positive dollar amount of SSI payment in August 2007. However, some of these individuals may still have been eligible for an SSI payment. It may just have happened that an overpayment from

a previous month was being collected which reduced that month's payment to zero, for example. In the survival analyses presented in this section, we use a more programmatic definition based on whether or not an individual was eligible for an SSI payment in a given month based on income, resources, and disability or age.[14] Technically, we implement this definition of eligibility based on each individual's SSI payment status indicator from the SSR. A value of 'C01' indicates that an individual was eligible for payment in that month, while other values indicate reasons for being in non-payment status ranging from excess resources to death to termination of the record for administrative purposes.

Although we use the same basic procedure for each of the events of interest above, we will use time to first non-payment month to describe the estimation procedure. The probability of having a non-payment month in month t, or the failure rate (f_t), is defined as the percentage of individuals who experience their first non-payment month in that month who were at risk of having their first non-payment month at the beginning of that month. Mathematically, this is:

$$f_t = \frac{d_t}{(N_t - \frac{m_t}{2})},$$

where d_t is the number of people who experience their first non-payment month in month t, N_t is the number of persons at risk of having their first non-payment month at the beginning of month t, and m_t is the number of persons who are right censored (no observations past month t). The expression in the denominator is an actuarial method for handling observations censored during the time period.[15] Essentially, it is an approximation of the number of individuals at risk at the

[14] Future versions of this paper may convert the "snap-shot" analyses to this definition.
[15] For the time to first non-payment month and time to death analyses, the only censoring month is the final month. For the length of non-payment spell, the censoring month could be either the month of death or the final month, although this would appear as a different month *number* depending on when the spell began.

midpoint of the period. Because only those who are at risk of having a non-payment month are included in the failure rate—observations that have already had their first non-payment month or have been censored are excluded from future months—the sample size diminishes over time. By accumulating these failure rates over time we estimate the percentage of individuals who have experienced their first non-payment month after a certain amount of time, conditional on being at risk at the beginning of that time.

Alternatively, the time to first non-payment month could be characterized in terms of the fraction of recipients remaining in current-pay status (i.e., still receiving a payment). This is equivalent to the individual not leaving in the current time period or in any previous time period. These *survival rates*, $S_{j,}$ can be expressed mathematically as:

$$S_j = \prod_{k=1}^{j} (1 - f_k).$$

This can also be expressed in terms of the *cumulative failure rate*, or the fraction returning to SSI through period j, which is equivalent to $1\text{-}S_j$.

Further, the *hazard rate* (h_j) can be estimated. This "is the *conditional probability that individual i will experience the event in time period j, given that he or she did not experience it in any earlier time period*" (Singer and Willet 2003, p. 330, emphasis in original).[16] This is equivalent to the interval-specific failure rate divided by the survival rate (f_j/S_j). The maximum likelihood estimator of this is:

[16] This definition is only applicable in the discrete-time sense. Hazard is actually a rate over a given period of time. With discrete-time, however, the interval of time is of length 1.

$$h_j = \frac{f_j}{(1-\frac{f_j}{2})\cdot(t_{j+1}-t_j)}.$$

By estimating these values for each of our location groups in August 2005, we can determine if those in counties affected by Hurricanes Katrina and Rita had different rates of exit from SSI, whether those exit spells last longer or shorter, and whether they were more likely to die in the post-hurricane months, compared with SSI recipients in counties not directly affected by the hurricanes.

Time to First Non-Payment Month. Figure 1 shows the estimated cumulative failure rate for the three mutually exclusive location groups (unaffected states, affected states but unaffected counties, and affected counties).[17]

Insert Figure 1 Here

As can been seen, recipients in affected counties experienced a non-payment month sooner than recipients in unaffected counties, although the difference is small. The gap appears to have started in October of 2005 and persisted through the 24-month observation period. Five months after Hurricane Katrina, 9 percent of recipients in counties directly affected by the hurricane had experienced a non-payment month compared with 8 percent of recipients in unaffected counties. One year after the hurricanes, 16 percent of recipients from affected counties had experienced a non-payment month compared with about 15 percent of recipients from unaffected counties. The gap widens to about 2 percentage points after 2 years.

[17] The data for Figure 1, and the corresponding survival rates, standard errors, and hazard rates are presented in Appendix Table 2.

Looking at the hazard rates or conditional probabilities of experiencing a month of non-payment (Figure 2), it is clear that the risk of non-payment is particularly larger for those in affected counties only in September 2005, after which it closely tracks the hazard rate for those in unaffected counties for the remainder of the period. Much of the turnover in the first month may be due to the population being limited to those receiving payments at the beginning of the period. Because SSI eligibility and payments can fluctuate on a monthly basis, a non-trivial proportion of those receiving SSI in a given month may not receive SSI in the following month. There also appears to be a yearly spike in December that we capture.[18]

Insert Figure 2 Here

Length of Non-Payment Spell. Figure 3 shows that many individuals in all three location groups who experience a non-payment month return to current-payment status quickly.[19] However, it is also clear that those in affected states return to current-payment status later than those in unaffected states; in other words, their non-payment spells are longer than those in unaffected states. Additionally, those in counties directly affected by the hurricanes have longer spells than those in other parts of the affected states. The sample is limited to those whose first reason for non-payment was not death; those who die are treated as censored as of the month of death (thus leaving the sample in the subsequent months).

[18] We are still exploring possible explanations for this spike. We speculate that it may be related to annual cost-of-living adjustments to Social Security benefits or other end-of-year income adjustments.
[19] The data for Figure 3, and the accompanying failure rates, standard errors, and hazard rates are presented in Appendix Table 3.

Insert Figure 3 Here

One quarter of those who had exited SSI for a reason other than death returned to SSI after the first month of non-payment. After the fourth month of non-payment, 38 percent of those who had exited in unaffected states had returned to SSI compared with 36 percent in the unaffected counties of affected states and 35 percent of recipients in affected counties. By the end of the 24-month follow-up period, we estimate that 52 percent of those who had exited SSI in unaffected states had returned to SSI, compared with 48 percent in unaffected counties of affected states and 47 percent in affected counties.

Death Rates. Finally, we look at the probability of dying in any given post-Katrina/Rita month, conditional on being alive at the beginning of that month (Figure 4).[20] While the conditional probability of dying is higher for those in the affected counties than for those in unaffected states in each month after Katrina/Rita, this is not true with respect to those in affected states but unaffected counties. In several months, those from unaffected counties in affected states are actually more likely to die than those from affected counties.

Insert Figure 4 Here

Overall, the results suggest that recipients from counties affected by Hurricanes Katrina and Rita (surprisingly) have an earlier non-payment month that cannot be attributed to increased death rates. Additionally, the length of this non-payment spell is longer than for those unaffected by

[20] The data for Figure 4, and the accompanying failure rates, survival rates, and standard errors are presented in Appendix Table 4.

the hurricanes. While the net effect of the hurricanes on the overall number of months of SSI participation cannot be conclusively determined at this stage, the results are clearly consistent with the hypothesis that the hurricanes significantly altered the patterns of SSI participation among those in affected counties. Future work should consider a broader definition of SSI participation and SSI non-payment, perhaps considering longer spells of non-payment, to more fully understand how these SSI recipients have been affected.

XII. Discussion/ Conclusion/Next Steps

Using administrative records of the SSI program, we identified the universe of SSI recipients in counties affected by Hurricanes Katrina and Rita and track them over the ensuing 24 months. We also developed similar data for SSI recipients in counties not affected by the hurricanes, allowing us to compare and contrast the groups with respect to baseline characteristics, changes in SSI program status, changes in income (SSI, earnings, unearned income), and changes in geographic location. Finally, we conducted multivariate analyses of the likelihood of leaving SSI due to death and reasons other than death and survival analyses of time to first SSI exit and first SSI re-entry. Administrative data have clear strengths but also suffer from some important limitations for analyzing the outcomes of the universe of SSI recipients affected by Hurricanes Katrina and Rita.

It was unclear, a priori, what effect the hurricanes would have on the earnings and program participation of SSI recipients. New employment opportunities may have opened up increasing earnings and decreasing participation. But SSI recipients typically have lower human capital skills, poorer health, and a weaker attachment to the labor force than non-recipients, all of which

may have been worsened by the hurricanes. Our results show that SSI recipients in affected counties who had zero earnings in August 2005 but positive earnings in August 2007 experienced higher earnings relative to similarly defined SSI recipients nationwide. But a smaller proportion of SSI recipients in affected counties had earnings in August 2007 compared with the national average.

Recipients in affected counties were more likely to leave the SSI program by August 2007, both due to death and for other reasons. Some stories following the hurricanes suggested that individuals in hospitals and institutional arrangements may have been left behind. However, our descriptive and multivariate results show that a smaller percentage of SSI recipients in Medicaid institutions died during our two-year follow-up period in hurricane-affected counties than in unaffected areas. The percentage of SSI recipients who moved (relocated) was larger in affected counties than in the overall SSI population. However, the magnitude of the difference was smaller than expected given the massive evacuations forced by the hurricanes.

