MEASURING THE LABOR MARKET IMPACTS OF HURRICANE KATRINA MIGRATION: EVIDENCE FROM HOUSTON, TX

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Abstract: Hurricane Katrina made landfall on August 29, 2005, precipitating a mass out-migration of evacuees from the U.S. Gulf Coast region. A substantial number of evacuees fled to the Houston, TX metropolitan area, where the population rose by 3.8 percent. Using data from the September, 2000-August, 2006 Current Population Surveys, I compare wages and employment among non-evacuees in Houston and other metro areas, before and after the storm. I find that Hurricane Katrina migration was associated with a 1.8 percent drop in wages and a 0.5 percentage point drop in the probability of being employed among native Houstonians, where both estimates are statistically significant at conventional levels. In addition, women, more-educated individuals, and non-minorities seem to be more adversely affected by Katrina migration than men, less-educated individuals, and minorities, respectively. However, these differences can be accounted for by taking into consideration the industrial or occupational distribution of evacuees and non-evacuees in the Houston metro area. My main findings suggest that Hurricane Katrina migration had a modest negative effect on labor market outcomes for native Houstonians.

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I. Introduction

Hurricane Katrina made landfall on the U.S. Gulf Coast as a category three storm on the morning of August 29, 2005. With winds reaching speeds of 130 miles per hour and storm surges as high as 27 feet, Katrina caused unprecedented damage along the coasts of Alabama, Mississippi, and Louisiana. The vast devastation of the Gulf Coast precipitated a mass out-migration of residents. While no official data are available on the number, location, or characteristics of evacuees, unofficial estimates suggest that 100,000 to 150,000 evacuees moved to the Houston, TX metropolitan area. This represents roughly a three to four percent increase in the metro area's population (DeParle 2006; Campo-Flores 2005). And, as some anecdotal evidence suggests, many evacuees expect to stay in the Houston metro area indefinitely (Romero 2005; Saulny 2005).

It is also known that Katrina disproportionately affected minorities and the disadvantaged. Gabe et al. (2005) show that among evacuees who experienced significant structural, flooding, or water damage in their place of residence, approximately one-half are black. The pre-Katrina poverty rate among these most acutely affected evacuees was nearly double the national rate. In addition, their educational attainment and pre-storm labor force participation rates lagged behind national averages, while their pre-storm unemployment rates outpaced the national rate. Yet, these statistics should come as no surprise since Katrina struck an area that is considered to be one of the most disadvantaged in the United States.

In this paper, I examine the effect of the migration of Katrina evacuees on the Houston metropolitan .labor market. More specifically, I use Current Population Survey data from September, 2000 to August, 2006 to consider how wages and employment among native Houstonians changed with the addition of Katrina evacuees to the labor market. To quantify the

effect of Hurricane Katrina migration, I compare wages and employment before and after the storm among non-evacuees residing in Houston and in other metro areas that were not affected by the storm. In addition, I allow the effects to vary by gender, education, and race and ethnicity.

The existing studies of the effect of immigration on the labor market outcomes among native-born workers provide a good point of comparison for this analysis. Economic theory suggests that the arrival of new workers to a labor market may result in lower wages and employment among native-born workers, as a result of increased competition for jobs. The extent to which labor market outcomes worsen among native-born workers depends on how comparable the newly-arrived workers and the native-born workers are. In the present context, how much the arrival of Hurricane Katrina evacuees affects native Houstonians is a function of how similar the evacuees are to native Houstonian workers on the dimensions that are usually related to wages and employment, such as age, gender, education, race, and ethnicity.

II. Theoretical Underpinnings and Previous Literature

I consider a simple model of the supply and demand for labor in a local labor market. I assume that native Houstonians and evacuees are substitutes in production and that the labor supply and demand curves are imperfectly elastic. Assuming that some of the evacuees are looking for employment, the arrival of evacuees into Houston's local labor market will cause an increase in the supply of labor.[1] This increase in the labor supply will increase competition for jobs, leading to a fall in wages and the probability of being employed among native Houstonians, as some native Houstonians are displaced by evacuees in the labor market. The size of the drop

[1] The migration of evacuees into the Houston metro area may also cause an outward shift in the labor demand curve through increased demand for locally-consumed and locally-produced goods and services. However, as is often done in short-run studies, I assume that the shift in labor demand is of a much smaller magnitude than the shift in labor supply, and therefore I do not take it into consideration.

in wages and employment among native Houstonians is an empirical question, one that will be addressed in the remainder of this paper.

Parallels may be drawn between this chapter and the literature on the labor market effects of immigration (see Card (2005) and Friedberg and Hunt (1995) for reviews of this literature). In a study similar to this one, Kugler and Yuksel (2006) examine the labor market effects of immigration due to Hurricane Mitch, which made landfall in Central America in October, 1998, and resulted in an influx of Central American immigrants to the U.S. border states. Using 1970-2000 Census data, Kugler and Yuksel find negative employment effects among low-educated native workers and positive wage effects among highly educated workers.

More generally, there are numerous studies which examine the impact of an unexpected increase in the local labor supply due to immigration. The unexpected nature of the increase in the labor supply helps to rule out sources of bias in the estimates, such as would arise if immigrants systematically move to areas that have an excess of job openings or that are experiencing high rates of wage growth. There are several examples of such studies. Card (1990) estimates the impact of the Mariel Boatlift in 1980, or the immigration of Cubans to Miami, FL that followed Castro's opening of the Port of Mariel. Carrington and deLima (1996) study the effect of the immigration of Portuguese repatriates from Angola and Mozambique, after Portugal lost its African colonies in the 1970s, and Hunt (1995) studies the 1962 return of French repatriates from Algeria. Lastly, Friedberg (2001) examines the effect of the Soviet Union lifting emigration restrictions in the early 1990s on the Israeli labor market. Collectively, these studies find small and insignificant effects of immigration on labor market outcomes among natives, concluding that immigration puts little, if any, downward pressure on native-born wages and employment.

Other studies estimate the effect of immigration on local labor markets using variation across geography and across time in the immigrant share of the labor force, and these studies produce conflicting results. For example, Card (2001; 2005) uses multiple years of cross-sectional data and finds that local labor market outcomes for unskilled natives are only marginally affected by immigration. Card finds that a three percent immigrant-induced increase in the local labor supply results at most in a 1.5 percent drop in wages and one percentage point drop in the employment rate among low-skilled natives. However, Borjas (2003; 2006), using multiple years of the Census, shows that the wage effect of immigration is larger than Card's estimate if the labor market is defined at the national level instead of at the local level. Borjas argues that this is because natives are far more likely to migrate between localities than between countries in response to increased labor market competition due to immigration, and that the estimates at the local level are biased downward because of this. Indeed, Borjas finds that a 10 percent immigrant-induced increase in the labor supply reduces wages among native males by as much as four percent.[2] Still, Ottaviano and Perri (2006) argue that by ignoring the possibility of an increase in capital investment in response to the labor increase, Borjas overstates the size of the effect. In addition, Borjas assumes that native and immigrant workers are perfectly interchangeable in the labor market. If this is not the case, Borjas' estimate will overstate the true effect of immigration on native wages.

