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Employment and Self-Employment in the Wake of Hurricane Katrina

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Abstract

Year 2005 brought four severe hurricanes to the U.S. Gulf states, including Hurricane Katrina, an exceptional storm in terms of its magnitude of destruction. We examine the short- and long-term effects of Hurricane Katrina on the labor market outcomes of prime age individuals in the states most affected by the hurricane and for evacuees using data from the monthly Current Population Survey. We find that in the states most affected by Hurricane Katrina—Alabama, Florida, Louisiana and Mississippi—employment and unemployment by the end of 2006 were at similar rates as the end of 2003 with the exception of Mississippi, which still had lower employment and higher unemployment at the end of 2006 compared with pre-Katrina levels. By one year after the hurricane, evacuees that returned to their pre-Katrina state of residence have labor force participation rates and unemployment rates at the same level or near that of non-evacuees. Evacuees that relocated (non-returnees) have lower employment rates and higher unemployment rates, both immediately following the hurricane and one year later. Self-employment rates are higher for returning evacuees in all states compared with non-evacuees in those states in the months immediately following the hurricane but are no different one year later. There is some evidence of higher self-employment rates among non-returnees that may be due to poor job prospects in the wage and salary sector or due to new opportunities for starting businesses in the wake of hurricane Katrina.

1. Introduction

Year 2005 brought four severe hurricanes to the U.S. Gulf states, including Hurricane Katrina, an exceptional storm in terms of its magnitude of destruction. Table 1 provides an overview of the 2005 hurricane season by named hurricane, the states affected, the month of first landfall, and the dollar damages as reported by the U.S. Department of Commerce (2006). Katrina was by far the most destructive storm that year, with estimated damages of nearly $100 billion dollars and primarily affecting the states of Alabama, Florida and Louisiana and Mississippi (the latter three being states where Katrina made landfall).[1] Katrina was preceded by Hurricane Dennis in July, which made landfall in Florida and affected Mississippi and Alabama with flooding and power outages. Hurricane Katrina was followed by Rita in September and by Wilma in October. Prior to Hurricane Katrina, Hurricane Ivan in September 2004 had been the most costly with estimated damages of approximately $14.6 billion affecting the states of Alabama, Florida and Louisiana.

Estimates of total dollar damages however, are just one gauge of the economic consequences of a hurricane. Another important domain of economic impact is the effect of a hurricane or other natural disaster on labor market outcomes. Natural disasters usually involve temporary disruptions to the local economy through direct and indirect effects on local infrastructure, business structures and other business capital, and residences and the population, especially the workforce. In the aftermath of Hurricane Katrina, attention was focused in part on the plight of business owners. Indeed, the cost to business owners of the destruction of capital can be substantial and the policies intended to aid business owners may accelerate the pace of economic recovery. Moreover, the changes in the cost and availability of commercial insurance in the time following Hurricane Katrina have critical ramifications for economic recovery and the ongoing economic vitality of the region (Dixon, McDonald, Zissimopoulos 2007).

In the case of the 2005 hurricane season, the abnormal number of storms within the span of a few months, as well as the magnitude and geographic scope of the damages, resulted in a particularly large effect on the potential labor force, with an estimated 1.1 million persons age 16 and over evacuating their homes as a result of Katrina alone (Kosanovich, 2006). For the populations affected, the storms led to short- and long-distance migration for what became, in

[1] Estimated damages, as reported by the U.S. Department of Commerce (2006), are based on insurance industry estimates and do not include uninsured losses. So Commerce uses a factor of two times insured losses to arrive at the estimate. The estimates do not include losses insured by flood insurance coverage (FEMA). Other estimates adjusted for inflation, wealth and population provided by Pielke et al. (2006) are also shown in Table 1.

some cases, extended periods of time, with the concomitant need to find housing and employment in a new location. Decisionmakers charged with guiding economic recovery and considering how to handle future disasters will need information not only on the effect of Hurricane Katrina on local employment levels in the short and long term but also details about workers and their jobs, including those displaced to other regions not directly affected by the hurricane.

In this context, the goal of this study is to examine the short- and long-term effects of Hurricane Katrina on the labor market outcomes of prime age individuals in the states most affected by the hurricane and for specific groups in the affected states defined by their evacuation status. We use data from the monthly Current Population Survey (CPS) that allow us to examine key labor market outcomes, namely labor force participation rates, employment rates, and unemployment rates. We also use the CPS data to differentiate between the share of employed workers in self-employment as compared with wage and salary work in order to understand what types of workers are most affected, the resilience of self-employment work to this disaster, and the role of self-employment in providing temporary and/or long-term employment. In addition, we exploit information collected in the monthly CPS for a year following Hurricane Katrina that allows us to identify the employment outcomes of individuals displaced by the storm.

Our research is related to the literature that has examined the economic effects of natural disasters, a literature that has produced mixed findings (Skidmore and Toya 2002; Webb, Tierney, Dahlhamer 2002; Alesch et. al 2001).[2] Another related literature addresses the factors that promote entrepreneurship or self-employment. A natural disaster may encourage movements into self-employment by offering new opportunities for entrepreneurship, but it may also be a second best option for workers displaced from wage and salary work. Blanchflower and Oswald (1998) and Manser and Picot (1999) argue that people are pushed into self-employment by poor job prospects in the wage and salary sector. Moore and Mueller (2002) find that Canadian workers are more likely to become self-employed the longer is the spell of joblessness, when unemployment benefits are not collected between jobs, and when the reason for job loss is an involuntarily separation. Self-employment rates have also been found to rise with increases in

[2] Skidmore and Toya (2002) postulate that disaster stimulates growth through the adaptation of new technology as a result of replacing destroyed capital and find a long-term positive effect on GDP growth using cross-national methods that compare the number of disasters, controlling for geographical area on GDP growth. In contrast, Webb, Tierney, Dahlhamer (2002) study the Loma Prieta earthquake and Hurricane Andrew and find no long-term effect on economic recovery. Alesch and co-authors (2001) examine small businesses located in Northridge, California at the time of the 1994 earthquake and again in 1996 and find that the survival of small businesses after this disaster was dependent on individual business characteristics including among other factors, commercial insurance coverage.

local or national unemployment rates, at least for some groups such as women (Simpson and Sproule, 1998; Schuetze, 2000), but this finding is not universal (Blanchflower, 2000).

The short-term effects of Hurricane Katrina on employment were described in the August 2006 *Monthly Labor Review* based on several data sources, including the monthly CPS through June 2006 (Brown, 2006; Clayton and Spletzer, 2006; Garber, 2006; Kosanovich, 2006). In the months immediately following Katrina, employment declined in the affected states and counties and varied significantly by region, industry and by evacuation status. The potential for labor market effects was largest in Louisiana, with an estimated 17 percent of the state's employment in FEMA-designated damage zones, compared with 5 percent for Mississippi. The damages in Alabama and Florida were smaller still.

We extend the analyses of the CPS data reported in the *Monthly Labor Review* in several ways. First, we conduct a time series analysis of labor market outcomes, including labor force participation, employment, unemployment, and self-employment rates, from late 2003 to late 2006. Using quarterly data, we can determine the extent to which aggregate labor market outcomes at the state level returned to their pre-Katrina levels more than a year after the natural disaster. Second, we examine the same labor market outcomes for those who evacuated from the Katrina-affected states, considering differences among those who return and those who do not, as well as differences by geography and over time. Our analysis controls for individual characteristics and other labor market variables to account for other factors that may explain differences in labor market outcomes across groups and geographic regions, and over time.

Before presenting our results, we briefly describe the CPS data we rely on in the next section. Based on these data, we find that in the states most affected by Hurricane Katrina—Alabama, Florida, Louisiana and Mississippi—employment and unemployment by the end of 2006 were at similar rates as the end of 2003 with the exception of Mississippi, which still had lower employment and higher unemployment at the end of 2006 compared with pre-Katrina levels. One of the groups most affected by the hurricane—the evacuees—have labor force participation rates at the same level as non-evacuees and employment levels and unemployment levels near that of non-evacuees one year after the hurricane. This result, however, masks important differences for subgroups of evacuees. The group of evacuees that did not return to their pre-Katrina state of residence, even controlling for observable differences, has lower employment rates and higher unemployment rates, both immediately following the hurricane and one year later. Evacuees from different Katrina-affected states have had different employment experiences, as well. The returning evacuees from Louisiana have higher unemployment rates than non-evacuees from their respective states. Self-employment rates are higher for returning

evacuees in all states compared with non-evacuees in those states in the four months immediately following the hurricane but are no different one year later. Non-returnees have the highest rates of self-employment from March to October 2006 although due to small sample sizes, the differences are only statistically different that non-evacuees at the 10 percent level. Higher self-employment rates among evacuees may be due to poor job prospects in the wage and salary sector, but they may also be due to new opportunities for starting businesses in the wake of Hurricane Katrina.