In our multivariate analyses, we find that the odds of dying by August 2007 are higher for those in affected counties and in affected states but unaffected counties than for those in unaffected states. Those in counties affected by the hurricanes were also at a higher risk of leaving SSI for reasons other than death as opposed to staying on SSI, relative to recipients in unaffected counties. While it cannot be conclusively determined at this stage if those in counties affected by the hurricanes experience more months of SSI participation than those in unaffected areas, we can say that the patterns of SSI participation are significantly different for those in affected counties. Interestingly, unaffected counties in affected states also show differences from the

unaffected states in the post-hurricane period. However, the counties directly affected by the hurricanes show statistically significantly larger effects for most of our analysis. The fraction of new SSI recipients after the hurricanes is higher in affected counties than in unaffected states. This is also true for unaffected counties in affected states; these counties likely received a number of evacuees from affected counties. The survival analyses suggest that there may be more volatility in SSI participation among recipients in counties affected by the hurricanes relative to unaffected areas. SSI recipients in affected counties experience a non-payment month sooner and return to the SSI program more slowly than recipients in unaffected areas.

Future research should delve more deeply into the timing of events affecting SSI recipients after the hurricanes, such as the timing of earnings. Other definitions of periods of SSI payment and non-payment should be considered to test the sensitivity of the estimates presented in this paper. Other sources of data also might be useful, for example to study the post-hurricane rate of SSI applications. The Current Population Survey (CPS) has been used by other researchers to track individuals after the hurricanes. Under strict, restricted-access conditions, SSA can match the CPS to SSA administrative data. Using the CPS-SSA matched data would allow SSA to understand who applied for SSI payments after the hurricanes and if those who evacuated the affected areas applied at rates different from non-evacuees. Similarly, while we present statistics on the number of new recipients one and two years after the hurricanes, an analysis of SSA's administrative data on applications could help SSA better understand the effect of natural disasters on workloads and program participation. It may also be useful to match records for individuals on SSI prior to August 2005 to determine how the hurricanes affected the participation of that group of recipients.

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Table 1: Number and percentage distribution of SSI recipients, by selected characteristics and location in August 2005

	All		Unaffected States		Unaffected Counties in Affected States		Affected Counties	
Characteristic	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Total	7,093,190	100.0	6,142,825	100.0	601,988	100.0	348,377	100.0
Age group								
Child	1,038,176	14.6	872,931	14.2	99,265	16.5	65,980	18.9
Elderly	1,980,132	27.9	1,715,554	27.9	181,282	30.1	83,296	23.9
Working age	4,074,882	57.5	3,554,340	57.9	321,441	53.4	199,101	57.2
State								
Other	6,142,825	86.6	6,142,825	100.0	--	--	--	--
AL	163,602	2.3	--	--	131,320	21.8	32,282	9.3
LA	171,881	2.4	--	--	48,015	8.0	123,866	35.6
MS	125,330	1.8	--	--	49,006	8.1	76,324	21.9
TX	489,552	6.9	--	--	373,647	62.1	115,905	33.3
Gender								
Female	4,039,661	57.0	3,488,025	56.8	351,662	58.4	199,974	57.4
Male	3,053,529	43.1	2,654,800	43.2	250,326	41.6	148,403	42.6
Living arrangement								
Other	10,909	0.2	9,553	0.2	707	0.1	649	0.2
Own household	5,767,586	81.3	5,020,546	81.7	477,138	79.3	269,902	77.5
Another's household	309,469	4.4	266,732	4.3	27,911	4.6	14,826	4.3
Parent's household	870,638	12.3	732,907	11.9	82,373	13.7	55,358	15.9
Medicaid institution	134,588	1.9	113,087	1.8	13,859	2.3	7,642	2.2
Disability Type*								
All								
Non-mental	2,201,713	43.1	1,872,274	42.3	205,266	48.8	124,173	46.84
Mental	2,911,345	56.9	2,554,997	57.7	215,440	51.2	140,908	53.16
Children								
Non-mental	352,262	33.9	288,641	33.1	39,269	39.6	24,352	36.91
Mental	685,914	66.1	584,290	66.9	59,996	60.4	41,628	63.09
Working Age								
Non-mental	1,849,451	45.4	1,583,633	44.6	165,997	51.6	99,821	50.14
Mental	2,225,431	54.6	1,970,707	55.5	155,444	48.4	99,280	49.86

* Limited to SSI recipients under age 65.

Source: Authors' tabulations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2005.

Table 2: Number and percentage distribution of SSI recipients in August 2005, by selected characteristics in August 2005 and SSI status in August 2007

	All					Affected Counties				
Characteristic	Total Number	Total Percent	Dead	Alive, On SSI	Alive, Off SSI	Total Number	Total Percent	Dead	Alive, On SSI	Alive, Off SSI
Total	7,093,190	100.0	5.26	82.56	12.18	348,377	100.0	5.74	80.42	13.83
Age group										
Child	1,038,176	100.0	0.58	87.54	11.88	65,980	100.0	0.67	88.52	10.81
Elderly	1,980,132	100.0	10.60	82.88	6.52	83,296	100.0	12.25	80.74	7.01
Working age	4,074,882	100.0	3.86	81.13	15.01	199,101	100.0	4.70	77.61	17.69
State										
Other	6,142,825	100.0	5.17	82.71	12.12					
AL	163,602	100.0	5.66	80.36	13.98	32,282	100.0	5.52	80.15	14.33
LA	171,881	100.0	5.66	79.73	14.60	123,866	100.0	5.59	79.25	15.16
MS	125,330	100.0	5.84	78.99	15.17	76,324	100.0	5.84	78.77	15.39
TX	489,552	100.0	5.99	83.26	10.75	115,905	100.0	5.90	82.85	11.25
Gulf Region										
Unaffected Counties	6,744,813	100.0	5.23	82.67	12.10	--	--	--	--	--
Affected Counties	348,377	100.0	5.74	80.42	13.83	348,377	100.0	5.74	80.42	13.83
Gulf Region 2										
Unaffected States	6,142,825	100.0	5.17	82.71	12.12	--	--	--	--	--
Unaffected Counties in Affected States	601,988	100.0	5.92	82.22	11.86	--	--	--	--	--
Affected Counties	348,377	100.0	5.74	80.42	13.83	348,377	100.0	5.74	80.42	13.83
Gender										
Female	4,039,661	100.0	5.45	81.72	12.83	199,974	100.0	6.18	78.64	15.18
Male	3,053,529	100.0	5.01	83.67	11.32	148,403	100.0	5.15	82.83	12.02
Living arrangement										
Other	10,909	100.0	3.26	51.76	44.98	649	100.0	3.85	53.93	42.22
Own household	5,767,586	100.0	5.67	82.17	12.16	269,902	100.0	6.48	79.06	14.46
Another's household	309,469	100.0	4.61	83.24	12.14	14,826	100.0	5.10	81.99	12.91
Parent's household	870,638	100.0	0.51	87.50	11.99	55,358	100.0	0.60	88.45	10.95
Medicaid institution	134,588	100.0	19.97	68.30	11.73	7,642	100.0	18.42	69.60	11.97
Disability Type*										
All										
Non-mental	2,201,713	100.0	5.13	81.17	13.7	124,173	100.0	5.82	79.16	15.02
Mental	2,911,345	100.0	1.73	83.39	14.88	140,908	100.0	1.82	81.36	16.82
Children										
Non-mental	352,262	100.0	1.34	84.97	13.69	24,352	100.0	1.46	86.58	11.96
Mental	685,914	100.0	0.19	88.85	10.95	41,628	100.0	0.21	89.66	10.13
Working age										
Non-mental	1,849,451	100.0	5.85	80.45	13.71	99,821	100.0	6.89	77.35	15.77
Mental	2,225,431	100.0	2.20	81.71	16.09	99,280	100.0	2.49	77.88	19.63

* Limited to SSI recipients under age 65

Source: Authors' tabulations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2005 and August 2007.

Table 3: Mean income in August 2005 and August 2007 among SSI recipients in August 2005, by SSI program status in August 2007

			August 2005			August 2007		
SSI Status in August 2007		N	Earnings	Unearned	SSI Payment	Earnings	Unearned	SSI Payment
All	Total	7,093,190	$13.02	$213.74	$473.36	--	--	--
	Dead	373,075	$3.25	$254.34	$391.29	--	--	--
	Alive, On SSI	5,856,107	$10.33	$205.47	$472.81	$12.07	$222.39	$469.25
	Alive, Off SSI	864,008	$35.49	$252.30	$512.52	--	--	--
Child	Total	1,038,176	$1.24	$268.87	$555.31	--	--	--
	Dead	6,041	$1.79	$246.79	$498.52	--	--	--
	Alive, On SSI	908,775	$0.86	$266.05	$565.09	$5.12	$250.10	$569.08
	Alive, Off SSI	123,360	$4.04	$290.74	$486.05	--	--	--
Elderly	Total	1,980,132	$4.23	$281.32	$363.21	--	--	--
	Dead	209,852	$1.26	$310.72	$313.36	--	--	--
	Alive, On SSI	1,641,184	$4.02	$268.09	$377.45	$2.86	$290.39	$393.25
	Alive, Off SSI	129,096	$11.74	$401.73	$263.19	--	--	--
Working Age	Total	4,074,882	$20.29	$166.86	$506.01	--	--	--
	Dead	157,182	$5.97	$179.36	$491.20	--	--	--
	Alive, On SSI	3,306,148	$16.06	$157.73	$494.78	$18.55	$181.02	$479.55
	Alive, Off SSI	611,552	$46.85	$213.01	$570.50	--	--	--

Source: Authors' tabulations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2005 and August 2007.