Taken as a whole, the immigration literature implies that the effect of immigration on native wages and employment is small, if not statistically indistinguishable from zero. Therefore

[2] Borjas' results seem consistent with Card's, but they differ since they apply to distinct populations. Indeed, Card estimates the impact of immigration on wages among *low-skilled* natives, whereas Borjas estimates the impact of immigration on wages among *all male* natives. As Card (2005) shows, immigrants are disproportionately low-educated and therefore the labor market competition between natives and immigrants is most severe among the low-educated, low-skilled population. Thus, Card's estimated wage effect among low-skilled natives would be an upper bound on his estimate of the effect among all male natives.

I expect that the arrival of Katrina evacuees to the Houston metro area labor market will have at most modest wage and employment effects among native Houstonians.

III. Data

I use data from the outgoing rotation groups from the September, 2000-August, 2006 Basic Monthly Current Population Survey (CPS), which is a nationally representative sample of approximately 60,000 households per month.[3] The CPS collects information on demographics and employment (for individuals 15 and older), and, beginning in November, 2005, three additional questions relating to Hurricane Katrina were added to the Basic Monthly Survey. First, respondents in all households are asked: "Is there anyone living or staying here who had to evacuate, even temporarily, where he or she was living in August because of Hurricane Katrina?" If the respondent answers "yes," then evacuees are identified from the household roster: "Did… have to evacuate, even temporarily, where she was living in August because of Hurricane Katrina?" Finally, evacuees' pre-Katrina residences are recorded: "In August, prior to the Hurricane warning, where was… living?"

Using these new survey questions, I identify and characterize Katrina evacuees appearing in the CPS sample from November, 2005 to August, 2006 across the United States as well as within specific metropolitan areas. Due to the design of the CPS, respondents may frequently appear in consecutive monthly surveys during that period. In order to prevent over-counting respondents in Tables 1-3, I exclude repeat observations in the following way. First, since wage

[3] Before in July, 2001, the CPS sampled roughly 50,000 households. The CPS sampling frame uses a specific rotation scheme which follows a 4-8-4 pattern. When a household enters the survey, it is in the sample for four consecutive months, corresponding to the household's first through fourth months in the sample. Then, the household is out of the sample for eight consecutive months. Finally, the household returns to the sample for four consecutive months, corresponding to the household's fifth through eighth months in the sample, before being retired from the survey. Households in their fourth and eighth months in the sample are therefore referred to as the ''outgoing rotation groups" (U.S. Bureau of the Census, 2002).

data are gathered only in the outgoing rotation groups, for all respondents who appear in an outgoing rotation group during the period of interest, I retain their information from their fourth or eighth month in the sample and discard all repeat observations from other months.[4] Next, for respondents who do not appear in an outgoing rotation group during the sample period, I retain their information from the first month in which they appear in the sample.

Table 1 shows the estimated number of evacuees and their share of the total population by core-based statistical area (CBSA), among CBSAs in which at least one evacuee appears in the CPS. For the purposes of this paper, a CBSA can be thought of as a metropolitan area.[5] As seen in Table 1, roughly 75,000 of the more than 540,000 evacuees identified in the CPS are in the Houston metro area (or, "Houston-Baytown-Sugar Land, TX"), with approximately 21,000 evacuees appearing in the city of Houston alone.[6] These figures represent a 3.8 and 2.9 percent shock to the Houston metro area and city populations, respectively. Restricting attention to the working-age population[7], which is a good proxy for labor supply, reveals a labor supply shock of similar magnitude.

[4] Each CPS respondent is part of an outgoing rotation group twice while they participate in the survey, once during their fourth month in the sample and again during their eighth month in the sample. However, since a respondent's fourth and eighth months in the sample are separated by twelve calendar months and since the sample period for Tables 1-3 is only ten months long (November, 2005-August, 2006), it is impossible for a respondent to appear in an outgoing rotation group twice during that period.

[5] The term CBSA refers collectively to metropolitan and micropolitan statistical areas, each of which consist of a substantial population nucleus plus the adjacent communities with which that nucleus has a high degree of economic and social integration. Census 2000 standards require that each CBSA must contain at least one urban area with a population of at least 10,000. Each metropolitan statistical area must have at least one urbanized area with a population of at least 50,000, while each micropolitan statistical area must have at least one urban cluster with a population of least 10,000 but no more than 50,000 (U.S. Bureau of the Census, 2006b).

[6] The estimates in Table 1 are likely to be an undercount of the number of evacuees in the Houston metro area and across the United States as a whole. Indeed, estimates from other sources range from 100,000 to 150,000 evacuees in the Houston metro area and over 700,000 evacuees in all. Since the sample unit for the CPS is a house, apartment, or other residential unit, evacuees who sought refuge in shelters, hotels, or other nonresidential units are not part of the CPS sampling frame and therefore would not be included in the sample. However, evacuees who were living in CPS sample households before the storm and returned to those households by the time the survey was conducted are included in the sample. In addition, it is also possible that some evacuees who did not live in CPS sample households before the storm moved into residences that were part of the CPS sampling frame and therefore would have been included in the sample (U.S. Bureau of the Census, 2006a).

[7] Working-age is defined as age 16 to 64.

However, the Houston metro area is certainly not the only metro area for which the CPS identifies a great number of evacuees. It should come as no surprise that the New Orleans metro area itself is home to the most evacuees, more than 170,000 as identified in my sample, since many evacuees had already returned to their homes by the time of the survey. In addition, other metro areas also experienced large influxes of evacuees (i.e., Daphne-Fairhope and Mobile in Alabama, Naples-Marco Island and Pensacola-Ferry Pass-Brent in Florida, Baton Rouge and Lake Charles in Louisiana, and Gulfport-Biloxi in Mississippi). But, these metro areas either were in the direct path of the storm (i.e., Baton Rouge, Gulfport-Biloxi, and Mobile) or have very small sample sizes in the CPS (i.e., Daphne-Fairhope, Lake Charles, Naples-Marco Island, and Pensacola-Ferry Pass-Brent). Therefore, I chose to focus on the Houston metro area for this analysis since, among metro areas not in the storm's path, the Houston metro area both received a substantial number of evacuees and has a relatively large sample size in the CPS.