2. Data

We use data from the CPS, a monthly survey of 60,000 households conducted by the U.S. Bureau of Census for the Bureau of Labor Statistics. This survey provides comprehensive data on the civilian non-institutional population 15 years and older, including information on labor force outcomes such as labor force participation, employment, unemployment, and class of worker (e.g., wage and salary versus self-employment). Personal characteristics are also collected for respondents including sex, age, race/ethnicity, marital status, and educational attainment. In terms of geography, the CPS is most suited to estimating labor market outcomes at the state or national level.[3]

We use the CPS labor market data to measure the following labor market outcomes for prime age individuals (those 25 to 64):

- *Labor force participation rate*: the number of persons age 25 to 64 in labor force (those employed plus unemployed) divided by the population age 25 to 64
- *Employment rate*, also called the *employment-to-population ratio*: the number of persons age 25 to 64 employed divided by the population age 25 to 64
- *Unemployment rate*: the number of persons 25 to 64 not working but actively looking for work divided by the number of persons age 25 to 64 in the labor force
- *Self-employment rate*: the number of employed persons 25 to 64 who report they are self-employed in an incorporated or unincorporated business divided by the number of employed persons age 25 to 64.

All four outcomes are measured as percentages.

[3] Garber et al. (2006) use establishment data while Brown, Mason, and Tiller (2006) use Local Area Unemployment Statistics data to assess labor market outcomes following Katrina at a finer level of geography. These data sources do not have information on worker characteristics as is the case with the CPS. At the same time, the CPS is not as suitable for analyses of local labor market outcomes.

The CPS data collection efforts experienced many operational and analytic challenges in the specific geographic areas affected by Hurricane Katrina (Cahoon et al., 2006). Fortunately, the next interview round in September 2005 was scheduled for three weeks post-Katrina, which allowed for some adjustments to be made. For example, destroyed housing units are usually not retained in the sample for possible reinterview in subsequent months, but an exception was made in the hurricane-affected areas through December 2005. This meant that sampled addresses that were vacant were revisited in subsequent months even if the dwelling unit was damaged or destroyed and interviews were conducted with individuals living in temporary structures such as a trailer on their property. Even with these adjustments, there was a substantial decline in the number of households interviewed in the months immediately following Hurricane Katrina. For example, in Louisiana, the number of households interviewed declined by 36 percent from August to September 2005 (Cahoon et al., 2006). Cahoon et al. (2006) describe the adjustments made to the sample weights using information from the U.S. Postal Service's National Change of Address database and demographics from the 2000 Census to account for the complications created by non-response because of inter-state migration.

Important for this study is a series of new questions added to the monthly CPS to identify people evacuated from their home because of Hurricane Katrina throughout the United States. Starting with the November 2005 survey, all CPS households in Katrina-affected states and non-Katrina affected states were queried about anyone living or staying in their residence who had to evacuate, even temporarily, where he or she was living in August because of Hurricane Katrina, who it was, and where he or she was living in August prior to the Hurricane warning. Information on labor force status and other questionnaire items were collected for these "evacuees" in the same manner as other household members. The special Katrina-related questions were included in the monthly survey through October 2006.

We use this information, in combination with state identifiers, to classify all prime age (age 25 to 64) CPS respondents into one of four mutually exclusive categories:

- *Non-evacuee in non-Katrina state*: currently living outside a Katrina-affected state (Alabama, Florida, Louisiana, and Mississippi) and not an evacuee
- *Non-evacuee in Katrina state*: currently living in a Katrina-affected state and not an evacuee
- *Returnee evacuee*: evacuated from Katrina-affected state and currently living in the same state evacuated from (although not necessarily the same address)

- *Non-returnee evacuee*: evacuated from Katrina-affected state and currently not living in the same state evacuated from.

Table 2 shows the sample sizes for these four groups pooled from the November 2005 through October 2006 monthly CPS. In addition, for the second and third groups, we sometimes disaggregate respondents into which of the four Katrina-affected states they currently reside in.

3. Results

In this section we present results from three interrelated analyses of the labor market effects of Hurricane Katrina. First, we focus on time trends in the four labor market indicators for the Katrina states and all other states from September 2003 to November 2006. The time trend analysis begins in 2003 to capture pre-Katrina trends and employment effects of Hurricane Ivan in September 2004, one year earlier. Second, we examine time trends in the same four labor market outcomes over time by evacuee status for the time period these data are available (November 2005 to October 2006), disaggregating our sample into the four groups listed above.[4] Third, we model the various labor market outcomes by evacuation status, with controls for demographic characteristics, state characteristics and interactions of evacuation status by current state and time. These last two analyses allow us to determine the effects on labor market outcomes for individuals affected and unaffected by Hurricane Katrina, with and without controls for other factors that might explain variation in the outcomes of interest.

Aggregate Trends in Labor Market Outcomes: 2003-2006

Tables 3 to 6 respectively report time series results for the four labor market outcomes of interest for the prime age population: labor force participation rate, employment rate, unemployment rate, and self-employment rate. In each table, results are shown for the U.S. as a whole, for the five major Census regions (Northeast, Midwest, Atlantic, South, and West), and for the four Katrina-affected states (Alabama, Florida, Louisiana, and Mississippi). The data points are based on pooled data over 3 monthly surveys (i.e., quarterly data), from two years before Katrina to one year after. Quarters are defined relative to the timing of Hurricane Katrina, which

[4] We considered the relevance of CPS labor force concepts for evacuees and concluded that the survey definitions will capture their labor force status accurately. The definition of employed includes work during the reference week of one hour or more, work in one's own business, unpaid work of more than fourteen hours, or being with a job but not working because of vacation or *bad weather*. Unemployed is defined as no employment during the reference week, but being available for work and making specific efforts to find work in the last four weeks. Not in the labor force is defined as neither employed nor unemployed. Respondents displaced by a hurricane with one month or more of not actively seeking work (resettling) would be classified as not in the labor force.

occurred in August, rather than the usual division of the calendar year. Thus, quarter four (Q4) runs from September to November, the first three full months after Katrina made landfall. Quarter one (Q1) is from December to February, quarter two (Q2) is from March to May, and quarter three (Q3) is from June to August. A dashed line separates the pre-Katrina quarters from the post-Katrina quarters. All labor market outcomes reported in Tables 3 to 6, measured as rates and multiplied by 100 for interpretation as percentages, are based on weighted data but they are not seasonally adjusted.

As seen in Table 3, the national time trend shows the percentage of labor force participants is relatively stable over the period covered by the data. Prior to Katrina, the percent of individuals in the labor force in the South was generally lower than the other four regions. The Katrina-affected states, with the exception of Florida, had lower labor force participation rates than the group of Southern states. In the post-Katrina period, there is some evidence of a very small short-term decline in the percent of the population participating in the labor force in Alabama and Louisiana, but by 2006 Q4, percentages were back to the 2003 Q4 levels in Alabama and 3.5 percentage points higher in Louisiana. In Mississippi, the percent of the population participating in the labor force fell successively in the four quarters following Katrina and rebounded minimally in the last quarter of data recorded in Table 3. In Florida, there was a small decline in the percent of the population participating in the labor force (0.5 percentage points) in the quarter immediately following Katrina, but the rate returned to the pre-Katrina level thereafter.

The time patterns and regional patterns for the percent of the population employed are very similar to those for labor force participation (Table 4). Overall, the percent employed is fairly stable over time at the national level. There is a one-percentage increase between the first and last quarter in our data from 75.6 to 76.8 percent. Across regions, the percent of the population employed is lowest in the South, with Alabama, Louisiana, and Mississippi falling below the average for all Southern states. Following Katrina, Alabama and Louisiana show a very small decline and subsequent rebound (larger for Louisiana), Florida shows only a small one-quarter dip of less than one percent (a decline from 76.2 percent employed pre-Katrina to 75.7 percent employed post-Katrina), and Mississippi shows a four-quarter drop from 72.6 percent before Katrina to a low of 68.3 percent in 2006 Q3 before increasing slightly in the last quarter of the time series to 69.9 percent employed.

Across the entire time period shown in Table 5, the percent of labor force participants that are unemployed is higher than the national average (4.1) in Mississippi (4.7) and Louisiana (4.4) and lower than the national average in Florida (3.1) and Alabama (3.7). Examining trends

over time, at the national level, the pattern is one of declining unemployment over time. Likewise, Alabama's unemployment rate was on a downward trend up until Katrina. The state experienced an increase in the percent unemployed in the first two quarters following the hurricane, from 2.8 percent in the quarter before the hurricane to 3.9 percent two quarters later. The percent of the labor force unemployed was slightly below the pre-Katrina level as of 2006 Q4. Louisiana also experienced an increase in unemployment post-Katrina but only for one quarter and then just half a percentage point. By the fourth quarter of 2006, the percent unemployed in Louisiana was 0.4 percentage points lower than in 2003 Q4. In contrast, there is no discernable change in unemployment in Florida following the Hurricane. Mississippi's unemployment rate dips slightly below the pre-Katrina level for three quarters.