Table 3a: Mean income in August 2005 and August 2007 among SSI recipients in August 2005 in counties affected by Hurricanes Katrina and Rita, by SSI program status in August 2007

			August 2005			August 2007		
SSI Status in August 2007		N	Earnings	Unearned	SSI Payment	Earnings	Unearned	SSI Payment
All	Total	348,377	$8.13	$219.49	$434.65	--	--	--
	Dead	20,001	$2.57	$254.80	$345.26	--	--	--
	Alive, On SSI	280,182	$5.97	$215.06	$430.20	$7.64	$229.11	$429.72
	Alive, Off SSI	48,194	$22.97	$230.60	$497.58	--	--	--
Child	Total	65,980	$0.56	$302.45	$544.68	--	--	--
	Dead	445	$0.48	$256.78	$496.80	--	--	--
	Alive, On SSI	58,405	$0.32	$302.26	$553.23	$3.98	$283.02	$557.83
	Alive, Off SSI	7,130	$2.48	$306.84	$477.66	--	--	--
Elderly	Total	83,296	$3.34	$312.64	$260.77	--	--	--
	Dead	10,207	$0.99	$332.40	$235.94	--	--	--
	Alive, On SSI	67,251	$3.32	$302.15	$269.75	$2.15	$327.36	$284.80
	Alive, Off SSI	5,838	$7.67	$398.87	$200.77	--	--	--
Working Age	Total	199,101	$12.64	$153.03	$470.93	--	--	--
	Dead	9,349	$4.40	$169.97	$457.39	--	--	--
	Alive, On SSI	154,526	$9.26	$144.20	$453.54	$11.41	$165.97	$444.38
	Alive, Off SSI	35,226	$29.66	$187.28	$550.81	--	--	--

Source: Authors' tabulations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2005 and August 2007.

Table 4: Earnings status and mean earnings in August 2005 and August 2007, among SSI recipients age 18 to 64 who were on SSI in both August 2005 and August 2007

	All SSI Recipients			Recipients Affected by Hurricanes Katrina and Rita		
Classification by Presence or Absence of Earnings in August 2005	Total*	No earnings in August 2007	Positive earnings in August 2007	Total	No earnings in August 2007	Positive earnings in August 2007
Total						
Number of individuals	3,306,148	3,098,620	207,528	154,526	149,197	5,329
Percentage of individuals	100	93.72	6.28	100	96.55	3.45
Mean earnings, August 2005	$16.06	$5.98	$166.54	$9.26	$4.21	$150.64
Mean earnings, August 2007	$18.55	$0.00	$295.58	$11.41	$0.00	$330.86
No earnings in August 2005						
Number of individuals	3,111,277	3,052,630	58,647	149,601	147,739	1,862
Percentage of individuals	100	98.12	1.88	100	98.76	1.24
Mean earnings, August 2005	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Mean earnings, August 2007	$8.24	$0.00	$436.94	$6.15	$0.00	$493.84
Positive earnings in August 2005						
Number of individuals	194,871	45,990	148,881	4,925	1,458	3,467
Percentage of individuals	100	23.6	76.4	100	29.6	70.4
Mean earnings, August 2005	$272.45	$402.91	$232.14	$290.49	$430.66	$231.55
Mean earnings, August 2007	$183.28	$0.00	$239.90	$171.29	$0.00	$243.32

Source: Authors' tabulations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2005 and August 2007.

*Includes one individual in the general population with a missing SSR record.

Table 5: Location of August 2005 SSI recipients in August 2007, or last date of contact

All SSI Recipients

				SSI status in August 2007								
	All			Dead*			Alive, On SSI			Alive, Off SSI*		
Location in August 2007	N	RowPctN	ColPctN	N	RowPctN	ColPctN	N	RowPctN	ColPctN	N	RowPctN	ColPctN
All	7,093,190	100.0	100.0	373,075	5.3	100.0	5,856,107	82.6	100.0	864,008	12.2	100.0
Same State and County	6,204,840	100.0	87.5	343,441	5.5	92.1	5,334,280	86.0	91.1	527,119	8.5	61.0
Same State New County	413,882	100.0	5.8	17,149	4.1	4.6	334,377	80.8	5.7	62,356	15.1	7.2
Different State	474,468	100.0	6.7	12,485	2.6	3.4	187,450	39.5	3.2	274,533	57.9	31.8
Other	6,744,813	100.0	95.1	353,074	5.2	94.6	5,575,925	82.7	95.2	815,814	12.1	94.4
Same Gulf County	285,141	100.0	4.0	17,350	6.1	4.7	242,040	84.9	4.1	25,751	9.0	3.0
Different Gulf County	26,617	100.0	0.4	1,320	5.0	0.4	21,877	82.2	0.4	3,420	12.9	0.4
Left Gulf Region	36,619	100.0	0.5	1,331	3.6	0.4	16,265	44.4	0.3	19,023	52.0	2.2

Recipients in Affected Counties

				SSI status in August 2007								
	All			Dead*			Alive, On SSI			Alive, Off SSI*		
Location in August 2007	N	RowPctN	ColPctN	N	RowPctN	ColPctN	N	RowPctN	ColPctN	N	RowPctN	ColPctN
All	348,377	100.0	100.0	20,001	5.7	100.0	280,182	80.4	100.0	48,194	13.8	100.0
Same State and County	285,141	100.0	81.9	17,350	6.1	86.8	242,040	84.9	86.4	25,751	9.0	53.4
Same State New County	25,439	100.0	7.3	1,238	4.9	6.2	20,559	80.8	7.3	3,642	14.3	7.6
Different State	37,797	100.0	10.9	1,413	3.7	7.1	17,583	46.5	6.3	18,801	49.7	39.0
Other												
Same Gulf County	285,141	100.0	81.9	17,350	6.1	86.8	242,040	84.9	86.4	25,751	9.0	53.4
Different Gulf County	26,617	100.0	7.6	1,320	5.0	6.6	21,877	82.2	7.8	3,420	12.9	7.1
Left Gulf Region	36,619	100.0	10.5	1,331	3.6	6.7	16,265	44.4	5.8	19,023	52.0	39.5

Source: Authors' tabulations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2005 and August 2007.

* For those who had died or left SSI by August 2007, the location in August 2007 represents the last known location recorded in SSA administrative records.

Table 6: Number and percentage change in SSI Recipients in Hurricane-Affected Counties, in Unaffected Counties, and Nationally, August 2004 - August 2007

	(1) All	(2) Unaffected Counties	(3) Affected State Only	(4) Unaffected State	(5) Affected Counties	(5)-(2) Difference-in-Differences
SSI recipients in August 2004						
Total number	7,027,708	6,684,458	591,194	6,093,264	343,250	
SSI recipients in August 2005*						
Total number	7,124,532	6,774,497	604,777	6,169,720	350,035	
Percentage change from August 2004	1.4	1.3	2.3	1.3	2.0	0.6
SSI recipients in August 2006						
Total number	7,236,907	6,894,803	626,636	6,268,167	342,104	
Percentage change from August 2005	1.6	1.8	3.6	1.6	-2.3	-4.0
SSI recipients in August 2007						
Total number	7,335,942	6,987,113	639,470	6,347,643	348,829	
Percentage change from August 2006	1.4	1.3	2.0	1.3	2.0	0.6
Percentage change from August 2005	3.0	3.1	5.7	2.9	-0.3	-3.5
New SSI Recipients in August 2006**	705,445	671,459	66,036	605,423	33,986	
As a percentage of August 2006 total recipients	9.7	9.7	10.5	9.7	9.9	
New SSI Recipients in August 2007**	1,214,897	1,154,930	115,154	1,039,776	59,967	
As a percentage of August 2007 total recipients	16.6	16.5	18.0	16.4	17.2	

Source: Authors' tabulations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2004, August 2005, August 2006, and August 2007.

* This count includes all individuals receiving SSI in the month of August. Other tables do not include those dying before August 29, 2005.

** This is the number of SSI recipients in the current year who were not SSI recipients in the previous August.

Table 7: Multinomial Logit Estimates and Odds Ratios of the Probability of Dying by August 2007, Relative to Staying on SSI

Independent Variables (measured in August 2005)	(1) Coefficient	(1) Error	(1) Pr > ChiSq	(1) Odds Ratio	(2) Coefficient	(2) Error	(2) Pr > ChiSq	(2) Odds Ratio
Location (Reference=Unaffected counties in unaffected states)								
Affected counties	0.19	0.01	<.0001	1.21	0.21	0.02	<.0001	1.23
Affected states, Unaffected counties	0.09	0.01	<.0001	1.09	0.08	0.01	<.0001	1.09
Living Arrangement (Reference=Own HH)								
Another's HH	-0.21	0.01	<.0001	0.81	-0.23	0.01	<.0001	0.80
Parent's HH	-0.51	0.03	<.0001	0.60	-0.51	0.03	<.0001	0.60
Medicaid institution	1.50	0.01	<.0001	4.49	1.53	0.01	<.0001	4.63
Other arrangement	0.18	0.06	0.0012	1.20	0.17	0.06	0.0035	1.19
Gender (Reference=Male)								
Female	-0.21	0.00	<.0001	0.81	-0.22	0.00	<.0001	0.81
Age group (Reference=Working age)								
Elderly	0.66	0.00	<.0001	1.93	0.65	0.00	<.0001	1.93
Child	-1.57	0.02	<.0001	0.21	-1.57	0.02	<.0001	0.21
Earnings (Reference=No earnings)								
Positive earnings	-0.84	0.01	<.0001	0.43	-0.84	0.02	<.0001	0.43
Disability* (Reference=Non-mental disability)								
Mental disability	-0.88	0.00	<.0001	0.42	-0.87	0.01	<.0001	0.42
Interacted with Affected County								
Living Arrangement (Reference=Own HH)								
Another's HH					0.08	0.04	0.0563	1.08
Parent's HH					-0.05	0.10	0.6377	0.95
Medicaid institution					-0.23	0.03	<.0001	0.79
Other arrangement					0.11	0.22	0.6217	1.11
Gender (Reference=Male)								
Female					0.05	0.02	0.0014	1.05
Age group (Reference=Working age)								
Elderly					-0.05	0.02	0.0043	0.95
Child					0.00	0.09	0.9825	1.00
Earnings (Reference=No earnings)								
Positive earnings					-0.04	0.08	0.574	0.96
Disability* (Reference=Non-mental disability)								
Mental disability					-0.10	0.02	<.0001	0.90
Interacted with Affected State, Unaffected Counties								
Living Arrangement (Reference=Own HH)								
Another's HH					0.15	0.03	<.0001	1.17
Parent's HH					0.05	0.08	0.5219	1.05
Medicaid institution					-0.18	0.03	<.0001	0.84
Other arrangement					-0.01	0.23	0.9709	0.99
Gender (Reference=Male)								
Female					0.01	0.01	0.4113	1.01
Age group (Reference=Working age)								
Elderly					0.03	0.01	0.0265	1.03
Child					-0.04	0.07	0.5383	0.96
Earnings (Reference=No earnings)								
Positive earnings					-0.03	0.06	0.549	0.97
Disability* (Reference=Non-mental disability)								
Mental disability					-0.07	0.02	<.0001	0.93
Intercept	-2.57	0.00	<.0001		-2.58	0.00	<.0001	