Tables 2 and 3 compare evacuees' and non-evacuees' characteristics across the United States and within the Houston metro area, respectively.[8] Both tables show that evacuees are significantly more likely to be young, less educated, and unmarried compared with non-evacuees. The tables also show that evacuees are significantly more likely to be black, non-Hispanic or non-white, non-Hispanic and significantly less likely to be Hispanic compared to non-evacuees. This characterization of the evacuees based on CPS data is in line with the conclusions reached by Gabe et al. (2005).

Tables 2 and 3 also compare labor market outcomes among evacuees and non-evacuees who participated in the labor market in the post-Katrina period. Acknowledging the obvious issue of sample selection, (i.e., individuals who participate in the labor market or who are

[8] Throughout this paper, I will refer to people who lived in Houston before and after Hurricane Katrina, and who therefore aren't Katrina evacuees, as non-evacuees in the Houston metro area or as native Houstonians interchangeably.

Katrina evacuees are not a random sub-sample of the overall population), there are, nonetheless, some noteworthy differences. Evacuees, both across the U.S. and in the Houston metro area, are significantly less likely to be employed or in the labor force after Katrina than non-evacuees, and there is some evidence that evacuees across the country are earning significantly lower wages than non-evacuees.

In addition, there are also differences in the occupational and industrial distribution of evacuees and non-evacuees. In particular, Table 2 shows that, compared to employed non-evacuees, a significantly larger share of employed evacuees across the U.S. is employed in clerical and less-skilled services occupations and a significantly smaller share is employed in professional or technical occupations. Moreover, employed evacuees nationally are significantly more likely to be in natural resources, mining, and construction; retail trade; and leisure and hospitality industries and less likely to be in non-durable goods manufacturing industries, compared to employed non-evacuees. Since sample sizes are considerably smaller in the Houston metro area, fewer significant differences arise when comparing the occupational and industrial distributions of employed evacuees and non-evacuees. Nevertheless, evacuees in the Houston metro area are significantly less likely to be in craft or trade occupations and significantly more likely to be in educational and health services industries than non-evacuees, the latter of which is congruent with the prominence of service industries in the pre-Katrina New Orleans economy relative to the Houston economy (Appleseed, 2006; U.S. Bureau of the Census, 2007).

IV. Methodology

I use a difference-in-differences framework to compare wages and employment among non-evacuees along two dimensions: time and geography. For the first dimension, time, I compare outcomes at the individual level for five years before the storm and one year after the storm. However, not all metro areas that are sampled by the CPS appear in the sample consistently for five years prior to and one year after Katrina. Therefore, I exclude individuals from metro areas that do not appear in the CPS for at least one year prior to and one year after the storm. As such, the number of metro areas eligible for inclusion in the analysis drops by approximately one-third, from 362 to 222.[9] Since Katrina made landfall nearly two weeks after the August, 2005 CPS survey reference week, September, 2000-August, 2005 constitutes the pre-Katrina period while September, 2005-August, 2006 constitutes the post-Katrina period (U.S. Bureau of the Census, 2006a).

For the second dimension, geography, I compare outcomes at the individual level in the Houston metro area and other metro areas that were not impacted by Katrina, either directly or indirectly. This comparison differences out the potential effect of concurrent labor market changes unrelated to Hurricane Katrina that may have occurred in the Houston and other metro areas. A metro area is considered to have been directly impacted by Katrina if it was in the direct path of the storm. Areas that experienced flooding or catastrophic, extensive, or moderate structural damage are considered to be directly impacted, while areas that experienced only limited structural damage or soil saturation are not, as assessed by the Federal Emergency Management Agency (Gabe et al., 2005). The acutely impacted counties and parishes correspond to five metro areas appearing in the data (namely, Mobile, AL; Baton Rouge and New Orleans-

[9] Since the CPS selects metro areas in order to produce a nationally representative sample of the U.S. population age 16 and older with respect to demographic and labor force characteristics, dropping these metro areas should not bias my results.

Metairie-Kenner, LA; and Gulfport-Biloxi and Jackson, MS), and I exclude observations in those metro areas from the analysis.

A metro area is considered to have been indirectly affected by Katrina if it experienced greater than a one percent gross population increase due to the migration of evacuees, as measured by the CPS.[10] Thus, I exclude observations from an additional seven metro areas (namely, Huntsville, AL; Fort Walton Beach-Crestview-Destin, Naples-Marco Island, and Pensacola-Ferry Pass-Brent, FL; and Lafayette, Lake Charles, and Monroe, LA) on the basis of the size of the gross population increase due to Hurricane Katrina migration. My final sample is comprised of non-evacuees who live in Houston and 210 other comparable metro areas that were not impacted by Katrina.[11]

Using the sample of non-evacuees in the Houston and other comparison metro areas, I estimate the following regression specification, clustering on the metro area to account for within-metro-area correlation in the error term:

$$outcome_{imt} = \beta_1 Houston_m + \beta_2 post_t + \beta_3 Houston_m * post_t + \sum_j \delta_j X_{j,i} + \sum_m \gamma_m M_m + \sum_t \gamma_t T_t + \varepsilon_{imt}$$

where $outcome_{imt}$ is log wages or an employment indicator for individual *i*, in metro area *m*, and month/year *t*; $Houston_m$ is a dummy that takes a value of one for observations in the Houston metro area and otherwise; $post_t$ is a dummy that takes a value of one after August, 2005, and zero otherwise; the $X_{j,i}$'s are individual-level covariates (age, age squared, sex, marital status, the interaction of sex and marital status, education, race, ethnicity, industry, and occupation); and the M_m's and T_t's are metro area and month/year fixed effects. The wage regression is estimated

[10] The results presented in the next section are robust to small perturbations in this threshold.

[11] In the results presented below, the estimated effects change only slightly when the group of comparison metro areas is limited to those in Texas' neighboring states (Arkansas, New Mexico, and Oklahoma; Louisiana is excluded for obvious reasons) or to all other metro areas in the state of Texas that were not impacted by Katrina, However, the standard errors increase substantially due to the reduction in sample size.

using weighted least squares and the employment regression is estimated as a weighted probit, where the weights are the CPS final weight.[12] The coefficient of interest, β_3, identifies the effect of Hurricane Katrina migration on wages or on the probability of being employed among non-evacuees in the Houston metro area in the post-Katrina period relative to those outcomes for non-evacuees in the comparison metro areas.

V. Results

Table 4 shows the difference-in-differences estimates for the wage and employment regressions.[13] As implied by my simple model of the labor market and by the findings from the immigration literature, I find that Hurricane Katrina migration is associated with a 1.8 percent decline in wages and 0.5 percentage point decline in the probability of being employed among native Houstonians, and both estimates are statistically significant at conventional levels.

