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7/23/08
8:45 am

WHEN THE SAINTS COME MARCHING IN: EFFECTS OF HURRICANES KATRINA AND RITA ON STUDENT EVACUEES AND ON RECEIVING SCHOOLS*

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July 18, 2008

Abstract

I examine academic performance and college going for public school students affected by Hurricanes Katrina and Rita. Students who are forced to switch locations due to the hurricanes experience sharp declines in test scores in the first year following the hurricane. The level decrease in performance persists into the second year for Katrina evacuees from suburban areas and for Rita evacuees (from the Lake Charles area). In contrast, Katrina evacuees from Orleans Parish have 2007 test scores which are above their pre-Hurricane levels. I obtain similar results when I instrument for a student's evacuee status using the amount of physical damage to her school caused by the hurricane. Somewhat surprisingly I do not find evidence of peer effects of the evacuees' arrival on students in the receiving schools. Katrina evacuees who are entering their senior year of high school or who have just graduated at the time of hurricane experience a 4 percentage point drop in their rate of enrollment in four year colleges. And they do not appear to make up for this in the subsequent two years. However, later cohorts of high school students appear to be unaffected.

I also examine changes in crime rates in Houston (relative to other Texas cities) following the hurricanes. There is a sharp increase in burglaries in the months following the hurricanes September 2005, but this increase is short lived. Murders in Houston trend upwards during the entire pre and post-period. When I examine crime at the zip code level, I do not find that Houston zip codes with more evacuees experienced a larger increase in crimes.

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* I thank Alan Gustman and Joshua Angrist for helpful suggestions and Celia Kujala for outstanding research assistance. I thank Fen Chou (LA Dept of Education), Ann Payne (Data Recognition Corp), and Richard Reeves (National Student Clearinghouse) for helping me assemble the data. The peer effects portion of this paper is being combined with Katrina peer effects work by Scott Imberman and Adriana Kugler using Houston data. The National Science Foundation and the US Department of Educations' Institute for Education Sciences provided generous funding. Data are provided by the Louisiana Department of Education, the East Baton Rouge School District and the Houston Independent School District. This is a terribly preliminary, and not terribly concise write-up with more analysis, more discussion of the relevant literature and at least one additional year of data to follow.

I. Introduction

Hurricane Katrina was one of the worst natural disasters in United States history. Roughly 1900 deaths are blamed on Katrina and estimates of the damage to homes and infrastructure are roughly $80 billion. In addition, as of 2008, roughly $60 billion in Federal money has been allocated for disaster relief and recovery[1].

Because Katrina destroyed so many homes and flooded 80% of New Orleans, nearly 1 million people were displaced from their homes. Thirty five thousand Katrina evacuees relocated to Houston, Texas while 24,000 relocated to Mobile, Alabama and 15,000 people moved to Baton Rouge. Rand Corporation estimates that of Louisiana's 760,000 public school students (pre-Katrina and Rita), 196,000 were displaced from their schools (Pane et al. 2006).

This paper is a first attempt at analyzing the effects of dislocation from Katrina and Rita on student achievement and college going. The data are provided by the Louisiana Department of Education and include reading and math test scores, basic student demographics, school and school district for each student in each year and whether or not the student was displaced by Hurricane Katrina or Rita. Data from the National Student Clearinghouse are used to track four cohorts of high school students who reached high school graduation age pre-and post Katrina.

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[1] CNN, 2008. Department of Homeland Security web page:
http://www.dhs.gov/xprepresp/programs/gc_1157649340100.shtm

The existing literature suggests at least three different effects that can be explored with these data. First, the literature on the disruptive effects of moving schools (e.g. Hanushek, Kain and Rivkin [2004], Alexander Norc and Entwistle [1996]) would suggest modest sized negative effects from switching schools. Having one's family displaced by a hurricane is likely far more disruptive than a conventional move between schools. Vigdor [2007] estimates that evacuees on average lost three weeks of work and that evacuees who do not return home lost closer to ten weeks of work. Pane et al [2005] finds that the median student evacuee missed five weeks of school.

Second, the literature on peer effects (for example Hoxby [2000], Hanushek Kain and Rivkin [2004], Vigdor Nechyba [2007], Angrist and Lang [2002], Hoxby and Weingarth [2006]) and the literature on class size would suggest that there may be significant negative externalities for "native" students in the receiving schools.[2] Finally the literature on school quality and teacher quality (for example Rivkin Kain and Hanushek [2005], Kane, Staiger Rockoff [2006]) would suggest that some New Orleans natives could actually benefit from being forced to move out of their low performing schools.

I attempt to look at all three of these hypotheses using disruption by Katrina and Rita as the key source of variation. Of course these hurricanes were such massive events that studying the impacts may be interesting in its own right whether or not we can use the impacts from the hurricanes to inform the educational literature more broadly.

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[2] Angrist and Lang [2002] does not find statistically significant peer effects from Boston's METCO program.

In the spring of 2006, following the hurricanes, I find reasonably large (.10 standard deviation) declines in test scores for students who are displaced by the hurricanes.[3] These declines are relative to all other Louisiana students in the same grade. For many groups of displaced students, the entire negative effect persists into the spring of 2007. Students from suburban New Orleans (Jefferson Parish) and Lake Charles (in Calcasieu Parish) start with 2004 and 2005 test scores above the state average and experience a level drop in their test scores which persist for both 2006 and 2007.

Students from New Orleans proper (Orleans Parish), start with much lower test scores on average and experience the same decrease in performance in 2006. But, by 2007 these displaced students attain scores that are at or above their pre-hurricane performance.

College enrollment appears to have been disrupted for evacuees in graduating classes just prior and just after the hurricanes, i.e. the classes of 2005 and 2006. These evacuees see a reduction of 4 percentage points in their rate of college going.[4] But the subsequent class does not show signs of the same effect.

One might expect large peer effects (and class size effects) on students in the receiving schools. East Baton Rouge Parish school district alone received several

[3] This effect is roughly 1-2x the size of being assigned a teach with test score value added that is one standard deviation below the mean of all teachers in a state. (Kane, Staiger Rockoff [2008] and Hanushek Kain O'Brien and Rivkin [2005]).
[4] This is for enrollment in four year colleges.

thousand student evacuees. However, I find very little evidence of negative peer effects for "native" students in the destination schools.

The Existing Literature on Hurricane Katrina

Several papers have examined labor market effects from Hurricane Katrina. One of the most in depth of these is Vigdor [2007] which asks whether evacuees benefit in the medium run from being forced out of New Orleans which was high in poverty and unemployment and had lower income than other cities in the South. This hypothesis is similar in spirit to the investigations of the Moving to Opportunity Program (Katz Kling and Liebman [2001]) and the demolitions of public housing in Chicago (Jacob [2004]). Vigdor [2007] finds that evacuees are hurt both in terms on income and weeks worked by the dislocation. McIntosh [2007] finds that the in migration of evacuees hurt native wages and employment in Houston, Texas.

Several studies including Paxson and Rouse [2008], Groen and Polivka [2008], and Sastry [2007] investigate patterns of population movement caused by Katrina. Katrina has reduced the size of New Orleans proper from roughly 480,000 to about 255,000 (as of the 2006 American Community Survey). Paxson and Rouse find that whites and homeowners were the most likely to return. Those whose homes faced the worst flooding were the least likely to return.

Most relevant for this paper is a Rand Corporation study by Pane at al (2006) that documents the number of displaced students, where they went, and how many days of schools were lost. This study finds that 196,000 public school students in Louisiana were displaced. This represents roughly one quarter of Louisiana's total enrollment.[5] About 81 percent of the evacuees came from just three parishes (Orleans, Jefferson and Calcasieu.). Orleans is coterminous with the city of New Orleans. Jefferson contains much of the suburban portion of the New Orleans metro area and includes 21 cities, towns and unincorporated areas. Calcasieu contains the city of Lake Charles and is in the southwest corner of New Orleans which was devastated by Hurricane Rita.

Pane et al shows that the median evacuee missed five weeks of school. Thirty eight percent of evacuees were out of school and then returned to their original school. Thirty one percent relocated to another Louisiana school while another 31 percent disappeared from the data set.

II. Data Description

The main data set consists of student level test scores and demographics for Louisiana public school students during 2004-2007. Under Louisiana's accountability program, students in grades 4, 8, and 10 are tested in March of each year. These tests are

[5] Like this study, Payne at al uses administrative data from the Louisiana Department of Education. Payne at al has complete data on counts of students by school. In contrast I am using test score data and as a result I only have counts and student demographics on students who were tested. I have not attempted to obtain a broader set of administrative data or to reproduce the counts of evacuees.

known as the LEAP or Louisiana Educational Assessment Program (grades 4 and 8) and the GEE or Graduation Exit Examination. The subjects tested include math and english language arts (ELA) for grades 4, 8 and 10. Science and social studies are tested in grades 4,8 and 11. For simplicity I do not report results for science and social studies tests in the tables below.

The LEAP and GEE tests are high stakes tests with the following set of rules: To be promoted to the next grade, students in grades 4 and 8 must score "Basic" on at least one of the math and ELA tests and at least "Approaching Basic" on the other exam. In order to be eligible for a standard high school diploma, high school students must receive "Approaching Basic" or better on both the ELA and math exams and "Approaching Basic" or better on either of the science or social studies exams. High stakes testing policies were suspended for all 4th and 8th grade students during the 05-06 school year due to the hurricanes.

In spring 2006 tests known as the ILEAP (Integrated Louisiana Educational Assessment of Progress) were added for grades 3, 5, 6, 7, and 9. (The Iowa Test of Basic Skills was previously used for these students. I do not have the Iowa test scores.) Students in these five grades are tested in both math and english language arts. Students in grades 3,5,6, and 7 are tested in science and social studies. The tests in the ILEAP grades do not have a high stakes component at the student level.

Table I shows the number of student level observations I have for each year. I only observe students if they take a LEAP, ILEAP or GEE exam. Thus in 2005, I observe most students in grades 4, 8, 10 and 11. I observe a small number of students in grade 12 who re-took various exams. I observe a total of 210,755 students for all of Louisiana for 2004. If I inflate this number by 13/4 to account for the fact that I am only observing 4 grades of the possible 13 grades in the k-12 system, I infer that there were roughly 685,000 public school students Louisiana in 2004. Starting in 2006, the data add students in grades 3, 5,6, 7, and 8 (because of the ILEAP testing) making the dataset much more complete.

Since I do not observe all students in all years, one of the challenges of the data analysis is making the tradeoff between running specifications that control for a student's lagged test score and running specifications that make use of all of the observations. Below I try several different approaches.

I have a randomly generated ID number which allows me to link a given student across years in the data set. For the Spring of 2006, I also have a field which tells me which students are evacuees and whether they were displaced from a public school or private school and whether they were displaced by Katrina or Rita. This was collected by teachers and principals and then reported to the state at the time the exams were taken. For each year, I know a student's school and district, race, gender, and free lunch status.

My analysis sample is constructed by taking all students in Table I and then limiting the data to students observed in 2006 since that is the year during which the Louisiana required schools to provide information on a student's evacuee status. Student evacuees are classified as displaced by Katrina or Rita and also as displaced from a public or private school or out of state school. This reduces the number of observations from 1.3 million to 1.0 million. My results are robust to other approaches including inferring a student's evacuee status from her 2004 or 2005 location.

<u>In all cases in the tables and text, when I refer to a single year, I mean March of that year. Hence "2005" refers to March 2005 which is the spring of the 04-05 school year. Thus any references to 2005 test score data are pre-hurricanes.</u>

The parishes most affected by Hurricane Katrina are Orleans, Jefferson, Plaquemines, and Saint Bernard. These parishes comprise the Greater New Orleans Metro Area. Table II shows a frequency tabulation of students in grades 4, 8 and 10 in 2005 tabulated by their eventual (2006) evacuee status. There are 135,316 students in these three grades in the analysis sample, 14,400 of whom were in one of the affected parishes in 2005. Ninety percent of the students in the affected parishes become evacuees. And, of the Katrina evacuees, ninety-three percent come from the most affected parishes.

Even after the hurricanes, the bulk of Katrina evacuees who remain in Louisiana remain in a school in one of the four most affected parishes. Table III shows, by year, the percentage of eventual evacuees who attend school in one of the affected parishes. This percentage is 93 percent in 2004 and 2005 (again the Spring of these years which is pre-hurricane). This dips to 68% in the spring following Katrina but rises back to 76% by 2007. Many of the evacuees move from Orleans Parish to Jefferson.

Tables IV and V document the fact that Katrina evacuees are more likely to disappear from the Louisiana public school sample relative to non-evacuees. In Table IV I take the set of evacuees from Orleans Parish who were in the 8th grade in 2005. I ask whether they are still in the sample in 2007. Roughly 50% of the evacuees remain in the sample versus roughly 80% for all other students. Obviously selection out of the sample makes it difficult to estimate the effect of the hurricanes on student achievement.

Table VI shows which school districts are sending and receiving evacuees after Katrina.[6] I show the number of eventual evacuees located in each parish by year. (In other words I classify students by their eventual (2006) evacuee status.) I limit the table to students in grades 4, 8, and 10 since those three grades are tested consistently throughout 2004-2007. Pre-hurricane, the vast majority of these evacuees are located in Jefferson and Orleans Parishes, with an additional 700-800 evacuees in each of St. Tammany, Plaquemines, and St. Bernard in 2005, all three of which are part of the greater New Orleans area.

[6] For many parishes the school district and the parish coincide, but this is not always the case. Orleans now has the Orleans Parish School District and the Recovery School District and several academy and charter districts.

Post-hurricane, the count of evacuees (in grades 4,8,10) in Jefferson Parish grows by about 1200 evacuees and East Baton Rouge School District gains about 1,000 of these evacuees. Since I am counting only three grades, this implies that East Baton Rouge gained roughly 3300 student evacuees in all grades. The remaining school districts in the state each gain 0-150 evacuees. The number of evacuees in Orleans itself shrinks dramatically post-Katrina. The Recovery School District (RSD) in Orleans was set up to administer most of the schools in the former Orleans Parish School District. The RSD has roughly 1100 4th ,8th ,and 10th graders by 2007.

In Table VII, I show the summary statistics at the student level for the year 2006 (as opposed to the student*year level). And I show summary statistics separately for the Katrina and Rita evacuees. Ten and one half percent or roughly 45,400 of the students are Katrina evacuees. Thirty percent of those evacuees are originally from Orleans Parish. Five point four percent or roughly 23,000 students are Rita evacuees. Since I only observe students in grades 3-11 and since I only observe students who remain in Louisiana public schools, the actual number of evacuees is higher.

Forty four percent of all students are black, while 56 percent of the Katrina evacuees are black and 31 percent of the Rita evacuees are black.

I standardized math and ELA scores to be mean zero standard deviation one within each year and grade level (for the entire state). This standardization is apparent in the average math and ELA scores for all observations in Table I. The Katrina evacuees have math scores that are .268 standard deviations below the state average and ELA scores that are .222 standard deviations below. The Rita evacuees have math scores that are .108 standard deviations above and ELA scores that are .140 standard deviations above the state average. Table VI has more detail about how average test scores vary by school district over time. Pre-Katrina, Jefferson Parish has math scores about .18 standard deviations below the state average while Orleans is .52 standard deviations below the state average. Figure I shows the estimated 2005 (pre-Hurricane) math test score distribution for Orleans evacuees versus all of the non-evacuees in 2005.

In Appendix Table I, I provide summary statistics for the analysis sample. The raw data contained 1.3 million student*year observations for all public school students who were tested with the LEAP/ILEAP/GEE in Louisiana during 2004-2007.

Ten point three percent of the observations are from Katrina evacuees. I further break down the Katrina evacuees into those originally from Orleans Parish (i.e. the city of New Orleans) and those from elsewhere. Three and one half percent of the observations are from Katrina evacuees who were in Orleans Parish during 2005 (or 2004 if I do not observe the student in 2005).[7] 2.4 percent of the observations are for Katrina evacuees who left the four most affected parishes by 2006, while the remainder stayed within the most affected parishes (i.e. greater New Orleans.) Five point four percent of the observations come from Rita evacuees displaced from a public school.

[7] Due to the structure of the dataset, classifying students by their pre-hurricane location AND their evacuee status requires using a subset of the analysis sample.

As mentioned above, I also have data on college enrollments and degrees for a sample of 32,000 Louisiana students. The data are from the Student Loan Clearinghouse database and were created in an a collaboration between myself, the State of Louisiana's Department of Education's Office of Assessment and Accountability, Data Recognition Corp which organizes and warehouses certain portions of the student level data, and the Clearinghouse.

