



CREDIT AND FINANCIAL IMPACTS OF DISASTER:

What Can We Learn from Credit File Data

Michael Turner, Alyssa Stewart Lee, Eugene Gurenko, Alexander Itigin, Robin Varghese and Patrick Walker

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GLOSSARY

Collections:

Severely delinquent unpaid obligations (for credit or a variety of goods and services). These unpaid accounts may be sold to companies (collections agencies) which specialize in collecting on such accounts. These unpaid “collections’ accounts appear in credit reports as collections items.

Credit Score:

Usually a numerical expression generated by statistical and mathematical analysis of data found in an individual’s or business’s credit file. It usually represents the likelihood of a future severe delinquency or other derogatory (such as a bankruptcy). As such, it is a measure of personal or business financial risk.

Debt:

The monetary value of various types of credit and debt outstanding, including mortgages, credit cards, auto loans, etc.

Delinquency:

When a business or individual is late on a payment. Usually it is reported in credit files in 30 day increments, 30 days late, 60 days late, etc.

Indebtedness:

Debt and debt burdens relative to a family’s income.

MSA:

Metropolitan Statistical Area

No File:

An individual or business that has no credit file.

Severe Delinquency:

For most payments being 90+ days late is considered a severe delinquency, for mortgage payment being 60+ days late is considered a severe delinquency.

Thin File:

An individual that has fewer than three payment histories in their credit file, including no payment histories. Individuals and businesses may have a credit file and have no payment histories if, for instance, their credit file only contains a public derogatory, such as lien.

Executive Summary

This report sheds additional light on the impact and aftermath of Hurricane Katrina and the storms of 2005 on individuals, businesses, and communities of the Gulf Coast, using datasets previously not used for such purposes. In addition to the information already used to assess Katrina's impact, such as government statistics and the numerous data series found in *The New Orleans Index*¹, we bring several private datasets to the effort. Specifically we use individual level consumer credit file data (from TransUnion), consumer credit file data aggregated at the community level (from TransUnion), credit file data for businesses (from Experian), data on small business owners and operators (from Experian), and socio-demographic information appended to the individual consumer and business owner/operator files (from Acxiom). Analysis of the information found in these datasets should extend our understanding of the impact of the disaster(s) by

- (1) bringing additional evidence to bear of previous findings, and**
- (2) uncovering aspects of the impact and recovery not seen in other datasets.**

This report represents the first effort to understand how the information found in such private datasets can be used for policy planning, economic needs assessment and community development.²

The two primary objectives of this report are:

- (1) to provide an overview of the various credit bureau datasets used and
- (2) to offer preliminary findings about the financial characteristics of those individuals and businesses that remain in the region through an analysis of select data.



KEY FINDINGS

July 2007 data suggest that Orleans and St. Bernard Parish businesses appeared to have been particularly hard hit and slow to recover, while evidence of business recovery across the New Orleans and Biloxi-Gulfport metropolitan areas is mixed.

Business credit file account activity in most of the parishes of the greater New Orleans MSA had either returned to near pre-Katrina or greater than pre-Katrina levels by July 2007, with the notable exceptions of Orleans and St. Bernard Parishes.

» Delinquencies in business accounts, a measure of business health, changed only modestly in all but Orleans and St. Bernard parishes where the average number of days delinquent had increased greatly by July 2007.

Business financial stress, measured by the average amount of reported business collections, rose significantly two years after Katrina.³

» Average credit collections for the New Orleans MSA increased by nearly 500% between August 2005 and July 2007, while those for Orleans Parish increased by nearly 900% during the same period.

» Average credit collections for the Biloxi-Gulfport MSA increased by nearly 400% between August 2005 and July 2007, with Jackson experiencing a dramatic increase of nearly 1,300% during the two years after Katrina.

There are differences across parishes of the New Orleans MSA.

» The population of Orleans and Saint Bernard parishes following Katrina witnessed dips in credit scores, fewer accounts on their credit reports, and fewer borrowers with an active bank card following Katrina. This could indicate a flight of the financially better off from the hardest hit parishes and areas, particularly in St. Bernard Parish post-Katrina.

Changes in indebtedness and credit performance vary dramatically across groups of individuals following the disaster.

» Lower income groups experienced the greatest increase in the average level of indebtedness.

» African Americans showed the highest increase in level of indebtedness, while Caucasians showed the lowest. On the other hand, African Americans achieved

the highest improvement in credit performance while Hispanics showed no improvement at all.

- » Young adults (under 25 year of age) showed the highest increase in the average level of indebtedness. Indebtedness levels actually increased the least for the oldest age groups, with the very elderly (over 86 years) experiencing no increase at all.
- » While those in the middle age groups enjoyed improvement in average credit performance, there has been only a slight improvement for younger adults and even some decline for the oldest age groups.
- » Homeowners and married couples experienced a relatively smaller increase in average level of indebtedness and showed better improvement in credit performance compared to other age groups.
- » Differences in the *levels* of credit performance and indebtedness across groups appear much larger than differences within groups in those measures from pre- to post-disaster. These across group differences underscore the importance of accounting for changing population composition when comparing pre- to post-disaster average community-wide financial indicators.

Data found in private data sets, such as consumer and business credit files, have the potential to quickly inform policymakers and stakeholders (both following disasters and in general) of the underlying financial conditions of populations, communities, and small businesses.

- » Information, such as credit scores, should be monitored by those interested in economic development and recovery since these real outcome measures are used by the private sector to guide and price flows of capital to consumers and, increasingly, to small businesses.
- » Data found in credit files may be useful in creating *leading* indicators of recovery and economic development, as such data are routinely used for similar purposes in the private sector, such as estimating the likelihood of future default for consumers and small businesses.
- » Appending credit file data with other private and public data can enable segmentation analysis and monitoring of recovery and development program efficacy.



I. Introduction

In the immediate aftermath of Hurricane Katrina, few would have imagined a New Orleans that after three years of recovery had rebounded in many areas (like the French Quarter and the Garden District), but still had neighborhoods that have changed very little since Katrina and the resulting floods. Three years later, this is indeed the case.

Many still debate the effectiveness of early responses to the disaster, such as the allocation of housing rehabilitation capital through the Community Development Block Grant Program⁴, the lack of decisive federal action on recovery efforts⁵, and the insurance industry's pricing response to Hurricane Katrina disasters.⁶ At the same time, there has been some progress. Federal policy changes in local matching funds requirements for federal infrastructure aid have been dropped, enabling the development of public schools and other critical infrastructure.⁷ The New Orleans MSA continues to repopulate: an analysis of postal records indicate coverage at 87% of pre-Katrina levels, however Orleans Parish currently has only around 72%

coverage compared to pre-Katrina.⁸ Recently, the pace of population recovery has slowed considerably. The composition of the population has also changed, with the post disaster population being older, less poor, and including fewer children than in 2005.⁹

Despite the extensive coverage given to the impact of the 2005 hurricanes on the Gulf Coast in the media and in policy circles, gaps still remain in understanding the economic consequences of the impact and subsequent recovery.²⁰ We believe that these gaps are less the result of a lack of interest than a lack of readily available information. This report represents an initial step to help complete areas of missing information.

In this report we describe some private sector databases that may be useful following disasters and other shocks. We then report on some basic analysis we carried out using data from consumer, business, and credit file data aggregated at the community-level before and after the 2005 hurricanes. As this is the first attempt that we know of to use this information specifically in this way, we refrain from interpreting too much from the results. A further discussion of some of the potential value in analyzing credit data can be found in Appendix A.

Additional research should focus on refinement of methods and on tethering the performance of some of the credit indicators examined here to other well-established indicators and future outcomes, such as employment level and repopulation rate. This last point, essentially creating leading indicators for recovery and development, could be particularly useful to policy makers all over the world.

Beyond monitoring contemporaneous measures of economic health, a key objective of this project is to identify vulnerabilities of specific areas to disasters in advance. Our ability to do so will help improve to inform the policies of the public sector at the local, state and federal levels. This information is also critical to reduce uncertainty for private sector actors, such as banks, insurance companies, public agencies, as well as small business owners, and households.¹⁰

The individual, business, and community level analyses in this report generally describe the financial impacts on the areas of the Gulf Coast and Florida most impacted by Hurricane Katrina (purple) and (secondarily) by Hurricanes Rita (red), and Wilma (orange). And as mentioned, differences in analytic intent, data coverage, and data availability do produce slight differences in the levels of geography and the time periods considered across the different levels of analysis.



FIGURE 1:
Map of Hurricane Impacts

Map created by the
Political and Economic
Research Council, 2007

Across all levels of analysis, there are some fundamental limitations in the nature of databases and specifically credit data that should be noted.

All databases contain errors to some degree, but as long as these errors are random, symmetrically distributed with a mean difference of zero (i.e., are unbiased), and there are a sufficient number of observations, this should not present a problem for inference. The TransUnion and Experian databases used in this analysis are sufficiently large and are regulated with processes to allow for accurate updates.¹¹ These data are collected every day by the credit bureaus, giving banks, finance companies, and others the ability to assess a current measure of credit worthiness of an individual, individuals, or businesses for their financial products.

We also see a need to explore more fully the actual completeness of the credit data, derogatory information, and collections information. That is, the lack of a late payment indication on a credit file does not necessarily mean that a business or an individual is not late on any payment. In normal situations, a creditor may choose to not report delinquencies directly. In some cases the same account from a non-reporting creditor is passed on to a collections agency who reports the delinquency. In response to the Katrina disaster, creditors were asked not to report on credit files for six months

following the disaster. Likewise, individual creditors instituted a wide variety of corporate policies to address the short-term concern of the impact of disaster on the credit score.¹²

Given these factors, we will tend to be cautious when interpreting the results and not focus on small differences or actual levels of variables. We will utilize the individual and business record data to mainly understand directional impacts and changes over time and across areas. We will leave to later researchers the task of interpreting more precisely the levels or ratios of these variables and tethering them to other, perhaps more tangible, outcomes. This is particularly appropriate when analyzing information from the business databases, which are not as developed as the consumer databases and may not be as complete.