In Tables 5, 6, and 7, I repeat the difference-in-differences analysis separately by gender, level of education, and race and ethnicity. In Table 5, I find that wage and employment effects are relatively small for male non-evacuees, who experience an insignificant 0.7 percent drop in wages and a significant 0.3 percentage point drop in the probability of being employed. In contrast, female non-evacuees were more adversely affected, with wages dropping by a significant 3.1 percent and the probability of being employed dropping by a significant 0.9 percentage points. However, these differences by gender in the wage and employment effects are not statistically significant.

[12] The results are robust to running the regressions unweighted or estimating the employment regression as a linear probability model.

[13] For ease of interpretation, in Tables 4-7, marginal effects are displayed for the employment regressions instead of the probit coefficients.

At first glance, the gender-stratified results may seem counterintuitive because of the large body of empirical evidence which shows that male labor supply is less responsive to a change in wages relative to female labor supply, resulting in a steeper wage-employment relationship as is traced out by the male labor demand curve. If this is the case, then I would expect to find larger wage and employment effects among men for a given change in the labor supply, which is the opposite of what I find. However, this can be explained by accounting for differences in the evacuee share of total employment by industry and by occupation.

More specifically, I first compute the number of evacuees in each industry and occupation in the year following Hurricane Katrina, and second, I compute the number of native Houstonians in each industry and occupation, using one year of pre-Katrina data. I use pre-Katrina data for the native Houstonians it should reflect relatively stable employment behaviors, while post-Katrina data may reflect the movement of native Houstonians between industries or occupations in response to the arrival of the evacuees. Next, I construct the evacuee share of total employment by industry or occupation, which is the ratio of the number of evacuees in an industry or occupation and the sum of the evacuees and native Houstonians in that same industry or occupation. Each native Houstonian in the sample one-year prior to Katrina is assigned the evacuee shares corresponding to the industry and occupation in which they work. Finally, the industry-specific or occupation-specific evacuee share of employment is regressed on an indicator for female at the individual level. The coefficient on the female indicator provides an estimate of the extent to which female native Houstonians are more or less likely than male native Houstonians to be employed in an industry or occupation in which evacuees comprise a large share of those who are employed.

As I alluded to above, I find that female native Houstonians are significantly more likely than male native Houstonians to be employed in industries or occupations in which evacuees comprise a greater share of total employment. Therefore, while the wage and employment differences-in-differences estimates for men and women are not significantly different from each other, female native Houstonians faced greater labor market competition due to the arrival of evacuees, and this accounts for the relatively larger effects among women.

In Table 6, I find that the wage effects for the two lowest education groups, those with less than and those with only a high school degree, are positive and significant (1.8 and 1.4 percent), while the wage effects for the two highest education groups, those who attended some college and those who have a college degree, are negative and significant (-6.2 and -5.8 percent). The employment effects, however, are negative and significant (-1.2, -0.7, and -0.3 percentage points) for the three highest education groups, while the employment effect for the lowest education group is positive (0.7 percentage points) but only marginally significant.

Contrary to the common finding in the immigration literature that the least educated group is the most adversely affected by immigration, my results suggest that the arrival of Katrina evacuees had the most negative impact on highly educated native Houstonians. While the difference in the estimated effect by education is statistically significant for wages, it is insignificant for employment. I again find that this can be explained by differences in the evacuee share of employment across the industries and occupations in which less- and more-educated non-evacuees are employed, using the approach described earlier, but replacing the female indicator with education indicators. In particular, native Houstonians with more than a high school degree are significantly more likely than other native Houstonians to work in industries or occupations in which evacuees comprise a greater share of total employment. This

implies that more-educated Native Houstonians faced relatively greater labor market competition after the arrival of evacuees, which can account for their experiencing relatively more adverse wage and employment effects.

Finally, Table 7 shows the difference-in-differences estimates separately by race and ethnicity. The wage and employment effects for white, non-Hispanic native Houstonians are larger in magnitude than the overall effects, showing a significant drop in wages of 5.6 percent and a significant drop in the probability of being employed of one percentage point. Non-white, non-Hispanic native Houstonians, on the contrary, experienced a significant 2.2 percent increase in wages and an insignificant change in the probability of being employed. Wage and employment estimates for Hispanic native Houstonians of any race were only marginally significant. While the characterization of evacuees provided in Table 3 would suggest that labor market competition should be greatest among non-white, non-Hispanics, that supposition is not upheld by my results. Non-Hispanic whites experience a greater decrease in wages and employment than non-Hispanic non-whites and Hispanics. However, the differences by race and ethnicity are only marginally statically significant for the wage results, and they are statistically insignificant for the employment results. Again, I find evidence that non-Hispanic whites face a greater degree of competition with evacuees in Houston, since they are significantly more likely to be employed in occupations in which evacuees comprise a greater share of total employment.

VI. Conclusion

My main finding – that the 3.8 percent increase in the Houston metro area population due to the in-migration of Katrina evacuees led to a statistically significant 1.8 percent decline in wages and a statistically significant 0.5 percentage point reduction in the probably of being

employed among native Houstonians – is consistent with other studies of the impact of immigration on native labor markets. Recall that Card (2001) finds that a three percent immigrant-induced increase in the local labor supply lowers wages among low-skilled natives by 1.5 percent, while Borjas (2006) finds that a ten percent immigrant-induced increase in the labor supply lowers wages among all male natives by as much as four percent. Scaling these effects by the size of the labor supply increase experienced by the Houston metro area suggests that the wage drop among native Houstonians should be in the neighborhood of one to two percent – exactly the range in which my wage effect estimate falls.

My estimate of the effect on the likelihood of being employed is also consistent with other research. For example, Card (2001) finds that a three percent increase in the local labor supply due to immigration lowers the employment rate among low-skilled natives by a statistically significant one percentage point. Since the labor supply increase experienced in the Houston metro area is close to three percent, this suggests that the drop in the probability of employment among native Houstonians should also be around one percentage point. My estimate of the effect, 0.5 percentage points, is reasonably close.

However, the results by gender, education, and race and ethnicity produce some surprising findings. While both male and female native Houstonians experience a drop in wages and in the probability of being employed, the effects are larger for women. With respect to education, I find that native Houstonians with higher levels of education are more adversely affected by the arrival of the evacuees than are those with lower levels of education. And, lastly, non-minority native Houstonians are more adversely affected than are minority native Houstonians. However, most of these differences are not statistically significant, and each can be explained by the industrial or occupational distributions of native Houstonians and evacuees.

Indeed, the evidence supports the notion that female, highly-educated, and non-Hispanic white native Houstonians are employed in industries or occupations that faced relatively greater labor market competition after the arrival of the evacuees.