Time trends in the percent of workers that are self-employed are reported in Table 6. Nationwide, the percent of workers in self-employment is relatively stable over the time period analyzed and is about 12 percent of employed workers. In Alabama, the percent of workers in self-employment is below the national average in 2003 (10.6 percent compared to 12.0 percent), declines slightly over time, and appears to be largely unaffected by Katrina. The decline from 2003 Q4 to 2006 Q4 is largely driven by the percent of women self-employed which falls 3.5 percentage points during this time period (evident before Katrina and thus we do not attribute this drop to Katrina). In most of the quarters reported in Table 6, workers in Florida are more likely to be self-employed compared with other Katrina states and the national average. There are slight fluctuations over time, including a small increase in the first few quarters after Katrina. In Louisiana self-employment is generally increasing in the quarters post-Katrina, reversing an earlier downward trend. By 2006 Q4 the percent of workers self-employed in Louisiana is approximately one percentage point higher than in 2003 Q4. In Mississippi, self-employment fluctuates more over time than the other Katrina states in the quarters before and after Katrina, so it is difficult to attribute any particular increase or decrease to the hurricane. Interestingly, three of the Katrina states (Alabama is the exception) have self-employment rates the same as the national average or at most 0.9 percentage points above as of 2003 Q4, but the percent of workers self-employed are 1.0 to 1.5 percentage points above the national average by 2006 Q4. These patterns may be due to a changing mix of the population in the Katrina-affected states because of the migration of disadvantage workers post-Katrina who are less likely to be self-employed or due to movements into self-employment among the population that remains or returns. Multivariate models, discussed below, will help disentangle these effects by controlling for observable characteristics of workers at different time periods.

To summarize, at the national level, between late 2003 and late 2006 the percent of the population in the labor force and the percent of workers in self-employment were unchanged, while there was a slight increase in the percent of the population employed and a larger decline in unemployment. In the Katrina-affected states, any decline in labor force participation or employment after Katrina was followed by an increase so that rates in 2006 Q4 were at or above the rates in 2003 Q4. Mississippi is the exception with persistently lower employment at the end of the time period examined. Likewise, any increased unemployment post-Katrina dissipated within a quarter or two so that the percent of labor force participants unemployed in 2006 Q4 was equal to that of pre-Katrina levels, again with the exception of Mississippi. These patterns are largely consistent with analyses reported by the Bureau of Labor Statistics based on other data sources (Kosanovich, 2006). In contrast to the stable national self-employment statistics, the percent of workers self-employed was slightly higher in Q4 2006 than in Q4 2003 for Louisiana and Mississippi, unchanged in Florida, and lower in Alabama.

Trends in Labor Market Outcomes by Evacuee Status: November 2005 to October 2006

The results in Tables 3 to 6 provide an aggregate picture of labor market outcomes in states affected and unaffected by Katrina. To gain further insight into the labor market effects of the hurricane, we use the information collected in the CPS from November 2006 to October 2006 that allow us to identify Katrina evacuees. In general, compared with non-evacuees in non-Katrina states or even non-evacuees in Katrina states, we would expect evacuees, because of their displacement, to face a greater likelihood of unfavorable labor market outcomes, such as being out of the labor force or unemployed. If workers are "pushed" into self-employment by bad economic prospects in the wage and salary market, we might also see higher rates of self-employment among evacuees. On the other hand, evacuees may find that displacement and local economic disruptions open up favorable opportunities in entrepreneurship and are therefore "pulled" into self-employment.

As noted earlier, among this group of evacuees, we can also identify who is a returnee at any point in time (to their same pre-Katrina state) versus those who are not returnees. We might expect returnees to have more labor market success because they have the ability to return to their original state, either because their economic losses were smaller or they have a larger support network such as family and friends to support their return. On the other hand, those who do not return may make that choice because their outcomes are better in their new location compared with what they could attain were they to return. We might also expect outcomes for these groups to vary over time, with those who return soon after the hurricane facing fewer barriers to

resuming their pre-Katrina life, while those who remain as non-returnees facing the greatest barriers. On the other hand, if those who remain in their new location do so because their economic prospects have improved, the selection mechanism may have the opposite effect.

To examine these issues, we use the CPS data from November 2005 to October 2006 to examine our four labor market outcomes by evacuee status and state (being in one of the Katrina-affected states or not). We also look at outcomes for the first six months in the time interval (November 2005 to April 2006) and the second six months (May 2006 to October 2006) to determine if the patterns differ over time. As seen in Table 7, in the first six months following Hurricane Katrina, 73 percent of evacuees had returned to their pre-Katrina state, and within another six months, a total of 84 percent had returned. Returnees did not necessarily return to the same address. According to the analysis in the *Monthly Labor Review*, by June 2006, 60 percent of evacuees had returned to their pre-Hurricane address based on sample of respondents aged 16 and older (Kosanovich, 2006).

Tables 8 and 9 report on the four labor market outcomes for prime age adults in the four mutually exclusive groups defined earlier based on evacuation status and residence in a Katrina-affected state. In addition, we report outcomes for the U.S. total prime age population and also combine the two groups of evacuees (i.e., reporting the average for returnees and non-returnees).

Consider first labor force participation and employment reported as percentages in Table 8. For the U.S. as a whole, and non-evacuees in non-Katrina states, the outcomes are similar and show no change over the two six-month intervals. Non-evacuees in Katrina states are less likely to participate in the labor force or be employed than the U.S. as a whole, but there is also no change over time. In contrast, evacuees are less likely to participate in the labor force or be employed than non-evacuees and their outcomes improve over the two six-month intervals. Moreover, outcomes are considerably less favorable, but also improve over time, for non-returnees compared with returnees. For example, from November 2005 to October 2006, 71 percent of evacuees participated in the labor force, while 79 percent of prime-age individuals from non-Katrina states and 77 percent of non-evacuees from Katrina states participated in the labor force. Among evacuees, the lowest rates are among the non-returnees (59 percent versus 74 percent), a pattern that was also found by Cahoon et al. (2006) based on the CPS data through June 2006. Evacuees' labor force participation increased substantially over time from 68 percent to 74 percent but is still below that of non-evacuees. Non-returnees' labor force participation increased even more dramatically over time from 54 percent to 66 percent. The difference in employment between non-returnees and returnees is even more striking: 38 percent versus 70 percent over the 12-month period.

A similar picture emerges for unemployment shown in the first set of columns in Table 9. Here the national pattern and that for non-evacuees is declining unemployment over the two six-month intervals. In contrast, evacuees have unemployment rates about three times the national average at each of the time intervals shown (10.9 percent compared to 3.7 percent over 12 months). Among evacuees, non-returnees have considerably higher levels of unemployment, nearly 36 percent compared with 6 percent for returnees. This same pattern was evident in the CPS data as of June 2006 as reported by Cahoon et al. (2006). Notably, like the national pattern, unemployment declined for returnees over time, but it increased for non-returnees. Higher unemployment in the second six-month interval for non-returnees may reflect individuals who were initially categorized as out of labor force or employed (may not have been working due to weather related absence) in the first six-month interval later being classified unemployed as they begin to search actively for work in a new location. Alternatively, this pattern may reflect the changing composition of non-returnees over time as the most successful evacuees who are able to return make the transition from being "non-returnees" to "returnees."

Finally, Table 9 also shows results for self-employment among employed workers. Here again, the percent of workers self-employed is the same for the U.S. as a whole, for non-evacuees in either Katrina or non-Katrina states. There is also no change over the two six-month intervals in self-employment rates for these populations. Evacuees are about one percentage point more likely to be self-employed than non-evacuees from Non-Katrina states and about equally like to be self-employed as non-evacuees from Katrina states. Among evacuees, the percent of workers self-employed is higher for returnees than non-returnees viewed over the entire 12-month interval (13.3 versus 8.6 percent). But this difference obscures substantial differences over time in self-employment rates among evacuees. For the first six-month interval, returnees were more likely to be self-employed than any other group (15.0 percent). The group of evacuees who owned businesses in Katrina affected states apparently have a strong incentive to return quickly or some returnees take-up self-employment. After one year, the percent of working returnees self-employed is the same as non-evacuees in Katrina and non-Katrina States. Non-returnees have low rates of self-employment in the first six months beginning November 2005 (4.5 percent) and the highest rates one year later (13.6 percent). Consistent with explanations found in the literature, non-returnees may find favorable prospects in self-employment in the state where they relocated or they may not find advantageous opportunities for wage and salary jobs and are instead "pushed" into self-employment.