In addition to the need for a better understanding of credit file data, further research would be useful in understanding the accuracy, coverage, and potential biases of the Acxiom socio-demographic used in this report. Such data is routinely used in the private business sector for marketing and other purposes, but is rarely used by researchers.

Finally, the credit bureau data system contains credit reports with three or more data sources¹³ for between 66% to 74% of the adults. Yet, there is insufficient or no information to score the remaining population that is estimated at 35 to 54 million Americans using traditional methods.¹⁴ This population is termed “thin-file.” Those with no credit file report at all are referred to as “no-file.” Research indicates that the thin file population

is disproportionately made up of ethnic minorities (African American, Latino, Asian American), the young (less than 35), older individuals (over 66), and low-wage earners (less than \$30,000).¹⁵

It is important to note that, as expected, there was a gross decline in the number of files between 2005 and 2006 for New Orleans. However, a review of the records utilized in this analysis indicates an increase in the proportion of the population with credit files.¹⁶ This finding is consistent with population change. The population decline in New Orleans during this time period was characterized by an exodus of lower income households, renters, and families with children. These group characteristics also correspond to a high proportion of thin-file and no-file consumers. Another interpretation, of course, is that the credit files did not perfectly track the movements of the individuals following Hurricane Katrina.

This study utilizes both the credit score and the underlying credit report data. Therefore, while individuals in the thin file or no file population may not always have a credit score, any data on the credit report currently or within the past seven years will be captured.

Another potential concern with credit file data could be the presence of fragmented files, in which an individual has multiple files due to, for instance, a change in address that was not recorded correctly. Due to the nature of this disaster extra care has been taken by the bureaus to eliminate this type of error. Previous research conducted by PERC and the Brookings Institution that matched files of individuals over a year did not encounter large problems with fragmented files. All such duplicate files that could be identified accounted for less than two percent of the files examined.¹⁷



II. Impact and Recovery of Small Businesses

It is imperative that the economic health and recovery of Gulf Coast businesses following the hurricanes of 2005 be one of the primary concerns for both policymakers and those interested in the medium-term and long-term recoveries of the hardest hit areas. Healthy businesses with positive job growth provide strong incentives for workers to stay in the recovering areas and others outside those areas to either move in or return. Measures of employment, job vacancies, unemployment, number of employers, labor force size, and wages (usually by parish/county) are available from government sources and can certainly be used to glean the health of the labor market. These measures, in fact, are reported in *The New Orleans Index*¹⁸ and indicate that by the end of 2007 there were smaller labor forces in Orleans Parish and the New Orleans MSA (80% of pre-Katrina levels) and tighter labor markets (higher wages, lower unemployment rates, and higher vacancy rates).

Dek Terrell and Ryan Bilbo focus entirely on the business environment of Louisiana following the hurricanes of 2005, with particular emphasis on the hardest hit parishes.¹⁹ They use detailed data from the Quarterly Census of Employment and Wages to assess the impact of the hurricanes on businesses and the subsequent recovery. In terms of total number of employers they found Orleans and St. Bernard Parishes to be the hardest hit and the least recovered, with Orleans down to 80% of its pre-Katrina levels and St. Bernard down to 50% of its pre-Katrina levels by the fourth quarter of 2006. They also found a much higher failure rate among small businesses (1-5 employees) in southeast Louisiana compared to larger businesses following Katrina. Although both a higher failure rate and a higher creation rate are expected for smaller businesses, there appears to be a real and disproportionate impact on smaller businesses. Looking at the average number of employees for businesses, the authors show a rise from 19.4 to 22.5 employees. So, on net, employment appears to have shifted from smaller to larger businesses.

While these studies and statistics provide a great deal of insight, many do so from selected dimensions of economic well-being, as they must. These data and studies do a good job of describing changes along crucial dimensions, such as numbers of businesses and employment level. However, they may not fully illuminate the current financial conditions of business, which in turn may impact future employment levels and numbers of employers. Further information on revenues, account balances, collections, delinquency rates, future expectations, etc. may be helpful in painting a fuller picture of the state of businesses and small businesses.

A survey conducted by PERC on the second anniversary of Hurricane Katrina provides additional insight into the 'micro' qualitative conditions of small businesses.²¹ This survey included questions regarding the sources of financing, future expectations, and how much their sales were impacted by the storms. Nearly two-thirds of small business owners in some of the hardest hit counties and parishes of Louisiana and Mississippi reported earning less revenue two years following the hurricanes of 2005 than prior to the storms. Two years after the storms of 2005, 78% of African American-owned and operated businesses reported a decline in revenues. Because this survey focused on those businesses that had survived for two years, even it may paint an overly optimistic picture of small businesses in the hardest hit areas. As Terrell and Bilbo's findings show, amongst the hardest hit areas (such as Orleans and St Bernard Parishes), the entrance of new businesses was not close to making up for the loss of employers following the storms through the fourth quarter of 2006. It is therefore likely that excluding those businesses that entered and exited the market would skew the survey results in such a way that understates the negative impact of the storms on small businesses.

Therefore, following large disasters or even in areas of persistent economic downturn it may be useful for local, federal, or state governments to simply survey small business owners on a regular basis to gauge the state of the financial health of businesses, along with the owner/operator's future expectations and intentions.

A. Data

The following results were obtained using business credit file data from Experian appended with socio-demographic data from Acxiom. They are analogous to survey results in that they measure *average* aspects of businesses in the database and do not convey information on volumes. As we have previously stated there are already reasonably good volume estimates, such as for total employment and number of businesses. We are uncertain how well changes in the size of the Experian small business database compares with actual changes in the number of businesses, since Experian is not attempting to measure this but to the contrary is making efforts to increase the coverage of its database. It therefore may be difficult to determine whether a volume change is due to changing database coverage, just as different sample sizes of a survey do not infer changing population sizes.

Experian's National Business Database contains information on over 16 million businesses of all sizes across all sectors in the United States. The sources for this data include Experian's proprietary business credit contributors, yellow pages, state and federal public records, marketing data suppliers and compilers, and Experian's televerification phone surveys.

A business credit report is similar in many ways to a personal credit file. The files contain basic information on the business, its name, address, main phone number, size (in sales and employees), line(s) of businesses (Standard Industrial Classification (SIC) codes), and type of business (sole proprietor, corporation, etc.). It contains payment

and balance information on accounts as well as the type of accounts the business may have, e.g., credit and also lease accounts. Also included are business credit scores based on such credit variables.

For a small business, the financial wellbeing of its owner is often inextricably linked to the business. To understand this critical linkage, we utilized the Experian Business Owners Link Database. This database contains information on millions of small businesses, defined as businesses with fewer than 25 employees and less than \$10 million in sales. This database contains information on the subset of businesses found in the National Business Database for which there is information on the owner or operator. In addition to some of the basic business descriptive information found in the National Business Database, this database contains identifying information on the small business owner or operator²², such as gender and home address. Directly, this could be used to examine how the impact of the disaster on the area in which the owner/operator lived affected the small business, or vice versa. Indirectly, however, this allows us to do much more by enabling additional owner/operator specific data to be appended.

Using the owner/operator data from the Experian Business Owner Link Database, the Acxiom Corporation was able to append estimates of owner/operator income, ethnicity, age, marital status, number of children, home ownership status, and language preference. In addition, estimates of a number of socio-demographic characteristics for small geographic areas where the owner/operators live, such as census tract, are included.

The socio-demographic data from Acxiom are not simply crude estimates based on location (census tract) or derived in some fashion from attributes of the individual credit files. They have been generated by Acxiom for each individual from a combination of data sources including self-reported sources, estimates from some of the individual's characteristics, extrapolation from census data, and public record information. If little or no good information existed to determine the age of the individual, for instance, then no estimate would have been given. That is, no information was added instead of simply adding a crude guess. Such individuals would then be excluded from breakdowns by age, since we would be unsure of their age. The primary socio-demographic variable used in the small business section is ethnicity and there are ethnicity estimates for about 91% of small business owners in the dataset of the affected regions.

B. Units of Observation

There are two units of observation in this business analysis: the business enterprise level, and the the owners/operators level. These units are aggregated to standard geographic levels. There is not a unique one-to-one relationship between all businesses and owners/operators. For instance, one business owner could own two or more separate businesses and one business could have two or more owners. Finally, a business could be one location of many attributed to a single business. So, for instance, if a business owner has a single deli business with three locations, each of the locations will have its own record.

C. Longitudinal Aspects of the Data

In the small business analysis, we are using three snapshots in time, one taken in August 2005, one taken in August 2006, and one taken in July 2007.²³ Thus, we are able to get a glimpse of the financial health of businesses immediately before the disasters hit, as well as at time intervals of approximately one and two years later. These three snapshots also allow for finer time-series analysis for data such as account balances, which are reported up to four full quarters prior to the snapshot. In cases such as this, we can look at quarterly figures over three years.

As the Experian Databases are updated, businesses are added. The addition of a business to a database is due to the opening of a business, or an existing business being found by the system. Businesses can be dropped as well: if businesses are no longer believed to be operating based on data verification procedures, then they are removed from the database. Experian attempts to keep these databases as accurate as possible.

Yet these databases were not designed to measure the rate of business activity, openings, closings, etc. consistently over time. In other words, the proportion of businesses that are captured in the database may be improving over time, so a change in the number of businesses for an area may reflect changing participation in the database and not actual changes in the number of businesses. And conversely, we are not certain how swiftly businesses are removed from the database once they are out of business.

Due to the constraints of the data, we will not directly use the changes in the number of reported business before and after the hurricanes to measure the impact on businesses (closures). In order to count a business as operating, we believe it is best to include those businesses that are not only in the database but are also presenting evidence that they are active, perhaps by credit or other activity.