One issue that remains to be addressed is the possibility of a change in the net "natural" migration rate into the Houston metro area after the arrival of the evacuees, where the net natural migration rate can be thought of the net migration rate that would have been observed in the absence of Hurricane Katrina. A concurrent decrease in the net natural migration rate into the Houston metro area would attenuate the increase in the labor supply associated with the arrival of the Katrina evacuees, and would therefore negatively bias my estimate of the effect of the migration of evacuees (Borjas, 2006). In contrast, a concurrent increase in the net natural migration rate into the Houston metro area would have the opposite effect. However, no data on migration rates at the metro area level are available to approximate the importance of this potential bias.[14] Still, this bias is arguably quite small considering the very short-run time frame considered in this chapter and the indeterminate duration of the evacuees' stay.

Overall, the results from my analysis mirror the general findings from the literature on the effect of immigration on local labor markets. I find that wages and employment among native Houstonians are significantly, yet modestly, adversely affected by the migration of Hurricane Katrina evacuees into the Houston metro area labor market. Furthermore, the magnitudes of my estimates are in the neighborhood of those implied by the immigration literature. Thus, it seems that the welcoming of Hurricane Katrina evacuees to the Houston metro area caused little harm

[14] I requested change of address data related to the movement of people into and out of the Houston metro area around the time of Hurricane Katrina from the United States Postal Service. My request was denied on the grounds that this information is considered to be sensitive and therefore is protected by Exemption 3 of the Freedom of Information Act.

to the native Houstonian labor market, at least as can be measured by changes in wages or employment.

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Table 1. Number of Katrina Evacuees and Non-Evacuees per Core-Based Statistical Area[a]

	Evacuees		Non-Evacuees		Total		Evacuees as a % of Total	
Core-Based Statistical Area	Weighted	Raw	Weighted	Raw	Weighted	Raw	Weighted	Raw
New Orleans-Metairie-Kenner, LA	170,890	513	151,625	874	322,514	1,387	53.0%	37.0%
Houston-Baytown-Sugar Land, TX	74,596	194	1,869,004	6,350	1,943,600	6,544	3.8%	3.0%
City of Houston	20,854	59	701,383	2,479	722,237	2,538	2.9%	2.3%
Gulfport-Biloxi, MS	24,110	106	35,494	298	59,603	404	40.5%	26.2%
Daphne-Fairhope, AL	14,790	47	75,107	319	89,897	366	16.5%	12.8%
Baton Rouge, LA	14,103	44	230,954	828	245,057	872	5.8%	5.0%
Dallas-Fort Worth-Arlington, TX	14,711	38	2,122,727	7,237	2,137,438	7,275	0.7%	0.5%
Atlanta-Sandy Springs-Marietta, GA	7,540	23	1,714,149	6,066	1,721,689	6,089	0.4%	0.4%
Miami-Fort Lauderdale-Miami Beach, FL	7,724	23	1,814,470	6,662	1,822,194	6,685	0.4%	0.3%
Lake Charles, LA	7,398	22	85,774	314	93,172	336	7.9%	6.5%
Mobile, AL	6,621	22	114,863	435	121,485	457	5.5%	4.8%
Las Vegas-Paradise, NV	1,838	17	619,858	5,939	621,696	5,956	0.3%	0.3%
Jackson, MS	3,693	16	200,183	1,025	203,876	1,041	1.8%	1.5%
Pensacola-Ferry Pass-Brent, FL	4,942	16	138,203	531	143,145	547	3.5%	2.9%
Chicago-Naperville-Joliet, IL-IN-WI	5,019	15	3,036,446	10,920	3,041,465	10,935	0.2%	0.1%
Lafayette, LA	4,112	13	192,297	654	196,409	667	2.1%	1.9%
Naples-Marco Island, FL	3,806	12	93,195	414	97,001	426	3.9%	2.8%
Huntsville, AL	3,019	11	115,736	437	118,754	448	2.5%	2.5%
Monroe, LA	4,209	11	188,711	717	192,920	728	2.2%	1.5%
Washington-Arlington-Alexandria, DC-VA-MD-WV	1,290	11	1,925,481	16,937	1,926,771	16,948	0.1%	0.1%
Austin-Round Rock, TX	3,373	10	589,552	2,019	592,926	2,029	0.6%	0.5%
Memphis, TN-MS-AR	4,634	10	475,621	1,654	480,254	1,664	1.0%	0.6%
Fort Walton Beach-Crestview-Destin, FL	2,291	8	92,333	360	94,625	368	2.4%	2.2%
Nashville-Davidson-Murfreesboro, TN	3,312	8	494,978	1,783	498,291	1,791	0.7%	0.4%
Cincinnati-Middletown, OH-KY-IN	1,493	7	683,462	2,712	684,955	2,719	0.2%	0.3%
Portland-Vancouver-Beaverton, OR-WA	1,555	7	698,461	3,834	700,016	3,841	0.2%	0.2%
Richmond, VA	1,895	7	410,768	1,859	412,663	1,866	0.5%	0.4%
Virginia Beach-Norfolk-Newport News, VA-NC	1,430	7	482,739	2,151	484,168	2,158	0.3%	0.3%
Birmingham-Hoover, AL	1,274	5	419,772	1,571	421,047	1,576	0.3%	0.3%
Kansas City, MO-KS	939	5	634,273	3,828	635,212	3,833	0.1%	0.1%
Minneapolis St Paul-Bloomington, MN-WI	739	5	1,002,431	6,933	1,003,170	6,938	0.1%	0.1%
Albuquerque, NM	600	4	284,924	2,084	285,524	2,088	0.2%	0.2%
Kankakee-Bradley, IL	1,414	4	89,684	316	91,098	320	1.6%	1.3%
Salt Lake City, UT	381	4	340,649	2,765	341,030	2,769	0.1%	0.1%
Boston-Cambridge-Quincy, MA-NH	732	3	1,509,772	8,456	1,510,504	8,459	0.0%	0.0%
Buffalo-Niagara Falls, NY	1,047	3	365,406	1,424	366,453	1,427	0.3%	0.2%
Dayton, OH	859	3	267,133	1,035	267,991	1,038	0.3%	0.3%
Fayetteville-Springdale-Rogers, AR-MO	718	3	128,383	734	129,101	737	0.6%	0.4%
Fort Collins-Loveland, CO	461	3	99,769	698	100,230	701	0.5%	0.4%
Jacksonville, FL	951	3	409,103	1,472	410,054	1,475	0.2%	0.2%
Orlando, FL	1,000	3	711,984	2,484	712,984	2,487	0.1%	0.1%
Seattle-Tacoma-Bellevue, WA	1,160	3	1,115,169	4,684	1,116,329	4,687	0.1%	0.1%
St. Louis, MO-IL	566	3	953,203	4,167	953,769	4,170	0.1%	0.1%
Augusta-Richmond County, GA-SC	629	2	197,271	736	197,899	738	0.3%	0.3%