Thus far we have pulled Clearinghouse data for a random sample of 8,000 students from the parishes of Orleans, St. Bernard, Jefferson, Plaquemines, East Baton Rouge, and Iberia. The first four parishes are the Katrina affected ones and the latter two are intended to serve as controls. Our sample is roughly a 50% sample of all students who took GEE exams in 2002-2005. Most students take the exams in their 10th grade. The first two cohorts graduated prior to the hurricanes and the second two were entering 11th and 12th grade at the time the hurricanes struck. One great advantage of the Clearinghouse data is that it allows me to track students across state lines and to obtain fairly clean measures of college going for an entire sample, whether or not a student moves or fails to graduate from high school.

For the analysis, I consider whether or not a given student enrolled in a college or a four year college. (In the long run there exists the potential to study college retention, college selectivity, and graduation rates.) Table Ia shows a breakdown of the raw data by cohort and by 2,4, less than 2 year college or no enrollment. Technically the "no-enrollment" students are the ones that cannot be found in the Clearinghouse database using various combinations of social security number, date of birth, and last name. Table Ia implies that more recent cohorts have fewer enrollments. Most of this difference appears to an age effect: as the cohort ages, additional students enroll for the first time each year. To control for the age effect, I look at college enrollments within the first twelve months from the implied year of high school graduation.[8]

Using this measure, the mean enrollment rate for any college is 41 percent and the mean enrollment rate for a four year college is 30 percent. Prior to the hurricanes, Orleans had a four year college enrollment rate of 26 percent versus 36 percent and 37 percent for East Baton Rouge and Iberia respectively. Interesting, despite having significantly lower test scores, Orleans and all of the greater New Orleans parishes had an overall college going rate *higher* than that of Iberia or East Baton Rouge. Orleans was at 44 percent and Jefferson at 51 percent relative to Iberia's 41 percent. This may reflect the greater supply of two year colleges in the New Orleans metro area.

III. Empirical Framework

My main interest is estimating the effect of the hurricanes on the academic performance of the evacuees and on the academic performance of students in the receiving schools. The structure of the data set presents several challenges. First, because I do not observe every student both before and after the hurricanes, I do not necessarily want to limit myself to models in which I control for a student's lagged test score on the right hand side. Including lagged test scores limits me to students who are 8th graders in the base period because I only have four years worth of data and in 2004

[8] I infer high school class year by assuming that students are taking the GEE exam in their 10th grade.

and 2005 only 4th ,8th, 10th graders are tested. Thus in addition to standard test score growth regressions, I also run simpler models in which I simply ask how test score levels change for the eventual evacuees over time.

Second, large numbers of students leave the State as a result of the hurricanes. In theory I could bring in Houston test score data for the students who go to Houston, but it's not clear how I would scale the Texas scores before merging them with Louisiana scores in a regression. My preferred solution is to also use college going as the outcome rather than test scores. As noted above, the Clearinghouse data allow me to track students who leave Louisiana both before and after the hurricanes.

Third, the hurricanes did not hit a random set of students but rather Katrina affected a group of students who were disproportionately poor and low scoring and Rita affected a group of students who were disproportionately richer and higher scoring. In most specifications my control for this selection into evacuee status is to either a) control for lagged test score or b.) include students who eventually become evacuees but were not at the time they took the test. However, I also have an instrumental variables strategy which is to use within district variation in the FEMA assessment of damage Katrina caused to a given localized area. Within Jefferson, Saint Bernard and Plaquemines, some schools experienced severe damage while others received little. Within district this FEMA damage assessment strongly predicts evacuee status but may be orthogonal to student characteristics.

My simplest OLS specification asks how the test scores of the eventual evacuees varied over time. I run the following regression for each year in the dataset:

$$(1)\ \text{Math Score}_{it} = \alpha + \boldsymbol{\beta 1}*\text{Katrina Evacuee Status}_i + \boldsymbol{\beta 2}*\text{Rita Evacuee Status}_i + \boldsymbol{\gamma}*\mathbf{X}_i + \boldsymbol{\lambda}*\text{Grade Effects} + \varepsilon_{it}$$

This is for student i in year t. Standard errors are clustered at the level of the current school, but my results are robust to clustering at the level of the pre-hurricane school. I also include grade effects and dummies for race, gender, and free lunch status with the latter three effects represented by $\boldsymbol{\gamma}*\mathbf{X}_i$.

$\boldsymbol{\beta 1}$ and $\boldsymbol{\beta 2}$ tell me the position of the Katrina and Rita evacuees within the test score distribution in a given year. I then look across the four regressions and examine the pattern in coefficients. One advantage of this approach is that I can use every observation in the analysis sample, rather than limiting myself to observations with both pre- and post hurricane test scores. I use this same specification when considering the college enrollment rate as the outcome.

A related version of the above specification is to pool all four years and introduce a dummy for post-hurricane and the interaction of evacuee status and post-hurricane.

$$(2)\ \text{Math Score}_{it} = \alpha + \boldsymbol{\beta 3}*\text{After05}*\text{Katrina Evacuee Status}_i + \boldsymbol{\beta 4}*\text{After05}*\text{Rita Evacuee Status}_i + \boldsymbol{\beta 1}*\text{Katrina Evacuee Status}_i + \boldsymbol{\beta 2}*\text{Rita Evacuee Status}_i + \boldsymbol{\beta 5}*\text{After 2005} + \boldsymbol{\gamma}*\mathbf{X}_i + \boldsymbol{\lambda}*\text{Grade Effects} + \varepsilon_{it}$$

This effectively estimates the effect of being an evacuee as a difference in difference: **$\beta 3$** represents the difference in evacuee test scores before and after the hurricanes relative to the difference in test scores for non evacuees before and after the hurricanes. One disadvantage of equation (2) is that I constrain the effect in 2006 and 2007 to be the same. I argue below that for the Orleans Parish evacuees, the effect changes over time.

A third approach is to run a more standard growth in test scores regression in which I control for the student's lagged test score.

$$\text{(3) Math Score}_{it} = \alpha + \boldsymbol{\beta 1}\text{*Katrina Evacuee Status}_i + \boldsymbol{\beta 2}\text{*Rita Evacuee Status}_i \\ + \boldsymbol{\beta 6}\text{*Lagged Math Score}_i + \boldsymbol{\gamma}\text{*}\mathbf{X}_i + \boldsymbol{\lambda}\text{*Grade Effects} + \varepsilon_{it}$$

I have two versions of the test score growth regression. In one version the lagged math score is the most recent lagged score, so that for 2007, the lagged score is from 2006 which is post-hurricane. In the other version of equation (3), the lagged score is held to be a baseline test score from either 2004 or 2005 depending on which is available. In either case the observations are limited by the fact that I only have test scores for three grades worth of students in 2004 and 2005.

Finally, as mentioned above there is obviously some concern about selection into being an evacuee. As one exercise, I try instrumenting for evacuee status with FEMA's (Federal Emergency Management Agency's) assessment of damage and flooding in the zipcode of the student's pre-hurricane school. In other words, I identify **$\beta 1$** in equation (3) using only variation from damage to the zipcode where the student attends school, and not any other student characteristics that might predict being an evacuee. This exercise has some intuitive appeal because the variation in evacuee status stemming from hurricane damage may be more exogenous than variation that derives from family income or number of relatives in the area with an intact home. But admittedly this IV strategy is unlikely to solve self selection out of the sample or all of the potential correlation between family income and flood levels.

In addition to estimating the effects of the hurricanes on evacuee outcomes, I am also interested in measuring the peer effects on students in the receiving schools. To get at this issue I begin with a very simple specification in which I put test scores for the non-evacuees on the left hand side and the percent of the student body that are Katrina evacuees on the right hand side.

$$\text{(4) Math Score}_{it} = \alpha + \boldsymbol{\beta 7}\text{*Percent Katrina}_{it} + \boldsymbol{\gamma}\text{*}\mathbf{X}_i + \boldsymbol{\lambda}\text{*Grade Effects} + \boldsymbol{\delta}\text{*School Effects} + \varepsilon_{it}$$

For equation (4), I pool all the years and set "Percent Katrina" to 0 for the pre-hurricane years and to the 2006 percent Katrina for both 2006 and 2007. For the regression I limit the sample to non-evacuees and I include school fixed effects. My main specification excludes the schools that are located in the four most affected parishes, but my results are robust to including those schools.

My second peer effects specification is closer to a difference in difference strategy. I pool the years and hold percent Katrina constant at the 2006 level. I then include a dummy for "after the hurricane" and the interaction of this dummy with "after."

$$\text{(5) Math Score}_{it} = \alpha + \boldsymbol{\beta 8}\text{*After05*Percent Katrina}_{it} + \boldsymbol{\beta 7}\text{*Percent Katrina}_{it} + \beta 5\text{*After 2005} + \boldsymbol{\gamma}\text{*}\mathbf{X}_i + \boldsymbol{\lambda}\text{*Grade Effects} + \varepsilon_{it}$$

Here I cluster at the school level. I do not of course include school fixed effects since the percent Katrina is constant within a school.

IV. Results

Table VIII displays the results from estimating equation (1) for math test scores, i.e. the repeated cross sections with Katrina and Rita evacuee status on the right hand side. In 2004 and 2005, eventual Katrina evacuees have math test scores that are .07 to .09 standard deviations below the math scores of other Louisiana students. After the hurricane this gap widens to -.19 standard deviations in 2006 and narrows a bit by 2007 to -.12. This suggests that the Katrina evacuees may have fallen behind an additional .10 standard deviations during the year after the hurricane but that they recovered some of the loss during 2007. I can't reject equality between the 2005 and 2007 coefficients.

The Rita evacuees see a similar decline following the hurricane with no subsequent catch up. The Rita evacuees are about .08 standard deviations above the average Louisiana student in 2004 and 2005 and they lose this advantage after being displaced by the hurricane. While the initial (2006) decline for the Rita evacuees is similar to that for the Katrina evacuees, there does not appear to be any catch up in 2007 for the Rita evacuees. The effects over time are graphed for both groups of evacuees in Figure II.

Table IX repeats this exercise using the English Language Arts scores. The declines experienced by the evacuees after the hurricanes are smaller for ELA scores than for math scores. Before the hurricane, the Katrina evacuees are about .09 standard deviations below the state average and experience a drop of .054 standard deviations in 2006. By 2007, the Katrina evacuees make back much of that loss and are .10 standard deviations below the state average. The Rita evacuees again start the period significantly above the state average and lose a portion of their advantage. Pre-hurricane the Rita evacuees are .09-.10 standard deviations above the state average and fall to being .05 standard deviations above. As with the math scores, the Rita evacuees experience a 2006 decline that is similar to that of the Katrina evacuees but the Rita evacuees do not see any "catch up" in 2007. The effects over time are shown in Figure III.

Table X separates out the Katrina effects for evacuees initially from Orleans Parish versus all others. The sample size falls because I am forced to limit the sample to students whom I observe in 2004 or 2005 (or both). Here I find that the two groups have a rather different experience. The non-New Orleans Katrina evacuees (most of whom are from Jefferson) experience a loss of .11 standard deviations in their math score and see very little improvement in 2006. In contrast, the New Orleans evacuees start out with significantly worse test scores and also see a drop in 2006 of .125 standard deviations. But by 2007 the New Orleans evacuees actually have higher average test scores than they had pre-Katrina. This test score advantage of 2007 relative to 2004 or 2005 is not statistically significant, but the point estimate is .04 to .065 standard deviations.

Certainly one possible interpretation of these facts is that the new schools for the New Orleans evacuees have such higher value added relative to the old schools that within two years the evacuees have more than made up for the large costs of the dislocation imposed by the hurricane. The Jefferson students do not see an increase possibly because they receive no benefits from the disruption and possibly because there are negative externalities from the large numbers of Orleans students who arrive at their schools. The effects are graphed in Figure IV.

Table XI performs the same exercise (separating the Orleans Parish and non-Orleans Parish evacuees) for ELA scores. For non-Orleans evacuees, the ELA scores fall in 2006 and fall more in 2007. But for the Orleans evacuees, there is an initial drop of .10 standard deviations after the hurricane (in 2006) followed by a large average gain in 2007. The Orleans evacuees have 2007 average ELA scores that are .10 standard deviations higher than their 2004 test scores.

The preceding tables used all of the observations available and did not control for a student's initial performance. In Table XII, I calculate a baseline (pre-hurricane) math and ELA score for each student observed in 2004 and 2005. I regress 2006 and 2007 test scores on evacuee status, controlling for the baseline scores. Again, I estimate separate effects for Orleans and non-Orleans evacuees. Column (1) is for math scores in 2006. The Orleans evacuees experience a .13 drop in test scores controlling for their baseline score. By 2007 they have made back the hurricane induced drop, though are not estimated to be performing above their pre-hurricane level.

The non-Orleans Katrina evacuees show a different pattern. They experience an average loss of .07 standard deviations in 2006 and this persists into 2007. The Rita evacuees from public schools experience a .05 standard deviation loss in 2006. In the point estimates they recover in 2007, though the 2006 and 2007 coefficients are not statistically significantly different.

The results for the ELA scores tell the same story as the results for the math scores. The Orleans Katrina evacuees show a negative effect in 2006 with recovery by 2007. The non-Orleans Katrina evacuees have a negative shock in 2006 which gets worse in 2007.

Tables XIII and XIV use a difference in difference methodology to estimate the effects of the hurricanes on the evacuees. However, following equation (2) I do not allow for separate coefficients for 2006 and 2007. In Table XIII, I examine the effects by grade and for all grades combined. The coefficient of interest is "after" times evacuee status. In columns (1)-(3), we see that the negative effects of the hurricane are by far the largest for the 10th graders with an estimated effect size of -.18 standard deviations for the Katrina evacuees and -.13 for the Rita evacuees. Combining all grades yields an effect of -.089 for the Katrina evacuees. Adding fixed effects for initial school (Column 5) reduces the number of observations available but still greatly reduces the estimated standard error. Table XIV uses the same difference in difference methodology and shows the effects of Katrina and Rita on ELA scores for all grades with and without fixed effects for initial school. Including school fixed effects, the Katrina evacuees experience a drop of .081 standard deviations in their ELA score and Rita evacuees experience a drop of .047.

Table XV takes the difference in difference methodology for math scores (equation 2) and cuts the data by distance moved, race, gender, and Orleans versus non-Orleans evacuees. In column (1) I ask whether Katrina evacuees who move out of the affected parishes experience different outcomes than those who stay within the greater New Orleans metro area. The point estimate on the interaction between being an evacuee*After 2005*moved out is positive but it is small and not statistically significant. In column (2), I limit the sample to just the black students and find effects of Katrina and Rita that are similar to the point estimates for the whole sample. For example, the effect of Katrina for the black students is -.07 versus -.089 for all students (from Table XIV). Similarly the effects for the male students (at -.075) look similar to the effects for all students. The most interesting cut of the data appears to be when we split the Orleans and non-Orleans Katrina evacuees. In the point estimates, the negative effect for the non-Orleans evacuees is nearly twice as large as for the Orleans evacuees. The negative effects for the Orleans evacuees is not statistically significantly different from 0.

Tables XVI and XVII shows estimates from equation (3) which includes lagged math scores. I estimate equation (3) separately for 2005, 2006, and 2007. The 2005 estimates (column 1 of each table) are highly speculative since I have so few students with a test score in both 2004 and 2005. Column (1) of Table XVI shows no effect of evacuee status in the Spring of 2005 (pre-hurricane), controlling for lagged test score. In Column (2) (for 2006) the effect for the Katrina evacuees is -.087 and the effect for the Rita evacuees is -.053. These are similar to the estimates of -.089 and -.082 (Katrina and Rita respectively) that I obtained using the difference in difference model. In column (3), I split the Katrina evacuees by those who left the greater New Orleans area and those who did not. The effects for 2006 are significantly less negative for those who left the area. This of course may be selection, not treatment. Finally in column (7), I estimate the growth in test scores model for 2007, controlling for 2006 test score. The estimated effects are not statistically different from zero. I interpret this as saying that on average, Rita and Katrina evacuees did not experience unusual growth (i.e. catch up) in 2007 scores despite the dip in 2006.

Tables XVIII and XIX are for the instrumental variables strategy. I use FEMAs localized damage assessment of flooding and damage from Hurricane Katrina as an instrument for evacuee status. I use the damage assessment at the student's initial (2004 or 2005 school) in part because I do not know students' home addresses. FEMA's damage assessments are available on Google Earth. I use the following coding scheme: areas with no damage are coded as 0. Light, moderate, extensive and catastrophic and coded as 1-4 respectively. Saturated areas are coded as a 5 and completely flooded areas are coded as a 6. While this conflating of flood levels and damage seems odd, these are the data as provided by FEMA and my IV results are robust to alternative coding strategies.

Table XVIII shows a frequency of student*year observations by the damage assessment assigned to their initial school. I have only coded up the Katrina damage assessments and have ignored damage from Rita.