Source: Authors' tabulations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2005 and August 2007.

* Only non-elderly SSI recipients.

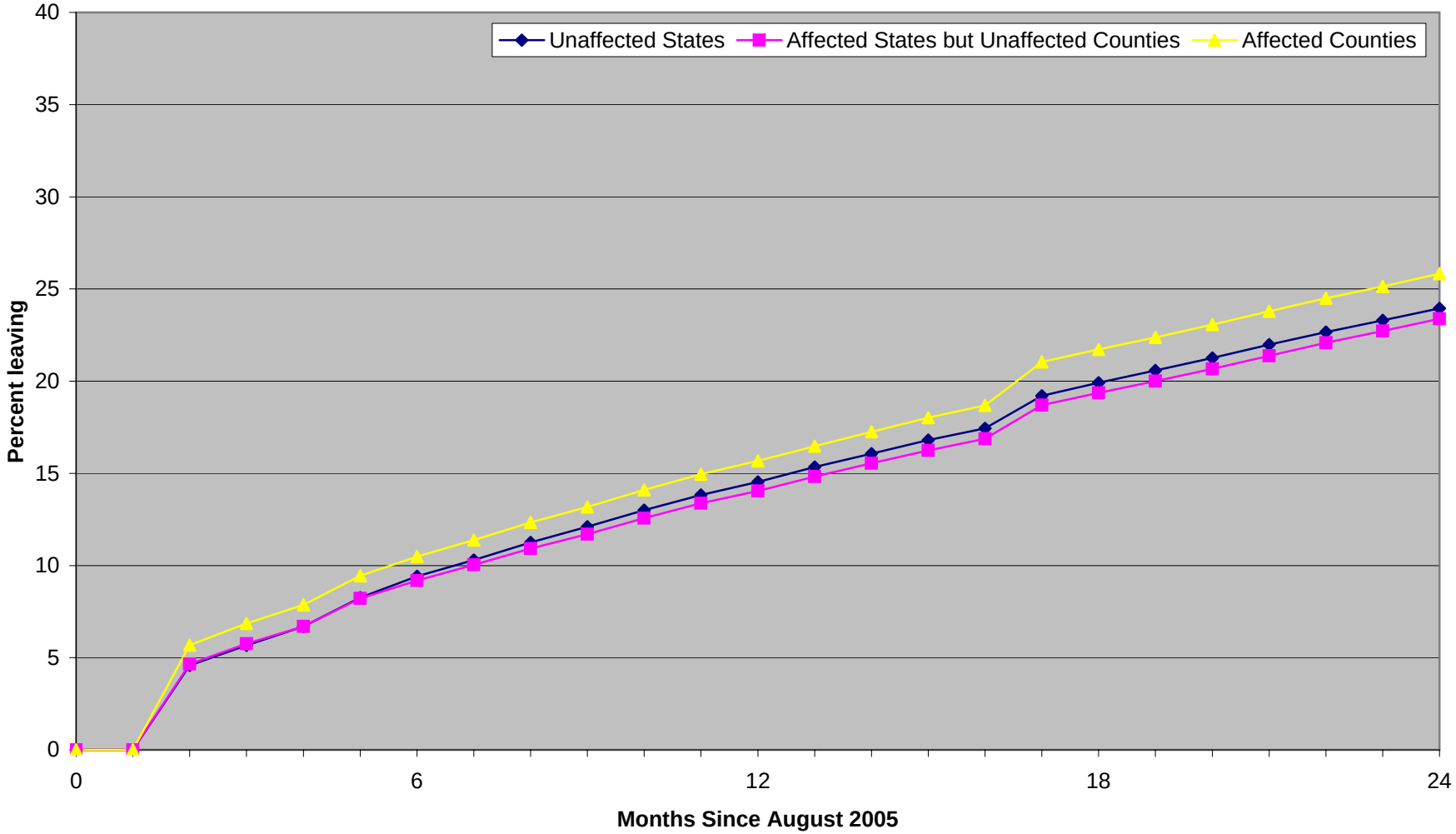
Table 8: Multinomial Logit Estimates and Odds Ratios of the Probability of Leaving SSI for Reasons Other Than Death by August 2007, Relative to Staying on SSI

Independent Variables (measured in August 2005)	(1) Coefficient	(1) Error	(1) Pr > ChiSq	(1) Odds Ratio	(2) Coefficient	(2) Error	(2) Pr > ChiSq	(2) Odds Ratio
Location (Reference=Unaffected counties in unaffected states)								
Affected counties	0.16	0.01	<.0001	1.17	0.12	0.01	<.0001	1.13
Affected states, Unaffected counties	0.02	0.00	0.0001	1.02	0.02	0.01	0.0074	1.03
Living Arrangement (Reference=Own HH)								
Another's HH	0.05	0.01	<.0001	1.05	0.06	0.01	<.0001	1.06
Parent's HH	0.05	0.01	<.0001	1.06	0.05	0.01	<.0001	1.05
Medicaid institution	0.19	0.01	<.0001	1.21	0.21	0.01	<.0001	1.24
Other arrangement	1.74	0.02	<.0001	5.67	1.74	0.02	<.0001	5.72
Gender (Reference=Male)								
Female	0.24	0.00	<.0001	1.27	0.23	0.00	<.0001	1.26
Age group (Reference=Working age)								
Elderly	-0.83	0.00	<.0001	0.44	-0.82	0.00	<.0001	0.44
Child	-0.28	0.01	<.0001	0.76	-0.23	0.01	<.0001	0.79
Earnings (Reference=No earnings)								
Positive earnings	0.40	0.01	<.0001	1.49	0.40	0.01	<.0001	1.49
Disability* (Reference=Non-mental disability)								
Mental disability	0.07	0.00	<.0001	1.08	0.06	0.00	<.0001	1.07
Interacted with Affected County								
Living Arrangement (Reference=Own HH)								
Another's HH					-0.10	0.03	<.0001	0.90
Parent's HH					-0.03	0.03	0.2993	0.97
Medicaid institution					-0.25	0.04	<.0001	0.78
Other arrangement					-0.33	0.08	0.0001	0.72
Gender (Reference=Male)								
Female					0.12	0.01	<.0001	1.13
Age group (Reference=Working age)								
Elderly					-0.12	0.02	<.0001	0.89
Child					-0.32	0.03	<.0001	0.73
Earnings (Reference=No earnings)								
Positive earnings					0.10	0.03	0.0002	1.11
Disability* (Reference=Non-mental disability)								
Mental disability					0.09	0.01	<.0001	1.09
Interacted with Affected State, Unaffected Counties								
Living Arrangement (Reference=Own HH)								
Another's HH					-0.01	0.02	0.5078	0.99
Parent's HH					0.08	0.03	0.0033	1.08
Medicaid institution					-0.15	0.03	<.0001	0.86
Other arrangement					0.19	0.08	0.0202	1.21
Gender (Reference=Male)								
Female					0.03	0.01	0.0036	1.03
Age group (Reference=Working age)								
Elderly					-0.06	0.01	<.0001	0.94
Child					-0.32	0.03	<.0001	0.72
Earnings (Reference=No earnings)								
Positive earnings					0.07	0.02	0.0031	1.07
Disability* (Reference=Non-mental disability)								
Mental disability					0.06	0.01	<.0001	1.06
Intercept	-1.92	0.00	<.0001		-1.92	0.00	<.0001	

Source: Authors' tabulations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2005 and August 2007.