Table 1. Number of Katrina Evacuees and Non-Evacuees per Core-Based Statistical Area, Continued

	Evacuees		Non-Evacuees		Total		Evacuees as a % of Total	
Core-Based Statistical Area	Weighted	Raw	Weighted	Raw	Weighted	Raw	Weighted	Raw
Canton-Massillon, OH	609	2	124,810	486	125,419	488	0.3%	0.3%
Cape Coral-Fort Myers, FL	587	2	181,118	743	181,704	745	0.5%	0.4%
Coeur d'Alene, ID	196	2	36,819	472	37,015	474	0.7%	0.6%
Columbia, MO	447	2	68,302	341	68,749	343	0.0%	0.0%
Denver-Aurora, CO	348	2	789,211	5,415	789,559	5,417	0.4%	0.3%
Eugene-Springfield, OR	448	2	117,333	709	117,781	711	0.2%	0.2%
Greensboro-High Point, NC	516	2	281,039	987	281,555	989	0.3%	0.3%
Knoxville, TN	547	2	164,465	622	165,012	624	0.0%	0.0%
Los Angeles-Long Beach-Santa Ana, CA	737	2	4,449,523	15,169	4,450,260	15,171	0.6%	0.6%
Ocala, FL	595	2	91,031	352	91,627	354	0.3%	0.3%
Palm Bay-Melbourne-Titusville, FL	630	2	202,142	734	202,771	736	0.8%	0.6%
Panama City-Lynn Haven, FL	620	2	81,071	313	81,691	315	0.0%	0.0%
Providence-Fall River-Warwick, RI-MA	101	2	427,046	9,231	427,147	9,233	0.1%	0.0%
Riverside-San Bernardino-Ontario, CA	705	2	1,289,065	4,620	1,289,770	4,622	0.1%	0.1%
San Antonio, TX	640	2	631,784	2,291	632,424	2,293	0.2%	0.1%
San Jose-Sunnyvale-Santa Clara, CA	1,020	2	654,568	2,284	655,589	2,286	0.5%	0.4%
Shreveport-Bossier City, LA	690	2	145,615	493	146,305	495	0.7%	0.6%
South Bend-Mishawaka, IN-MI	663	2	92,328	349	92,990	351	0.1%	0.1%
Tampa-St. Petersburg-Clearwater, FL	649	2	996,236	3,632	996,886	3,634	0.2%	0.1%
Wichita, KS	323	2	200,698	1,643	201,021	1,645	0.0%	0.0%
Bridgeport-Stamford-Norwalk, CT	114	1	315,981	3,229	316,095	3,230	0.2%	0.2%
Columbus, GA-AL	282	1	116,816	476	117,099	477	0.2%	0.2%
Corpus Christi, TX	252	1	141,570	540	141,823	541	0.2%	0.2%
Greeley, CO	175	1	92,039	613	92,214	614	0.0%	0.0%
Hartford-West/East Hartford, CT	122	1	374,048	3,759	374,170	3,760	0.2%	0.2%
Lansing-East Lansing, MI	304	1	142,863	596	143,168	597	0.1%	0.1%
Lexington-Fayette, KY	241	1	165,255	856	165,496	857	0.1%	0.1%
Little Rock-North Little Rock, AR	210	1	222,640	1,359	222,850	1,360	0.1%	0.1%
Louisville, KY-IN	257	1	347,057	1,741	347,314	1,742	0.2%	0.2%
Peoria, IL	257	1	117,596	450	117,853	451	0.0%	0.0%
Philadelphia-Camden-Wilmington, PA-NJ-DE	279	1	1,887,234	11,247	1,887,513	11,248	0.3%	0.2%
Port St. Lucie-Fort Pierce, FL	320	1	110,807	431	111,127	432	0.0%	0.0%
Portland-South Portland, ME	54	1	129,488	2,926	129,542	2,927	0.4%	0.3%
Roanoke, VA	282	1	79,073	333	79,354	334	0.5%	0.3%
Santa Fe, NM	170	1	35,409	290	35,578	291	0.1%	0.1%
Sarasota-Bradenton-Venice, FL	272	1	221,673	866	221,945	867	0.2%	0.1%
Savannah, GA	327	1	191,278	694	191,606	695	0.0%	0.1%
Sioux Falls, SD	37	1	73,240	1,980	73,277	1,981	0.1%	0.1%
Springfield, MA-CT	245	1	209,486	765	209,732	766	0.2%	0.2%
Springfield, MO	204	1	110,297	499	110,500	500	0.3%	0.4%
Statesville-Mooresville, NC	237	1	69,732	271	69,970	272	0.2%	0.1%
Victoria, TX	313	1	193,077	703	193,390	704	0.9%	0.5%
Nonmetropolitan	121,339	486	18,178,661	145,197	18,300,000	145,683	0.7%	0.3%
Total	545,227	1,822	61,730,639	357,423	62,275,866	359,245	0.9%	0.5%

Note: Observations are weighted using the Current Population Survey (CPS) final weight.

[a] The term "Core-Based Statistical Area" (CBSA) refers collectively to metropolitan and micropolitan statistical areas, each of which consist of a substantial population nucleus plus the adjacent communities with which that nucleus has a high degree of economic and social integration. Census 2000 standards require that each CBSA must contain at least one urban area with a population of at least 10,000. Each metropolitan statistical area must have at least one urbanized area with a population of at least 50,000, while each micropolitan statistical area must have at least one urban cluster with a population of least 10,000 but no more than 50,000.

Source: November, 2005-August, 2006 Basic Monthly CPS.