The dynamic nature of the data presents us with two possible methodological paths: (1) to look at the same group of businesses across the snapshots, or (2) to look at each snapshot as it is. When results are presented we will make clear whether calculations are based on the same group of businesses across time or whether they are varying.

One question we seek to answer is how businesses that weathered the disasters and stayed open have done in later years relative to their pre-disaster performance.²⁴ This sort of analysis is facilitated by using the unique business identification number (BIN) assigned to each business. Using the BIN we match and link records across time so we can compare changes in the health of the same group of businesses. On the other hand, we may be interested in how the actual state of businesses for any particular time is faring, including the start-ups new to that period and businesses that may not survive to the next period. In most cases we present both sets of findings, those from the constant (balanced panel) set of business and those from all of the businesses per period (unbalanced panel).

D. Geographic Coverage of the Data

This analysis utilizes business and owner data within the metropolitan areas of New Orleans, Louisiana and Gulfport-Biloxi, Mississippi. These two metropolitan areas were chosen because they were most heavily impacted, and represent the majority of heavily impacted population and heavily impacted businesses.

E. Findings

1. Evidence of Business Recovery Across the New Orleans and Biloxi-Gulfport MSAs

While evidence of business recovery across the New Orleans and Biloxi-Gulfport MSAs is mixed, Orleans and St. Bernard Parish businesses appear to have been particularly hard hit and slow to recover.

One of the most basic fields found in the business credit files is *number of trades*. This field is the number of accounts reported to Experian for a particular business. These accounts include business credit card accounts, bank loans, other loans and leases. While somewhat crude, this indicator may be a proxy for average credit and fiscal activity of businesses. We would imagine that more active businesses would tend to have more accounts to purchase inventory, supplies and materials. The counter argument that should be investigated is that businesses in trouble open up credit accounts to make up for declining sales or increasing costs.

The types of accounts reported and account balances are also important for deeper investigation through additional analyses. It would also be valuable to better interpret levels and changes in the measures found in business credit files, with later research benchmarking the credit data with public data or data from small business surveys, such as the one conducted by PERC²⁵.

In tables 1 and 1A we show breakdowns of average number of accounts per business for the New Orleans and Biloxi-Gulfport MSAs by the constituent counties and parishes.



TABLE 1: Average Number of Accounts (Changing Sample of Businesses Over Time)

	Aug 2005	Aug 2006	July 2007	Relative to Aug 2005	
				2006	2007
New Orleans MSA	3.68	3.30	3.29	0.90	0.89
Jefferson	3.41	3.14	3.09	0.92	0.91
Orleans	4.91	4.22	4.22	0.86	0.86
Plaquemines	4.17	3.78	3.65	0.91	0.88
St. Bernard	2.90	2.59	2.43	0.89	0.84
St. Charles	3.37	3.13	3.14	0.93	0.93
St. James	2.91	2.70	2.74	0.93	0.94
St. John the Baptist	3.04	2.86	2.81	0.94	0.93
St. Tammany	2.52	2.40	2.53	0.95	1.00
Biloxi-Gulfport MSA	3.02	2.40	2.54	0.79	0.84
Hancock	2.34	1.76	1.89	0.75	0.81
Harrison	3.19	2.54	2.72	0.80	0.85
Jackson	2.92	2.35	2.46	0.81	0.84

TABLE 1A: Average Number of Accounts (Constant Sample of Businesses Over Time)

	Aug 2005	Aug 2006	July 2007	Relative to Aug 2005	
				2006	2007
New Orleans MSA	3.83	3.45	3.28	0.90	0.86
Jefferson	3.63	3.34	3.12	0.92	0.86
Orleans	5.00	4.31	4.17	0.86	0.83
Plaquemines	4.54	4.12	3.83	0.91	0.84
St. Bernard	3.09	2.75	2.40	0.89	0.78
St. Charles	3.50	3.29	3.21	0.94	0.92
St. James	3.05	2.87	2.62	0.94	0.86
St. John the Baptist	3.26	3.02	2.75	0.93	0.84
St. Tammany	2.73	2.59	2.52	0.95	0.92
Biloxi-Gulfport MSA	3.26	2.72	2.68	0.83	0.82
Hancock	2.57	2.02	1.99	0.79	0.77
Harrison	3.45	2.89	2.87	0.84	0.83
Jackson	3.15	2.66	2.58	0.84	0.82

There appears only to be a small qualitative difference between the two tables (one holding the set businesses constant over time and the other not). Both indicate a decline in the average number of reported accounts for most of the counties and parishes in the years following Katrina. The figures based on the constant sample of businesses across time indicate a somewhat larger decline, on average, between 2005 and 2007. In the New Orleans MSA, the figures indicate steeper declines in the number of total trade-lines for Orleans, St. Bernard, and Plaquemines Parishes. In the Biloxi-Gulfport MSA, Hancock County witnesses the steepest decline. This is not surprising as these were among the hardest hit areas in the region.

Another measure that perhaps better gauges changes in business activity and recovery is number of active accounts. Since accounts can remain on file for years after they are used, much of the information embodied in *total* number of accounts, used in the previous tables, may be old and not relevant for a contemporaneous indicator. Tables 2 and 2A display results of the average active trades (accounts) for businesses by metropolitan area and constitute county/ parish for this measure. Active trades are those that have had some activity in the last six months, such as credit used, a payment sent, or a payment missed.

TABLE 2: Average Number of Active Accounts (Changing Sample of Businesses Over Time)

	Aug 2005	Aug 2006	July 2007	Relative to Aug 2005	
				2006	2007
New Orleans MSA	2.01	1.83	1.94	0.91	0.96
Jefferson	1.82	1.72	1.85	0.94	1.02
Orleans	2.73	2.36	2.48	0.87	0.91
Plaquemines	2.18	1.98	2.10	0.91	0.96
St. Bernard	1.54	1.26	1.28	0.82	0.83
St. Charles	1.87	1.79	1.93	0.96	1.03
St. James	1.58	1.44	1.66	0.91	1.05
St. John the Baptist	1.70	1.64	1.74	0.97	1.02
St. Tammany	1.43	1.39	1.46	0.97	1.03
Biloxi-Gulfport MSA	1.66	1.42	1.41	0.86	0.85
Hancock	1.35	1.06	1.01	0.79	0.74
Harrison	1.75	1.52	1.53	0.87	0.87
Jackson	1.58	1.37	1.37	0.87	0.87

TABLE 2A: Average Number of Active Accounts (Constant Sample of Businesses Over Time)

	Aug 2005	Aug 2006	July 2007	Relative to Aug 2005	
				2006	2007
New Orleans MSA	2.10	1.91	1.93	0.91	0.92
Jefferson	1.94	1.83	1.87	0.94	0.96
Orleans	2.77	2.39	2.43	0.87	0.88
Plaquemines	2.39	2.17	2.20	0.91	0.92
St. Bernard	1.65	1.32	1.21	0.80	0.73
St. Charles	1.98	1.90	1.99	0.96	1.00
St. James	1.66	1.51	1.58	0.91	0.95
St. John the Baptist	1.82	1.73	1.71	0.95	0.94
St. Tammany	1.54	1.49	1.45	0.97	0.94
Biloxi-Gulfport MSA	1.80	1.62	1.49	0.90	0.83
Hancock	1.48	1.21	1.06	0.82	0.71
Harrison	1.90	1.73	1.60	0.91	0.84
Jackson	1.73	1.57	1.45	0.91	0.84

Unlike the results using total accounts, those based on active accounts can paint a different picture depending on whether or not we look at the same sample of businesses over the two-year period. When we look at the same businesses across time we are not including new businesses that may have opened or closed post-Katrina. Including such businesses, Table 2, we see indications of a recovery of business activity in most of the parishes of the New Orleans MSA to pre-Katrina or greater than pre-Katrina levels, with the notable exceptions of Orleans and St. Bernard Parishes. Such indications of recovery are not as evident in the Biloxi-Gulfport MSA, with the largest relative declines in active accounts seen in Hancock County.

However, looking at the same sample of businesses that existed prior to Katrina and up to July 2007, we see a broad and fairly consistent decline in the number of active accounts with only slight recovery between 2006 and 2007.

2. Businesses in Orleans and St. Bernard Parishes

Businesses in Orleans and St. Bernard Parishes show persistent indications of financial stress.

A less ambiguous measure of the financial health of businesses is payment delinquencies. Tables 3 and 3A show the Days Beyond Term (DBT) or average lateness of accounts, for the New Orleans and Biloxi-Gulfport metropolitan areas. Since we

TABLE 3: Average Days Beyond Term (DBT)
(Changing Sample of Businesses Over Time)

	Q2 2005	Q2 2006	Q2 2007	Relative to Q2 2005	
				Q2 2006	Q2 2007
New Orleans MSA	1.54	2.15	2.14	1.39	1.38
Jefferson	1.47	1.65	1.56	1.12	1.06
Orleans	1.78	3.30	3.65	1.85	2.05
Plaquemines	2.07	1.98	1.85	0.96	0.89
St. Bernard	1.70	3.10	2.84	1.82	1.67
St. Charles	2.12	2.16	2.12	1.02	1.00
St. James	1.82	1.54	0.98	0.84	0.54
St. John the Baptist	1.63	1.41	1.95	0.86	1.19
St. Tammany	1.11	1.41	1.16	1.27	1.04
Biloxi-Gulfport MSA	1.77	1.94	1.26	1.09	0.71
Hancock	1.55	1.49	1.13	0.97	0.73
Harrison	1.93	2.12	1.25	1.10	0.65
Jackson	1.58	1.76	1.31	1.12	0.83

are not weighing the data by size of business or account amounts (which is the case with all of the calculations in this section) these represent good indications of the financial health of small businesses, which are the vast majority of all businesses.