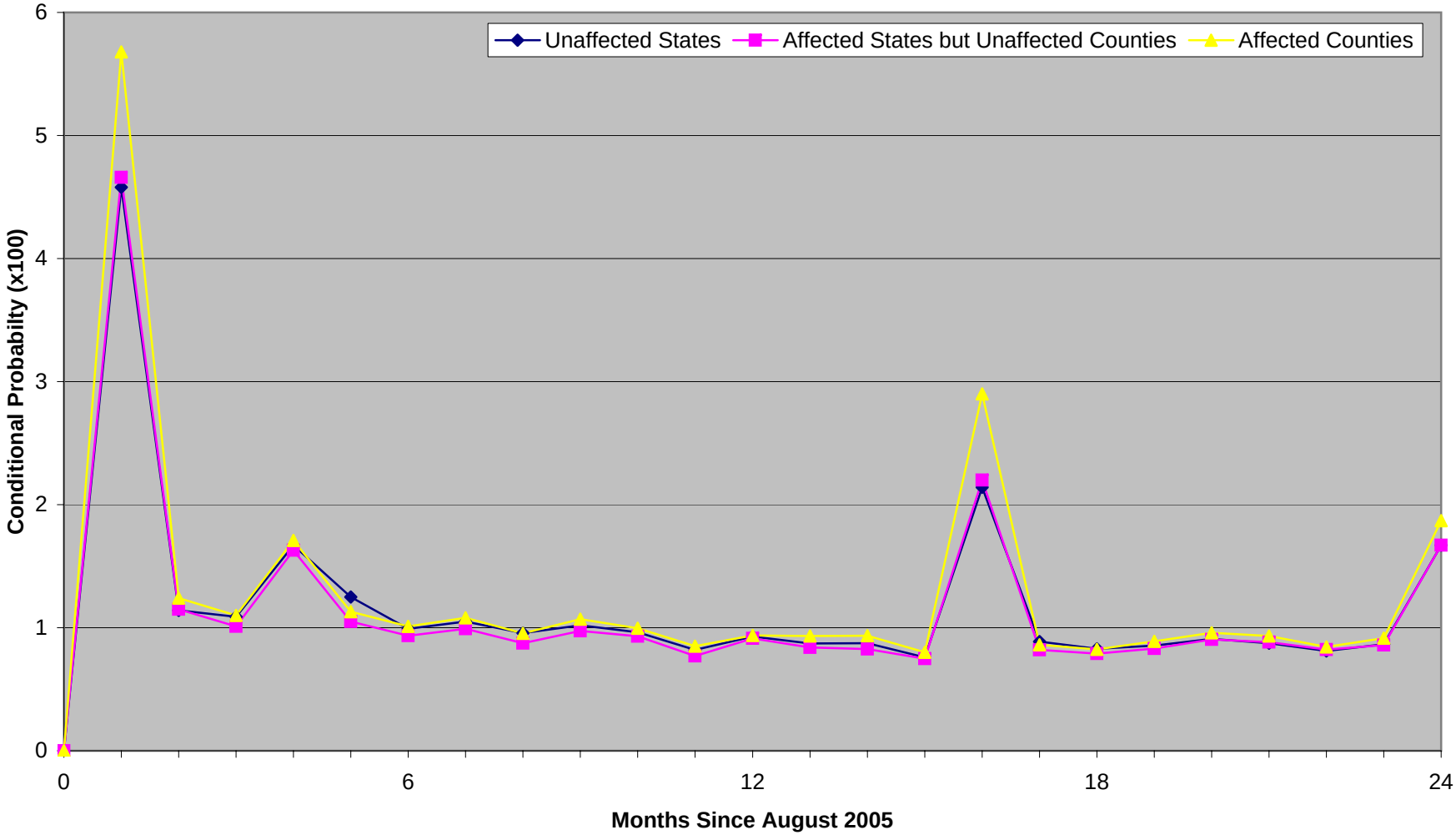
* Only non-elderly SSI recipients.

Figure 1: Time to First Non-Payment Month -- Percent leaving SSI for the first time after August 2005, by location in August 2005



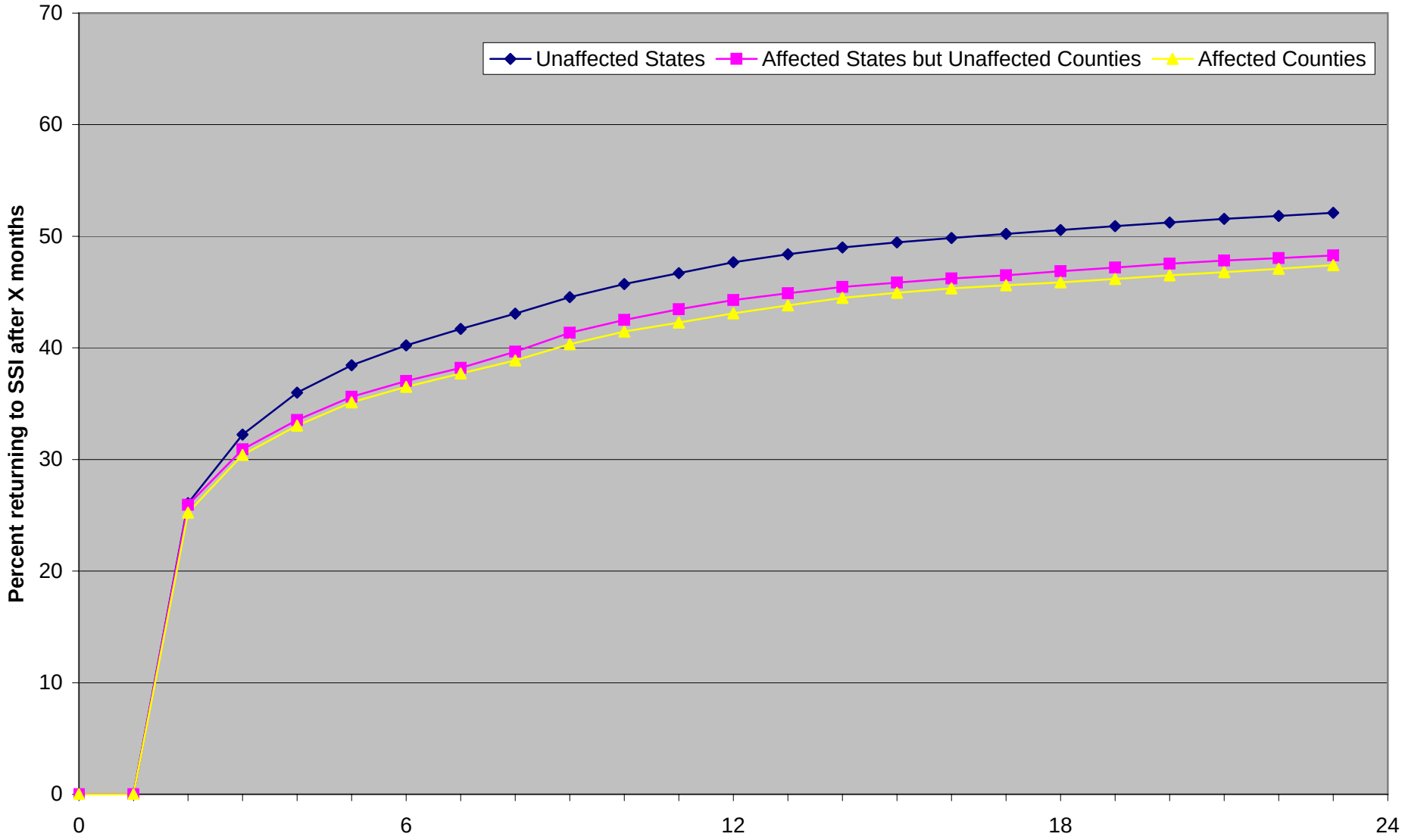
Source: Authors' calculations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2005 - August 2007.

Figure 2: Conditional probability of leaving SSI for the first time after August 2005, by location in August 2005



Source: Authors' calculations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2005 - August 2007.