It is admittedly surprising that 98 percent of the students are attending schools with 0 damage recorded on the FEMA maps.[9] However, the damage assessment as provided still results in a strong first stage in predicting evacuee status, even when I include district fixed effects. Column (1) of Table XIX shows the first stage regression. The damage assessment predicts evacuee status with an F statistic of 107 and a p-value of 0.0000. The IV estimates of the effect of hurricane Katrina on evacuees' 2006 math scores is -.16 which is in the ballpark of the difference in difference estimate of -.089. The estimated effect for Katrina evacuees on 2006 ELA scores is -.12.

Effects on College Going

In addition to test scores, I also consider whether college enrollment rates for the evacuees are affected. Table IVa shows the enrollment rate in four year colleges by school district and cohort. As mentioned above, I limit enrollments to those that take place within one year following implied high school graduation year, i.e. within three years after taking the GEE exam. I do this to make enrollment rates for all four cohorts comparable to the enrollment rate for the most recent (2007) cohort.

[9] My research assistant and I have triple checked this.

East Baton Rouge and Iberia are intended to be my "control" districts since students in these districts experience the statewide effects of the hurricanes but are not themselves displaced. In 2004, 2006, and 2007 East Baton Rouge students had a .351 to .358 four year college enrollment rate. Those numbers imply a fair amount of stability across the hurricane years. However, 2005 East Baton Rouge students had what looks like an anomalously high enrollment rate of .390.

In contrast, the two large districts affected by Katrina (Jefferson and Orleans) experience drops in enrollment rates for the 2005 and 2006 cohorts followed by recovery by the 2007 cohort. Jefferson has a four year enrollment rate of .304. This falls to .262 for both the 2005 and 2006 cohorts and then the enrollment rate rises back to .304. Orleans also experiences about a 4 percentage point drop in the enrollment rate, but only in 2006. This is shown graphically in Figure Ia.

This suggests two hypotheses. First, the hurricane affected college enrollment for both students entering their senior year of high school AND for students who had recently graduated. There are significant effects in Jefferson for the 2005 cohort. While some student's in that group may be misclassified in my data they all were scheduled to graduate prior to the hurricane. They are either from the 2005 or 2004 high school classes (not the 2006 or 2007 high school class.)

Second, while the hurricane impacted both the 2005 and 2006 graduating classes, there may be no effects for the 2007 class. In Jefferson, Plaquemines, and Orleans, the four year college enrollment rates for the class of 2007 all achieved the same level as the 2004 class.

Neither of these conjectures can be accepted with absolute certainty. There are significant difficulties in deciding upon an appropriate control group against which the Katrina evacuees should be measured. Certainly having a longer time series and students from more districts would be useful.

In Tables Va and VIa show these effects in a regression setting. In Table Va, I regress the dummy for four year college enrollment on dummies for being for Orleans and for being from one of the suburban parishes in the New Orleans area. I run the regression separately by year. The Orleans students begin with a 9.9 percentage point disadvantage in enrollment rates. This worsens during 2005 and 2006 and then improves to a 7.9 percentage point disadvantage. Much like with the test scores, the Orleans students end the period being *relatively* better off than in the pre hurricane (2004) period. In the case of college enrollment, some of this improvement is coming from reduced college enrollment rates in Iberia (which is supposed to be a "control" district). That of course makes the effects more difficult to interpret than if the "control" districts had stable or at least consistent enrollment patterns.

The students from Jefferson, St Bernard, and Plaquemines have a somewhat similar experience as the Orleans students. Their enrollment rates worsen relative to the control districts in 2005, show some relative catch up in 2006, and then end the period with a better relative position than they started in 2004. It would be premature to conclude that the hurricane helped the 2007 cohort of evacuees. Though the 2007 evacuees *relative* enrollment rates are higher than their peers in 2004, their absolute enrollment rates match those of the 2004 cohorts from their same districts.

Table VIa combines all the years as a panel and adds pre-hurricane school effects and year effects. As a whole, the evacuees have enrollment rates that are 3.6 percentage points higher than the other districts, controlling for year effects and pre-hurricane school effects.

Estimated Peer Effects in Receiving Schools

I now turn to the question of whether students in the receiving schools are negatively impacted by the arrival of the evacuees. As mentioned above, I perform this analysis using schools outside of the most affected parishes, i.e. greater New Orleans. There is substantial variation in the percent of the student body that are Katrina evacuees. The histogram of "percent katrina" for 2006 is shown in Figure VI. Many schools received almost no Katrina evacuees while substantial numbers of schools were comprised of 5% to 15% evacuees. The median school was 2% Katrina and the 75th percentile school is 4% Katrina. I exclude several charter schools that appeared to have a percent Katrina in excess of 30%. I include only non-evacuees in the final regression.

I use equation (4) as my baseline peer effects specification. The percent Katrina is set to 0 in the pre-hurricane years and is set to the 2006 level in the post-hurricane years. The regressions include school fixed effects. Table XX contains the estimates from this regression. I find essentially no evidence of peer effects from the arrival of the Katrina students. When using data for all grades, the Katrina evacuees appear to provide small positive peer effects on math scores (column (1)). Column (3) for the 8th graders does find a statistically significant negative coefficient of -.28. But this effect is small and implies that a 10 percentage point increase in percent Katrina depresses 8th grade math scores for "natives" by .028.

Table XXI and XXII expand this investigation by using a difference in difference style framework. In these regressions, I hold the percent Katrina constant at the 2006 level and add an interaction for percent Katrina times a dummy for "after 2005." Here again I am not finding "peer effects" or externalities that are either statistically or economically significant. I have also tried looking for peer effects from just the Orleans Parish evacuees (who had the lowest average test scores in the state.) Again, I find no evidence of peer effects.

The lack of peer effects is quite surprising given that there is the potential for many forms of externalities, including strains in finances, effects on class size and disruption effects stemming from the arrival of the Katrina students. My current work with Imberman and Kugler will explore this further. In particular my coauthors have been conducting a series of interviews with high school principals in the Houston area to learn more about how the arrival of evacuees affected class sizes, class compositions, and the day to day operations of schools.

Effects on Crime in Receiving Communities

During 2005 and 2006, the US media gave a great deal of attention to the alleged increases in crime in the communities where the evacuees relocated. Both the *New York Times* and *Washington Post* ran stories about evacuee related crime increases in Houston. One *Washington Post* story was titled, "After Welcoming Evacuees, Houston Handles Spike in Crime Population Swell Fills Apartments and Strains Police Force." One of the key statistics cited in several stories was that in the six months following Katrina, evacuees were involved in 17% of Houston's 153 murders during that period. This figure is not as shocking when one realizes that evacuees comprised nearly 10 percent of Houston's population at the time. And evacuees were likely a larger fraction of Houston's lowest income citizens.

My objective is to ask whether crime and crime per capita in Houston actually spiked following the hurricanes. I perform two sets of analysis. First, I compare monthly crime rates in Houston to monthly crime rates in Texas' other large cities. Second, I look at crime rates within 65 Houston zip codes and ask whether zip codes with more Katrina evacuees experienced greater increases in crime.

The first data set consists of monthly data from the Uniform Crime Reports Return A Master File. I use monthly data from January 2004 through December 2006. (A longer time series is probably desirable but it was necessary to read in and reshape the data for each year separately.) My comparison cities in Texas are Arlington, Austin, Dallas, El Paso, Fort Worth, Harris, Montgomery, and San Antonio. These are all of the cities with more than 300,000 people in 2000. The mean monthly crime rates per 10,000 people are shown in Table Ib.

Figures Ib, IIb, and IIIb plot the time series of the monthly numbers of burglaries, murders and robberies. The most striking fact is shown in Figure Ib. There is a large increase in the number of burglaries in Houston in the month that the evacuees arrive (September 2005). Burglaries jump from 2400 per month to 2900 per month. However, that increase disappears by October 2005 and does not return. One story is that a number of evacuees arrived in Houston and either temporarily became professional burglars or temporarily continued their former profession in Louisiana. But these evacuee burglars either quickly were caught or found other employment. Note that 30-50 productive burglars could produce an extra 500 burglaries in a month.

In Figure IIb, murders do appear to experience a level shift up that lasts through September 2006. The number of murders falls by October 2006. (Looking separately at the block level data from the Houston Police, I found that the decline in murders in October 2006 was temporary and murders again hit 37 per month in April 2007.) The picture for robberies is muddled (Figure IIIb). Robberies appear to trend up before the hurricanes and remain high throughout the post-hurricane period.

Table IIIb shows two different specifications using monthly UCR data across large Texas cities. In all cases the dependent variable is monthly crimes per 10,000 people. In columns (1), (3), (5) and (7) the right hand side includes a dummy for "After August 2005" and the interaction of that dummy with a dummy for Houston. In the even numbered columns I include a dummy for "Month Equals September 2005" and interact that dummy with the Houston dummy. In all cases I include city effects and month effects.

The evidence is mixed. Murders and robberies per 10,000 people are statistically significantly higher following September 2005. The coefficient for murders is .039 which represents a 40 percent increase relative to the mean for the whole period. The coefficient for robberies is roughly 17% of the mean value. But violent crime appeared to be trending upwards in Houston (both absolutely and relative to the rest of Texas) before the hurricanes. Burglaries show no evidence of a long run increase following the hurricanes.

To learn more about this issue, I also obtained the monthly block level crime data from the Houston Police Department.[10] I know the location of student evacuees, or at least the location of their schools from the Houston Independent School District Data. I aggregated both data sets to the zip code level since that appeared to be the smallest common geographic unit across the two data sets. The means for my zip code level data set are shown in Table IVb. For each zip code, I calculate percentage of students who are evacuees. The mean "percent katrina" is 7 percent, with a range from 0 percent to 50 percent. There are 65 zip codes and the data cover January 2005-September 2007.

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[10] http://www.houstontx.gov/police/cs/stats2.htm

In Table Vb, I report regressions of monthly crimes per 10,000 people on the "percent katrina" among students in the zip code. I include zip code fixed effects and a dummy for September 2005 or later. This enables me to identify the coefficient on "After August 2005"*"Percent Katrina." Looking across five different types of crimes, I found no evidence that crime was differentially higher in zip codes with a higher fraction of Katrina evacuees.

V. Discussion and Conclusion

Hurricanes Katrina and Rita had significant impacts on the academic performance of evacuees. In the first year following the hurricanes, evacuee math scores dropped between .08 and .10 standard deviations relative to other Louisiana students. This is not terribly surprising given the massive disruptions caused by the hurricanes and the fact that the median student lost around five weeks of school.

Perhaps what is more surprising is how quickly the Orleans Parish evacuees recovered from the experience. In most of my specifications, by 2007, the Orleans evacuees are doing as well academically as they were in 2004 and 2005. And in some specifications the Orleans evacuees have higher performance (at least in the point estimates) in 2007 than in 2004 or 2005. Conversely Rita evacuees from Lake Charles and Katrina evacuees from Jefferson experience test score drops that persist into 2007 and in many estimates actually worsen from 2006 to 2007. For example, controlling for baselines (pre-hurricane) test scores, Katrina evacuees not from Orleans scored .068

standard deviations worse in math in 2006 and .074 standard deviations worse in 2007. For this same group, english language arts scores fall by .047 standard deviations in 2006 and .076 standard deviations (relative to "baseline") in 2007.

One natural explanation is that the New Orleans schools were so deficient, that in the medium run the New Orleans evacuees have seen increased academic achievement as a result of being kicked out of their original schools. The averages for the New Orleans evacuees actually include those evacuees who have enrolled in the Recovery School District in New Orleans which by many accounts has struggled and which according to the data has low levels of average achievement. In contrast, Jefferson and Lake Charles evacuees experienced only the massive disruption of the hurricanes without any benefit. In particular the increased presence of the Orleans evacuees in the Jefferson schools could provide negative class size externalities and negative peer effects.

The Katrina evacuees both from New Orleans and Jefferson also appear to recover rapidly in terms of college enrollment rates. The 2005 and 2006 graduating classes experience a 4 percentage point drop in enrollment. However, the 2007 graduating class shows no such effect. If anything, the 2007 cohort of evacuees gains ground relative to students in the non-evacuee districts of East Baton Rouge and Iberia.

When I look more broadly for peer effects of the evacuees on schools outside the New Orleans area, I do not find any evidence for such effects. I would have expected that a 10 percent addition to the student body of evacuees would have statistically significant effects on test scores. There is not evidence in favor of this hypothesis. One possibility is that the receiving schools brought in enough extra teachers and classroom space to mitigate the problem. Principals may have been able to quickly identify new students who were discipline problems and mitigate the problems quickly. It is also possible that the test scores I am studying are a crude measure of academic success and that other measures (including grade point average, college going, and disciplinary records) would show both larger effects from Katrina and Rita and would provide more power to study peer effects from the evacuees.

One frequently repeated fact about the evacuees is that they brought crime to the receiving cities and towns. I investigated this using both city level UCR data and zip code level data within Houston. Its clear that robberies and murders are higher in Houston 2006 than in 2004 and early 2005. But is not clear how much of this trend predates the hurricanes. The big spike in burglaries in Houston in September 2005 faded within one month, leaving the number of burglaries per capita lower (since population rose by 10 percent.)

Overall these results provide a first look at how students were affected by one of the largest relocations in recent US history. The test score may results suggest that for students in particular poor performing schools, the cost to achievement from relocating can be fairly quickly be made up for by the benefits from being in a different school.

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Table I
Structure of the Uncut Dataset

The data contain four years worth of test scores (2004-2007). In 2004-2005 for Math and English Language Arts, students are tested in grades 4,8,10 under the LEAP (Louisiana Education Assessment Program). These are all high stakes test. Grade 4 and 8 students need to score "Approaching Basic" in both reading and math in order to progress to the next grade level. Grade 10 students need to score "Approaching Basic" in order to be eligible for a regular high school diploma. The high stakes policies were suspended for one year during 05-06 due to the Hurricanes. (Additionally Students are tested in Social Science and Science in grade 11. In 2006 and 2007, ILEAP tests are added for grades 3, 5, 6, 7, 9.

These are the raw data. The analysis sample limits the data to those students I observe in 2006 since that is the year for which I have an indicator of evacuee status. Note that for 2006-2007 I have 9 grades of students, adding up to about 450,000. I am missing grades 1,2, 12. If we multiply the 450k*12/9 we get 600,000 which is roughly the total number of public school students in Louisiana.

		year			
grade	2004	2005	2006	2007	Total
3	0	0	48,074	51,057	99,131
4	59,171	61,346	52,412	51,773	224,702
5	0	0	46,732	49,829	96,561
6	0	0	47,859	51,655	99,514
7	0	0	50,393	50,971	101,364
8	58,356	58,592	50,113	50,130	217,191
9	0	0	56,837	61,280	118,117
10	46,562	46,291	41,745	43,877	178,475
11	40,000	39,590	36,082	37,498	153,170
12	6,644	1,674	1,747	1,752	11,817
HS	22	14	2	152	190
Total	210,755	207,507	431,996	449,974	1,300,232

Table II

Frequency Tabulation of Lousiana Students Observed in 2005 (Grades 4,8,10) By Their Future Evacuee Status And Whether They Attend School In One of the Four Heavily Affected Parishes

I take pre-Hurricane data in Spring 2005. This is observed for students in grades 4,8,10. I then limit the data to those students I observe in 2006 (grades 3-11) since 2006 is the year in which I have an accurate indicator of evacuee status. I cut the data by being in one of the most affected parishes and being an evacuee in 2006. The most affected parishes are Orleans, Jefferson, Plaquemines, and St. Bernard. Ninety three percent of Katrina evacuees come from these parishes. And 90 percent of the students in these affected parishes are evacuees.

Displaced from Public School Due to Katrina	In A Katrina District in 2005		
	No	Yes	Total
No	119,928	1,379	121,307
Yes	988	13,021	14,009
Total	120,916	14,400	135,316

Frequency Tabulation of Lousiana Students Observed in 2006 (Grades 3-11) By Evacuee Status And Whether They Attend School In One of the Four Heavily Affected Parishes

For 2006, I observe all students in grades 3-11 and their evacuee status that Spring. Sixty nine percent of evacuees remain in one of the four affected Parishes.

Displaced from Public School Due to Katrina	In A Katrina District in 2006		
	No	Yes	Total
No	383,836	2,748	386,584
Yes	14,115	31,298	45,413
Total	397,951	34,046	431,997

Table III
Percent of Eventual Evacuees Attending School In One of Most Affected Parishes

I take all students who are evacuees in 2006. I calculate the fraction living in the affected parishes (Orleans, Jefferson, Plaquemines, and St. Bernard) by year.

Year	Fraction In Affected Parishes	N
2004	0.931	9,743
2005	0.929	14,009
2006	0.689	45,413
2007	0.759	35,325

Table IV

Evacuees Highly Likely To Be Missing From Sample Relative to Other Students (8th Graders in 2005)

I take the set of 8th graders observed during 2005 and ask whether they are in the sample in 2007. I cut the data by evacuee versus not.