These tabulations indicate that labor force participation and employment rates of evacuees remain below that of non-evacuees and unemployment rates above that of non-evacuees

one year following Hurricane Katrina with non-returnees experiencing the least favorable labor market outcomes among the evacuees. The self-employment rate for non-returnees increases over the first year following the hurricane, eventually exceeding the rate for non-evacuees, perhaps because of both push and pull factors.

These differences in labor market outcomes between evacuees and non-evacuees and by type of evacuee (returnee or not) shown in Tables 8 and 9 may result, in part, from differences in the characteristics of the groups. That is, some of the differences in labor market outcomes may have existed before Hurricane Katrina so that composition effects explain some of the patterns we see. Table 10 illustrates select characteristics of the groups we have been examining for the two six-month intervals. The two groups of non-evacuees (non-Katrina states and Katrina states) show stable characteristics over time and differences in characteristics reflect demographic differences between Southern and non-Southern states (e.g., lower levels of education and higher fraction of blacks). Among the two groups of evacuees, the population differences are starker, as well as the composition changes over time. For example, non-returnees are younger, less likely to be married or with a college degree, much more likely to be black and more likely to be female compared with non-evacuees or returnees. Early returnees are similar to non-evacuees in age and marital status but are more likely to be female and black. Later returnees compared to early returnees are more likely to be male and less likely to have a college degree or higher. Over time, the non-returnee population becomes older, more likely to be married, and male, while the education, race and ethnic composition shows less change. In summary, evacuees, particularly non-returnees, have characteristics that are generally associated with lower labor force participation rates and higher unemployment rates than non-evacuees from Katrina and non-Katrina states.

Multivariate Analysis of Labor Force Outcomes by Evacuee Status, State, and Time

To separate out the labor market effects of Hurricane Katrina over time by state and evacuee status, we employ a multivariate model. Specifically, we estimate logistic regression models of the propensity to be in the labor force, employed, unemployed, and self-employed. Our interest is in the estimated differences in these outcomes by evacuee status (non-evacuee in Katrina states, returnee, non-returnee) relative to non-evacuees in non-Katrina states, after controlling for other observable differences between individuals and other macro-economic factors that can affect labor market outcomes. Thus, the models include controls for the demographic characteristics examined in Table 10 (age, age-squared, sex, marital status, educational attainment, and race/ethnicity) and citizenship status. We also include month of year

indicators, indicators for which Katrina state (Alabama, Florida, Louisiana, Mississippi) the respondent currently resides (those in non-Katrina states are the reference group), state level unemployment rate for the respondent's current state of residence, and the state industrial mix (measured by the percentage of total payroll in the industry). In the first model we include evacuee status interacted with three time periods (indicators for 4-month periods beginning with November 2005) and in a second model, we interact evacuee status with current state for the four Katrina states (Alabama, Florida, Louisiana, and Mississippi), with all other states acting as the excluded group. To the extent that the observables do not control for other differences between evacuee groups, such as preferences for work, we interpret our results as measuring the relationship between evacuee status and labor market outcomes but not as how evacuee status affects labor market outcomes.

Our results are best viewed in terms of predicted probabilities where all characteristics except for evacuee status, time or state, are held constant at the mean value. Figure 1 shows the predicted probabilities for labor force participation, employment, unemployment and self-employment based on the first model with time and evacuee status interactions and Figure 2 shows the predicted probabilities based on the second model with state and evacuee status interactions. The logistic regression model results used to generate the two figures are available in Tables A1 and A2 in the appendix.

As seen in the first panel of Figure 1, in the four months following Hurricane Katrina beginning in November 2005 (time period T1), the percent of non-evacuees in the labor force participation is the same as the average in the non-Katrina states (82.6 and 82.1). Returnees are 2.6 percentage points less likely to be in the labor force as non-evacuees, holding all other factors in the model constant although this difference is not statistically significant. Non-returnees have lower labor force participation rates in this time period (61.6) and the difference is statistically significant. The percent of non-evacuees (from Katrina states and other states) in the labor force is stable over the entire twelve-month time period (T1 to T3). The percent of returnees in the labor force increases 1.6 percentage points from T1 (November 2005 through February 2006) to T2 (March to June 2006) and then remains stable for the next four months (T3). The percent of non-returnees in labor force participation experiences the largest increase over time: 61.6 (T1) to 63.8 (T2) to 76.9 (T3) and in the first two time periods, this is statistically different than the percent in the labor force of non-evacuees from Katrina states. One year after Hurricane Katrina, evacuees who do not return have labor force participation rates only 5.3 percentage points below non-evacuees and the difference is not statistically different.

The adjacent panel in Figure 1 shows that percent of the population employed based on model predictions. The percent of the population in non-Katrina states and among non-evacuees is approximately equal and is stable over time (between 78 and 79 percent). In the first four-month time period, the percentage of returnees employed is about 3 percentage points below non-evacuees and this difference is statistically significant and remains unchanged over time. The percent of non-returnees employed is 45.1 in the first time period and does not make substantial gains until the last time period when it reaches 53.2 although the difference remains statistically significant. Non-returnees are the outliers as well for predicted unemployment rates, shown in the third panel of Figure 1. For the non-Katrina states and non-evacuees, the percent unemployed is low and constant over time with the lowest among the non-evacuees (less than 2.0 percent). The percent of returnees unemployed is low in the first time period and not statistically different than unemployment among non-evacuees (2.4 percent) but increases 2 percentage points in T2 and although it declines again in T3 it is statistically different than in non-Katrina states. In contrast, the percent of non-returnees unemployed exceeds that for the other groups by more than 15 percentage points and increasing over the three time intervals (statistically significant in all time periods).

As seen in the fourth panel of Figure 1, the percent of workers self-employed is lower for non-evacuees from Katrina states compared to non-Katrina states in all time periods is unchanging over the three time periods but is not statistically different than non-evacuees. Approximately 11 percent of employed workers in non-Katrina states are self-employed and just under 7 percent are self-employed among non-evacuees. In the first time period, 10 percent of returnees are self-employed (statistically significant). This number decreases by about 50 percent to 5.6 percent in the second time period but one year later, is back above the self-employment rate for non-evacuees (7.5 percent and not statistically different). Although non-returnees are less likely to be employed than any other group, they are much more likely to be self-employed after one year. Only 4 percent of employed non-returnees are self-employed in the first period but by the second and third periods, this number increases to over 15 percent. Due to large standard errors, the differences are not significant at standard levels (significant at the 10 percent level). Thus, while self-employment may be important initially for returnees it is less important over time. There is some evidence it may be most important for non-returnees.

Figure 2 uses the second regression model, with interactions between evacuee status and current state, to show the predicted percent of non-evacuees (in Katrina states) compared with returnees in the labor force, employed, unemployed and self-employed, separately by their current Katrina-affected state (which is also the state of evacuation for the returnees). Outcomes

are also shown for non-returnees averaged over all non-Katrina states. These predictions are for outcomes averaged over the entire 12-months period from November 2005 to October 2006. In general, the results indicate that returnees in Alabama and Florida have favorable labor market outcomes relative to non-evacuees, while those in Louisiana and Mississippi do not. Among returnees, those in Florida, and to some extent those in Alabama, generally fare better than returnees in the other two Katrina-affected states. Consistent with Figure 1, non-returnees have the least favorable outcomes.

In Alabama, compared with non-evacuees, returnees are 1.9 percentage points more likely to be in the labor force, 2.8 percentage points more likely to be employed, 1.6 percentage points less likely to be unemployed and 4.5 percentage points more likely to be self-employed. In Alabama, the percent of non-evacuees in the labor force, employed and self-employed is statistically different than the relevant percent in non-Katrina states. For non-returnees the differences are not statistically different. In Florida, the differences are even more pronounced. Returnees in Florida, compared with non-evacuees in the state, are 6.1 percentage points more likely to be in the labor force, 8.2 percentage points more likely to be employed, 3.5 percentage points less likely to be unemployed and 4.5 percentage points more likely to be self-employed. Compared with individuals from non-Katrina states, the differences are statistically different for the percent of non-evacuees and returnees in the labor force and employed and non-evacuees self-employed and otherwise not significantly different than relevant percents in non-Katrina states. In contrast, returnees in Louisiana, compared with non-evacuees, are 0.5 percentage points less likely to be in the labor force, 2.8 percentage points less likely to be employed, 2.5 percentage points more likely to be unemployed and 0.9 percentage points more likely to be self-employed. In Louisiana the results are statistically different compared to non-Katrina states for all outcomes and statuses with the exception of employment of non-evacuees and self-employment of returnees. For several outcomes, the gap between returnees and non-evacuees in Mississippi is even larger than what is estimated for Louisiana. Returnees in Mississippi, compared with non-evacuees, are 4.3 percentage points less likely to be in the labor force, 5.1 percentage points less likely to be employed, 0.9 percentage points more likely to be unemployed and 1.2 percentage points more likely to be self-employed. The difference in labor force outcomes compared to non-Katrina states is statistically different for labor force participation of returnees, employment of non-evacuees and returnees, and unemployment of non-evacuees.