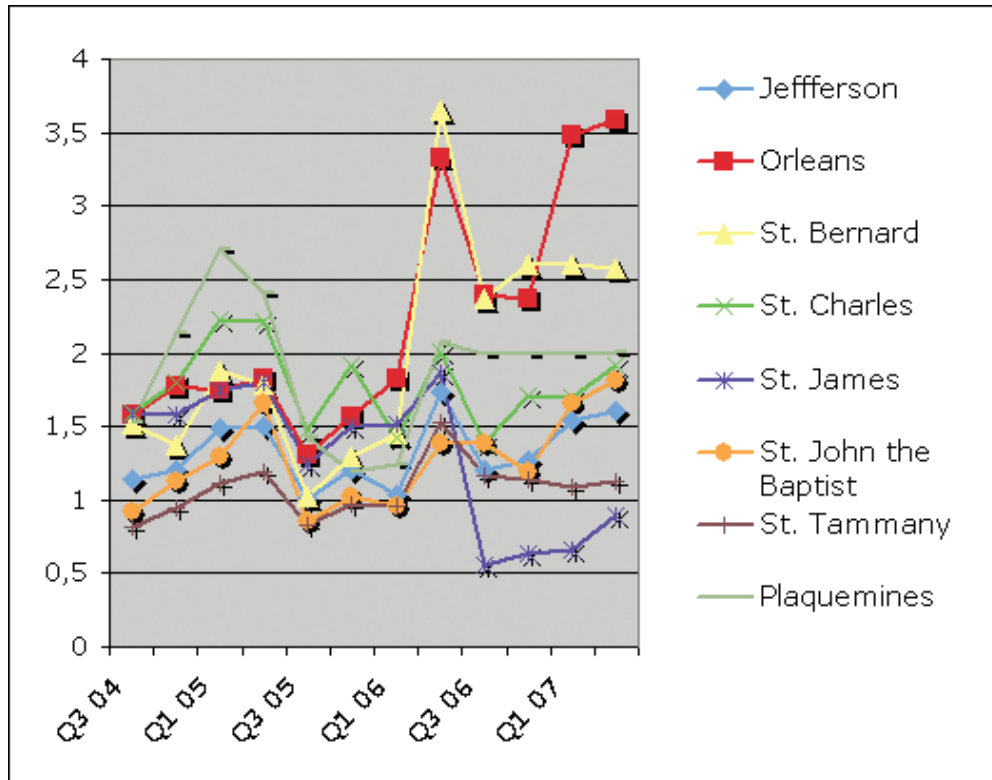
Days beyond term (DBT) is an obvious measure of financial distress for businesses. Both measures show an initial rise in this measure in 2006 but diverge in 2007, with New Orleans continuing to exhibit the rise into 2007 and with Biloxi showing a steep decline in DBT going into 2007. Again, the businesses in Orleans and St. Bernard Parishes show persistent indications of financial distress.



TABLE 3A: Average Days Beyond Term (DBT)
(Constant Sample of Businesses Over Time)

	Q2 2005	Q2 2006	Q2 2007	Relative to Q2 2005	
				Q2 2006	Q2 2007
New Orleans MSA	1.59	2.19	2.10	1.38	1.32
Jefferson	1.50	1.73	1.60	1.15	1.06
Orleans	1.82	3.33	3.59	1.83	1.98
Plaquemines	2.41	2.07	2.01	0.86	0.83
St. Bernard	1.78	3.65	2.58	2.05	1.45
St. Charles	2.21	2.01	1.91	0.91	0.87
St. James	1.80	1.86	0.89	1.03	0.50
St. John the Baptist	1.66	1.38	1.81	0.83	1.09
St. Tammany	1.19	1.53	1.13	1.28	0.94
Biloxi-Gulfport MSA	1.72	1.91	1.29	1.11	0.75
Hancock	1.58	1.35	1.46	0.85	0.92
Harrison	1.82	2.07	1.17	1.14	0.64
Jackson	1.60	1.82	1.43	1.14	0.89

FIGURE 2: Average Days Beyond Term (DBT) by Fiscal Quarter



If we examine this on a quarterly basis for the parishes of the New Orleans MSA we see a divergence among the parishes in this measure after Katrina struck, Q3 2005, with Orleans and St. Bernard seemingly decoupling from the other parishes.

3. Business Delinquency By Owner/Operator Ethnicity

Using the socio-demographic data appended to the credit files from the Acxiom Corporation we are able to break down results by the ethnicity of the business owner / operator. This sample is different since the

Business Owners Link database contains only small businesses, and of them only a subset of businesses for which owner information is available.²⁶

Table 4 shows this owner / operator ethnicity breakdown for a constant set of businesses over time. What we find is that businesses headed by African Americans and Hispanics appear to be falling behind on payments more than Caucasian-owned businesses in the New Orleans MSA. In the Biloxi-Gulfport MSA, Hispanic headed businesses appear to be doing a bit better on this measure than Caucasian headed businesses.

TABLE 4: Change in Days Beyond Term (DBT) by Q2 2007 (Q2 2005 = 1)
(Constant Sample of Businesses Over Time)

	All	Asian	Afr.Am.	Hispanic	Caucasian
New Orleans MSA	1.42	1.21	2.89	2.31	1.27
Jefferson	1.17	1.10	3.21	3.19	1.05
Orleans	2.48	0.88	2.40	3.30	1.99
Biloxi-Gulfport MSA	0.65	0.37	1.11	0.40	0.63
Harrison	0.74	9.57	1.08	0.03	0.71

The analysis is too preliminary to attempt to explain this disparity in greater depth. A number of possible underlying factors should be explored, such as whether this is driven by size of businesses, type of business, location(s) within parishes and counties, etc. Other factors, such as the initial conditions or vulnerabilities of the businesses should also be controlled for to better identify the underlying factors influencing the disparities.

4. Rise in Reported Collections Two Years After Katrina

Another unambiguous measure of the financial stress of businesses is the average amount of collections reported. Tables 5 and 5A show that there has been a significant rise in the amount of reported collections (outstanding and not) two years after Katrina.



TABLE 5: Average Amount in Collections (Changing Sample of Businesses Over Time)

	Aug 2005	Aug 2006	July 2007	Relative to Aug 2005	
				2006	2007
New Orleans MSA	197	209	954	1.06	4.83
Jefferson	178	160	532	0.90	2.99
Orleans	275	317	2315	1.15	8.42
Plaquemines	68	62	239	0.91	3.52
St. Bernard	72	103	171	1.44	2.39
St. Charles	87	80	154	0.92	1.78
St. James	52	54	69	1.03	1.32
St. John the Baptist	543	111	245	0.20	0.45
St. Tammany	131	218	299	1.66	2.28
Biloxi-Gulfport MSA	122	93	486	0.76	3.99
Hancock	117	97	126	0.83	1.08
Harrison	138	100	165	0.72	1.19
Jackson	96	79	1173	0.82	12.26

TABLE 5A: Average Amount in Collections (Constant Sample of Businesses Over Time)

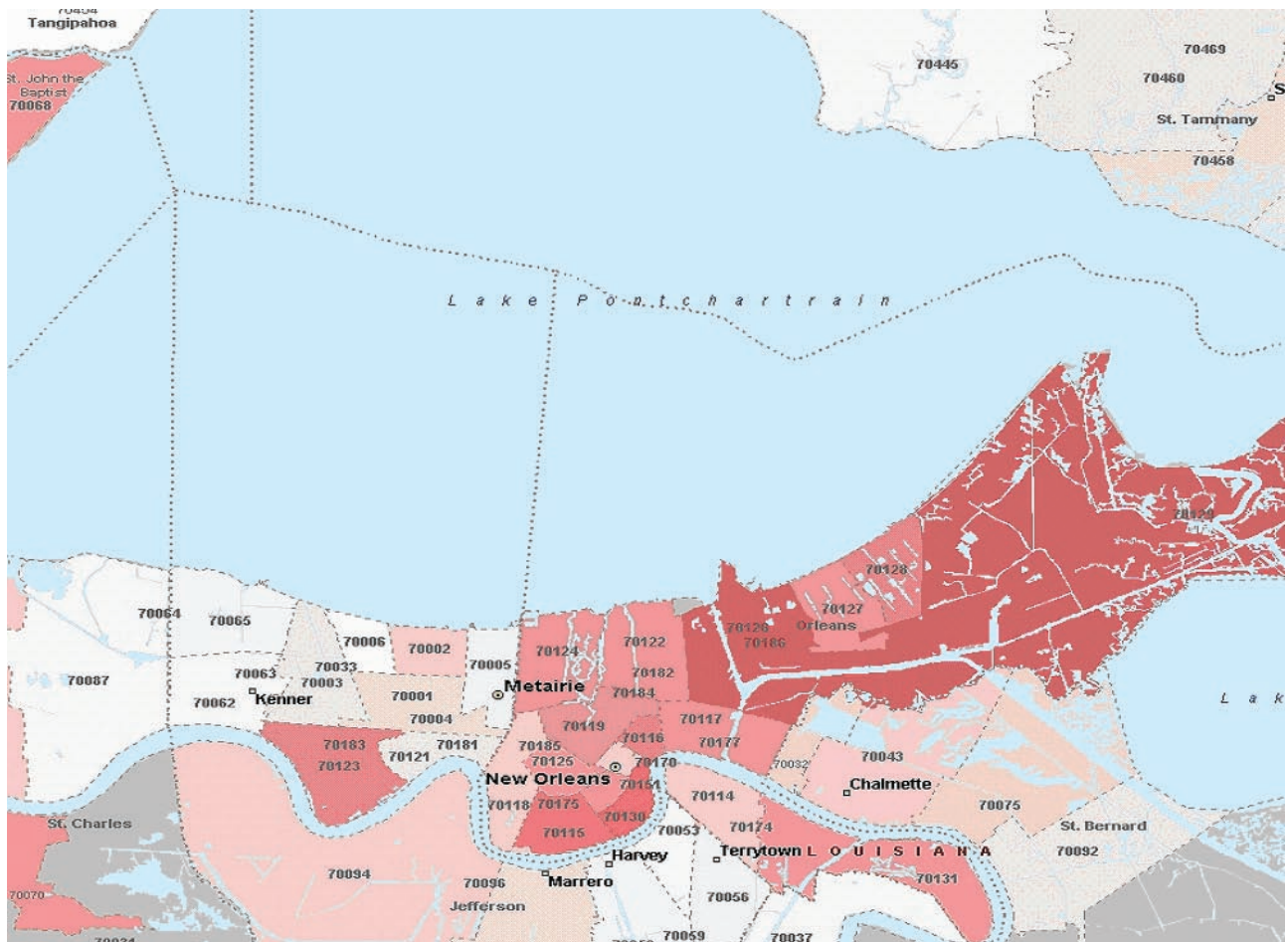
	Aug 2005	Aug 2006	July 2007	Relative to Aug 2005	
				2006	2007
New Orleans MSA	172	193	827	1.12	4.81
Jefferson	161	147	376	0.91	2.34
Orleans	242	279	2144	1.15	8.86
Plaquemines	75	68	98	0.91	1.30
St. Bernard	70	89	170	1.27	2.42
St. Charles	71	63	178	0.89	2.53
St. James	66	68	80	1.03	1.21
St. John the Baptist	344	50	169	0.15	0.49
St. Tammany	118	238	304	2.02	2.58
Biloxi-Gulfport MSA	122	97	333	0.80	2.73
Hancock	111	92	119	0.83	1.07
Harrison	137	108	169	0.78	1.23
Jackson	101	83	669	0.82	6.62