	Orleans	Evacuee	
Drop from Sample 05 to 07	No	Yes	Total
No	42,107	2,719	44,826
Yes	10,884	2,883	13,767
Total	52,991	5,602	58,593

Table V

Orleans Students More Likely to Disappear From Dataset Relative to Other Louisiana Students

I identify all eighth graders in 2005. I check to see whether they disappear from the data set by 2007. I run an OLS regression of dropping from the sample on student characteristics.

	(1) Eigth Graders in 2005 Who Disappear From Sample By 2007 (All Students)	(2) Eigth Graders in 2005 Who Disappear From Sample By 2007 (Orleans Students)
Attends School in Orleans	0.308	
in 2005	(0.006)**	
Math Score 2005	-0.072	-0.050
	(0.002)**	(0.008)**
Black (0-1)	-0.028	0.045
	(0.004)**	(0.047)
Male	0.028	0.020
	(0.003)**	(0.014)
Hispanic (0-1)	0.079	0.097
	(0.013)**	(0.086)
Asian (0-1)	0.025	-0.063
	(0.014)	(0.072)
Constant	0.158	0.414
	(0.003)**	(0.046)**
Observations	52274	4969
R-squared	0.094	0.012

Standard errors in parentheses
* significant at 5%; ** significant at 1%

Table VI
Where Evacuees Come From and Go To

I classify students by their eventual status as an evacuee. I count only the 4th, 8th, 10th graders since these are the only grades tested in all years of the dataset (2004-2007). I limit the sample to students observed in 2006 which is the year for which I know evacuee status. I only show districts with 30 or more evacuees in some year. Districts are sorted by the number of evacuees in 2006, except for the Recover School District in New Orleans.

	Number of Eventual Evacuees				Average Standardized Math Score			
district_name	2004	2005	2006	2007	2004	2005	2006	2007
Jefferson Parish	4755	6965	8219	6750	-0.13	-0.188	-0.28	-0.225
Orleans Parish	3297	4004	1252	849	-0.532	-0.519	-0.783	-0.041
Recovery School Districts				1074				-0.5409
East Baton Rouge Parish	22	35	1026	645	-0.293	-0.277	-0.29	-0.264
St. Tammany Parish	425	677	967	861	0.401	0.392	0.316	0.346
Plaquemines Parish	453	738	596	631	0.179	0.225	0.261	0.233
Tangipahoa Parish	22	27	210	143	-0.048	-0.093	-0.194	-0.198
Lafayette Parish	3	2	198	118	0.201	0.232	0.2	0.162
Caddo Parish	4	6	166	81	-0.111	-0.143	-0.043	-0.136
Rapides Parish	4	2	163	72	0.063	0.058	0.043	0.099
Ascension Parish	6	7	158	109	0.26	0.296	0.27	0.295
St. Bernard Parish	495	781	158	360	0.241	0.245	0.081	0.059
St. John The Baptist Parish	26	28	138	111	-0.257	-0.293	-0.317	-0.171
St. Landry Parish	5	2	108	32	-0.007	0.013	0.058	0.042
Terrebonne Parish	6	14	103	55	-0.02	-0.07	-0.123	-0.144
St. Charles Parish	28	39	93	78	0.372	0.305	0.214	0.256
City Of Baker School District	1	0	88	28	-0.455	-0.637	-0.659	-0.754
Belle Chasse Academy, Inc.	18	54	85	65	-0.006	0.061	-0.016	0.329
Ouachita Parish	1	2	84	39	0.287	0.336	0.322	0.293
Livingston Parish	7	9	80	102	0.325	0.248	0.228	0.254
St. Mary Parish	10	5	79	30	-0.039	0.072	-0.012	0.039
Bossier Parish	1	1	73	35	0.166	0.101	0.145	0.058
Lafourche Parish	20	15	68	48	-0.101	-0.048	0.018	0.058
Washington Parish	9	21	65	52	-0.02	-0.115	-0.173	-0.156
Iberia Parish	2	2	47	32	-0.009	0.021	0.052	0.115
City Of Monroe School District		2	45	15		-0.226	-0.067	-0.113
Milestone Sabis Academy Of New Orleans	16	25	45	33	-1.247	-0.345	-0.794	-0.469

Natchitoches Parish	0	1	44	20	-0.195	-0.184	-0.229	-0.251
West Baton Rouge Parish	2	2	44	21	-0.168	-0.136	-0.023	-0.1
Avoyelles Parish	2	2	43	21	-0.037	-0.006	-0.144	-0.074
Concordia Parish	1	0	41	24	-0.28	-0.254	-0.233	-0.291
St. Martin Parish	2	0	40	16	-0.093	-0.144	-0.031	-0.091
Iberville Parish	3	6	38	26	-0.235	-0.251	-0.278	-0.37
St. James Parish	2	2	35	16	-0.096	0.102	0.058	0.099
Vermilion Parish	2	3	31	7	0.156	0.1	0.132	0.058
Acadia Parish	0	0	30	11	0.109	0.032	0.095	0.024
Lincoln Parish	0	0	30	14	0.045	0.135	0.11	0.068
City Of Bogalusa School District		33	28	32		-0.343	-0.428	-0.456

Table VII
Student Level Summary Statistics for 2006

This table shows the means for all student level observations in the analysis sample for 2006. To determine whether an evacuee is originally from New Orleans, I need additionally to observe the student in 2004 or 2005. I show means and sample sizes separately for Katrina and Rita Evacuees.

	Entire State			Katrina Evacuees		Rita Evacuees	
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Obs	Mean
Katrina Evacuee in Public School	431,996	0.105	0.307	45,412	1.000	23,136	0.000
Katrina Evacuee Who Left Affected Parishes	431,996	0.033	0.178	45,412	0.311	23,136	0.000
Katrina Evacuee from New Orleans in 04 or 05	213,272	0.035	0.184	21,882	0.303	11,959	0.006
Katrina Evacuee Not from New Orleans in 04 or 05	213,272	0.071	0.258	21,882	0.697	11,959	0.000
Katrina Evacuee Temporarily Was in Private School	431,996	0.004	0.063	45,412	0.000	23,136	0.000
Katrina Evacuee Temporarily Was Out of State	431,996	0.004	0.066	45,412	0.000	23,136	0.000
Rita Evacuee in Public School	431,996	0.054	0.225	45,412	0.000	23,136	1.000
Rita Evacuee in Private School	431,996	0.000	0.008	45,412	0.000	23,136	0.000
Rita Evacuee Temporarily Out of State	431,996	0.000	0.022	45,412	0.000	23,136	0.000
Free Lunch Eligible	431,995	0.561	0.496	45,412	0.637	23,136	0.528
Male	431,996	0.508	0.500	45,412	0.511	23,136	0.513
Student is Black	431,996	0.440	0.496	45,412	0.560	23,136	0.308
Student is Hispanic	431,996	0.020	0.139	45,412	0.060	23,136	0.008
Student is Asian	431,996	0.013	0.113	45,412	0.036	23,136	0.008
Math Score (Standardized)	362,200	0.000	-1.000	34,702	-0.268	19,801	0.108
English Language Arts Score (Standardized)	362,751	0.000	-1.000	34,611	-0.222	19,824	0.140

Table VIII
Effects of Katrina or Rita Displacement on Math scores
Repeated Cross Sections

I regress test scores on dummies for ever being a Rita or a Katrina evacuee in a public school. Standard errors are clustered at the school level. Test scores are standardized to be mean zero variance 1 at the year*grade level. Exams are taken in March of each year. In March 2004 and March 2005, tests were administered to 4th, 8th, and 10th graders. In 2006 and 2007 the exams were administered to all grades 3-10.

	(1) Standardized Value of Math Score (2004)	(2) Standardized Value of Math Score (2005)	(3) Standardized Value of Math Score (2006)	(4) Standardized Value of Math Score (2007)
Displaced from Public	-0.069	-0.086	-0.189	-0.123
School Due to Katrina	(0.027)*	(0.030)**	(0.022)**	(0.028)**
Displaced from Public	0.089	0.081	-0.004	0.008
School Due to Rita	(0.035)*	(0.029)**	(0.025)	(0.025)
Student is Black	-0.602	-0.564	-0.644	-0.577
	(0.015)**	(0.013)**	(0.013)**	(0.011)**
Student is Asian	0.327	0.400	0.368	0.435
	(0.045)**	(0.046)**	(0.030)**	(0.032)**
Student is Hispanic	-0.177	-0.154	-0.268	-0.204
	(0.036)**	(0.036)**	(0.020)**	(0.024)**
Student is Male	-0.033	0.005	0.009	0.017
	(0.008)**	(0.007)	(0.004)*	(0.004)**
Free/Reduced Lunch Eligible	0.000	0.000	-0.317	-0.409
	(0.000)	(0.000)	(0.015)**	(0.012)**
Constant	0.553	0.573	0.747	0.591
	(0.143)**	(0.234)*	(0.045)**	(.)
Observations	54787	73630	362196	291645
R-squared	0.0966	0.0892	0.1674	0.1778

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Table IX
Effects of Katrina or Rita Displacement on English Language Arts scores: Repeated Cross Sections

I regress test scores on dummies for ever being a Rita or a Katrina evacuee in a public school. Standard errors are clustered at the school level. Test scores are standardized to be mean zero variance 1 at the year*grade level. Exams are taken in March of each year. In March 2004 and March 2005, tests were administered to 4th, 8th, and 10th graders. In 2006 and 2007 the exams were administered to all grades 3-10.

	(1) Standardized Value of ELA Score (2004)	(2) Standardized Value of ELA Score (2005)	(3) Standardized Value of ELA Score (2006)	(4) Standardized Value of ELA Score (2007)
Displaced from Public	-0.090	-0.084	-0.138	-0.104
School Due to Katrina	(0.031)**	(0.030)**	(0.022)**	(0.026)**
Displaced from Public	0.095	0.086	0.049	0.027
School Due to Rita	(0.040)*	(0.031)**	(0.027)	(0.026)
Student is Black	-0.421	-0.448	-0.533	-0.445
	(0.016)**	(0.013)**	(0.013)**	(0.012)**
Student is Asian	0.142	0.136	0.202	0.283
	(0.055)*	(0.048)**	(0.032)**	(0.031)**
Student is Hispanic	-0.058	-0.141	-0.274	-0.187
	(0.046)	(0.042)**	(0.023)**	(0.024)**
Student is Male	-0.381	-0.308	-0.303	-0.300
	(0.009)**	(0.008)**	(0.004)**	(0.004)**
Free/Reduced Lunch	0.000	0.000	-0.361	-0.447
Eligible	(0.000)	(0.000)	(0.016)**	(0.012)**
Observations	53,643	72,637	362,747	291,477
R-squared	0.0801	0.0738	0.1577	0.1617

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Table X
Effects of Katrina or Rita Displacement on Math scores
Repeated Cross Sections: Orleans vs Non-Orleans Evacuees

I regress test scores on dummies for ever being a Rita or a Katrina evacuee in a public school. I distinguish between Katrina evacuees from Orleans Parish School District and evacuees from all other districts. Standard errors are clustered at the school level. Test scores are standardized to be mean zero variance 1 at the year*grade level.

	(1) Standardized Value of Math Score (2004)	(2) Standardized Value of Math Score (2005)	(3) Standardized Value of Math Score (2006)	(4) Standardized Value of Math Score (2007)
New Orleans Evacuee In	-0.197	-0.175	-0.302	-0.131
Public School	(0.052)**	(0.064)**	(0.033)**	(0.049)**
Non New Orleans Evacuee	-0.002	-0.041	-0.157	-0.146
In Public School	(0.027)	(0.028)	(0.025)**	(0.040)**
Displaced from Public	0.091	0.083	-0.026	-0.000
School Due to Rita	(0.035)*	(0.029)**	(0.029)	(0.033)
Student is Black	-0.591	-0.557	-0.605	-0.534
	(0.015)**	(0.013)**	(0.014)**	(0.015)**
Student is Asian	0.325	0.396	0.429	0.471
	(0.044)**	(0.046)**	(0.042)**	(0.045)**
Student is Hispanic	-0.193	-0.162	-0.142	-0.096
	(0.036)**	(0.036)**	(0.025)**	(0.034)**
Student is Male	-0.033	0.005	0.013	0.025
	(0.008)**	(0.007)	(0.006)*	(0.006)**
Free/Reduced Lunch Eligible	0.000	0.000	-0.316	-0.376
	(0.000)	(0.000)	(0.016)**	(0.017)**
Observations	54787	73630	163897	118626
R-squared	0.0980	0.0898	0.1814	0.1991

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Table XI
Effects of Katrina or Rita Displacement on ELA scores
Repeated Cross Sections: Orleans vs Non-Orleans Evacuees

I regress test scores on dummies for ever being a Rita or a Katrina evacuee in a public school. I distinguish between Katrina evacuees from Orleans Parish School District and evacuees from all other districts. Standard errors are clustered at the school level. Test scores are standardized to be mean zero variance 1 at the year*grade level.

	(1) Standardized Value of ELA Score (2004)	(2) Standardized Value of ELA Score (2005)	(3) Standardized Value of ELA Score (2006)	(4) Standardized Value of ELA Score (2007)
New Orleans Evacuee In Public School	-0.286	-0.244	-0.346	-0.183
	(0.058)**	(0.063)**	(0.040)**	(0.053)**
Non New Orleans Evacuee In Public School	0.018	0.003	-0.086	-0.121
	(0.029)	(0.026)	(0.023)**	(0.036)**
Displaced from Public School Due to Rita	0.098	0.090	0.016	-0.027
	(0.040)*	(0.031)**	(0.028)	(0.032)
Student is Black	-0.405	-0.435	-0.505	-0.440
	(0.016)**	(0.013)**	(0.015)**	(0.016)**
Student is Asian	0.138	0.127	0.275	0.339
	(0.054)*	(0.047)**	(0.042)**	(0.041)**
Student is Hispanic	-0.086	-0.158	-0.133	-0.094
	(0.045)	(0.041)**	(0.024)**	(0.032)**
Student is Male	-0.381	-0.308	-0.277	-0.285
	(0.009)**	(0.008)**	(0.006)**	(0.006)**
Free/Reduced Lunch Eligible			-0.360	-0.410
			(0.017)**	(0.017)**
Observations	53643	72637	164308	118481
R-squared	0.0831	0.0756	0.1832	0.2005

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Table XII
Effects of Katrina or Rita Displacement on Math and ELA scores Growth from Baseline: Orleans vs Non-Orleans Evacuees

I regress 2006 and 2006 test scores on dummies for ever being a Rita or a Katrina evacuee in a public school. I control for the student's pre-hurricane score in 2004 or 2005. I distinguish between Katrina evacuees from Orleans Parish School District and evacuees from all other districts. Standard errors are clustered at the school level. Test scores are standardized to be mean zero variance 1 at the year*grade level. Regressions include grade level dummies.

	(1) Standardized Value of Math Score (LEAP or ILEAP) (2006)	(2) Standardized Value of Math Score (LEAP or ILEAP) (2007)	(3) Standardized Value of ELA Score (LEAP or ILEAP) (2006)	(4) Standardized Value of ELA Score (LEAP or ILEAP) (2007)
Math Score in 2005 or 2004	0.800	0.783		
	(0.004)**	(0.007)**		
ELA Score in 2005 or 2004			0.765	0.748
			(0.004)**	(0.006)**
New Orleans Evacuee In Public School	-0.133	-0.015	-0.128	-0.035
	(0.021)**	(0.035)	(0.022)**	(0.036)
Non New Orleans Evacuee In Public School	-0.068	-0.074	-0.047	-0.076
	(0.018)**	(0.024)**	(0.015)**	(0.018)**
Displaced from Private School Due to Katrina	0.063	-0.063	0.026	0.055
	(0.056)	(0.074)	(0.053)	(0.082)
Displaced Out of State Due to Katrina	0.003	-0.028	0.010	-0.047
	(0.032)	(0.043)	(0.032)	(0.041)
Displaced from Public School Due to Rita	-0.052	-0.007	-0.004	-0.051
	(0.014)**	(0.024)	(0.017)	(0.020)**
Displaced from Private School Due to Rita	0.316	0.107	0.731	0.739
	(0.043)**	(0.123)	(0.054)**	(0.230)**
Displaced Out of State Due to Rita	-0.126	0.076	-0.177	-0.144
	(0.122)	(0.202)	(0.128)	(0.163)
Free/Reduced Lunch Eligible	-0.114	-0.150	-0.141	-0.153
	(0.007)**	(0.008)**	(0.008)**	(0.008)**
Student is Male	-0.011	-0.020	-0.074	-0.116
	(0.004)**	(0.004)**	(0.004)**	(0.004)**
Student is Black	-0.172	-0.152	-0.190	-0.182
	(0.008)**	(0.011)**	(0.008)**	(0.011)**
Student is Hispanic	0.031	0.062	0.006	0.019
	(0.014)*	(0.021)**	(0.015)	(0.020)
Student is Asian	0.185	0.258	0.182	0.258
	(0.017)**	(0.023)**	(0.016)**	(0.019)**
Constant	0.437	0.844	0.516	0.235
	(0.039)**	(0.232)**	(0.045)**	(1,053.203)
Observations	157664	114463	157499	114190
R-squared	0.626	0.595	0.597	0.568

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Table XIII
Effects of Katrina or Rita Displacement: Difference in Difference Methodology

I regress test scores on dummies for ever being an evacuee, a dummy for after 2005, and the interaction of the two. This identifies the effect of the hurricane by asking whether eventual evacuee test scores became differentially worse after Fall 2005. Standard errors are clustered at the current school level. Columns (1),(2),(3) are for grades 4,8,10 respectively. Column (4) is for all grades. Column (5) is for all grades and includes fixed effects for initial (2005 or 2004) school. Years included are 2004-2007. Test scores are standardized at the whole state*grade*year level to be mean 0 variance 1. Standard errors are clustered at the level of the current school.