Non-returnees currently living in a state that is not one of the Katrina states compared with returnees and non-evacuees, have the lowest rates of labor force participation and employment (66.5 and 47.1 percent respectively), the highest unemployment rates (19.2 percent)

and among workers, about average rates of self-employment (10.6 percent) all statistically different than the results for non-Katrina states with the exception of self-employment. For many individuals, evacuee status was a choice and was not imposed by authorities. It may be the case that the group that returned is different than non-evacuees in ways that are correlated with employment and self-employment and these groups are different across states. Thus, we cannot interpret the results in Figures 1 and 2 as the effect of evacuating (and returning) on various labor market outcomes. That said, our models control for many observable differences that at the individual level and state level we know to be correlated with labor market outcomes.

4. Conclusion

From September 2003 to November 2006, data from the monthly CPS for prime age individuals reveal that the United States on average experienced small increases in labor force participation and employment rates, and declines in the unemployment rate. In the four Katrina-affected states examined in this study, there were short-term declines in the labor force participation and employment rates and increases in the unemployment rate following Katrina. However, the levels for these outcomes had returned to pre-Katrina levels or better by the end of 2006 with the exception of Mississippi, the one Katrina-affected state that continued to experience persistent lower rates of labor force participation, employment and higher rates of unemployment in the post-Katrina period. While the rate of self-employment among employed workers remained relatively stable at the national level over this period, there is some evidence that it rose in the post-Katrina period, especially in Louisiana and Mississippi.

One group of individuals severely affected by the hurricane was evacuees, those who left their residence, even temporarily, as a result of the storm. Questions included in the monthly CPS from November 2005 to October 2006 allow us to examine labor market outcomes for these individuals up to a year after the hurricane. While the group of evacuees on average has characteristics associated with lower labor force participation and higher unemployment compared with non-evacuees from the Katrina-affected states, models controlling for observable characteristics show significant labor market effects in the months following the disaster, and even one year later, particularly for evacuees that did not return to their pre-Katrina state. Employment rates of evacuees were below those for non-evacuees and unemployment rates above that of non-evacuees in the months following Katrina and one year later. The differences are most dramatic for non-returnees who, one year later, have employment rates almost half the rate of non-evacuees and unemployment rates almost seven times as high. Comparing non-evacuees and returnees from the four Katrina-affected states, we find that returnees to Louisiana

and Mississippi have less favorable labor market outcomes compared with returnees to Florida and Alabama.

Our results also suggest that self-employment, whether due to push or pull factors, may provide a pathway to employment for prime age individuals affected by the hurricane. Self-employment rates are higher for returning evacuees in all states compared with non-evacuees in those states in the four months immediately following the hurricane but are no different one year later. Non-returnees have the highest rates of self-employment from March to October 2006 although due to small sample sizes, the differences are only statistically different that non-evacuees at the 10 percent level. Self-employment differences may be a function of poor job prospects in the wage and salary sector but it may also be due to new opportunities for starting businesses in the wake of Hurricane Katrina.

While the CPS data provide important insights into the labor market effects of Hurricane Katrina—effects that we can trace for about a year after the disaster—limitations on the CPS sampling frame need to be recognized in interpreting our results. In particular, the CPS sample does not include individuals who reside in temporary shelters, hotels, or other non-residential settings. Given that many Katrina evacuees were located in such settings, particularly immediately after the storm, the CPS data will not fully capture the experiences of the population affected by Katrina, especially in the initial months following the hurricane. To some extent, this issue is addressed by using the CPS sampling weights, which were adjusted to account for the higher non-interview rates in the months immediately following the hurricane. As more of those affected by the storm relocated to structures that would be included in the CPS sample frame with the passage of time, we would expect our results to be more representative of the experiences of all those affected by Katrina.

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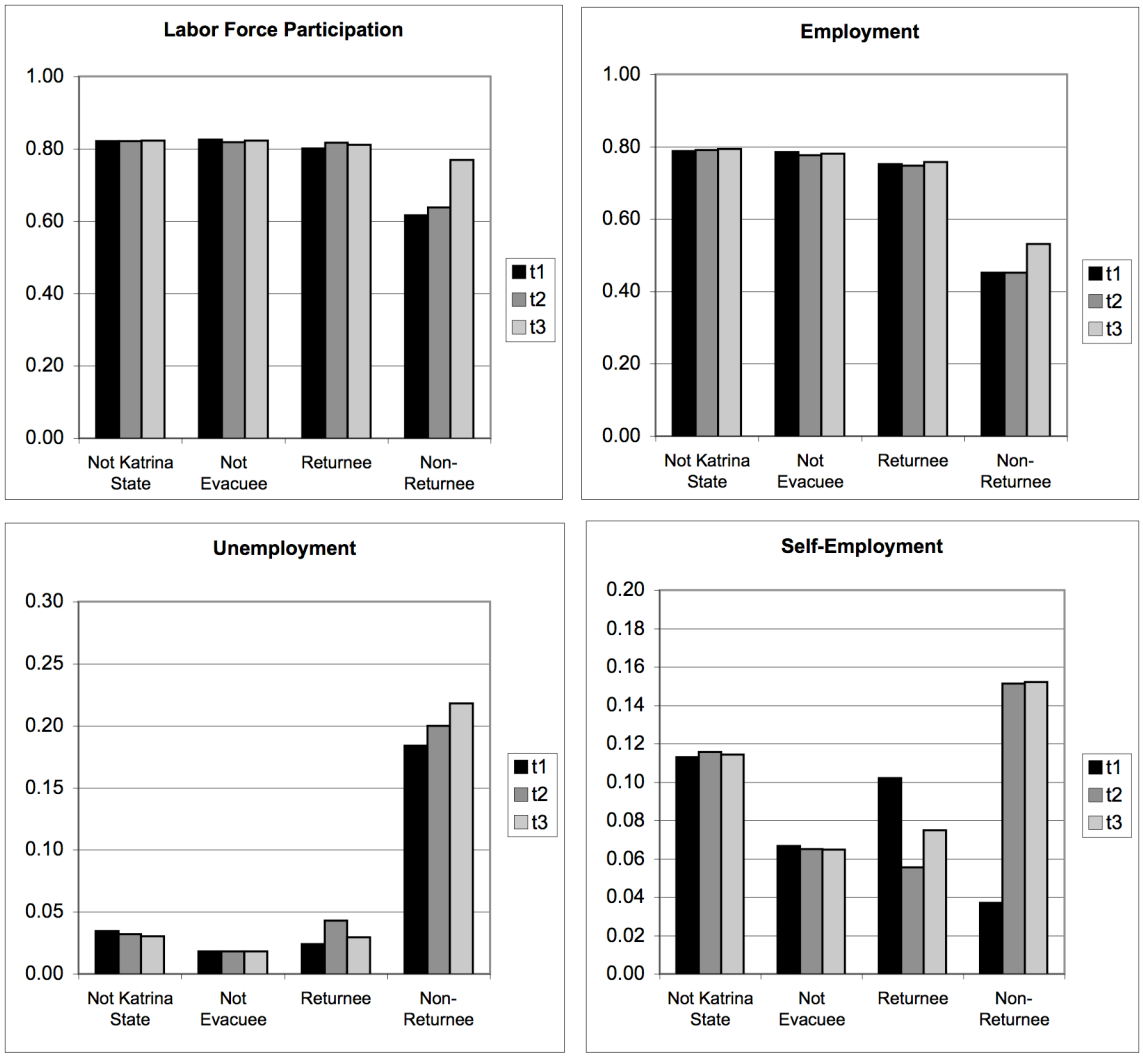
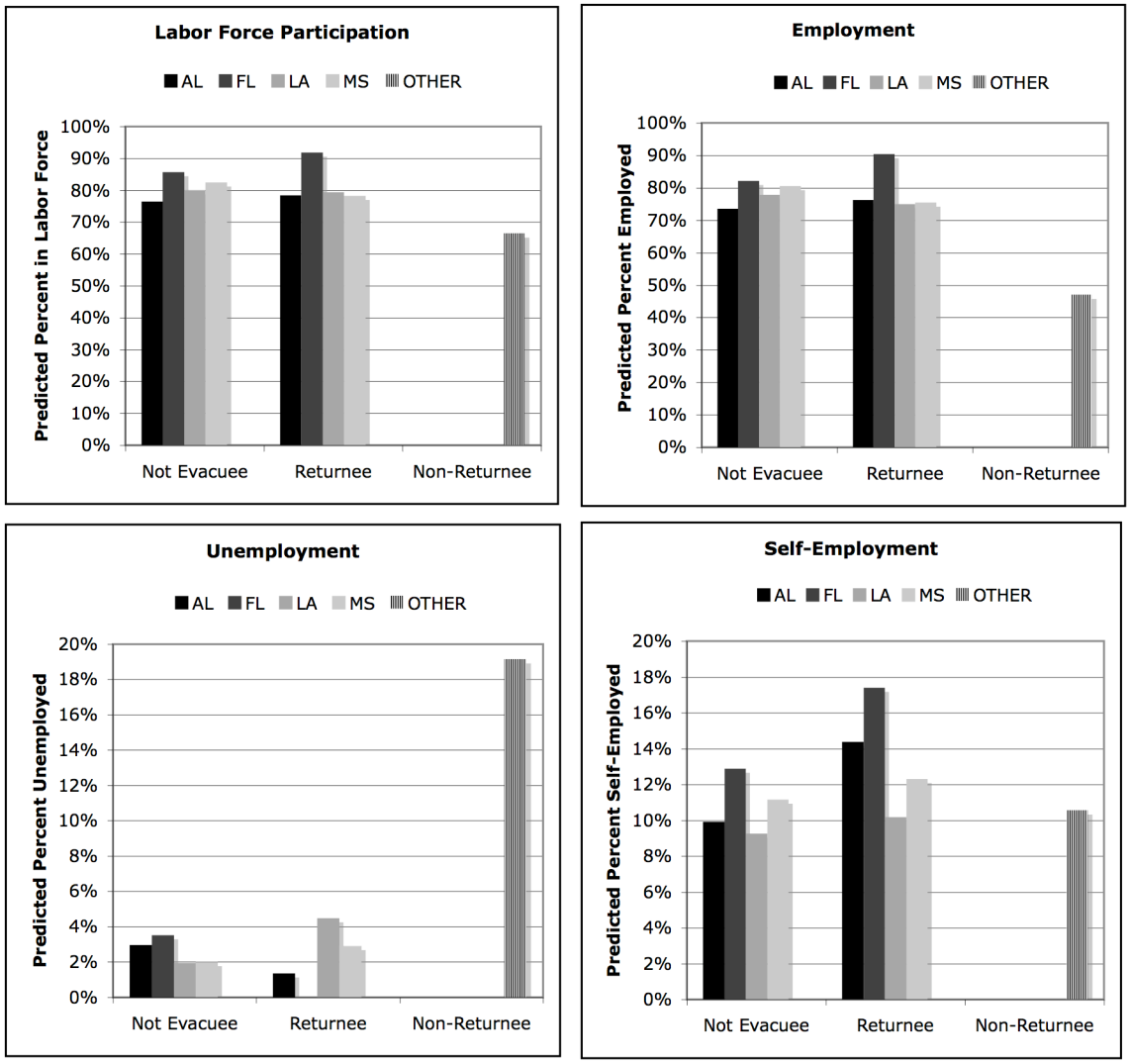
Figure 1—Predicted Probability of Labor Force Participation, Employment, Unemployment, and Self-Employment over Time by Evacuee Status