Table 2. Characteristics of Katrina Evacuees and Non-Evacuees, United States

	Evacuees		Non-Evacuees		
Characteristic	Mean	SD	Mean	SD	
Among All Individuals					
Female	0.53	0.50	0.51	0.50	*
Age	34.61	22.03	35.85	22.05	***
Under Age 16	0.24	0.42	0.22	0.42	
Age 16-24	0.16	0.37	0.13	0.34	***
Age 25-34	0.13	0.33	0.14	0.34	
Age 35-44	0.14	0.34	0.15	0.35	
Age 45-54	0.13	0.34	0.14	0.35	*
Age 55-64	0.10	0.30	0.10	0.30	
Above Age 64	0.11	0.31	0.12	0.32	
Pre-Katrina Residence[a]					
Current Address	0.53	0.50	--	--	
Louisiana	0.66	0.47	--	--	
Mississippi	0.19	0.39	--	--	
Alabama	0.04	0.21	--	--	
Florida	0.04	0.18	--	--	
Remainder of the US	0.07	0.26	--	--	
Among Individuals Age 25-64					
Education					
Less Than a HS Degree	0.15	0.36	0.12	0.33	***
HS Degree	0.35	0.48	0.31	0.46	***
Some College	0.27	0.45	0.27	0.44	
College Degree or Higher	0.22	0.41	0.30	0.46	***
Among Individuals Age 16-64					
Married	0.41	0.49	0.51	0.50	***
Black, Non-Hispanic	0.33	0.47	0.12	0.33	***
Non-white, Non-Hispanic	0.37	0.48	0.19	0.39	***
Hispanic, any Race	0.06	0.23	0.15	0.36	***
Employed	0.58	0.49	0.72	0.45	***
Not in Labor Force	0.33	0.47	0.24	0.43	***
Log Wage[b]	1.90	0.47	1.97	0.47	***
Occupation[c]					
Professional/Technical	4.19	2.27	3.96	2.31	***
Managerial	0.18	0.39	0.23	0.42	
Sales	0.09	0.29	0.10	0.30	
Clerical	0.12	0.33	0.11	0.32	***
Craft/Trade	0.16	0.37	0.14	0.34	
Operative/Labor	0.11	0.32	0.11	0.31	
Less-Skilled Services	0.12	0.33	0.14	0.34	***
More-Skilled Services	0.12	0.32	0.10	0.30	
Industry					
Natural Resources, Mining, and Construction	0.08	0.28	0.08	0.26	***
Manufacturing: Durable Goods	6.09	2.97	6.16	2.93	*
Manufacturing: Non-Durable Goods	0.12	0.33	0.10	0.30	***
Wholesale Trade	0.06	0.24	0.08	0.27	
Retail Trade	0.03	0.17	0.04	0.20	**
Transportation and Utilities	0.03	0.18	0.03	0.18	
Financial and Information Activities	0.21	0.41	0.19	0.39	
Professional and Business Services	0.06	0.24	0.05	0.23	
Educational and Health Services	0.09	0.28	0.10	0.30	
Leisure and Hospitality	0.11	0.31	0.11	0.31	**
Other Services	0.19	0.40	0.21	0.41	

Note: Observations are weighted using the Current Population Survey (CPS) final weight. The raw sample is comprised of 1,824 evacuees and 460,218 non-evacuees. Occupation and industry data are summarized for those individuals who are employed or unemployed (who report the occupation and industry of their last job).

[a] Data on pre-Katrina residence is only collected for evacuees.

[b] Wages are deflated using the monthly CPI-U (base year 1982-1984).

[c] Less-skilled services occupations include food preparation, serving, building and grounds cleaning, and maintenance occupations. More-skilled services occupations include healthcare support, protective service, personal care, and service occupations.

* denotes statistical significance in the difference of the means at the .10 level; ** at the .05 level; *** at the .01 level (two-tailed tests).

Source: November, 2005-August, 2006 Basic Monthly CPS. Wage data come from the outgoing rotation groups.

Table 3. Characteristics of Katrina Evacuees and Non-Evacuees, Houston, TX Metropolitan Area

	Evacuees		Non-Evacuees		
Characteristic	Mean	SD	Mean	SD	
Among All Individuals					
Female	0.53	0.50	0.50	0.50	
Age	29.12	20.56	32.10	20.58	**
Under Age 16	0.29	0.45	0.26	0.44	
Age 16-24	0.19	0.40	0.13	0.34	***
Age 25-34	0.17	0.38	0.16	0.37	
Age 35-44	0.14	0.35	0.15	0.36	
Age 45-54	0.08	0.28	0.14	0.34	**
Age 55-64	0.04	0.20	0.08	0.27	**
Above Age 64	0.08	0.27	0.07	0.26	
Pre-Katrina Residence[a]					
Current Address	0.00	0.00	--	--	
Louisiana	0.49	0.50	--	--	
Mississippi	0.01	0.11	--	--	
Alabama	0.00	0.00	--	--	
Florida	0.01	0.10	--	--	
Remainder of the US	0.49	0.50	--	--	
Among Individuals Age 25-64					
Education					
Less Than a HS Degree	0.17	0.38	0.21	0.41	
HS Degree	0.41	0.50	0.26	0.44	***
Some College	0.18	0.39	0.26	0.44	
College Degree or Higher	0.23	0.42	0.27	0.44	
Among Individuals Age 16-64					
Married	0.30	0.46	0.51	0.50	***
Black, Non-Hispanic	0.57	0.50	0.18	0.38	***
Non-white, Non-Hispanic	0.60	0.49	0.24	0.43	***
Hispanic, any Race	0.13	0.34	0.32	0.47	***
Employed	0.47	0.50	0.69	0.46	***
Not in Labor Force	0.36	0.48	0.27	0.44	***
Log Wage[b]	1.89	0.44	1.93	0.47	
Occupation[c]					
Professional/Technical	3.97	2.48	4.01	2.29	
Managerial	0.26	0.44	0.22	0.41	
Sales	0.07	0.26	0.10	0.30	
Clerical	0.16	0.37	0.11	0.32	
Craft/Trade	0.12	0.33	0.12	0.33	**
Operative/Labor	0.06	0.24	0.14	0.34	
Less-Skilled Services	0.09	0.29	0.13	0.34	
More-Skilled Services	0.12	0.33	0.10	0.30	
Industry					
Natural Resources, Mining, and Construction	0.11	0.32	0.07	0.26	
Manufacturing: Durable Goods	6.30	2.67	5.90	3.02	
Manufacturing: Non-Durable Goods	0.08	0.27	0.13	0.34	
Wholesale Trade	0.04	0.19	0.06	0.25	*
Retail Trade	0.06	0.24	0.05	0.21	
Transportation and Utilities	0.00	0.00	0.04	0.19	
Financial and Information Activities	0.26	0.44	0.19	0.39	
Professional and Business Services	0.06	0.24	0.07	0.26	
Educational and Health Services	0.10	0.31	0.07	0.26	***
Leisure and Hospitality	0.08	0.27	0.12	0.32	
Other Services	0.29	0.46	0.18	0.39	

Note: Observations are weighted using the Current Population Survey (CPS) final weight. The raw sample is comprised of 194 evacuees and 5,309 non-evacuees. Occupation and industry data are summarized for those individuals who are employed or unemployed (who report the occupation and industry of their last job).

[a] Data on pre-Katrina residence is only collected for evacuees.

[b] Wages are deflated using the monthly CPI-U (base year 1982-1984).

[c] Less-skilled services occupations include food preparation, serving, building and grounds cleaning, and maintenance occupations. More-skilled services occupations include healthcare support, protective service, personal care, and service occupations.

* denotes statistical significance in the difference of the means at the .10 level; ** at the .05 level; *** at the .01 level (two-tailed tests).