One prominent aspect of these results is that for at least a year after Katrina, there was little change in reported collections. This lag is understandable since it usually takes some time before accounts go to collections. In addition, following Katrina many creditors and business became more flexible and enacted temporary payment and delinquency reporting moratoriums. However, what is most surprising about these figures is the enormous jump experienced by Orleans Parish.

We can get some additional insight as to this increase in Orleans Parish by drilling down geographically to the zip code level.

Figure 3 shows us that there appears to be somewhat of a geographic pattern in this business distress measure. The further west one looks, going from west of Jefferson Parish, to Jefferson Parish, to western Orleans Parish, and finally to Eastern Orleans Parish, we see an increase in the relative rise in collections, with higher rises indicated in darker regions.

FIGURE 3:
Increase in amount in collections by zip code, 2005-2007 (Darker Indicates Greater Amount in Collections)



As before, we can break results for changes in collections down by owner/operator ethnicity.

**TABLE 6: Change in Collections by Ethnicity as of July 2007 (August 2005 = 1)
(Constant Sample of Businesses Over Time)**

	All	Asian	African American	Hispanic	Caucasian
New Orleans MSA	3.56	0.71	3.43	1.43	4.08
Jefferson	1.37	0.63	1.61	1.31	1.50
Orleans	3.72	1.74	3.96	2.38	3.64
Biloxi-Gulfport MSA	1.47	0.45	1.24	0.93	1.59
Harrison	1.61	0.34	1.12	0.94	1.86



We find, as shown in Table 6, that in the Biloxi-Gulfport MSA and Harrison County that collections rose relatively more for Caucasian-owned / operated businesses. In the overall New Orleans MSA, Caucasian-owned businesses also saw the largest relative increase in collections, but at the parish level, for Orleans and Jefferson Parish, we find that African American-owned and operated businesses witness the greatest relative rise in collections.

The results presented in this section are broadly consistent with the measures found in the New Orleans Index and the wage and employment data presented by Dek Terrell and Ryan Bilbo and indicate the persistent problems facing businesses in Orleans and St. Bernard parishes. This suggests that business credit files may contain measures that can be valuable in gauging the economic recovery of businesses following disasters. It is likely that information from public datasets, such as wages, employment, and number of firms, information from surveys, and information from private datasets, such as credit files, do not perfectly overlap and are not perfect substitutes for one another. As such, future work should focus on which data or combinations of data are most suited for impact assessment, planning, and recovery analysis. And it would be particularly valuable to determine if some measures are good *leading* indicators of business strength and recovery. As with most initial analysis, the work presented here should be viewed as a starting point for future work.



III. Vulnerability of and Disaster Impacts on Individuals

The analysis in this section focuses on the financial impact of disasters on individuals and the vulnerabilities of individuals to disasters, using individual level credit file data appended with socio-demographic data. The calculations are made at the individual level, and then the results are reported (segmented) by groups (by income, ethnicity, age, etc.). The motivation for this section is to identify whether some groups are more financially vulnerable to and harder hit by disasters. With such an identification, targeted relief and risk mitigation policies are possible. This analysis represents a first attempt (a beta) at the creation of such vulnerability indices by the World Bank, which will continue to pursue and refine the work started in this section. As such, heavy interpretation is not placed on the results presented here, other than noting large dis-

parities that are found across groups. The reader should take such results as suggestive and worthy of further investigation, but not yet sufficient to fine tune policy and insurance products.

A. Data

The individual credit files from TransUnion have been anonymized to comply with existing privacy laws and regulations. For analytic purposes they have been appended with socio-demographic data from the Acxiom Corporation. The appended socio-demographic data includes data on income, ethnicity, age, marital status, number of children, home ownership status, and language preference.

As noted in the small business section, the socio-demographic data from Acxiom are not simply crude estimates based on location (census tract) or derived in some fashion from attributes of the individual credit files. They have been generated by Acxiom for each individual from a combination of data sources including self-reported sources, estimates from some of the individual's characteristics, extrapolation from census data, and public record information. If little or no good information existed to determine the age of the individual, for instance, then no estimate would have been given. Such individuals would then be excluded from breakdowns by age, since we would be unsure of their age. For income estimates, one-third of the data came from self-reported sources.

We used this initial data set to begin the process of designing an economic/financial health monitor and vulnerability indices. For a first step we wanted to create an index based on variables and weights

derived at *a priori*, based on best guesses as to the relevant factors. This index is a starting point in an iterative process to a fully developed economic/financial health monitor and vulnerability indices.

B. Longitudinal Aspects of the Data

While we do not use comprehensive individual data with which we can track the same individuals across time, we have analyzed two independent snapshots of thousands of credit files before and after the storms of 2005. The first snapshot was taken in March 2005 and 97,831 individual credit files are examined. The second snapshot was taken in March 2006 and 89,544 individual credit files are examined. These two snapshots still allow us to conduct very valuable analyses on different segments of the population. Since we are segmenting the analysis by income and ethnicity, for instance, and are accounting for the individual's particular income group in the index calculation, the results are somewhat insulated from the changes in population that occurred following the hurricanes. As we do not have a panel of the same individuals before and after the storms, we are not perfectly able to "control" for population changes.

C. Geographic Coverage of the Data

The data used represent a wide geographic area and are from relatively highly populated counties and parishes impacted by the storms of 2005. They come from Baldwin and Mobile Counties in

Alabama; Broward and Miami-Dade Counties in Florida; Jefferson, Orleans, and East Baton Rouge Parishes in Louisiana; and Hancock and Harrison Counties in Mississippi.

To further understand the financial impacts at the community level, this analysis uses a small set of individual data to begin the process of designing an economic/financial health monitor and vulnerability index. For a first step we wanted to create indices based on variables and weights derived *a priori*, based on assumptions of the relevant factors. This then represents a starting point, the initial values in an iterative process.

In order to be able to analyze households' financial vulnerability, we first developed scorecards for evaluating both households' Current Level of Indebtedness and Current Credit Performance. In the following discussion these two scores are called the *LI score* and *CP score*, respectively.

The objective of the *LI score* is to summarize the households' current level of indebtedness. This score takes into account a household's mix of different kinds of credit, credit term structure, and pursuit and availability of new credit. Importantly it also accounts for the income level of the household. This is done in such a way that the same amount of debt would represent a greater degree of indebtedness for lower income households. This distinction is crucial, in that the index does not measure average debt but rather average indebtedness.

The objective of the *CP score* is to summarize households' current performance on different credit obligations. For recent delinquencies, this score takes into account both frequency and severity. The delinquencies' frequency specifies how many

different credit accounts have been delinquent and how many delinquencies have been registered for different accounts. Severity characterizes level of delinquency for different types of credit obligations.

Theoretical possible ranges for the calculated *LI score* and *CP score* are between 0 and 1000. For the *LI score*, greater values indicate greater level of indebtedness and for *CP score*, greater values indicate worse credit performance. The exact make-up of the score is outlined in Appendix C.

Other studies have explored the trajectory of performance on credit obligations following shocks. The Mortgage Bankers Association has, for example, examined the trajectory of mortgage delinquencies in the wake of Katrina. Other indicators, such as BEA data, that note the increase in average household income, lower average number of dependents, higher education levels, all suggest that the remaining and in-migrating households are better off. But these figures hide how some segments, such as low-income groups, have been impacted. That is, they only examine broad changes at the community level.

The findings below are initial attempts to unpack these aggregates, to understand how subsets have been affected. Further information is needed to understand both the causes behind the shifts and to monitor future trends. For example, to what extent are rising debt levels masked by mandatory mortgage payoffs from insurance settlements? Further research can help unpack these questions and aggregates, as additional data sources are made available.

D. Findings

1. Rising Indebtedness and Improved Credit Performance

There was a greater increase in the level of indebtedness and a substantial improvement in credit performance in the hurricane affected areas compared to the national average. Tables 7 and 7A show the average values of the indices for 2005 and 2006 for the investigated 2005 hurricane season affected area (Table 7) and for the nation (Table 7A). Substantial differences are seen when the areas affected by the 2005 hurricane season are compared to national average values.