NOTE: Sample is non-institutionalized population ages 25-64. Katrina states are Alabama, Florida, Louisiana, and Mississippi. Returnees are those that currently reside in the same state they lived in before Katrina but not necessarily at the same address. T1=November 2005-February 2006, T2=March 2006-June 2006, T3=July 2006-October 2006.

SOURCE: Authors' calculations based on multivariate logistic regression model using monthly CPS data from November 2005-October 2006.

Figure 2—Predicted Probability of Labor Force Participation, Employment, Unemployment, and Self-Employment in the Four Katrina States by Evacuee Status



NOTE: Sample is non-institutionalized population ages 25-64. Katrina states are Alabama, Florida, Louisiana, and Mississippi. Returnees are those that currently reside in the same state they lived in before Katrina but not necessarily at the same address.

SOURCE: Authors' calculations based on multivariate logistic regression model using monthly CPS data from November 2005-October 2006.

Table 1—Named Hurricanes in 2005

Named Hurricane	Characteristics		
	Landfall Month	$ Damages (Billions)	Landfall State(s)
Dennis	July	2[1]	FL
Katrina	August	100[1] 81[2]	FL, LA, MS
Rita	September	10[1] 10[2]	LS, TX
Wilma	October	12[1] 21[2]	FL

[1]Preliminary estimates, as reported by the U.S. Department of Commerce, are based on insurance industry estimates that do not include uninsured losses. Insured losses are multiplied by a factor of two to arrive at the estimates shown. The estimates do not include losses insured by flood insurance coverage (FEMA).

[2]Estimates adjusted for inflation, wealth and population (Pielke et al., 2006).

SOURCE: U.S. Department of Commerce (2006) and Pielke et al. (2006).

Table 2—Respondent Classification by Evacuee Status and State
(number of observations)

Evacuee Status	Number of Observations
Non-evacuee in non-Katrina state	803,310
Non-evacuee in Katrina state	58,875
Returnee evacuee	2,128
Non-returnee evacuee	571
Total	864,884

NOTE: Sample is non-institutionalized population ages 25-64. Katrina states are Alabama, Florida, Louisiana, and Mississippi.

SOURCE: Authors' calculations using monthly CPS data from November 2005-October 2006.

Table 3—Quarterly Labor Force Participation Rate by Region/State: 2003 Q4 – 2006 Q4

Quarter	U.S.	Northeast	Midwest	Atlantic	South	West	AL	FL	LA	MS
2003 Q4	79.2	79.5	81.3	82.0	78.0	78.5	75.9	78.5	72.6	75.3
2004 Q1	79.0	79.4	81.0	80.1	77.7	78.6	74.9	78.4	73.6	76.0
2004 Q2	79.0	79.5	81.0	80.6	77.2	78.7	76.4	78.2	72.8	75.4
2004 Q3	78.6	79.2	80.8	80.5	76.6	78.3	74.6	78.1	74.7	74.6
2004 Q4	78.9	79.5	80.9	80.6	77.2	78.6	75.1	78.3	75.6	74.5
2005 Q1	78.8	79.1	80.8	79.8	77.6	78.4	74.3	78.6	73.8	75.9
2005 Q2	78.9	78.9	81.3	80.5	77.3	78.5	74.9	78.1	75.2	77.0
2005 Q3	78.7	79.3	80.7	80.5	76.7	78.3	75.4	78.4	76.0	76.6
2005 Q4	79.1	79.8	81.1	81.5	77.5	78.6	76.3	77.9	75.7	75.1
2006 Q1	78.9	79.4	80.8	80.8	77.0	78.8	73.8	78.4	74.9	74.6
2006 Q2	79.1	79.2	80.9	81.4	77.5	78.9	74.1	78.8	74.7	72.9
2006 Q3	78.9	79.5	80.8	80.6	77.2	78.4	75.2	78.5	76.5	72.2
2006 Q4	79.3	79.5	81.9	81.5	77.6	78.8	75.5	78.6	76.1	73.9

NOTE: Sample is non-institutionalized population ages 25-64. Katrina states are Alabama, Florida, Louisiana, and Mississippi. Results are weighted percentages, not seasonally adjusted. Q4=September-November, Q1= December-February, Q2=March-May, Q3=June-August.

SOURCE: Authors' calculations using monthly CPS data from September 2003-November 2006.

Table 4—Quarterly Employment Rate by Region/State: 2003 Q4 – 2006 Q4

Quarter	U.S.	Northeast	Midwest	Atlantic	South	West	AL	FL	LA	MS
2003 Q4	75.6	75.7	77.7	79.5	74.3	74.5	72.4	75.3	69.5	72.1
2004 Q1	75.2	75.4	76.9	77.2	74.1	74.4	71.2	75.6	69.6	73.0
2004 Q2	75.4	75.8	77.2	77.6	74.0	74.7	73.1	75.3	69.6	73.1
2004 Q3	75.2	75.8	77.0	77.9	73.1	74.9	71.0	75.0	71.3	71.0
2004 Q4	75.7	76.6	77.4	78.2	73.9	75.2	72.0	75.6	72.5	70.5
2005 Q1	75.3	75.6	76.9	77.3	73.9	74.8	71.2	75.9	70.1	72.0
2005 Q2	75.8	75.9	77.6	77.8	74.3	75.1	72.8	76.0	72.7	73.5
2005 Q3	75.6	76.3	77.2	78.3	73.7	75.0	73.2	76.2	71.9	72.6
2005 Q4	76.1	76.9	78.0	79.3	74.2	75.6	73.9	75.7	71.2	71.6
2006 Q1	75.7	76.1	77.2	78.6	73.9	75.5	70.9	76.3	72.0	71.0
2006 Q2	76.1	76.1	77.8	79.3	74.5	76.0	71.9	76.9	71.4	69.4
2006 Q3	76.0	76.6	77.7	78.2	74.1	75.6	73.0	76.3	74.7	68.3
2006 Q4	76.8	77.1	79.0	79.4	74.8	76.3	73.5	76.6	73.2	69.9

NOTE: Sample is non-institutionalized population ages 25-64. Katrina states are Alabama, Florida, Louisiana, and Mississippi. Results are weighted percentages, not seasonally adjusted. Q4=September-November, Q1= December-February, Q2=March-May, Q3=June-August.