	(1) Standardized Value of Math Score (Grade 4)	(2) Standardized Value of Math Score (Grade 8)	(3) Standardized Value of Math Score (Grade 10)	(4) Standardized Value of Math Score (All Grades)	(5) Standardized Value of Math Score (All Grade, f.e. initial school)
After 2005*Katrina Evacuee In Public School	-0.080	-0.071	-0.184	-0.089	-0.091
	(0.032)*	(0.046)	(0.049)**	(0.026)**	(0.010)**
After 2005*Rita Evacuee In Public School	-0.098	-0.012	-0.132	-0.080	-0.064
	(0.038)*	(0.032)	(0.051)*	(0.024)**	(0.014)**
Displaced from Public School Due to Katrina	-0.079	-0.089	-0.008	-0.072	-0.013
	(0.032)*	(0.042)*	(0.057)	(0.025)**	(0.014)
Displaced from Public School Due to Rita	0.073	0.071	0.154	0.082	0.024
	(0.040)	(0.051)	(0.056)**	(0.028)**	(0.021)
After	-0.001	0.022	0.028	0.005	-0.067
	(0.011)	(0.013)	(0.014)*	(0.007)	(0.004)**
Displaced Out of State Due to Katrina	-0.105	0.051	-0.122	-0.051	-0.065
	(0.063)	(0.093)	(0.116)	(0.050)	(0.045)
After 2005*Katrina Evacuee Who Had Left State	-0.006	-0.113	-0.021	-0.049	-0.027
Temporarily	(0.084)	(0.112)	(0.141)	(0.057)	(0.053)
Displaced Out of State Due to Rita	-0.230	0.390	-0.128	0.004	0.109
	(0.193)	(0.208)	(0.149)	(0.160)	(0.149)
After 2005*Rita Evacuee Who Had Left State	0.045	-0.684	0.326	-0.153	-0.033
Temporarily	(0.224)	(0.252)**	(0.187)	(0.160)	(0.190)
Free/Reduced Lunch Eligible	-0.397	-0.337	-0.272	-0.349	-0.285
	(0.015)**	(0.023)**	(0.022)**	(0.013)**	(0.004)**
Student is Male	-0.025	0.029	0.099	0.010	0.006
	(0.006)**	(0.007)**	(0.009)**	(0.004)**	(0.003)*
Student is Black	-0.562	-0.645	-0.618	-0.608	-0.499
	(0.016)**	(0.017)**	(0.022)**	(0.011)**	(0.004)**
Student is Hispanic	-0.140	-0.279	-0.327	-0.227	-0.128
	(0.030)**	(0.033)**	(0.037)**	(0.020)**	(0.011)**
Student is Asian	0.365	0.405	0.381	0.391	0.425
	(0.031)**	(0.046)**	(0.068)**	(0.028)**	(0.013)**
Observations	156,007	133,692	87,444	782,258	410,942
R-squared	0.1409	0.1766	0.1618	0.1650	0.2199

Robust standard errors in parentheses, * significant at 5%; ** significant at 1%

Table XIV
Effects of Katrina or Rita Displacement on English Language Arts Scores
Difference in Difference Methodology

I regress test scores on dummies for ever being an evacuee, a dummy for after 2005, and the interaction of the two. This identifies the effect of the hurricane by asking whether eventual evacuee test scores became differentially worse after Fall 2005. Standard errors are clustered at the current school level. Column (1) is for all grades. Column (2) is for all grades and includes fixed effects for initial (2005 or 2004) school. Years included are 2004-2007. Test scores are standardized at the whole state*grade*year level to be mean 0 variance 1. Standard errors are clustered at the level of the current school.

	(1) Standardized Value of ELA Score (All Grades)	(2) Standardized Value of ELA Score (All grades, f.e. for Initial School)
After 2005*Katrina Evacuee In Public School	-0.047	-0.081
	(0.027)	(0.010)**
After 2005*Rita Evacuee In Public School	-0.044	-0.047
	(0.026)	(0.015)**
Displaced from Public School Due to Katrina	-0.078	-0.019
	(0.026)**	(0.014)
Displaced from Public School Due to Rita	0.085	0.043
	(0.032)**	(0.022)*
After	0.001	-0.081
	(0.007)	(0.004)**
Displaced Out of State Due to Katrina	-0.053	-0.090
	(0.054)	(0.046)
After 2005*Katrina Evacuee Who Had Left State Temporarily	-0.028	-0.043
	(0.062)	(0.054)
Displaced Out of State Due to Rita	0.017	0.081
	(0.165)	(0.154)
After 2005*Rita Evacuee Who Had Left State Temporarily	-0.269	-0.323
	(0.159)	(0.194)
Free/Reduced Lunch Eligible	-0.390	-0.326
	(0.013)**	(0.004)**
Student is Male	-0.305	-0.298
	(0.003)**	(0.003)**
Student is Black	-0.485	-0.378
	(0.012)**	(0.004)**
Student is Hispanic	-0.215	-0.109
	(0.022)**	(0.011)**
Student is Asian	0.221	0.261
	(0.029)**	(0.014)**
Constant	0.605	0.528
	(0.016)**	(0.005)**
Observations	780504	409071
R-squared	0.1507	0.2141

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Table XV
Effects of Katrina or Rita Displacement on Math Scores
Difference in Difference Methodology: Four Cuts of the Data

I regress math test scores on various dummies for type of evacuee, a dummy for after 2005, and the interaction of evacuee type with "after 2005." Column (1) includes a separate effect for evacuees who left the most affected parishes (Orleans, Jefferson, Plaquemines, St. Bernard). Column (2) limits the data to black students and column (3) limits the data to male students. Column (4) separates the Orleans Parish Evacuees and all other Katrina evacuees.

	(1) Standardized Value of Math Score (All Grades, Split Movers From Affected Areas)	(2) Standardized Value of Math Score (All Grades, Black Students Only)	(3) Standardized Value of Math Score (All Grades, Male Students Only)	(4) Standardized Value of Math Score (All Grades, Split Orleans Parish Evacuees)
After 2005*Katrina Evacuee In Public School	-0.110	-0.070	-0.075	
	(0.030)**	(0.028)*	(0.027)**	
After 2005*Katrina Evacuee In Public School*Moved Out of Affected Parishes	0.037			
	(0.046)			
After 2005*New Orleans Evacuee In Public School				-0.061
				(0.045)
After 2005*Non Orleans Evacuee In Public School				-0.117
				(0.030)**
After 2005*Rita Evacuee In Public School	-0.080	-0.049	-0.078	-0.094
	(0.024)**	(0.034)	(0.029)**	(0.032)**
Displaced from Public School Due to Katrina	-0.075	-0.098	-0.076	
	(0.026)**	(0.030)**	(0.026)**	
Katrina Evacuee In Public School*Moved Out of	0.053			
	(0.043)			
After 2005	0.005	0.013	0.005	-0.021
	(0.007)	(0.009)	(0.008)	(0.009)*
New Orleans Evacuee In Public School				-0.169
				(0.051)**
Non New Orleans Evacuee In Public School				-0.031
				(0.024)
Free/Reduced Lunch Eligible	-0.350	-0.220	-0.346	-0.352
	(0.013)**	(0.020)**	(0.013)**	(0.015)**
Student is Male	0.010	-0.049		
	(0.004)**	(0.005)**		
Student is Black	-0.608		-0.666	-0.588
	(0.011)**		(0.011)**	(0.012)**
Student is Hispanic	-0.223		-0.223	-0.140
	(0.020)**		(0.022)**	(0.023)**
Student is Asian	0.395		0.374	0.425
	(0.028)**		(0.030)**	(0.034)**
Observations	782258	364561	393001	410940
R-squared	0.1652	0.0119	0.1759	0.1553

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Table XVI
Effects of Katrina or Rita Displacement on Growth In Math Scores
(OLS Including Student's Lagged Test Score)

I regress math test scores on dummies for ever being an evacuee and the student's lagged test score. Columns (1), (2) and (4) are for 2005, 2006, 2007 respectively. The data set spans 2004-2007. Column (1) is an unusual sample in that few students tested in 2005 were also tested in 2004. Column (2) includes separate dummies for being a Katrina evacuee AND being a Katrina evacuee who moved out of the most affected parishes (Orleans, Jefferson, Plaquemines, St. Bernard) Columns include data from all grades and include grade dummies. The disadvantage of this approach is that columns (2) and (3) are limited to students who were in grades 4,8, or 10 in 2004 or 2005. Standard errors are clustered at the level of the current school.

	(1) Standardized Value of Math Score (2005)	(2) Standardized Value of Math Score (2006)	(3) Standardized Value of Math Score (2006)	(4) Standardized Value of Math Score (2007)
Displaced from Public School Due to Katrina	-0.025	-0.087	-0.101	0.013
	(0.033)	(0.015)**	(0.020)**	(0.013)
Displaced from Public School By Katrina And Moved Out of Affected Parishes			0.054	
			(0.024)*	
Displaced from Public School Due to Rita	0.014	-0.053	-0.053	0.021
	(0.041)	(0.014)**	(0.014)**	(0.012)
Lagged Math Score	0.721	0.804	0.803	0.789
	(0.015)**	(0.004)**	(0.004)**	(0.003)**
Displaced from Private School Due to Katrina	-0.005	-0.001	-0.001	0.042
	(0.104)	(0.055)	(0.056)	(0.026)
Displaced Out of State Due to Katrina	0.122	-0.012	-0.013	0.045
	(0.109)	(0.033)	(0.033)	(0.021)*
Displaced from Private School Due to Rita	0.000	0.315	0.315	0.100
	(0.000)	(0.043)**	(0.043)**	(0.130)
Displaced Out of State Due to Rita	-0.238	-0.150	-0.150	0.017
	(0.385)	(0.128)	(0.128)	(0.087)
Free/Reduced Lunch Eligible	0.000	-0.112	-0.113	-0.103
	(0.000)	(0.008)**	(0.008)**	(0.004)**
Student is Male	0.028	-0.011	-0.011	0.002
	(0.015)	(0.004)**	(0.004)**	(0.002)
Student is Black	-0.079	-0.175	-0.175	-0.124
	(0.021)**	(0.008)**	(0.008)**	(0.005)**
Student is Hispanic	-0.072	0.035	0.039	-0.019
	(0.067)	(0.014)*	(0.014)**	(0.011)
Student is Asian	0.179	0.186	0.188	0.144
	(0.165)	(0.017)**	(0.016)**	(0.012)**
Observations	8678	156514	156514	278521
R-squared	0.3990	0.6262	0.6263	0.6650

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Table XVII
Effects of Katrina or Rita Displacement on Growth In ELA Scores
(OLS Including Student's Lagged Test Score)

I regress english language arts test scores on dummies for ever being an evacuee and the student's lagged test score. Columns (1), (2) and (4) are for 2005, 2006, 2007 respectively. The data set spans 2004-2007. Column (1) is an unusual sample in that few students tested in 2005 were also tested in 2004. Column (3) includes separate dummies for being a Katrina evacuee AND being a Katrina evacuee who moved out of the most affected parishes (Orleans, Jefferson, Plaquemines, St. Bernard) Columns include data from all grades and include grade dummies. The disadvantage of this approach is that column (3) is limited to students who were in grades 4,8, or 10 in 2004 or 2005. Standard errors are clustered at the level of the current school.

	(1) Standardized Value of ELA Score (2005)	(2) Standardized Value of ELA Score (2006)	(3) Standardized Value of ELA Score (2006)	(4) Standardized Value of ELA Score (2007)
Displaced from Public School Due to	0.028	-0.070	-0.082	-0.005
Katrina	(0.035)	(0.014)**	(0.017)**	(0.011)
Displaced from Public School By Katrina And			0.046	
Moved Out of Affected Parishes			(0.023)*	
Displaced from Public School Due to	0.054	-0.006	-0.006	-0.005
Rita	(0.049)	(0.017)	(0.017)	(0.011)
Lagged ELA Score	0.743	0.769	0.769	0.776
	(0.015)**	(0.004)**	(0.004)**	(0.002)**
Displaced from Private School Due to Katrina	0.008	-0.048	-0.048	0.033
	(0.261)	(0.053)	(0.053)	(0.029)
Displaced Out of State Due to Katrina	0.118	-0.008	-0.009	-0.008
	(0.140)	(0.032)	(0.032)	(0.023)
Displaced from Private School Due to Rita	0.000	0.733	0.733	-0.110
	(0.000)	(0.053)**	(0.053)**	(0.144)
Displaced Out of State Due to Rita	-0.319	-0.191	-0.190	-0.059
	(0.073)**	(0.132)	(0.132)	(0.077)
Free/Reduced Lunch Eligible	0.000	-0.139	-0.139	-0.108
	(0.000)	(0.008)**	(0.008)**	(0.004)**
Student is Male	-0.014	-0.073	-0.073	-0.084
	(0.018)	(0.004)**	(0.004)**	(0.002)**
Student is Black	-0.057	-0.192	-0.192	-0.096
	(0.022)**	(0.008)**	(0.008)**	(0.005)**
Student is Hispanic	0.060	0.008	0.012	-0.015
	(0.071)	(0.015)	(0.015)	(0.011)
Student is Asian	-0.022	0.183	0.186	0.117
	(0.109)	(0.016)**	(0.016)**	(0.011)**
Constant	-1.102	0.511	0.511	-0.831
	(0.078)**	(0.043)**	(0.044)**	(3,294.038)
Observations	7183	155646	155646	279580
R-squared	0.4461	0.5953	0.5954	0.6326

Robust standard errors in parentheses * significant at 5%; ** significant at 1%

Table XVIII
Variation in Damage Assessment In Student's School

We use Google Earth images that contain FEMA's coding of Katrina affected areas to identify areas that experience damage or flooding. Google has six categories: 1=light , 2=moderate, 3=extensive, 4=catastrophic, 5=saturated, 6=flooded. We match the damage assessment of the students' school to the school she was attending in 2005 (or 2004 if 2005 is not available). The imags are available at http://bbs.keyhole.com/ubb/showflat.php/Cat/0/Number/99819/an/0/page/0

Damage Assessment	Freq.	Percent
None (0)	592,815	98.05
Light (1)	3,970	0.66
Moderate (2)	1	0
Catastrophic (4)	302	0.05
Flooded (6)	7,517	1.24
Total	604,605	100

Table XIX
IV Including Student's Lagged Test Score
Effects of Katrina or Rita Displacement on Growth In Math ELA Scores

I instrument for being a Katrina evacuee with the "damage assessment" for the initial school's address available on Google Maps. All regression include district fixed effects. Standard errors are clustered at the level of the initial school. Column (1) is the first stage regression. Columns (2) -(5) are the IV second stages.

	(1) **First Stage** Displaced from Public School Due to Katrina	(2) IV Standardized Value of Math Score (All Grades, 2006)	(3) IV Standardized Value of Math Score (All Grades, 2007)	(4) IV Standardized Value of ELA Score (All Grades, 2006)	(5) IV Standardized Value of ELA Score (All Grades, 2007)
Damage Assessment at School	0.074				
	(0.005)**				
Displaced from Public School Due to Katrina		-0.159	-0.024	-0.118	-0.006
		(0.061)**	(0.069)	(0.073)	(0.088)
Lagged Math Score		0.799	0.794		
		(0.004)**	(0.003)**		
Lagged ELA Score				0.763	0.789
				(0.005)**	(0.003)**
Free/Reduced Lunch Eligible	0.033	-0.096	-0.092	-0.132	-0.090
	(0.004)**	(0.005)**	(0.005)**	(0.006)**	(0.005)**
Student is Male	-0.000	-0.011	-0.002	-0.075	-0.100
	(0.001)	(0.003)**	(0.004)	(0.004)**	(0.004)**
Student is Black	0.008	-0.175	-0.090	-0.189	-0.075
	(0.004)*	(0.007)**	(0.006)**	(0.007)**	(0.006)**
Student is Hispanic	0.004	0.032	0.007	0.010	0.005
	(0.005)	(0.014)*	(0.016)	(0.016)	(0.015)
Student is Asian	0.005	0.182	0.161	0.188	0.151
	(0.007)	(0.016)**	(0.015)**	(0.015)**	(0.015)**
Constant	0.286	0.382	0.131	0.456	0.043
	(0.150)	(0.046)**	(0.032)**	(0.050)**	(0.036)
Observations	213269	156514	112321	155646	113307
R-squared	0.680	0.630	0.678	0.599	0.668

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Table XX
Effects of Katrina Evacuees on "Native" Math Scores
Panel Regression

I regress math test scores on the percent of the school that are designated as Katrina evacuees. Percent Katrina is 0 prior to the hurricane (2004 and 2005) and set to the Spring 2006 level for 2006 and 2007. All regressions include school fixed effects. I exclude the evacuees themselves from the regression. Standand errors are clustered at the school level. I exclude those few schools that are estimated to have a percent Katrina>30%. I only include schools outside of the 4 highly affected parishes (Orleans, St. Bernard, Jefferson, Plaquemines). (Regressions also include year effects, though these are fairly pointless since the test scores are standardized at the grade*year level for the uncut data set.)