TABLE 7: Average Values for Areas Affected by 2005 Hurricane Season

	LI score	CP score
Mean 2005	170.21	19.82
Mean 2006	187.23	18.08
Change, 2005 to 2006	17.03	-1.74
% Change	10.0%	-8.8%

TABLE 7A: Average National Values

	LI score	CP score
Mean 2005	185.15	16.46
Mean 2006	196.47	17.73
Change, 2005 to 2006	11.32	1.27
% Change	6.1%	7.7%

Since this is just the initial iteration of the development of the indices, we are most concerned with the qualitative nature of the results. The observed changes in both level of indebtedness and credit performance following the hurricanes 2005 can be qualitatively explained well. The increase in level of indebtedness that is higher for the affected areas than for the nation can possibly be explained through two scenarios. First, increased indebtedness may have resulted from the need for new debt for covering the hurricane losses. Second, a change in the population of the impacted areas in which those that were financially better off (with mortgages and higher value mortgages) may represent an increased proportion of the population and were not fully accounted for in the LI index, which took account of estimated household income. Furthermore, affected areas' improvement in credit performance – which is counter to the nation's decline – can be explained by (1) the availability of new liquidity from public aid and insurance indemnification on one hand and/or (2) also from a possible disproportionate out-migration of the financially vulnerable.

TABLE 8:
LI Score, by Ethnicity

	2005	2006	Change (06 to 05)	Difference from Average
All	170.2	187.2	10.0%	0%
African American	140.30	158.59	13.04	3.05
Asian	176.28	193.81	9.95	-0.04
Caucasian	175.22	188.35	7.49	-2.50
Hispanic	185.46	206.65	11.43	1.44
Other	161.44	172.98	7.15	-2.84

It should also be noted that, as is shown in the community section, there may be a slower than average rise in debt accompanied by a faster than average rise in indebtedness if in the hurricane affected areas relatively more debt was accumulated by lower income households.

2. African Americans: Rising Indebtedness, Improved Credit Performance

African Americans showed the highest increase in level of indebtedness but showed the greatest improvement in credit performance.

In tables 8 and 8A we breakdown both LI score and CP score by ethnicity. All ethnic groups show an increase in level of indebtedness following the storms, with Caucasian and others showing the lowest and African Americans showing the highest increase. On the other hand, African Americans showed the best improvement of credit performance among other ethnic groups 2005 to 2006 while Hispanics and Asians did the least well, showing a deterioration of the credit performance. In further research, it will be interesting to determine whether such differences across ethnic groups are driven or mitigated by any underlying income differences, geographic differences, regional out migration and/or in migration.

TABLE 8A: CP Score, by Ethnicity

	2005	2006	Change (06 to 05)	Difference from Average
All	19.8	18.1	-8.8%	0%
African American	32.19	27.46	-14.69	-5.89
Asian	13.05	14.60	11.91	20.71
Caucasian	17.15	15.25	-11.11	-2.31
Hispanic	19.40	19.49	0.51	9.31
Other	14.58	14.01	-3.87	4.93

3. Indebtedness & Credit Performance, by Age

Young adults experienced the highest increase in level of indebtedness, the very old showed some decline in credit performance.

Tables 9 and 9A present findings for LI score and CP score when broken down by age. Young adults (those under 25) showed the highest increase in level of indebtedness. The increase declines for older ages. The very old (over 85) experienced no increase at all. While for the middle age groups there was a substantial and well-balanced improvement in credit performance, there was only a minor improvement for young adults and even some decline for very old.



	2005	2006	Change (06 to 05)	Difference from Average
All	170.2	187.2	10.0%	0%
up to 25	186.3	216.4	16.1%	6.1%
26-35	207.8	229.7	10.5%	0.5%
36-55	200.4	216.0	7.8%	-2.2%
56-65	191.9	203.1	5.8%	-4.2%
66-85	161.4	166.0	2.8%	-7.2%
over 85	83.0	82.9	-0.1%	-10.1%

TABLE 9:
LI Score, by Age

	2005	2006	Change (06 to 05)	Difference from Average
All	19.8	18.1	-8.8%	0%
up to 25	24.5	24.1	-1.4%	7.4%
26-35	28.2	25.0	-11.7%	-2.9%
36-55	24.6	21.8	-11.3%	-2.6%
56-65	20.2	17.5	-13.3%	-4.6%
66-85	15.0	13.4	-10.2%	-1.4%
over 85	6.9	7.1	4.1%	12.9%

TABLE 9A:
CP Score, by Age

4. Indebtedness by Homeownership and Marital Status

Homeowners and married couples experienced lower increase in level of indebtedness. Tables 10 and 10A show the breakdown by marital status and homeownership.

Homeowners experienced lower increase in level of indebtedness and showed better improvement in credit performance than renters and those married than those who are single. Again, future research may seek to determine if such differences are driven by other factors, such as level of insurance protection

Finally, when we break down the LI and CP indices by household income we find little relationship between changes in credit performance and income.

In the level of indebtedness measure, we see a clear relationship between household income and changes in indebtedness following the disasters, with lower income households seeing greater increases in indebtedness.

	2005	2006	Change (06 to 05)	Difference from Average
All	170.2	187.2	10.0%	0%
Home Ownership				
Renter	161.5	182.1	12.7%	2.7%
Owners	198.4	210.3	6.0%	-4.0%
Marital Status				
Single	176.5	194.0	10.0%	0.0%
Married	200.4	211.4	5.5%	-4.5%

TABLE 10:
**LI Score, by Marital
Status and Home
Ownership**

	2005	2006	Change (06 to 05)	Difference from Average
All	19.8	18.1	-8.8%	0%
Home Ownership				
Renter	25.8	23.5	-9.0%	-0.3%
Owners	21.1	18.7	-11.7%	-2.9%
Marital Status				
Single	23.8	21.8	-8.5%	0.3%
Married	21.0	18.2	-13.3%	-4.5%

TABLE 10A:
**CP Score, by
Marital Status
and Home
Ownership**

Homeowners experienced lower increase in level of indebtedness and showed better improvement in credit performance than renters and those married than those who are single. Again, future research may seek to determine if such differences are driven by other factors, such as level of insurance protection

Finally, when we break down the LI and CP indices by household income we find little relationship between changes in credit performance and income.



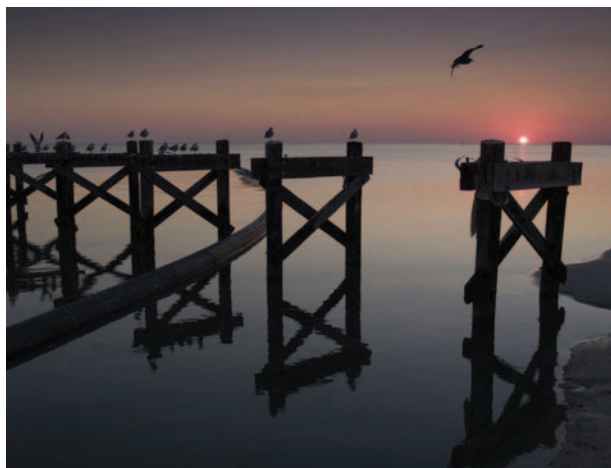
In the level of indebtedness measure, we see a clear relationship between household income and changes in indebtedness following the disasters, with lower income households seeing greater increases in indebtedness.

	2005	2006	Change (06 to 05)	Difference from Average
All	170.2	187.2	10.0%	0%
less than \$15,000	170.7	188.7	10.5%	0.5%
\$15,000 - \$19,999	190.5	206.4	8.4%	-1.6%
\$20,000 - \$29,999	193.8	210.6	8.7%	-1.3%
\$30,000 - \$39,999	192.0	210.0	9.4%	-0.6%
\$40,000 - \$49,999	199.5	216.1	8.3%	-1.7%
\$50,000 - \$74,999	203.5	214.9	5.6%	-4.4%
\$75,000 - \$99,999	201.0	210.5	4.7%	-5.3%
\$100,000 - \$124,999	188.1	196.4	4.4%	-5.6%
more than \$124,999	173.6	180.8	4.2%	-5.8%

TABLE 11:
LI Score, by Household Income

	2005	2006	Change (06 to 05)	Difference from Average
All	19.8	18.1	-8.8%	0%
less than \$15,000	26.4	24.3	-8.0%	0.8%
\$15,000 - \$19,999	27.7	23.5	-15.3%	-6.6%
\$20,000 - \$29,999	26.7	23.2	-13.0%	-4.3%
\$30,000 - \$39,999	23.2	21.0	-9.4%	-0.6%
\$40,000 - \$49,999	24.0	22.6	-9.6%	3.2%
\$50,000 - \$74,999	21.0	18.0	-14.4%	-5.7%
\$75,000 - \$99,999	18.6	16,3	-12.3%	-3.6%
\$100,000 - \$124,999	15.0	14.1	-6.0%	2.8%
more than \$124,999	11.5	10.2	-10.6%	-1.8%

TABLE 11A:
CP Score, by Household Income



IV. Community Impact and Recovery

We know much about the broad changes in the composition of the population of the areas impacted by the hurricanes of 2005. William H. Frey, Audrey Singer and David Park describe these changes for New Orleans.²⁷ They found the population following Hurricane Katrina to be smaller, more educated, less poor, less likely to rent, older, and less ethnic. Christina Paxson and Cecilia Rouse use a sample of 350 low-income parents who were enrolled in a community college intervention program prior to Hurricane Katrina to investigate why minority lower-income families appear to have been slower to return to New Orleans than other families.²⁸ They found that the most important factor determining whether a person and their family would return was whether their home experienced flooding. For the group that did not experience flooding, there was less likelihood of returning if they did not own the home they lived in or if they had lived with a friend or family member. That families would be less tied to the community if they were not homeowners and

would be less likely to return if they had experienced flood damage is not unexpected. More surprisingly, they did not find evidence to support the claim that those who did not return did so because they found better financial opportunities outside of New Orleans. In fact, the group that experienced flooding and did not return, saw their earnings decline by more than \$200 a month compared to the other groups. Of course, this does not take account of higher costs of living in New Orleans (such as rent) following Katrina.