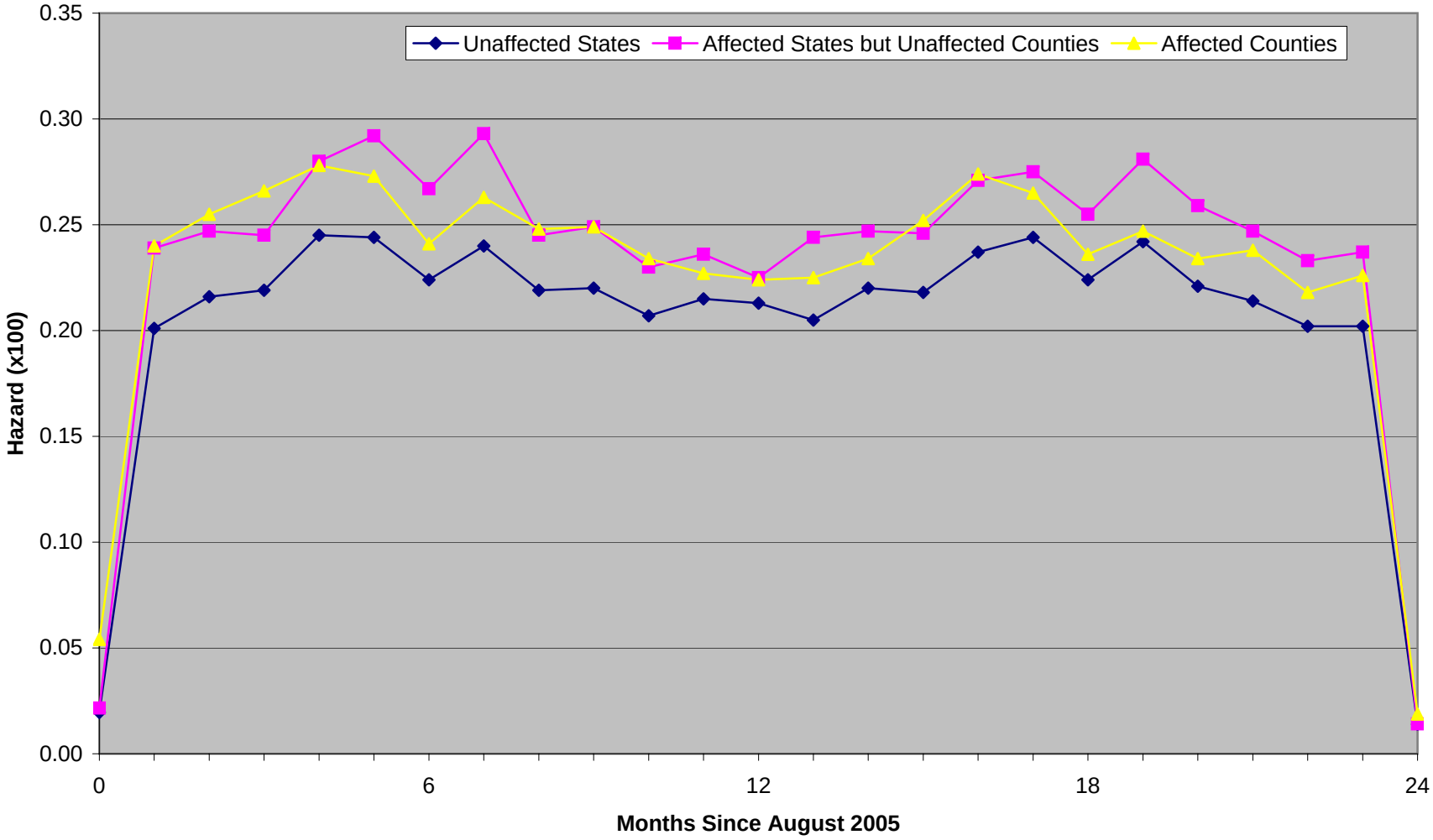
Figure 3: Length of Non-Payment Spell -- Percent returning to SSI after a non-payment month, by location in August 2005



Source: Authors' calculations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2005 - August 2007.

Note: The sample is limited to those whose first reason for non-payment was not death; those who die are treated as censored as of the month of death.

Figure 4: Conditional probability of dying in the months after August 2005, by location in August 2005



Source: Authors' calculations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2005 - August 2007.

Appendix Table 1. Counties designated by FEMA to be eligible for public assistance after Hurricanes Katrina and Rita

Alabama	Louisiana	Mississippi	Texas
Baldwin	Acadia	Adams	Angelina
Choctaw	Allen	Amite	Brazoria
Clarke	Ascension	Attala	Chambers
Greene	Assumption	Choctaw	Fort Bend
Hale	Beauregard	Claiborne	Galveston
Marengo	Calcasieu	Clarke	Hardin
Mobile	Cameron	Copiah	Harris
Pickens	East Baton Rouge	Covington	Jasper
Sumter	East Feliciana	Forrest	Jefferson
Tuscaloosa	Evangeline	Franklin	Liberty
Washington	Iberia	George	Montgomery
	Iberville	Greene	Nacogdoches
	Jefferson	Hancock	Newton
	Jefferson Davis	Harrison	Orange
	Lafayette	Hinds	Polk
	Lafourche	Jackson	Sabine
	Livingston	Jasper	San Augustine
	Orleans	Jefferson	San Jacinto
	Plaquemines	Jefferson Davis	Shelby
	Pointe Coupee	Jones	Trinity
	Sabine	Kemper	Tyler
	St. Bernard	Lamar	Walker
	St. Charles	Lauderdale	
	St. Helena	Lawrence	
	St. James	Leake	
	St. John the Baptist	Lincoln	
	St. Landry	Lowndes	
	St. Martin	Madison	
	St. Mary	Marion	
	St. Tammany	Neshoba	
	Tangipahoa	Newton	
	Terrebonne	Noxubee	
	Vermilion	Oktibbeha	
	Vernon	Pearl River	
	Washington	Perry	
	West Baton Rouge	Pike	
	West Feliciana	Rankin	
		Scott	
		Simpson	
		Smith	
		Stone	
		Walthall	
		Warren	
		Wayne	
		Wilkinson	
		Winston	
		Yazoo	

Source: Federal Emergency Management Agency announcements posted at http://www.fema.gov through September 14, 2005 for Louisiana and Mississippi counties affected by Hurricane Katrina; through October 5, 2005 for Alabama counties affected by Hurricane Katrina; through October 3, 2005 for Texas counties affected by Hurricane Rita; and through October 20, 2005 for Louisiana counties affected by Hurricane Rita.

Appendix Table 2: First exit from SSI for any reason, by county of residence in August 2005

Unaffected Counties in Unaffected States

Interval (months)									
[Lower,	Upper)	Number Failed	Number Censored	Effective Sample Size	Conditional Probability of Failure (x 100)	Conditional Probability Standard Error (x 100)	Survival (x 100)	Failure (x 100)	Survival Standard Error (x 100)
0	1	0	0	6,142,825	0.00	0.0000	100.00	0.00	0.0000
1	2	281,564	0	6,142,825	4.58	0.0084	100.00	0.00	0.0000
2	3	67,012	0	5,861,261	1.14	0.0044	95.42	4.58	0.0084
3	4	63,064	0	5,794,249	1.09	0.0043	94.33	5.67	0.0093
4	5	95,519	0	5,731,185	1.67	0.0053	93.30	6.70	0.0101
5	6	70,667	0	5,635,666	1.25	0.0047	91.74	8.26	0.0111
6	7	55,189	0	5,564,999	0.99	0.0042	90.59	9.41	0.0118
7	8	58,053	0	5,509,810	1.05	0.0043	89.70	10.30	0.0123
8	9	52,156	0	5,451,757	0.96	0.0042	88.75	11.25	0.0127
9	10	55,173	0	5,399,601	1.02	0.0043	87.90	12.10	0.0132
10	11	51,460	0	5,344,428	0.96	0.0042	87.00	13.00	0.0136
11	12	43,417	0	5,292,968	0.82	0.0039	86.17	13.83	0.0139
12	13	48,778	0	5,249,551	0.93	0.0042	85.46	14.54	0.0142
13	14	45,335	0	5,200,773	0.87	0.0041	84.66	15.34	0.0145
14	15	45,100	0	5,155,438	0.88	0.0041	83.93	16.07	0.0148
15	16	38,833	0	5,110,338	0.76	0.0038	83.19	16.81	0.0151
16	17	108,453	0	5,071,505	2.14	0.0064	82.56	17.44	0.0153
17	18	44,000	0	4,963,052	0.89	0.0042	80.79	19.21	0.0159
18	19	40,711	0	4,919,052	0.83	0.0041	80.08	19.92	0.0161
19	20	41,705	0	4,878,341	0.86	0.0042	79.42	20.58	0.0163
20	21	43,914	0	4,836,636	0.91	0.0043	78.74	21.26	0.0165
21	22	41,958	0	4,792,722	0.88	0.0043	78.02	21.98	0.0167
22	23	38,555	0	4,750,764	0.81	0.0041	77.34	22.66	0.0169
23	24	40,808	0	4,712,209	0.87	0.0043	76.71	23.29	0.0171
24	.	39,292	4,632,109	2,355,347	1.67	0.0083	76.05	23.95	0.0172

Appendix Table 2: First exit from SSI for any reason, by county of residence in August 2005 (continued)

Unaffected Counties in Affected States

Interval (months)									
[Lower,	Upper)	Number Failed	Number Censored	Effective Sample Size	Conditional Probability of Failure (x 100)	Conditional Probability Standard Error (x 100)	Survival (x 100)	Failure (x 100)	Survival Standard Error (x 100)
0	1	0	0	601,988	0.00	0.0000	100.00	0.00	0.0000
1	2	28,060	0	601,988	4.66	0.0272	100.00	0.00	0.0000
2	3	6,573	0	573,928	1.15	0.0140	95.34	4.66	0.0272
3	4	5,725	0	567,355	1.01	0.0133	94.25	5.75	0.0300
4	5	9,146	0	561,630	1.63	0.0169	93.30	6.70	0.0322
5	6	5,777	0	552,484	1.05	0.0137	91.78	8.22	0.0354
6	7	5,115	0	546,707	0.94	0.0130	90.82	9.18	0.0372
7	8	5,368	0	541,592	0.99	0.0135	89.97	10.03	0.0387
8	9	4,689	0	536,224	0.87	0.0127	89.08	10.92	0.0402
9	10	5,183	0	531,535	0.98	0.0135	88.30	11.70	0.0414
10	11	4,901	0	526,352	0.93	0.0132	87.44	12.56	0.0427
11	12	4,009	0	521,451	0.77	0.0121	86.62	13.38	0.0439
12	13	4,723	0	517,442	0.91	0.0132	85.96	14.04	0.0448
13	14	4,309	0	512,719	0.84	0.0127	85.17	14.83	0.0458
14	15	4,206	0	508,410	0.83	0.0127	84.46	15.54	0.0467
15	16	3,772	0	504,204	0.75	0.0121	83.76	16.24	0.0475
16	17	10,994	0	500,432	2.20	0.0207	83.13	16.87	0.0483
17	18	4,015	0	489,438	0.82	0.0129	81.30	18.70	0.0503
18	19	3,834	0	485,423	0.79	0.0127	80.64	19.36	0.0509
19	20	4,004	0	481,589	0.83	0.0131	80.00	20.00	0.0516
20	21	4,321	0	477,585	0.91	0.0137	79.33	20.67	0.0522
21	22	4,181	0	473,264	0.88	0.0136	78.62	21.38	0.0528
22	23	3,861	0	469,083	0.82	0.0132	77.92	22.08	0.0535
23	24	4,002	0	465,222	0.86	0.0135	77.28	22.72	0.0540
24	.	3,893	457,327	232,557	1.67	0.0266	76.62	23.38	0.0546