	(1) Standardized Value of Math Score (All Grades)	(2) Standardized Value of ELA Score (All Grades)	(3) Standardized Value of Math Score (4th Grade)	(4) Standardized Value of Math Score (8th Grade)
Percent of School	0.166	-0.080	-0.282	-0.113
That Are Katrina Evacuees	(0.080)*	(0.085)	(0.133)*	(0.152)
Free/Reduced Lunch	-0.309	-0.347	-0.342	-0.309
Eligible	(0.003)**	(0.003)**	(0.007)**	(0.007)**
Student is Male	0.020	-0.292	-0.016	0.044
	(0.002)**	(0.002)**	(0.005)**	(0.005)**
Student is Black	-0.507	-0.373	-0.456	-0.533
	(0.003)**	(0.003)**	(0.007)**	(0.007)**
Student is Hispanic	-0.196	-0.214	-0.115	-0.250
	(0.010)**	(0.010)**	(0.022)**	(0.024)**
Student is Asian	0.350	0.184	0.397	0.366
	(0.011)**	(0.011)**	(0.024)**	(0.028)**
Observations	694024	692719	137099	117515
R-squared	0.232	0.223	0.222	0.256

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Table XXI
Effects of Katrina Evacuees on "Native" Math Scores
Difference in Difference Approach

I regress math test scores on the percent of the school in school year 05-06 that are designated as Katrina evacuees. I exclude the evacuees themselves from the regression. Standand errors are clustered at the school level. I exclude those few schools that are estimated to have a percent Katrina>30%. In columns (1)-(5) I only include schools outside of the 4 highly affected parishes (Orleans, St. Bernard, Jefferson, Plaquemines). In column (6) I exclude schools with an average math score in 2005 of > .30 standard deviations above the mean. In column (6) I include all parishes.

	(1) Standardized Value of Math Score (Grade 4)	(2) Standardized Value of Math Score (Grade 8)	(3) Standardized Value of Math Score (Grade 10)	(4) Standardized Value of Math Score (All Grades)	(5) Standardized Value of Math Score (All Grades Exclude Schools With High Math)	(6) Standardized Value of Math Score (All Grades, Include Affected Parishes)
Year is After 2005* Percent Katrina	-0.158	0.285	0.441	0.465	0.143	0.465
	(0.268)	(0.378)	(0.481)	(0.220)*	(0.204)	(0.220)*
Percentage of School that are Katrina	-0.835	-0.382	-0.822	-0.625	-0.329	-0.625
Evacuees in Spring 2006	(0.276)**	(0.396)	(0.475)	(0.220)**	(0.222)	(0.220)**
After 2005	-0.007	0.001	-0.005	-0.025	-0.001	-0.025
	(0.015)	(0.018)	(0.020)	(0.011)*	(0.011)	(0.011)*
Free/Reduced Lunch Eligible	-0.420	-0.365	-0.305	-0.374	-0.287	-0.374
	(0.017)**	(0.025)**	(0.024)**	(0.014)**	(0.012)**	(0.014)**
Student is Male	-0.025	0.034	0.100	0.010	0.006	0.010
	(0.006)**	(0.007)**	(0.009)**	(0.004)**	(0.004)	(0.004)**
Student is Black	-0.528	-0.634	-0.599	-0.591	-0.563	-0.591
	(0.018)**	(0.020)**	(0.026)**	(0.013)**	(0.012)**	(0.013)**
Student is Hispanic	-0.146	-0.271	-0.294	-0.201	-0.235	-0.201
	(0.036)**	(0.039)**	(0.049)**	(0.021)**	(0.024)**	(0.021)**
Student is Asian	0.406	0.402	0.373	0.411	0.337	0.411
	(0.038)**	(0.057)**	(0.098)**	(0.037)**	(0.033)**	(0.037)**
Constant	0.579	0.488	0.359	0.516	0.337	0.516
	(0.022)**	(0.033)**	(0.035)**	(0.019)**	(0.015)**	(0.019)**
Observations	137099	117515	77749	694024	501561	694024
R-squared	0.1413	0.1773	0.1612	0.1651	0.1344	0.1651

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Table XXII
Effects of Katrina Evacuees on "Native" ELA Scores
Difference in Difference Approach

I regress english language arts scores on the percent of the school in school year 05-06 that are designated as Katrina evacuees. I exclude the evacuees themselves from the regression. Standard errors are clustered at the school level. I exclude a few schools that are estimated to have a percent Katrina>30%. In columns (1)-(2) I only include schools outside of the 4 highly affected parishes (Orleans, St. Bernard, Jefferson, Plaquemines). In column (3) I include all parishes. .In column (2) I exclude schools with an average standardized test score > .3.

	(1) Standardized Value of ELA Score (LEAP or ILEAP)	(2) Standardized Value of ELA Score (LEAP or ILEAP)	(3) Standardized Value of ELA Score (LEAP or ILEAP)
Year is 2006-2007* Percent Katrina	0.333	0.082	0.333
	(0.214)	(0.202)	(0.214)
Percentage of School that are Katrina	-0.435	-0.267	-0.435
Evacuees in 05-06	(0.240)	(0.245)	(0.240)
After 2005	-0.023	-0.009	-0.023
	(0.011)*	(0.011)	(0.011)*
Free/Reduced Lunch Eligible	-0.417	-0.336	-0.417
	(0.014)**	(0.012)**	(0.014)**
Student is Male	-0.304	-0.309	-0.304
	(0.004)**	(0.004)**	(0.004)**
Student is Black	-0.466	-0.448	-0.466
	(0.013)**	(0.013)**	(0.013)**
Student is Hispanic	-0.220	-0.253	-0.220
	(0.025)**	(0.031)**	(0.025)**
Student is Asian	0.231	0.135	0.231
	(0.038)**	(0.038)**	(0.038)**
Constant	0.642	0.489	0.642
	(0.018)**	(0.016)**	(0.018)**
Observations	692719	500222	692719
R-squared	0.1530	0.1256	0.1530

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Appendix Table I
Summary Statistics for the Analysis Sample

This table shows the means for all student*year observations in the analysis sample. I have limited the data to students who are observed during 2006. To determine whether an evacuee is originally from New Orleans, I need additionally to observe the student in 2004 or 2005. I only observe students in grades 4,8,10, and 11 in spring 2004 and spring 2005. The final three columns are only for students who eventually become Katrina evacuees in public schools.

	All					Katrina Evacuees		
Variable	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.
Katrina Evacuee in Public School	1,018,959	0.103	0.303	0	1	104,490	1.000	0.000
Katrina Evacuee Who Left Affected Parishes	1,018,959	0.024	0.153	0	1	104,490	0.232	0.422
Katrina Evacuee from New Orleans in 04 or 05	604,583	0.035	0.185	0	1	61,515	0.307	0.461
Katrina Evacuee Not from New Orleans in 04 or 05	604,583	0.070	0.256	0	1	61,515	0.693	0.461
Katrina Evacuee Temporarily Was in Private School	1,018,959	0.003	0.053	0	1	104,490	0.000	0.000
Katrina Evacuee Temporarily Was Out of State	1,018,959	0.004	0.062	0	1	104,490	0.000	0.000
Rita Evacuee in Public School	1,018,959	0.054	0.227	0	1	104,490	0.000	0.000
Rita Evacuee in Private School	1,018,959	0.000	0.007	0	1	104,490	0.000	0.000
Rita Evacuee Temporarily Out of State	1,018,959	0.000	0.019	0	1	104,490	0.000	0.000
Free Lunch Eligible	929,593	0.644	0.479	0	1	96,844	0.726	0.446
Male	1,018,959	0.506	0.500	0	1	104,490	0.508	0.500
Student is Black	1,018,959	0.446	0.497	0	1	104,490	0.566	0.496
Student is Hispanic	1,018,959	0.019	0.135	0	1	104,490	0.059	0.236
Student is Asian	1,018,959	0.012	0.111	0	1	104,490	0.036	0.186
Math Score (Standardized)	868,088	0.000	1.000	-3.913	5.056	84,848	-0.240	1.014
English Language Arts Score (Standardized)	865,487	0.000	1.000	-5.134	3.911	84,348	-0.211	1.050

Appendix Table II
Student Level Variation in Instrument Within Three of the Affected Parishes

These are students in 2005 whom I also find in the data set in 2006. Note that most of the Orleans students attend a school in Spring 2005 that later receives 0 damage assessment according to Google, despite the fact that nearly all of the Orleans schools are closed after the Hurricaine.

		damagea		ssessment	
district_name	0	1	4	6	Total
Jefferson Parish	6,819	787	0	142	7,748
Orleans Parish	3,127	303	0	1,374	4,804
Plaquemines Parish	558	0	61	201	820
Total	11,807	1,090	61	1,727	14,685

Appendix Table III
Effects of Orleans Evacuees on "Native" Math Scores
Difference in Difference Approach

Here I look explicitly at peer effects from evacuees who are originally (pre-Hurricane) from Orleans in 2004 or 2005.

	(1)	(2)	(3)	(4)	(5)	(6)
	Standardized Value of Math Score (Grade 4)	Standardized Value of Math Score (Grade 8)	Standardized Value of Math Score (Grade 10)	Standardized Value of Math Score (All Grades)	Standardized Value of Math Score (All Grades Exclude Schools With High Math)	Standardized Value of Math Score (All Grades, Include Affected Parishes)
After 2005*Percent Orleans	-0.461	0.108	-0.260	-0.185	-0.275	-0.253
Evacuees	(0.268)	(0.478)	(0.576)	(0.255)	(0.256)	(0.243)
Percentage of School That Are	-0.808	0.098	-0.961	-0.373	-0.149	-0.403
Orleans Evacuees in 05-06	(0.409)*	(0.437)	(0.631)	(0.293)	(0.271)	(0.278)
After 2005	-0.000	0.008	0.015	-0.004	0.011	-0.003
	(0.012)	(0.015)	(0.018)	(0.009)	(0.010)	(0.009)
Free/Reduced Lunch Eligible	-0.419	-0.363	-0.302	-0.372	-0.286	-0.369
	(0.016)**	(0.025)**	(0.024)**	(0.014)**	(0.012)**	(0.014)**
Student is Male	-0.026	0.034	0.100	0.010	0.006	0.010
	(0.006)**	(0.007)**	(0.009)**	(0.004)**	(0.004)	(0.004)**
Student is Black	-0.521	-0.638	-0.589	-0.586	-0.560	-0.586
	(0.018)**	(0.020)**	(0.027)**	(0.013)**	(0.012)**	(0.013)**
Student is Hispanic	-0.160	-0.278	-0.288	-0.206	-0.234	-0.217
	(0.034)**	(0.039)**	(0.049)**	(0.021)**	(0.024)**	(0.020)**
Student is Asian	0.408	0.395	0.381	0.413	0.338	0.408
	(0.038)**	(0.058)**	(0.097)**	(0.037)**	(0.032)**	(0.036)**
Constant	0.560	0.472	0.341	0.495	0.325	0.493
	(0.020)**	(0.031)**	(0.031)**	(0.017)**	(0.014)**	(0.017)**
Observations	136082	116913	77786	686875	501227	689393
R-squared	0.1411	0.1766	0.1618	0.1648	0.1347	0.1646

Robust standard errors in parentheses
* significant at 5%; ** significant at 1%

Table Ia
Student Clearinghouse Data: College Type By High School Class Year

I start with a random sample of Louisiana High School students who took the LEAP exams prior to the hurricanes. I infer high school class year from the year the exam was taken. I use the Clearinghouse Data to ask whether these students are enrolled in college and type of college.

high_school_cohort	college_type 2	4	L	None	Total
2004	1,340	3,097	36	3,527	8,000
2005	1,142	2,680	30	4,148	8,000
2006	1,055	2,367	25	4,553	8,000
2007	988	2,387	24	4,601	8,000
Total	4,525	10,531	115	16,829	32,000

Table IIa
New Enrollments Over Time in Most Popular Four Year Colleges in The Sample

I show enrollments by year in the most popular four year colleges for the sample. I also show total enrollments and enrollments in a few selective schools and a few Texas universities.

		high_sch	ool_cohort		
College_Name	**2004**	**2005**	**2006**	**2007**	**Total**
Louisiana State Unive	512	496	390	361	1759
University Of New Orl	630	266	241	282	1,419
Southeastern Louisian	272	296	341	335	1,244
Southern University A	0	341	333	300	974
University Of Louisia	204	220	216	189	829
Nicholls State Univer	118	96	65	72	351
Northwestern State Un	102	80	49	41	272
Dillard University	87	33	26	69	215
Xavier University Of	0	16	48	148	212
Grambling State Unive	39	44	53	56	192
Louisiana Tech Univer	57	55	36	42	190
Tulane University	67	38	33	46	184
Loyola University In	42	24	30	56	152
The University Of Lou	29	42	30	28	129
Texas Southern Univer	10	42	35	21	108
Mcneese State Univers	25	28	20	13	86
Rice University	4	3	1	3	11
Texas A&M University	1	4	3	3	11
University Of Texas A	0	6	3	1	10
University Of Houston	1	0	1	6	8
Boston College	2	1	1	0	4
George Washington Uni	2	2	0	0	4
Boston University	2	0	1	0	3
Georgetown University	1	1	0	1	3
Harvard University	2	1	0	0	3
Lehigh University	3	0	0	0	3
New York University	0	2	0	1	3
Princeton University	3	0	0	0	3
Stanford University	0	0	2	0	2
Yale University	0	1	1	0	2
Cornell University	0	1	0	0	1
Dartmouth College	0	0	0	1	1
Total	2,483	2,461	2,270	2,387	9,601

Table IIIa
Students Enrolled in 4 Year Colleges: Year of GEE Test Taking Versus First Year of Enrollment in College

I start with a random sample of Louisiana High School students who took the GEE exams prior to the hurricanes. I infer high school class year from the year the exam was taken. I use the Clearinghouse Data to ask whether these students are enrolled in college and type of college. The most common grade for taking the exam is 10th grade, but there are some 11th graders taking the exam.

		Year Took	LEAP		
Year of LEAP	2002	2003	2004	2005	Total
2001	0	1	0	0	1
2002	50	1	1	1	53
2003	1,315	44	3	0	1,362
2004	1,023	422	29	1	1,475
2005	431	1,770	676	12	2,889
2006	178	339	1,447	182	2,146
2007	71	77	171	1,865	2,184
2008	23	26	40	326	415
Total	3,091	2,680	2,367	2,387	10,525

Table IVa

Four Year College Going Rate By Graduation Cohort and School District

I take a random sample (roughly 50%) of 10th graders who take LEAP exams during 2002-2005 in six different districts. (I infer their senior based on the year the student takes the LEAP exam). I use Student Clearinghouse data matched to the students (regardless of post-Katrina location) to determine whether or not the student enrolled in a 4 year college within 3 years after taking the LEAP exam. The table shows the percent enrolled in a four year college and the number of students.

	Cohort			
District	2004	2005	2006	2007
East Baton Rouge	0.358	0.39	0.353	0.351
	2,332	2,318	2,363	1,984
Iberia	0.366	0.335	0.299	0.291
	544	543	662	584
Jefferson	0.304	0.262	0.262	0.304
	1,870	2,057	2,309	2,062
Orleans	0.26	0.259	0.218	0.258
	2,667	2,466	1,981	2,733
Plaquemines	0.321	0.295	0.34	0.322
	246	237	247	233
St. Bernard	0.317	0.34	0.269	0.282
	341	379	438	404

Table Va
Four Year College Going Regressed on District Dummies By Year

I take a random sample (roughly 50%) of 10th graders who take LEAP exams during 2002-2005 in six different districts. I dummy out the Orleans and the suburban New Orleans students (Jefferson, St. Bernard, Plaquemines) from the "control" students from East Baton Rouge and Iberia

	(1) Enrolled in a 4 Year College Class of 2004	(2) Enrolled in a 4 Year College Class of 2005	(3) Enrolled in a 4 Year College Class of 2006	(4) Enrolled in a 4 Year College Class of 2007
In Orleans Parish in 10th Grade	-0.099	-0.121	-0.124	-0.079
	(7.987)**	(9.596)**	(9.566)**	(6.289)**
In Jefferson/St. Bernard/Plaquemines in 10th Grade	-0.051	-0.104	-0.072	-0.035
	(4.066)**	(8.423)**	(6.256)**	(2.802)**
Constant	0.359	0.380	0.341	0.337
	(41.793)**	(44.291)**	(41.905)**	(37.435)**
Observations	8000	8000	8000	8000
R-squared	0.008	0.014	0.012	0.005

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

Table VIa
"Panel" of Four Year College Going With Initial School and Year Effects

I take a random sample (roughly 50%) of 10th graders who take LEAP exams during 2002-2005 in six different districts. I use Student Clearinghouse data to determine whether the student enrolls in a four year institution within 3 years after taking the exam.