Jeffrey Groen and Anne Polivka use a larger and more representative sample from the Current Population Survey (US Census) to compare outcomes from those that evacuated to those that did not, controlling for a host of factors.²⁹ They found that evacuees that did not return to the area from which they evacuated fared much worse in the labor market. This is consistent with the Paxson and Rouse finding that those who did not return did not do so because they were faring better elsewhere. The authors contend that the diminished labor market outcomes by the non-returnees was because they came from areas which suffered the most damage and thus were displaced from their jobs.

The following analysis takes a step toward describing how the average financial characteristics of residents of the parishes of the New Orleans metropolitan area have changed over time in relation to samples drawn from the Gulf Coast region, and the United States during the same timeframe. This analysis recognizes that changes are reflective in part of the migration of residents, as any community level analysis is. Nonetheless, an sketch of the financial health of the New Orleans metropolitan based on the residents in place today demonstrates the realistic base that exists.

A. Data

This analysis utilizes credit file data from TransUnion's TrenData database, aggregated at the county or parish level. It contains around 200 variables that are recorded in credit files to determine an individual's credit risk, credit worthiness, and credit capacity. These variables include measures of total debt, average credit utilization, and the risk profile, which is defined as a credit score. A credit file is different from a credit report: it is more comprehensive, including all reported credit information as well as other data collected by the CRA such as public record information.³⁰ Credit file information is only shared by credit bureaus for FCRA-defined permissible purposes, such as with creditors.³¹ A credit file is not shared with the consumer.

A credit report, on the other hand, is a summary of the credit file that is designed for ease of consumer use and accessibility. Credit scores are calculated values from the information in a credit file, and can be purchased by an individual in conjunction with their credit report.

Credit scores for general use are constructed by credit reporting agencies, which also sell credit files to other firms that calculate their own credit scores. In general, a credit score is a function of numerous factors related to the financial life of a consumer, including an individual's payment history, debt-to-equity ratio, and length of credit history, types of extended credit, and numerous additional variables related to recent transactions.³² These factors are modeled to classify consumers by score. Credit scores are varied for specific market applications to enhance predictiveness such as an auto loan ver-

sus a mortgage loan. Although we have some general understanding of how these classes of variables are weighed, the specific detail remains the private property of the firms that develop them.³³

Typically, consumer credit scores are scaled for ease of use to range between 350 and 850, where higher numbers represent lower levels of risks—or a lower probability of a delinquency or default—and lower numbers indicate a higher level of risk. Nonetheless, most scoring models utilize a unique range. For this analysis, we rely on TransUnion's credit score in the TrenData database, which ranges between 350 and over 850.

The source of this data are the companies who voluntarily report on the performance of credit-based products such as mortgages, credit cards, retail credit cards, and auto loans, among others. Other data, including public record data, are collected by the bureau or purchased from niche information service providers or other CRAs.

B. Longitudinal Aspects of the Data

The aggregated consumer credit database offers quarterly snapshots of randomly sampled consumers. Each quarter, a random sample of approximately 25 million borrowers is extracted from the population of United States borrowers with a credit file. The data set aggregates a one in nine sample of the population with credit files in greater New Orleans at the time of the sampling. This sample is used to create parish and county level quarterly estimates to evaluate and analyze variances in credit market performance.

We use an anonymous random sample of consumers over thirteen quarters from first quarter 2004 to second quarter 2007. Due to the significant out-migration and in-migration of greater New Orleans during that period, the sample sizes were adjusted. For example, in Orleans Parish the one nine data sample falls from 40,998 at the end of the third quarter of 2005 to 28,183 at the end of the third quarter of 2006. This translates to a decline in the actual number of files from 368,982 to 253,647.

The data indicate an apparent increase in the proportion of the population with a credit file. This may be due to the out migration from greater New Orleans being composed disproportionately of individuals from lower-income and African American communities that traditionally have below average credit scores and may be more likely to have no credit file.³⁶

This study analyzes changes in the credit profile of the New Orleans MSA based on the consumers living in the area when the quarterly snapshot is taken. This analysis does not track the change in credit profiles of individuals who do not live within the boundaries of the metropolitan area. In that an estimated 40 million Americans move every year, population for a given area, particularly after a disaster, is a dynamic variable.³⁷ At no time should one infer that this analysis covers and tracks the exact population that lived in greater New Orleans prior to September 2005. In future such research it may be possible to use detailed individual level data, which may enable the tracking of individuals.³⁸



C. Geographic Coverage of the Data

The community analysis focuses on trends in the New Orleans metropolitan statistical area (MSA) as illustrated in Figure 4. We chose to focus on this geographic area because our primary interest is in the area most directly impacted and affected by the hurricanes of 2005, specifically Hurricane Katrina. The New Orleans metropolitan statistical area, to the west of the point of impact, is defined according to the U.S. Census Bureau's most recent definition of metropolitan areas. It includes seven parishes: Orleans, Jefferson, Plaquemines, St. Bernard, St. Charles, St. John the Baptist, and St. Tammany. Orleans Parish and the city of New Orleans are the same entity, and we refer interchangeably to Orleans Parish and New Orleans. We also use greater New Orleans interchangeably with the New Orleans MSA.

FIGURE 4: New Orleans MSA and Census Region

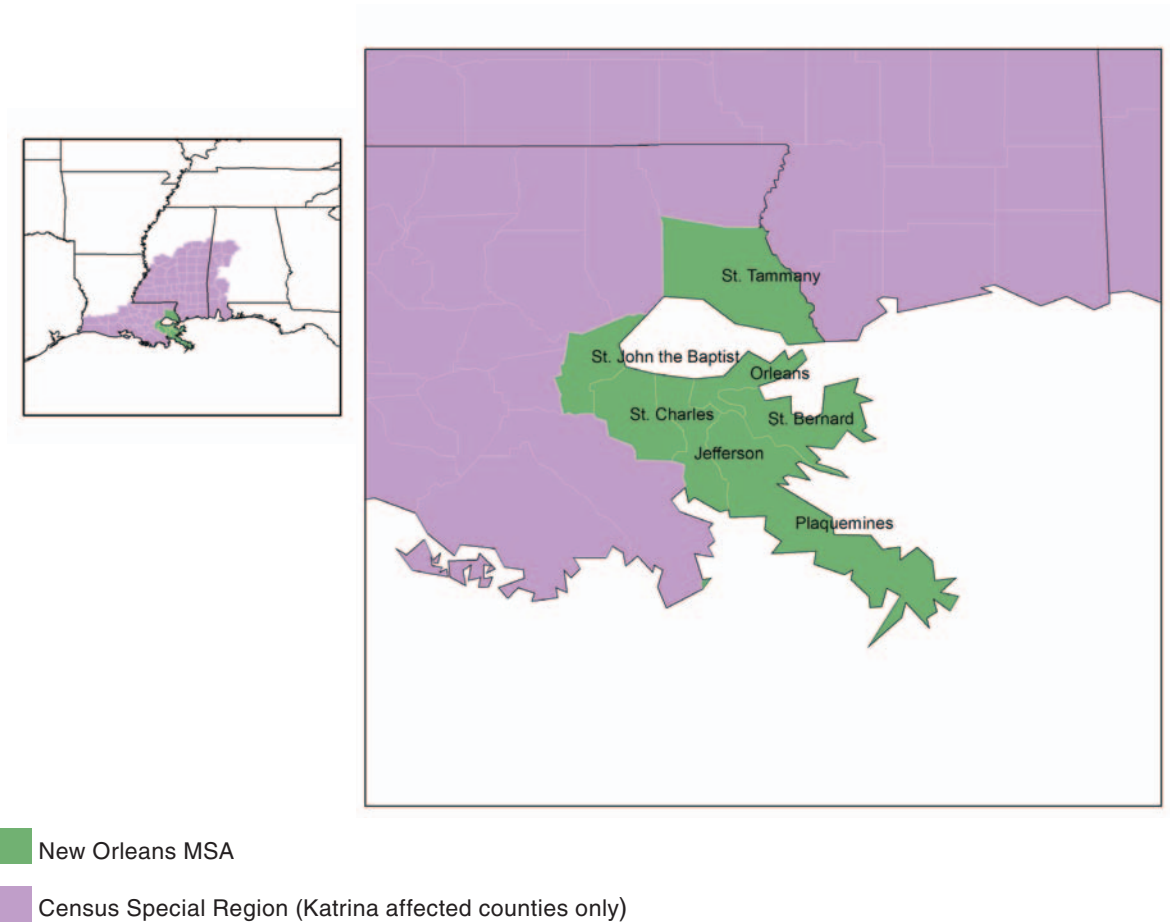


Figure created by the Political and Economic Research Council, 2007

In several sections of the community analysis, we discuss differences between the New Orleans metropolitan area and the Gulf Coast region. Since the impact of hurricanes Katrina and Rita was spread far across the Gulf Coast, we are able to make comparisons between the hardest hit areas and those less affected areas within the region, as well as between similarly damaged areas. Hence, we are able to make comparisons and develop benchmarks.

In this community analysis, the Gulf Coast region has been narrowly defined as the parishes and counties in Louisiana, Mississippi, and Alabama that were designated following Hurricane Katrina by FEMA as affected counties with affected individuals eligible for relief.³⁹ This definition limits the number of Louisiana parishes included in this analysis, excluding those that had physical community damage but low levels of damage to its residents (shown in purple in Figure 4). In addition, we do not include FEMA designated counties or parishes that were affected by Hurricane Rita only.

D. Findings

The level of debt and the utilization of credit have a significant effect on the ability to obtain access to credit at fair rates. An initial examination of these data focuses on aspects of indebtedness that are relevant to rebuilding. As noted above, the following findings need to be considered in the context of early findings; most importantly those of William H. Frey, Audrey Singer and David Park that found a shift in the composition of the population of New Orleans following Katrina.⁴⁰ They found post-Katrina New Orleans' population to be more educated, less poor, less likely to rent, and older.

1. Changes in average level of personal debt from the pre-Katrina population in greater New Orleans to the post-Katrina population.