Source: November, 2005-August, 2006 Basic Monthly CPS. Wage data come from the outgoing rotation groups.

Table 4. Effect of Hurricane Katrina Migration on Native Houstonians' Labor Market Outcomes
(Standard Errors in Parentheses)

	Dependent Variable	
Independent Variable	Log Wages[a]	Employment[b]
Houston	0.060 ***	0.016 ***
	(0.003)	(0.001)
Post	0.082 ***	-0.005
	(0.009)	(0.004)
Houston*Post	-0.018 ***	-0.005 ***
	(0.002)	(0.001)
N	349,955	717,480
R^2	0.45	--

Note: Observations are weighted using the Current Population Survey (CPS) final weight. Standard errors are clustered at the metro area level. The regressions also include individual-level covariates (age, age-squared, sex, marital status, the interaction of sex and marital status, education, race, ethnicity, industry, and occupation) and metro area and month/year fixed effects.

[a] The wage regression is estimated using weighted least squares. Wages are deflated using the monthly CPI-U (base year 1982-1984).

[b] The employment regression is estimated using a probit. Marginal effects are reported in the table.

* denotes statistical significance at the .10 level; ** at the .05 level; *** at the .01 level (two-tailed tests).

Source: Outgoing rotation groups of the September, 2000-August, 2006 Basic Monthly CPS.

Table 5. Effect of Hurricane Katrina Migration
on Native Houstonians' Labor Market Outcomes by Gender
(Standard Errors in Parentheses)

	Dependent Variable			
Independent Variable	Log Wages[a]		Employment[b]	
Men				
Houston	0.032	***	0.017	***
	(0.005)		(0.001)	
Post	0.101	***	0.020	***
	(0.011)		(0.003)	
Houston*Post	-0.007	**	-0.003	**
	(0.003)		(0.001)	
N	169,170		372,590	
R^2	0.44		--	
Women				
Houston	0.090	***	0.013	***
	(0.003)		(0.001)	
Post	0.132	***	-0.010	
	(0.010)		(0.006)	
Houston*Post	-0.031	***	-0.009	***
	(0.003)		(0.002)	
N	180,785		344,804	
R^2	0.45		--	

Note: Observations are weighted using the Current Population Survey (CPS) final weight. Standard errors are clustered at the metro area level. The regressions also include individual-level covariates (age, age-squared, marital status, education, race, ethnicity, industry, and occupation) and metro area and month/year fixed effects

[a] The wage regression is estimated using weighted least squares. Wages are deflated using the monthly CPI-U (base year 1982-1984).

[b] The employment regression is estimated using a probit. Marginal effects are reported in the table.

* denotes statistical significance at the .10 level; ** at the .05 level; *** at the .01 level (two-tailed tests).

Source: Outgoing rotation groups of the September, 2000-August, 2006 Basic Monthly CPS.

Table 6. Effect of Hurricane Katrina Migration
on Native Houstonians' Labor Market Outcomes by Level of Education
(Standard Errors in Parentheses)

	Dependent Variable	
Independent Variable	Log Wages[a]	Employment[b]
Less Than a High School Degree		
Houston	0.052 ***	0.015 ***
	-0.006	-0.005
Post	0.094 ***	-0.015
	-0.014	-0.017
Houston*Post	0.018 ***	0.007 *
	-0.004	-0.004
N	56,925	82,370
R^2	0.40	--
High School Degree Only		
Houston	-0.063 ***	0.006 ***
	-0.004	-0.001
Post	0.074 ***	0.019 ***
	-0.013	-0.005
Houston*Post	0.014 ***	-0.012 ***
	-0.003	-0.002
N	126,444	203,911
R^2	0.37	--
Some College, No Degree		
Houston	0.019 ***	0.023 ***
	-0.003	-0.001
Post	0.150 ***	0.010 **
	-0.013	-0.005
Houston*Post	-0.062 ***	-0.007 ***
	-0.003	-0.002
N	114,157	203,460
R^2	0.41	--
College Degree or More		
Houston	0.398 ***	-0.019 ***
	-0.012	-0.002
Post	0.089 ***	0.000
	-0.024	-0.004
Houston*Post	-0.058 ***	-0.003 **
	-0.009	-0.001
N	52,429	226,619
R^2	0.34	--

Note: Observations are weighted using the Current Population Survey (CPS) final weight. Standard errors are clustered at the metro area level. The regressions also include individual-level covariates (age, age-squared, sex, marital status, the interaction of sex and marital status, race, ethnicity, industry, and occupation) and metro area and month/year fixed effects.

[a] The wage regression is estimated using weighted least squares. Wages are deflated using the monthly CPI-U (base year 1982-1984).

[b] The employment regression is estimated using a probit. Marginal effects are reported in the table.

* denotes statistical significance at the .10 level; ** at the .05 level; *** at the .01 level (two-tailed tests).

Source: Outgoing rotation groups of the September, 2000-August, 2006 Basic Monthly CPS.

Table 7. Effect of Hurricane Katrina Migration
on Native Houstonians' Labor Market Outcomes by Race and Ethnicity
(Standard Errors in Parentheses)

	Dependent Variable	
Independent Variable	Log Wages[a]	Employment[b]
White, Non-Hispanic		
Houston	-0.035 ***	0.013 ***
	(0.003)	(0.001)
Post	0.069 ***	-0.006
	(0.012)	(0.004)
Houston*Post	-0.056 ***	-0.010 ***
	(0.003)	(0.001)
N	229,532	507,248
R^2	0.47	--
Non-white, Non-Hispanic		
Houston	0.084 ***	-0.100 ***
	(0.010)	(0.006)
Post	0.085 ***	-0.023
	(0.018)	(0.014)
Houston*Post	0.022 ***	-0.004
	(0.006)	(0.003)
N	63,726	119,743
R^2	0.39	--
Hispanic, any Race		
Houston	0.559 ***	0.055 ***
	(0.015)	(0.001)
Post	0.099 ***	-0.005
	(0.021)	(0.012)
Houston*Post	-0.009	-0.002
	(0.006)	(0.003)
N	56,697	89,385
R^2	0.37	--

Note: Observations are weighted using the Current Population Survey (CPS) final weight. Standard errors are clustered at the metro area level. The regressions also include individual-level covariates (age, age-squared, sex, marital status, the interaction of sex and marital status, education, industry, and occupation) and metro area and month/year fixed effects.

[a] The wage regression is estimated using weighted least squares. Wages are deflated using the monthly CPI-U (base year 1982-1984).

[b] The employment regression is estimated using a probit. Marginal effects are reported in the table.

* denotes statistical significance at the .10 level; ** at the .05 level; *** at the .01 level (two-tailed tests).

Source: Outgoing rotation groups of the September, 2000-August, 2006 Basic Monthly CPS.