	Enrolled in a 4 Year College
In a Katrina District * After 2005	0.036
	(3.559)**
10th Grade Year== 2003.0000	0.013
	(1.854)
10th Grade Year== 2004.0000	-0.036
	(3.812)**
10th Grade Year== 2005.0000	-0.037
	(3.825)**
Constant	0.303
	(63.204)**
Observations	32000
R-squared	0.140

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

Table Ib

Means for Uniform Crime Reports Data

These are monthly crime rates for cities in Texas with more than 300,000 people. The data are for January 2004-December 2006. The cities are listed below.

Variable	Obs	Mean	Std. Dev.	Min	Max
Murders Per 10,000	324	0.06	0.06	0.00	0.24
Burglaries Per 10,000	324	9.03	3.81	2.26	19.03
Robberies Per 10,000	324	2.07	1.59	0.12	6.39
Larcenies Per 10,000	324	29.20	10.15	8.82	51.93

Table IIb

City	Population in 2000
Arlington	366,479
Austin	681,406
Dallas	1,162,522
El Paso	603,772
Fort Worth	615,709
Harris	1,246,814
Houston	2,013,461
Montgomery	311,858
San Antonio	1,261,276

Table IIIb
Did Houston Crime Rates Rise After Katrina?

Data are from the Uniform Crime Reports. The unit of analysis is monthly crime rates for cities in Texas with more than 300,000 people. The data are for January 2004-December 2006. All regressions include city fixed effects and month effects. "After Sept 05" includes the month of September 2005.

	(1) Murders Per 10000 People	(2) Murders Per 10000 People	(3) Robberies Per 10000 People	(4) Robberies Per 10000 People	(5) Burglaries Per 10000 People	(6) Burglaries Per 10000 People	(7) Larcenies Per 10000 People	(8) Larcenies Per 10000 People
Houston*After Sept 05	0.039		0.351		-0.008		1.581	
	(0.011)**		(0.119)**		(0.319)		(0.819)	
After September 2005	-0.003		-0.000		-0.032		-2.455	
	(0.004)		(0.042)		(0.111)		(0.286)**	
Houston*Month is Sept 05		-0.009		-0.063		2.594		-4.220
		(0.032)		(0.367)		(0.941)**		(2.751)
Month is Sept 05		0.007		0.007		0.694		-0.273
		(0.013)		(0.145)		(0.372)		(1.088)
Constant	0.060	0.066	2.124	2.028	9.190	9.168	31.370	29.008
	(0.006)**	(0.006)**	(0.070)**	(0.066)**	(0.186)**	(0.168)**	(0.452)**	(0.492)**
Observations	324	324	324	324	324	324	324	324
R-squared	0.733	0.721	0.958	0.957	0.948	0.951	0.952	0.941

Standard errors in parentheses
* significant at 5%; ** significant at 1%

Table IVb
Means for Houston Zip Code Level Crime Data

I take monthly block level crime data from the Houston Police Department and aggregate to the zip code level. Below are the means for the month of September 2005. The data set runs from January 2005 through September of 2007. The percent of students who are Katrina evacuees is calculated using data from the Houston Independent School District. I aggregate the data to the zip code level using the zip code of the school that the student attends. The percent Katrina evacuees is measured in the Spring of 2006.

Variable	Obs	Mean	Std. Dev.	Min	Max
Percent Students Katrina Evacuees in Zip Code	65	0.070	0.082	0.000	0.500
Burglaries Per 10,000 People	65	17.230	12.090	0.000	51.921
Assaults Per 10,000 People	65	5.633	5.299	0.000	31.788
Murders Per 10,000 People	65	0.165	0.393	0.000	2.668
Auto Thefts Per 10,000 People	65	10.032	7.530	0.000	33.907
Narcotics Crimes Per 10,000 People	65	4.395	5.213	0.000	26.445
Population in Zip Code	65	28,535.91	13,256.32	7,496.00	76,146.00

Table Vb

Regression of Zip Code Level Crime Rates on Percent Katrina

I take monthly block level crime data from the Houston Police Department and aggregate to the zip code level. The number of crimes is divided by the population in the zip code*10000. The data set runs from January 2005 through September of 2007. The percent of students who are Katrina evacuees is calculated using data from the Houston Independent School District. I aggregate the data to the zip code level using the zip code of the school that the student attends. The percent Katrina evacuees is measured in the Spring of 2006.

The percent of students who are evacuees is held constant for a given zip code throughout the time series. All regressions include zip code fixed effects and I identify the coefficient on "after Sept 2005"*"percent Katrina students" in the zip code.

	(1) Burglaries Per 10,000 People	(2) Assaults Per 10,000 People	(3) Murders Per 10,000 People	(4) Auto Thefts Per 10,000 People	(5) Narcotics Violations Per 10,000 People
After Sept 05* Fraction of	-11.306	-0.142	-0.130	-2.258	-1.026
Students in Zip Code Who Are Evacuees	(6.575)	(3.884)	(0.256)	(5.275)	(7.747)
After September 2005	1.575	0.036	0.037	0.769	1.600
	(0.706)*	(0.417)	(0.027)	(0.566)	(0.832)
Constant	13.226	6.052	0.164	10.237	5.637
	(0.465)**	(0.275)**	(0.018)**	(0.373)**	(0.548)**
Observations	2137	2137	2137	2137	2137
R-squared	0.452	0.432	0.123	0.460	0.344

Standard errors in parentheses. All regressions include zip code fixed effects. Data consist of 65 zip codes in Houston * 33 months
* significant at 5%; ** significant at 1%

Figure I
Distribution of Math Scores (2005) For Eventual Evacuees From New Orleans Versus All Non-Evacuees

Math scores are standardized at the grade*year level. The red line is the distribution for those New Orleans students who become evacuees in 2006. The blue line is for Louisiana students who do not become evacuees. The mean difference between the two groups is roughly .5 standard deviations.

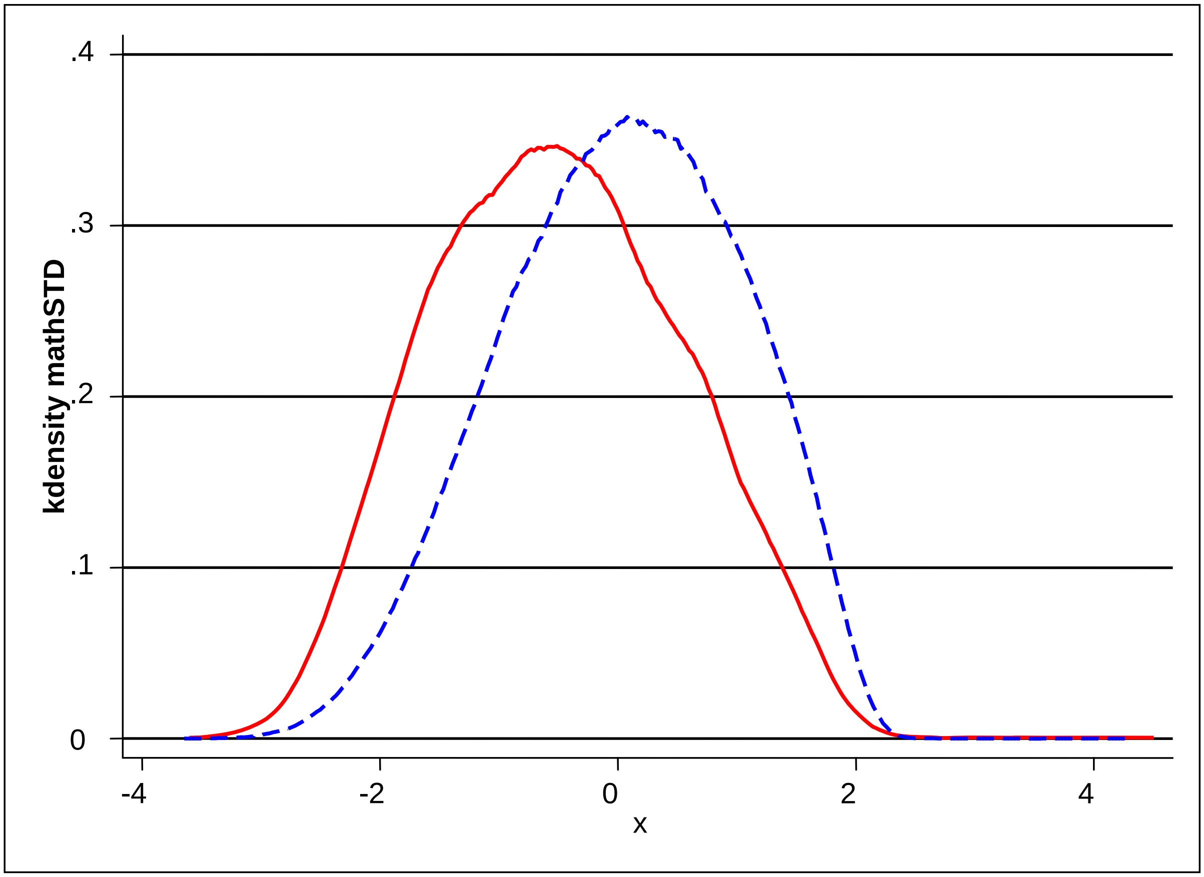


Figure II

Repeated Cross Sectional "Effects" on Math Scores
For Katrina and Rita Evacuees

I regress math scores (all grades) on dummies for eventual Katrina or Rita Evacuee Status. The 2006 and 2007 scores are post hurricane. Students are tested in March of each year.

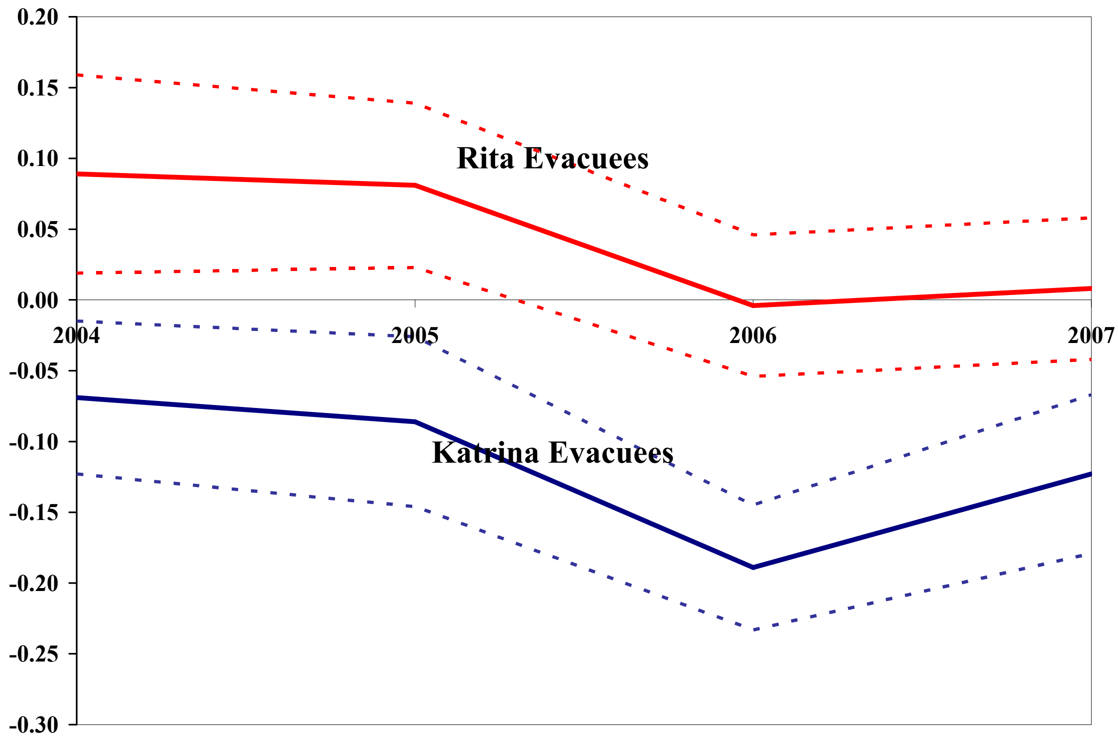


Figure III

Repeated Cross Sectional "Effects" on ELA Scores
For Katrina and Rita Evacuees

I regress ELA scores (all grades) on dummies for eventual Katrina or Rita Evacuee Status. The 2006 and 2007 scores are post hurricane. Students are tested in March of each year.

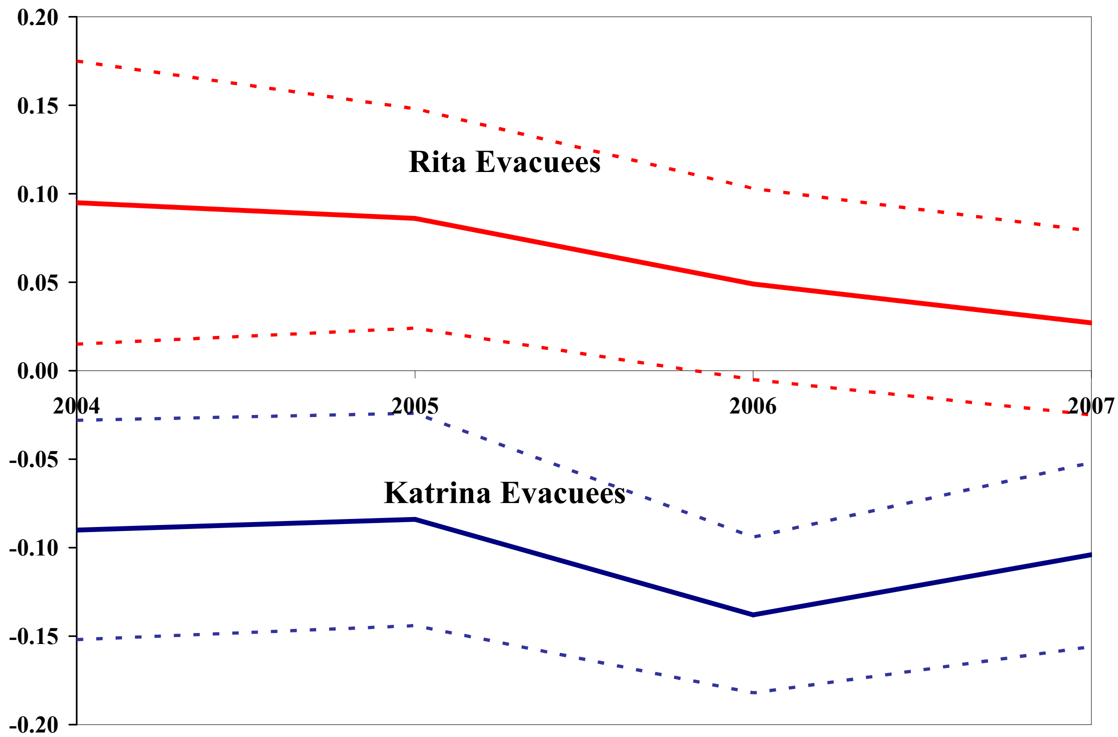


Figure IV

Repeated Cross Sectional "Effects" on Math Scores
New Orleans Versus Non New Orleans Evacuees

I regress math scores (all grades) on dummies for eventual Katrina Evacuee Status. The latter is split by evacuees who are in Orleans Parish in 2004 or 2005 versus all others. The 2006 and 2007 scores are post hurricane. Students are tested in March of each year.