Appendix Table 2: First exit from SSI for any reason, by county of residence in August 2005 (continued)

		Affected Counties							
Interval (months)									
[Lower,	Upper)	Number Failed	Number Censored	Effective Sample Size	Conditional Probability of Failure (x 100)	Conditional Probability Standard Error (x 100)	Survival (x 100)	Failure (x 100)	Survival Standard Error (x 100)
0	1	0	0	348,377	0.00	0.0000	100.00	0.00	0.0000
1	2	19,794	0	348,377	5.68	0.0392	100.00	0.00	0.0000
2	3	4,062	0	328,583	1.24	0.0193	94.32	5.68	0.0392
3	4	3,571	0	324,521	1.10	0.0183	93.15	6.85	0.0428
4	5	5,499	0	320,950	1.71	0.0229	92.13	7.87	0.0456
5	6	3,578	0	315,451	1.13	0.0189	90.55	9.45	0.0496
6	7	3,141	0	311,873	1.01	0.0179	89.52	10.48	0.0519
7	8	3,322	0	308,732	1.08	0.0186	88.62	11.38	0.0538
8	9	2,917	0	305,410	0.96	0.0176	87.67	12.33	0.0557
9	10	3,242	0	302,493	1.07	0.0187	86.83	13.17	0.0573
10	11	2,979	0	299,251	1.00	0.0181	85.90	14.10	0.0590
11	12	2,517	0	296,272	0.85	0.0169	85.04	14.96	0.0604
12	13	2,755	0	293,755	0.94	0.0178	84.32	15.68	0.0616
13	14	2,715	0	291,000	0.93	0.0178	83.53	16.47	0.0628
14	15	2,698	0	288,285	0.94	0.0179	82.75	17.25	0.0640
15	16	2,287	0	285,587	0.80	0.0167	81.98	18.02	0.0651
16	17	8,226	0	283,300	2.90	0.0315	81.32	18.68	0.0660
17	18	2,372	0	275,074	0.86	0.0176	78.96	21.04	0.0691
18	19	2,247	0	272,702	0.82	0.0173	78.28	21.72	0.0699
19	20	2,403	0	270,455	0.89	0.0180	77.63	22.37	0.0706
20	21	2,570	0	268,052	0.96	0.0188	76.94	23.06	0.0714
21	22	2,474	0	265,482	0.93	0.0186	76.21	23.79	0.0721
22	23	2,217	0	263,008	0.84	0.0178	75.50	24.50	0.0729
23	24	2,385	0	260,791	0.92	0.0186	74.86	25.14	0.0735
24	.	2,433	255,973	130,420	1.87	0.0375	74.17	25.83	0.0742

Source: Authors' tabulations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2005 - August 2007.

Appendix Table 3: First re-entry to SSI after a non-payment month for reason other than death, by county of residence in August 2005

		Unaffected Counties in Unaffected States							
Interval (months)									
[Lower,	Upper)	Number Failed	Number Censored	Effective Sample Size	Conditional Probability of Failure (x 100)	Conditional Probability Standard Error (x 100)	Survival (x 100)	Failure (x 100)	Survival Standard Error (x 100)
0	1	0	34,495	1,221,453	0.00	0.0000	100.00	0.00	0.0000
1	2	310,811	26,152	1,191,129	26.09	0.0402	100.00	0.00	0.0000
2	3	71,272	20,153	857,166	8.31	0.0298	73.91	26.09	0.0402
3	4	42,307	20,280	765,677	5.53	0.0261	67.76	32.24	0.0430
4	5	27,011	19,925	703,268	3.84	0.0229	64.02	35.98	0.0443
5	6	19,034	16,902	657,843	2.89	0.0207	61.56	38.44	0.0450
6	7	15,403	16,564	622,076	2.48	0.0197	59.78	40.22	0.0456
7	8	13,719	17,864	589,459	2.33	0.0196	58.30	41.70	0.0460
8	9	13,904	69,000	532,308	2.61	0.0219	56.94	43.06	0.0463
9	10	10,090	13,390	477,209	2.11	0.0208	55.45	44.55	0.0468
10	11	8,175	17,279	451,785	1.81	0.0198	54.28	45.72	0.0472
11	12	7,808	15,661	427,140	1.83	0.0205	53.30	46.70	0.0476
12	13	5,575	17,883	402,560	1.38	0.0184	52.32	47.68	0.0480
13	14	4,368	15,527	380,280	1.15	0.0173	51.60	48.40	0.0483
14	15	3,280	17,287	359,505	0.91	0.0159	51.01	48.99	0.0486
15	16	2,615	19,334	337,914	0.77	0.0151	50.54	49.46	0.0488
16	17	2,355	17,812	316,726	0.74	0.0153	50.15	49.85	0.0490
17	18	2,006	17,896	296,517	0.68	0.0151	49.78	50.22	0.0493
18	19	1,885	18,423	276,352	0.68	0.0157	49.44	50.56	0.0495
19	20	1,776	24,443	253,034	0.70	0.0166	49.10	50.90	0.0498
20	21	1,453	23,749	227,162	0.64	0.0167	48.76	51.24	0.0501
21	22	1,141	19,852	203,908	0.56	0.0165	48.45	51.55	0.0504
22	23	1,039	22,511	181,586	0.57	0.0177	48.18	51.82	0.0508
23	.	823	168,468	85,057	0.97	0.0336	47.90	52.10	0.0512

Appendix Table 3: First re-entry to SSI after a non-payment month for reason other than death, by county of residence in August 2005 (continued)

		Unaffected Counties in Affected States							
Interval (months)									
[Lower,	Upper)	Number Failed	Number Censored	Effective Sample Size	Conditional Probability of Failure (x 100)	Conditional Probability Standard Error (x 100)	Survival (x 100)	Failure (x 100)	Survival Standard Error (x 100)
0	1	0	3,351	112,554	0.00	0.0000	100.00	0.00	0.0000
1	2	28,418	2,562	109,597	25.93	0.1320	100.00	0.00	0.0000
2	3	5,300	1,993	78,902	6.72	0.0891	74.07	25.93	0.1320
3	4	2,724	1,996	71,607	3.80	0.0715	69.09	30.91	0.1400
4	5	2,088	1,989	66,891	3.12	0.0672	66.47	33.53	0.1430
5	6	1,391	1,697	62,960	2.21	0.0586	64.39	35.61	0.1460
6	7	1,124	1,584	59,928	1.88	0.0554	62.97	37.03	0.1480
7	8	1,338	1,584	57,220	2.34	0.0632	61.79	38.21	0.1490
8	9	1,446	7,316	51,432	2.81	0.0729	60.34	39.66	0.1510
9	10	901	1,373	45,642	1.97	0.0651	58.65	41.35	0.1530
10	11	713	1,627	43,241	1.65	0.0612	57.49	42.51	0.1550
11	12	595	1,596	40,916	1.45	0.0592	56.54	43.46	0.1560
12	13	422	1,744	38,651	1.09	0.0529	55.72	44.28	0.1570
13	14	382	1,475	36,620	1.04	0.0531	55.11	44.89	0.1590
14	15	237	1,628	34,686	0.68	0.0442	54.54	45.46	0.1600
15	16	223	1,804	32,733	0.68	0.0455	54.16	45.84	0.1600
16	17	170	1,596	30,810	0.55	0.0422	53.79	46.21	0.1610
17	18	194	1,652	29,016	0.67	0.0478	53.50	46.50	0.1620
18	19	169	1,733	27,130	0.62	0.0478	53.14	46.86	0.1630
19	20	168	1,988	25,100	0.67	0.0515	52.81	47.19	0.1640
20	21	119	2,266	22,805	0.52	0.0477	52.45	47.55	0.1650
21	22	92	1,910	20,598	0.45	0.0465	52.18	47.82	0.1660
22	23	83	2,307	18,398	0.45	0.0494	51.95	48.05	0.1670
23	.	72	17,089	8,617	0.84	0.0981	51.71	48.29	0.1680

Appendix Table 3: First re-entry to SSI after a non-payment month for reason other than death, by county of residence in August 2005 (continued)