SOURCE: Authors' calculations using monthly CPS data from September 2003-November 2006.

Table 5—Quarterly Unemployment Rate by Region/State: 2003 Q4 – 2006 Q4

Quarter	U.S.	Northeast	Midwest	Atlantic	South	West	AL	FL	LA	MS
2003 Q4	4.6	4.8	4.4	3.1	4.7	5.1	4.7	4.0	4.3	4.3
2004 Q1	4.9	5.1	5.1	3.7	4.7	5.4	4.9	3.6	5.5	4.0
2004 Q2	4.5	4.6	4.7	3.7	4.2	5.1	4.2	3.7	4.4	3.0
2004 Q3	4.4	4.3	4.7	3.2	4.5	4.3	4.8	4.0	4.6	4.9
2004 Q4	4.1	3.7	4.3	3.0	4.2	4.3	4.1	3.5	4.2	5.4
2005 Q1	4.5	4.3	4.9	3.0	4.7	4.6	4.2	3.4	5.0	5.1
2005 Q2	4.0	3.9	4.5	3.3	3.9	4.3	2.7	2.7	3.4	4.6
2005 Q3	3.9	3.7	4.3	2.8	3.9	4.2	2.8	2.8	5.4	5.3
2005 Q4	3.8	3.6	3.8	2.6	4.3	3.8	3.1	2.8	5.9	4.7
2006 Q1	4.1	4.2	4.5	2.7	4.1	4.1	3.9	2.6	3.9	4.7
2006 Q2	3.7	4.0	3.9	2.6	3.9	3.8	3.0	2.4	4.4	4.8
2006 Q3	3.6	3.6	3.9	3.0	4.0	3.5	2.9	2.8	2.3	5.4
2006 Q4	3.3	3.1	3.5	2.6	3.6	3.2	2.6	2.5	3.9	5.5

NOTE: Sample is non-institutionalized population ages 25-64. Katrina states are Alabama, Florida, Louisiana, and Mississippi. Results are weighted percentages, not seasonally adjusted. Q4=September-November, Q1= December-February, Q2=March-May, Q3=June-August.

SOURCE: Authors' calculations using monthly CPS data from September 2003-November 2006.

Table 6—Quarterly Self-Employment Rate by Region/State: 2003 Q4 – 2006 Q4

Quarter	U.S.	Northeast	Midwest	Atlantic	South	West	AL	FL	LA	MS
2003 Q4	12.0	10.9	11.3	10.3	12.0	13.8	10.6	12.9	12.0	12.6
2004 Q1	11.9	10.7	11.2	9.5	12.0	14.0	9.3	12.5	13.8	10.0
2004 Q2	11.9	11.0	11.1	9.7	11.7	13.5	10.8	14.3	11.2	10.7
2004 Q3	12.3	11.4	11.5	11.0	11.7	14.3	10.5	14.8	11.7	12.6
2004 Q4	12.0	11.2	11.1	10.4	11.5	14.0	10.6	13.6	12.6	9.9
2005 Q1	11.8	10.6	11.4	9.6	11.3	14.1	8.2	12.9	11.9	11.6
2005 Q2	12.1	11.2	12.0	10.2	11.2	13.9	9.3	14.3	9.8	13.0
2005 Q3	11.8	10.6	11.3	10.0	11.3	14.2	9.4	13.1	9.1	11.2
2005 Q4	11.6	10.2	10.6	9.9	11.7	13.8	9.4	13.5	11.0	9.5
2006 Q1	11.9	10.8	11.0	10.4	11.3	14.1	9.3	14.2	11.5	11.2
2006 Q2	11.9	10.7	11.6	10.7	11.1	14.1	9.8	13.6	9.2	10.8
2006 Q3	11.9	10.6	11.2	10.1	11.2	14.9	10.3	12.2	11.7	13.1
2006 Q4	11.8	11.0	10.8	10.8	10.9	14.1	9.1	12.7	13.1	13.4

NOTE: Sample is non-institutionalized population ages 25-64. Katrina states are Alabama, Florida, Louisiana, and Mississippi. Results are weighted percentages, not seasonally adjusted. Q4=September-November, Q1= December-February, Q2=March-May, Q3=June-August.

SOURCE: Authors' calculations using monthly CPS data from September 2003-November 2006.

Table 7—Evacuees Returning to Pre-Katrina State
(percentage)

Evacuee Status	11/05 – 4/06	05/06 – 10/06
Returnees	72.8	83.8
Non-returnees	27.2	16.2
Total	100.0	100.0
Unweighted N	1,226	1,473

NOTE: Sample is non-institutionalized population ages 25-64. Katrina states are Alabama, Florida, Louisiana, and Mississippi. Results are weighted percentages, not seasonally adjusted. Returnees are those that currently reside in the same state they lived in before Katrina but not necessarily at the same address.

SOURCE: Authors' calculations using monthly CPS data from November 2005-October 2006.

Table 8—Labor Force Participation and Employment Rates by Evacuee Status
(percentage)

	Labor Force Participation			Employment		
	6 months	6 months	All 12 mos.	6 months	6 months	All 12 mos.
	11/05 – 04/06	05/06 – 10/06	11/05 – 10/06	11/05 – 04/06	05/06 – 10/06	11/05 – 10/06
U.S. total	79.0	79.0	79.0	75.9	76.3	76.1
Non-evacuee: Other state	79.2	79.3	79.2	76.1	76.5	76.3
Non-evacuee: Katrina state	77.1	77.2	77.2	74.7	75.1	74.9
All evacuees	67.6	73.8	70.9	59.5	66.4	63.2
Returnees	72.5	75.4	74.1	68.0	71.5	70.0
Non-returnees	54.0	66.0	59.0	35.8	41.0	38.0

NOTE: Sample is non-institutionalized population ages 25-64. Katrina states are Alabama, Florida, Louisiana, and Mississippi. Results are weighted percentages, not seasonally adjusted. Returnees are those that currently reside in the same state they lived in before Katrina but not necessarily at the same address.

SOURCE: Authors' calculations using monthly CPS data from November 2005-October 2006.

Table 9—Unemployment and Self-Employment Rates by Evacuee Status
(percentage)

	Unemployment			Self-Employment		
	6 months	6 months	All 12 mos.	6 months	6 months	All 12 mos.
	11/05 – 04/06	05/06 – 10/06	11/05 – 10/06	11/05 – 04/06	05/06 – 10/06	11/05 – 10/06
U.S. total	4.0	3.5	3.7	11.9	11.9	11.9
Non-evacuee: Other state	4.0	3.5	3.8	11.8	11.9	11.8
Non-evacuee: Katrina state	3.0	2.8	2.9	12.5	12.0	12.3
All evacuees	12.0	10.0	10.9	13.3	12.3	12.7
Returnees	6.2	5.1	5.6	15.0	12.1	13.3
Non-returnees	33.7	38.0	35.7	4.5	13.6	8.6

NOTE: Sample is non-institutionalized population ages 25-64. Katrina states are Alabama, Florida, Louisiana, and Mississippi. Results are weighted percentages, not seasonally adjusted. Returnees are those that currently reside in the same state they lived in before Katrina but not necessarily at the same address.

SOURCE: Authors' calculations using monthly CPS data from November 2005-October 2006.

Table 10—Characteristics by Evacuee Status, State and Time

	Non-evacuee: Other state		Non-evacuee: Katrina state		Returnee		Non-returnee	
	11/05 – 04/06	05/06 – 10/06	11/05 – 10/06	05/06 – 10/06	11/05 – 04/06	05/06 – 10/06	11/05 – 10/06	05/06- 10/06
Age	43.5	43.6	44.0	44.2	44.5	44.0	40.6	43.3
Male (%)	49.2	49.2	48.5	48.4	44.5	47.4	38.2	44.8
Married (%)	64.8	64.3	62.3	61.0	61.7	59.2	43.3	51.7
College or more (%)	57.7	57.8	53.8	53.7	56.7	50.1	48.3	46.7
Hispanic (%)	13.5	13.7	14.2	14.4	5.7	3.5	4.9	4.4
Black (%)	10.5	10.6	19.1	19.4	24.9	21.7	62.7	65.9
White (%)	69.0	68.8	63.8	63.4	66.5	68.6	31.6	27.3

NOTE: Sample is non-institutionalized population ages 25-64. Katrina states are Alabama, Florida, Louisiana, and Mississippi. Results are weighted percentages, not seasonally adjusted. Returnees are those that currently reside in the same state they lived in before Katrina but not necessarily at the same address.