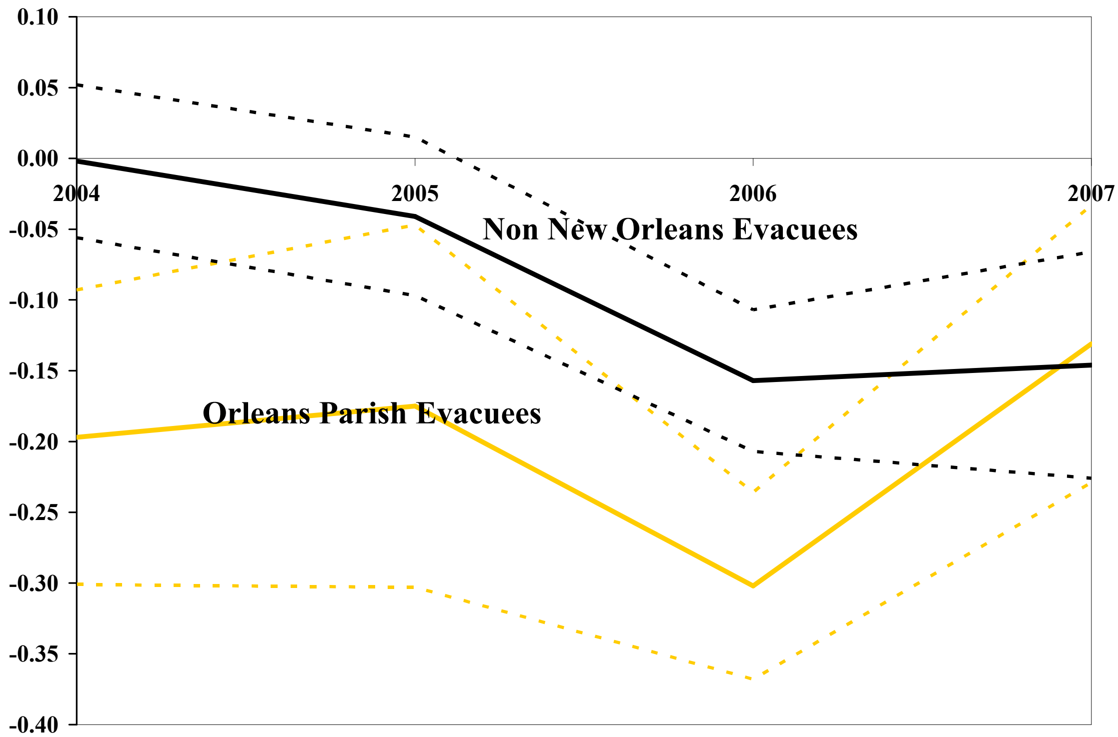


Figure V

Repeated Cross Sectional "Effects" on ELA Scores
New Orleans Versus Non New Orleans Evacuees

I regress English Language Arts scores (all grades) on dummies for eventual Katrina Evacuee Status. The latter is split by evacuees who are in Orleans Parish in 2004 or 2005 versus all others. The 2006 and 2007 scores are post hurricane. Students are tested in March of each year.

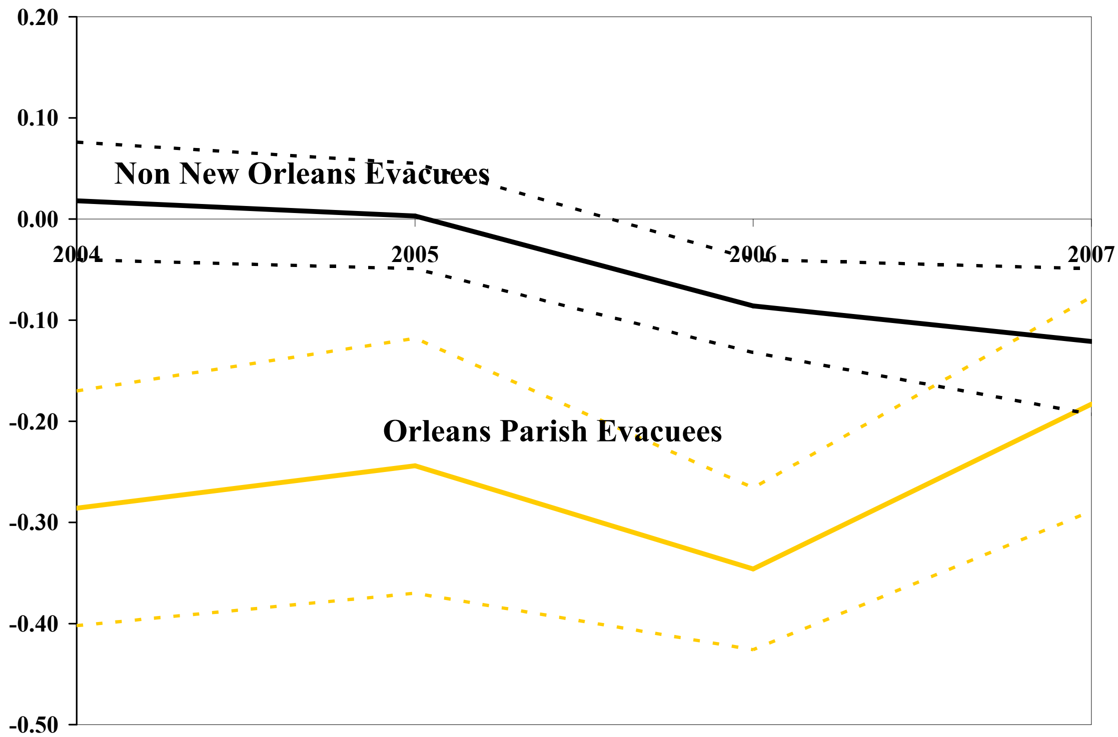


Figure VI

Histogram of "Percent Katrina" In Student's School in 2006

This excludes the evacuees themselves. "Percent Katrina" is calculated by using the number of students designated as evacuees in the school divided by the total number of students in the school.

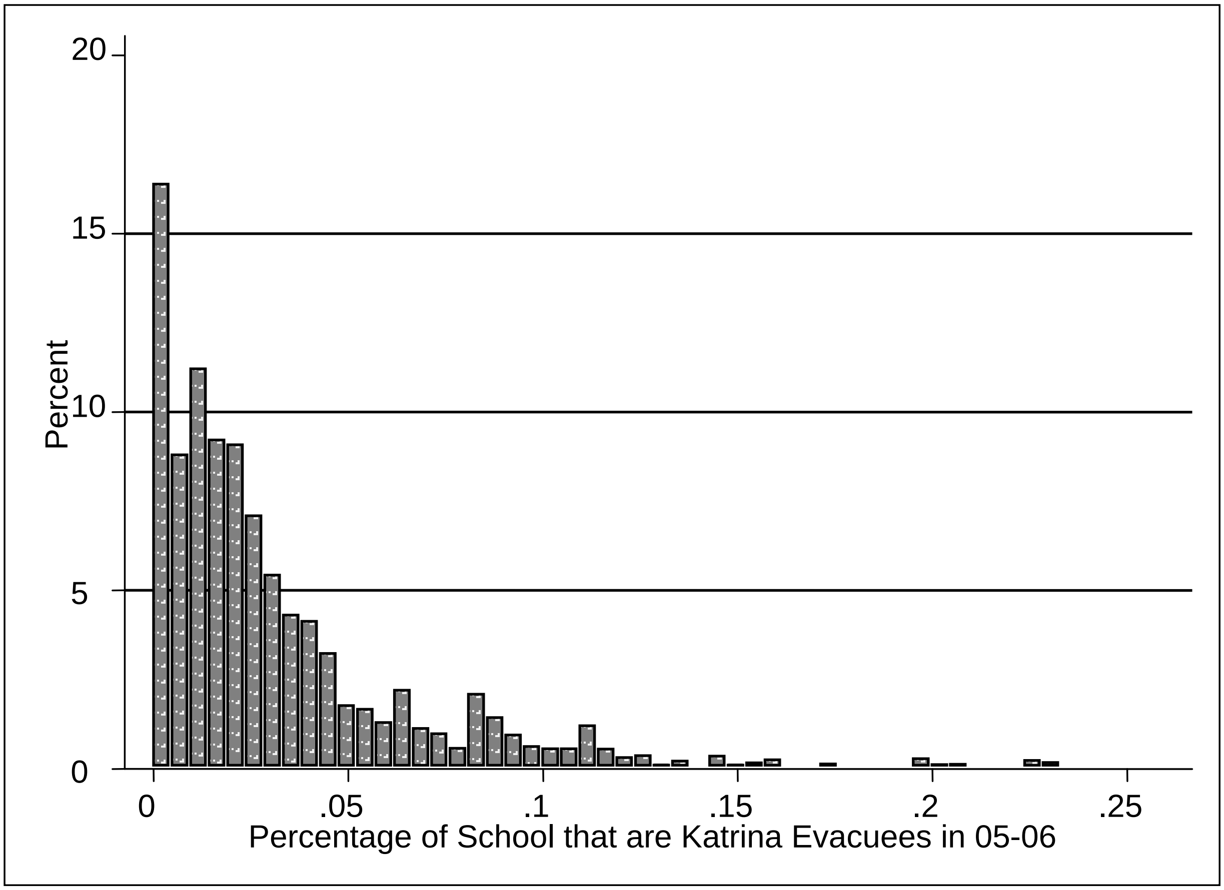
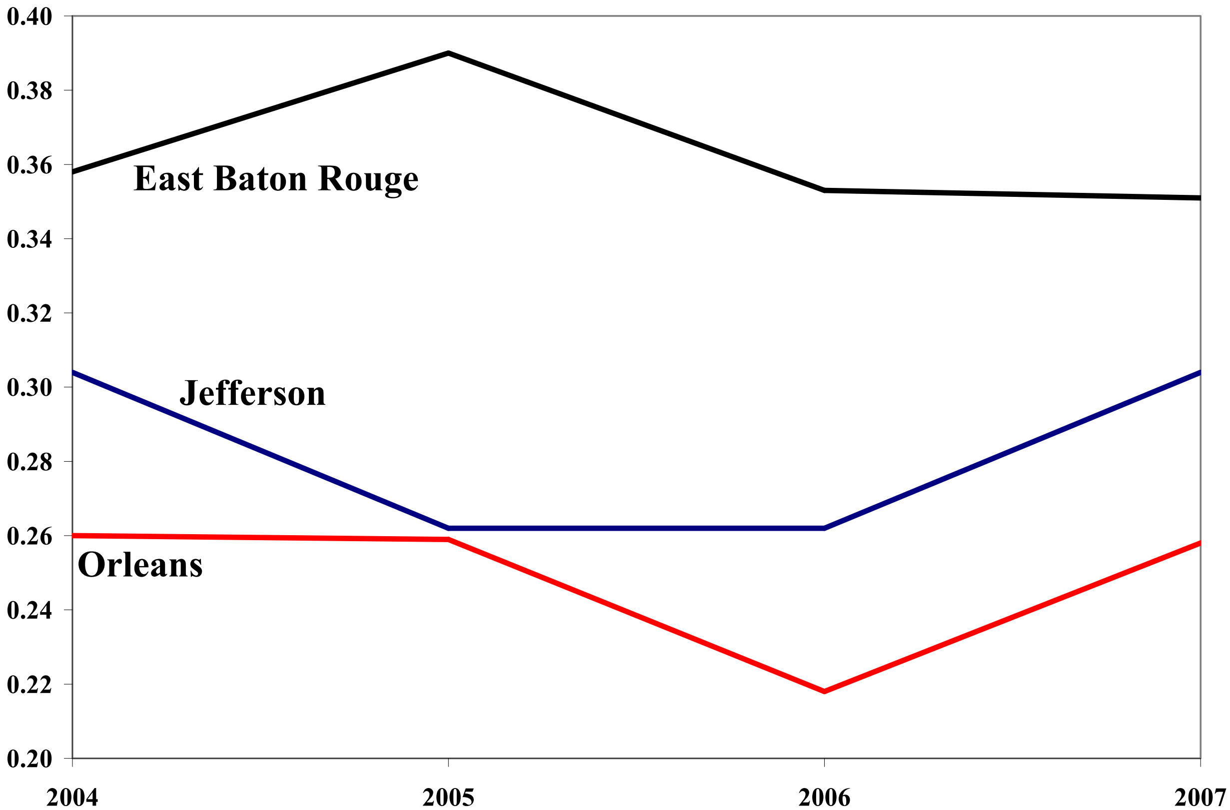


Figure Ia

Four Year College Going Rate For Three Large Districts

The sample is drawn from 10th graders who took the LEAP exam. This is their pre-Katrina district. High school cohort is simply test year+ 2.



Implied Year of High School Graduation

Figure Ib
Number of Burglaries in Houston

Data are from the Uniform Crime Reports and run from January 2004 to December 2006.

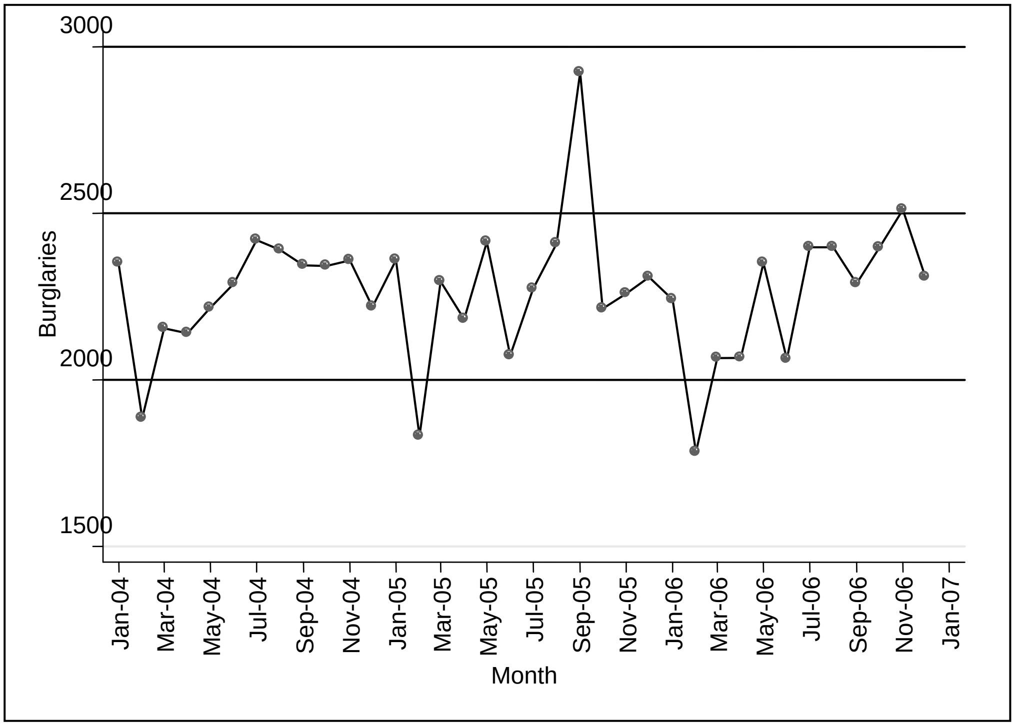


Figure IIb
Number of Murders in Houston

Data are from the Uniform Crime Reports and run from January 2004 to December 2006.

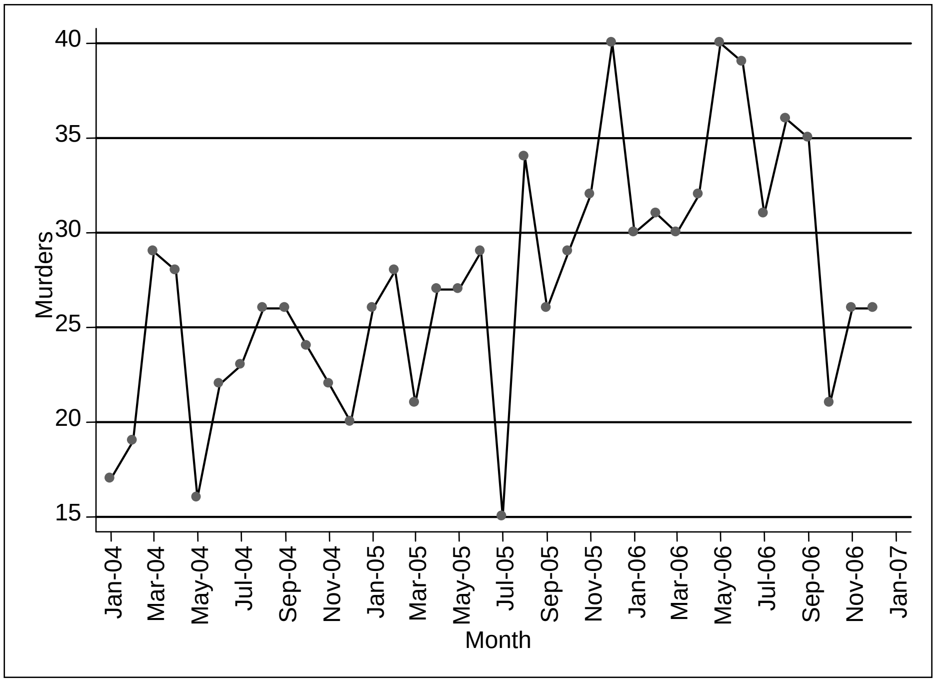


Figure IIIb
Number of Robberies in Houston

Data are from the Uniform Crime Reports and run from January 2004 to December 2006.