		Affected Counties							
Interval (months)									
[Lower,	Upper)	Number Failed	Number Censored	Effective Sample Size	Conditional Probability of Failure (x 100)	Conditional Probability Standard Error (x 100)	Survival (x 100)	Failure (x 100)	Survival Standard Error (x 100)
0	1	0	2,128	74,213	0.00	0.0000	100.00	0.00	0.0000
1	2	18,259	1,565	72,367	25.23	0.1610	100.00	0.00	0.0000
2	3	3,650	1,175	52,738	6.92	0.1110	74.77	25.23	0.1610
3	4	1,806	1,215	47,893	3.77	0.0870	69.59	30.41	0.1720
4	5	1,393	1,285	44,837	3.11	0.0819	66.97	33.03	0.1760
5	6	913	1,035	42,284	2.16	0.0707	64.89	35.11	0.1790
6	7	763	957	40,375	1.89	0.0678	63.49	36.51	0.1810
7	8	721	982	38,642	1.87	0.0688	62.29	37.71	0.1830
8	9	825	6,015	34,423	2.40	0.0824	61.13	38.87	0.1840
9	10	566	844	30,168	1.88	0.0781	59.66	40.34	0.1870
10	11	397	1,079	28,641	1.39	0.0691	58.54	41.46	0.1890
11	12	383	1,048	27,180	1.41	0.0715	57.73	42.27	0.1910
12	13	322	1,084	25,731	1.25	0.0693	56.92	43.08	0.1930
13	14	291	868	24,433	1.19	0.0694	56.20	43.80	0.1940
14	15	197	1,019	23,199	0.85	0.0602	55.53	44.47	0.1960
15	16	153	1,203	21,891	0.70	0.0563	55.06	44.94	0.1970
16	17	108	1,052	20,610	0.52	0.0503	54.68	45.32	0.1980
17	18	96	1,077	19,438	0.49	0.0503	54.39	45.61	0.1990
18	19	102	1,110	18,248	0.56	0.0552	54.12	45.88	0.2000
19	20	102	1,281	16,951	0.60	0.0594	53.82	46.18	0.2010
20	21	81	1,329	15,544	0.52	0.0578	53.50	46.50	0.2020
21	22	80	1,194	14,201	0.56	0.0628	53.22	46.78	0.2040
22	23	81	1,299	12,875	0.63	0.0697	52.92	47.08	0.2050
23	.	62	12,082	6,103	1.02	0.1280	52.59	47.41	0.2070

Source: Authors' tabulations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2005 - August 2007.

Appendix Table 4: Months from August 2005 until death, by county of residence in August 2005

Unaffected Counties in Unaffected States									
Interval (months)									
[Lower,	Upper)	Number Failed	Number Censored	Effective Sample Size	Conditional Probability of Failure (x 100)	Conditional Probability Standard Error (x 100)	Survival (x 100)	Failure (x 100)	Survival Standard Error (x 100)
0	1	1,204	0	6,142,825	0.02	0.0006	100.00	0.00	0.0000
1	2	12,353	0	6,141,621	0.20	0.0018	99.98	0.02	0.0006
2	3	13,229	0	6,129,268	0.22	0.0019	99.78	0.22	0.0019
3	4	13,410	0	6,116,039	0.22	0.0019	99.56	0.44	0.0027
4	5	14,935	0	6,102,629	0.25	0.0020	99.35	0.65	0.0033
5	6	14,851	0	6,087,694	0.24	0.0020	99.10	0.90	0.0038
6	7	13,604	0	6,072,843	0.22	0.0019	98.86	1.14	0.0043
7	8	14,571	0	6,059,239	0.24	0.0020	98.64	1.36	0.0047
8	9	13,238	0	6,044,668	0.22	0.0019	98.40	1.60	0.0051
9	10	13,263	0	6,031,430	0.22	0.0019	98.19	1.81	0.0054
10	11	12,447	0	6,018,167	0.21	0.0019	97.97	2.03	0.0057
11	12	12,902	0	6,005,720	0.22	0.0019	97.77	2.23	0.0060
12	13	12,782	0	5,992,818	0.21	0.0019	97.56	2.44	0.0062
13	14	12,238	0	5,980,036	0.21	0.0018	97.35	2.65	0.0065
14	15	13,127	0	5,967,798	0.22	0.0019	97.15	2.85	0.0067
15	16	12,961	0	5,954,671	0.22	0.0019	96.94	3.06	0.0070
16	17	14,084	0	5,941,710	0.24	0.0020	96.73	3.27	0.0072
17	18	14,477	0	5,927,626	0.24	0.0020	96.50	3.50	0.0074
18	19	13,232	0	5,913,149	0.22	0.0019	96.26	3.74	0.0077
19	20	14,268	0	5,899,917	0.24	0.0020	96.05	3.95	0.0079
20	21	13,035	0	5,885,649	0.22	0.0019	95.81	4.19	0.0081
21	22	12,547	0	5,872,614	0.21	0.0019	95.60	4.40	0.0083
22	23	11,859	0	5,860,067	0.20	0.0019	95.40	4.60	0.0085
23	.	11,803	0	5,848,208	0.20	0.0019	95.20	4.80	0.0086
24	.	410	5,835,995	2,918,408	0.01	0.0007	95.01	4.99	0.0088

Appendix Table 4: Months from August 2005 until death, by county of residence in August 2005 (continued)

Unaffected Counties in Affected States									
Interval (months)									
[Lower,	Upper)	Number Failed	Number Censored	Effective Sample Size	Conditional Probability of Failure (x 100)	Conditional Probability Standard Error (x 100)	Survival (x 100)	Failure (x 100)	Survival Standard Error (x 100)
0	1	130	0	601,988	0.02	0.0019	100.00	0.00	0.0000
1	2	1,438	0	601,858	0.24	0.0063	99.98	0.02	0.0019
2	3	1,485	0	600,420	0.25	0.0064	99.74	0.26	0.0066
3	4	1,469	0	598,935	0.25	0.0064	99.49	0.51	0.0092
4	5	1,672	0	597,466	0.28	0.0068	99.25	0.75	0.0111
5	6	1,741	0	595,794	0.29	0.0070	98.97	1.03	0.0130
6	7	1,589	0	594,053	0.27	0.0067	98.68	1.32	0.0147
7	8	1,735	0	592,464	0.29	0.0070	98.42	1.58	0.0161
8	9	1,445	0	590,729	0.25	0.0064	98.13	1.87	0.0175
9	10	1,468	0	589,284	0.25	0.0065	97.89	2.11	0.0185
10	11	1,353	0	587,816	0.23	0.0063	97.65	2.35	0.0195
11	12	1,384	0	586,463	0.24	0.0063	97.42	2.58	0.0204
12	13	1,319	0	585,079	0.23	0.0062	97.19	2.81	0.0213
13	14	1,422	0	583,760	0.24	0.0065	96.97	3.03	0.0221
14	15	1,437	0	582,338	0.25	0.0065	96.74	3.26	0.0229
15	16	1,430	0	580,901	0.25	0.0065	96.50	3.50	0.0237
16	17	1,570	0	579,471	0.27	0.0068	96.26	3.74	0.0245
17	18	1,592	0	577,901	0.28	0.0069	96.00	4.00	0.0253
18	19	1,468	0	576,309	0.26	0.0066	95.73	4.27	0.0260
19	20	1,617	0	574,841	0.28	0.0070	95.49	4.51	0.0267
20	21	1,482	0	573,224	0.26	0.0067	95.22	4.78	0.0275
21	22	1,415	0	571,742	0.25	0.0066	94.98	5.02	0.0282
22	23	1,327	0	570,327	0.23	0.0064	94.74	5.26	0.0288
23	.	1,351	0	569,000	0.24	0.0065	94.52	5.48	0.0293
24	.	40	567,609	283,845	0.01	0.0022	94.30	5.70	0.0299

Appendix Table 4: Months from August 2005 until death, by county of residence in August 2005 (continued)

Interval (months)		Affected Counties							
[Lower,	Upper)	Number Failed	Number Censored	Effective Sample Size	Conditional Probability of Failure (x 100)	Conditional Probability Standard Error (x 100)	Survival (x 100)	Failure (x 100)	Survival Standard Error (x 100)
0	1	188	0	348,377	0.05	0.0039	100.00	0.00	0.0000
1	2	835	0	348,189	0.24	0.0083	99.95	0.05	0.0039
2	3	885	0	347,354	0.26	0.0086	99.71	0.29	0.0092
3	4	923	0	346,469	0.27	0.0088	99.45	0.55	0.0125
4	5	959	0	345,546	0.28	0.0089	99.19	0.81	0.0152
5	6	942	0	344,587	0.27	0.0089	98.91	1.09	0.0176
6	7	827	0	343,645	0.24	0.0084	98.64	1.36	0.0196
7	8	902	0	342,818	0.26	0.0087	98.40	1.60	0.0212
8	9	847	0	341,916	0.25	0.0085	98.15	1.85	0.0229
9	10	850	0	341,069	0.25	0.0085	97.90	2.10	0.0243
10	11	797	0	340,219	0.23	0.0083	97.66	2.34	0.0256
11	12	771	0	339,422	0.23	0.0082	97.43	2.57	0.0268
12	13	758	0	338,651	0.22	0.0081	97.21	2.79	0.0279
13	14	759	0	337,893	0.23	0.0081	96.99	3.01	0.0289
14	15	788	0	337,134	0.23	0.0083	96.77	3.23	0.0299
15	16	848	0	336,346	0.25	0.0086	96.55	3.45	0.0309
16	17	918	0	335,498	0.27	0.0090	96.30	3.70	0.0320
17	18	888	0	334,580	0.27	0.0089	96.04	3.96	0.0330
18	19	788	0	333,692	0.24	0.0084	95.78	4.22	0.0340
19	20	822	0	332,904	0.25	0.0086	95.56	4.44	0.0349
20	21	776	0	332,082	0.23	0.0084	95.32	4.68	0.0358
21	22	789	0	331,306	0.24	0.0085	95.10	4.90	0.0366
22	23	721	0	330,517	0.22	0.0081	94.87	5.13	0.0374
23	24	745	0	329,796	0.23	0.0083	94.67	5.33	0.0381
24	.	31	329,020	164,541	0.02	0.0034	94.45	5.55	0.0388

Source: Authors' tabulations from Social Security Administration, Supplemental Security Record (Characteristic Extract Record format, 100 percent data), August 2005 - August 2007.