SOURCE: Authors' calculations using monthly CPS data from November 2005-October 2006.

Appendix

Table A1—Logistic Regression Model Coefficients for Four Labor Market Outcomes, Model with Evacuee Status by Time Interactions

Covariate	Labor Force Participation	Employment	Unemployment	Self-Employment
Intercept	-4.712***	-4.236***	-5.829***	5.166***
	(0.521)	(0.496)	(1.112)	(0.792)
Age	0.224***	0.214***	-0.042***	0.072***
	(0.002)	(0.002)	(0.005)	(0.003)
Age squared / 100	-0.293***	-0.275***	0.038***	-0.048***
	(0.002)	(0.002)	(0.006)	(0.004)
Male	0.943***	0.825***	-0.044***	0.562***
	(0.006)	(0.006)	(0.013)	(0.008)
Married	0.017***	0.124***	-0.633***	0.283***
	(0.006)	(0.006)	(0.014)	(0.009)
Education is college or more	0.638***	0.649***	-0.569***	0.063***
	(0.006)	(0.006)	(0.014)	(0.008)
Hispanic	-0.110***	-0.135***	0.269***	-0.563***
	(0.011)	(0.010)	(0.025)	(0.017)
Black	-0.222***	-0.319***	0.668***	-0.768***
	(0.010)	(0.009)	(0.020)	(0.019)
Other race	-0.354***	-0.368***	0.384***	-0.287***
	(0.012)	(0.012)	(0.029)	(0.018)
Naturalized citizen	0.242***	0.261***	-0.343***	0.215***
	(0.014)	(0.013)	(0.035)	(0.018)
Not a citizen	-0.209***	-0.177***	-0.049*	0.044**
	(0.012)	(0.011)	(0.027)	(0.019)
Unemployment rate	-0.094***	-0.115***	0.199***	0.019
	(0.005)	(0.005)	(0.011)	(0.007)
Currently in Louisiana	-0.127	0.006	0.187	0.413
	(0.279)	(0.267)	(0.389)	(0.556)
Currently in Mississippi	0.008	0.150	0.135	0.647
	(0.279)	(0.267)	(0.388)	(0.555)
Currently in Alabama	-0.341	-0.233	0.543	0.501
	(0.278)	(0.266)	(0.383)	(0.554)
Currently in Florida	0.277	0.278	0.719*	0.793
	(0.279)	(0.267)	(0.386)	(0.555)

[continued]

Table A1—Logistic Regression Model Coefficients for Four Labor Market Outcomes, Model with Evacuee Status by Time Interactions, Continued

Covariate	Labor Force Participation	Employment	Unemployment	Self-Employment
Non-evacuee non-Katrina state, period 1	-0.033	0.023	0.670*	0.578
	(0.278)	(0.266)	(0.384)	(0.554)
Non-evacuee non-Katrina state, period 2	-0.031	0.037	0.600	0.605
	(0.278)	(0.266)	(0.384)	(0.554)
Non-evacuee non-Katrina state, period 3	-0.026	0.050	0.540	0.592
	(0.278)	(0.266)	(0.384)	(0.554)
Non-evacuee Katrina state, period 2	-0.049	-0.045*	0.020	-0.029
	(0.026)	(0.025)	(0.069)	(0.036)
Non-evacuee Katrina state, period 3	-0.027	-0.024	0.020	-0.032
	(0.026)	(0.025)	(0.068)	(0.036)
Returnee, period 1	-0.166*	-0.188**	0.297	0.465***
	(0.099)	(0.095)	(0.223)	(0.141)
Returnee, period 2	-0.063	-0.204*	0.897***	-0.195
	(0.093)	(0.088)	(0.186)	(0.152)
Returnee, period 3	-0.099	-0.154*	0.508**	0.125
	(0.090)	(0.087)	(0.212)	(0.134)
Non-returnee, period 1	-1.086***	-1.488***	2.516***	-0.620
	(0.274)	(0.266)	(0.395)	(0.691)
Non-returnee, period 2	-0.989***	-1.489***	2.618***	0.914*
	(0.301)	(0.289)	(0.408)	(0.556)
Non-returnee, period 3	-0.354	-1.166***	2.728***	0.920
	(0.303)	(0.286)	(0.397)	(0.573)

NOTE: Standard errors in parentheses. Sample is non-institutionalized population ages 25-64. Returnees are those that currently reside in the same state they lived in before Katrina but not necessarily at the same address. Statistically significant at the ***1 percent, **5 percent, or *10 percent level. Models also include controls for share of state payroll in 18 sectors.

SOURCE: Authors' calculations using monthly CPS data from November 2005-October 2006.

Table A2—Logistic Regression Model Coefficients for Four Labor Market Outcomes, Model with Evacuee Status by State Interactions

Covariate	Labor Force Participation	Employment	Unemployment	Self-Employment
Intercept	-4.850***	-4.346***	-4.930***	5.950***
	(0.442)	(0.420)	(1.047)	(0.569)
Age	0.224***	0.214***	-0.042***	0.072***
	(0.002)	(0.002)	(0.005)	(0.003)
Age squared / 100	-0.293***	-0.275***	0.038***	-0.048***
	(0.003)	(0.002)	(0.006)	(0.004)
Male	0.943***	0.825***	-0.044***	0.562***
	(0.006)	(0.006)	(0.013)	(0.008)
Married	0.017***	0.124***	-0.634***	0.283***
	(0.006)	(0.006)	(0.014)	(0.009)
Education is college or more	0.638***	0.649***	-0.571***	0.063***
	(0.006)	(0.006)	(0.014)	(0.008)
Hispanic	-0.110***	-0.135***	0.268***	-0.563***
	(0.011)	(0.010)	(0.025)	(0.017)
Black	-0.222***	-0.319***	0.667***	-0.768***
	(0.010)	(0.009)	(0.020)	(0.019)
Other race	-0.354***	-0.369***	0.385***	-0.286***
	(0.012)	(0.012)	(0.029)	(0.018)
Naturalized citizen	0.242***	0.261***	-0.344***	0.215***
	(0.014)	(0.013)	(0.035)	(0.018)
Not a citizen	-0.209***	-0.177***	-0.049*	0.043**
	(0.012)	(0.011)	(0.027)	(0.019)
Unemployment rate	-0.096***	-0.118***	0.204***	0.024***
	(0.005)	(0.005)	(0.011)	(0.007)
Non-evacuee, Alabama	-0.341***	-0.297***	-0.045	-0.109**
	(0.028)	(0.027)	(0.077)	(0.045)
Non-evacuee, Florida	0.279***	0.214***	0.136*	0.185***
	(0.029)	(0.027)	(0.071)	(0.038)
Non-evacuee, Louisiana	-0.132***	-0.055*	-0.468***	-0.188***
	(0.033)	(0.032)	(0.085)	(0.051)
Non-evacuee, Mississippi	0.034	0.108***	-0.444***	0.021
	(0.034)	(0.033)	(0.079)	(0.051)
Returnee, Alabama	-0.230	-0.146	-0.835	0.313
	(0.231)	(0.227)	(1.008)	(0.306)
Returnee, Florida	0.914***	0.932***	-7.741	0.539
	(0.327)	(0.324)	(40.537)	(0.342)
Returnee, Louisiana	-0.165**	-0.215***	0.384***	-0.083
	(0.069)	(0.065)	(0.141)	(0.104)
Returnee, Mississippi	-0.239***	-0.194**	-0.060	0.133
	(0.093)	(0.090)	(0.206)	(0.148)

[continued]

Table A2—Logistic Regression Model Coefficients for Four Labor Market Outcomes, Model with Evacuee Status by State Interactions, Continued

Covariate	Labor Force Participation	Employment	Unemployment	Self-Employment
Non-returnee, Alabama	-0.938**	-1.912***	3.317***	-7.414
	(0.374)	(0.352)	(0.425)	(28.381)
Non-returnee, Florida	-1.054**	-1.321***	2.047***	-0.108
	(0.439)	(0.432)	(0.785)	(1.056)
Non-returnee, Louisiana	-2.162*	-1.923	-9.140	-8.164
	(1.234)	(1.201)	(353.500)	(118.100)
Non-returnee, Mississippi	0.150	0.429	-8.444	2.701***
	(0.813)	(0.818)	(110.300)	(0.863)
Non-returnee, all other states	-0.837***	-1.434***	2.003***	-0.041
	(0.098)	(0.097)	(0.130)	(0.265)

NOTE: Standard errors in parentheses. Sample is non-institutionalized population ages 25-64. Returnees are those that currently reside in the same state they lived in before Katrina but not necessarily at the same address. Statistically significant at the ***1 percent, **5 percent, or *10 percent level. Models also include controls for month of year and for share of state payroll in 18 sectors.

SOURCE: Authors' calculations using monthly CPS data from November 2005-October 2006.