Total debt, including credit cards, installment cards, mortgages and auto loans, has increased nationwide since 2005. In the United States, the average level of debt has risen 13%. The average level of

debt in the greater New Orleans rose at half of the rate seen in the United States as a whole. The amount of personal debt in greater New Orleans rose 7% while the total amount of personal debt in the Gulf Coast rose 6%.⁴¹ (Table 12).

TABLE 12: Debt

Average Level of Debt (\$, 1000s)		
year	US	New Orleans, MSA
2004	71.8	54.7
2005	76.7	57.3
2006	82.5	56.9

Source: TrenData, and Brookings Analysis

The level of debt within the parishes varies. As population in St. Bernard has declined precipitously, a preliminary view indicates that the current population of St. Bernard parish has far fewer average debt obligations.

TABLE 13. Level of Average Debt across Parishes

Geography	2nd Quarter 2005	2nd Quarter 2007	% change
United States	58.3	69.4	19.2%
New Orleans, LA MSA	43.9	44.8	2.2%
Jefferson Parish	42.6	42.9	0.8%
Orleans Parish	36.0	33.5	-6.9%
Plaquemines Parish	40.5	49.8	22.9%
Saint Bernard Parish	35.1	15.5	-55.9%
Saint Charles Parish	53.7	56.9	5.9%
Saint John the Baptist Parish	40.7	46.3	13.8%
Saint Tammany Parish	65.7	66.2	0.7%

Source: TrenData, Brookings Analysis



Total debt is comprised of many subcategories of debt including mortgages and credit cards. Understanding the impact of disaster on the home – the largest asset of many Americans – and the utilization of credit cards – a readily available reserve to smooth shocks to income⁴² – will help us to further understand impacts on asset preservation and the role of finance.

We first turn to credit card debt. We have anecdotal evidence that families affected by disaster utilized all accessible capital in the immediate recovery efforts. What is the reality? The ability of consumers to utilize credit cards to access emergency cash above and beyond savings, public assistance, and other means of support following Hurricane Katrina is evidenced in the rise of balances for the remainder of 2005. Today, however, the average credit card balance is 34% less than that of the average consumer in the United States (Figure 5).

FIGURE 5:
Average Balances
of Active Trades

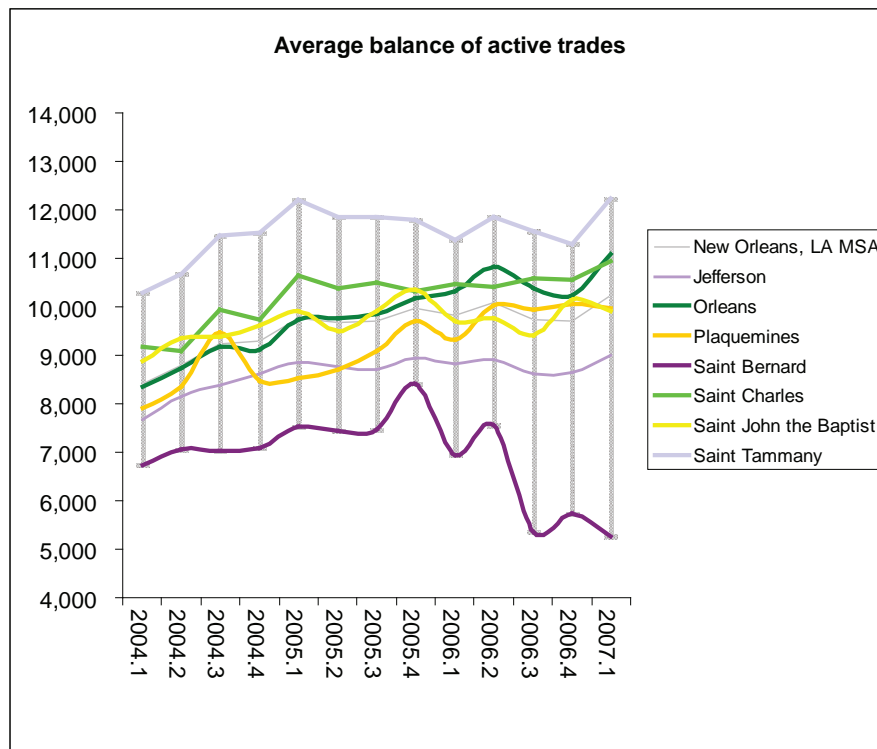
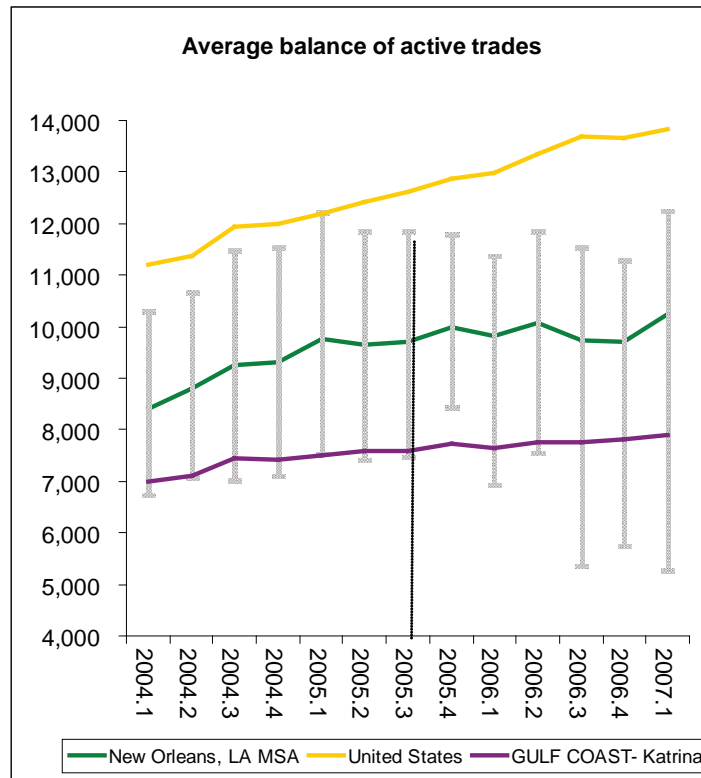


TABLE 14: Ratio Of Borrowers Who Have An Active Bankcard

Geographies	Pre-Katrina	Post- Katrina (average)	Change in Proportion of Borrowers with Active Bank Card
United States	0.71	0.72	1.6%
Gulf Coast	0.66	0.67	0.5%
New Orleans, LA MSA	0.65	0.64	-0.2%
Jefferson Parish	0.68	0.69	1.3%
Orleans Parish	0.56	0.51	-9.1%
Plaquemines Parish	0.66	0.65	-1.5%
Saint Bernard Parish	0.68	0.50	-27.5%
Saint Charles Parish	0.69	0.70	1.7%
Saint John the Baptist Parish	0.58	0.61	4.1%
Saint Tammany Parish	0.72	0.74	1.8%



There are a few reasons that may explain why we counter-intuitively observed lower credit card utilization. First, the most financially distressed individuals may have relocated to parts outside of the region, and there is ample evidence to this effect. Second, affected populations may have been increasingly denied credit due to income loss, worsening credit scores, and depreciated assets. That is, credit utilization may be lower because access to credit has become more restricted. Or it may be the case that these individuals are expecting to have lower future incomes and therefore are reluctant to go into debt. Additional research is needed to explore these discrepancies.⁴³

2. Number of Accounts per Borrower in Orleans and Saint Bernard Parishes

The Number of Accounts per Borrower in Orleans and Saint Bernard Parishes declined disproportionately following Katrina. The credit database variable that captures the total number

of accounts in a credit file can also be used as a proxy to indicate finance capacity or activity. In greater New Orleans the average number of accounts has decreased slightly. The decline is acute in the most highly impacted parishes: Orleans 16.9% and St. Bernard 30.3% (Table 15). Prior to the storm, consumers in Orleans parish had on average 10 accounts as opposed New Orleans averaging 12 and St. Tammany parish averaging 15 trades per credit report.



TABLE 15: Average Number of Accounts

Geography	2Q 2005	2Q 2007	Change (%)
United States	12.8	12.9	1.1%
New Orleans, LA MSA	12.4	11.9	-3.9%
Jefferson	12.8	12.5	-2.2%
Orleans	10.3	8.6	-16.9%
Plaquemines	13.2	12.7	-4.0%
Saint Bernard	12.8	8.9	-30.3%
Saint Charles	14.2	14.2	-0.2%
Saint John the Baptist	12.1	12.0	-0.5%
Saint Tammany	15.4	15.3	-0.8%

Furthermore, the average number of bank cards per consumer is two for the US, the Gulf Coast, and all parishes except Orleans and Saint Bernard. Orleans Parish has an average of one bank card per consumer. Following Katrina, the credit capacity of St. Bernard parish *diminished* on average from two bank cards to one. This finding is consistent with both the hypothesis of an exodus of those with greater credit access, and with the hypothesis of decreased credit access for those who remained. The role of wealth, savings, and other federal, state and local income support is currently unknown; however, should that data become available, it will illuminate this analysis.

3. Changes in Numbers with Mortgages and Mortgage Levels

A smaller proportion of borrowers have mortgages today and those mortgages loans are higher on average in a post Katrina greater New Orleans. The largest debt most borrowers incur in their lifetimes is a mortgage. In the data, this is captured in several variables, such as the ratio of borrowers who have a mortgage.⁴⁴ The United States has seen a steady rise in the ratio of borrowers with mortgages between the first quarter of 2004 and the first quarter of 2007. Greater New Orleans began to diverge from this trend in the fourth quarter of 2004. This decline, already in progress, was further accentuated by Hurricane Katrina, which pushed the proportion of borrowers with a mortgage to an all time low of 14%. For the homeowners who had mortgages, the data indicate an overall reduction of debt secured by a home.⁴⁵ The decline continued through June 2006 resulting in an overall decrease of 23% in the ratio of borrowers with loans secured by homes in greater New Orleans.

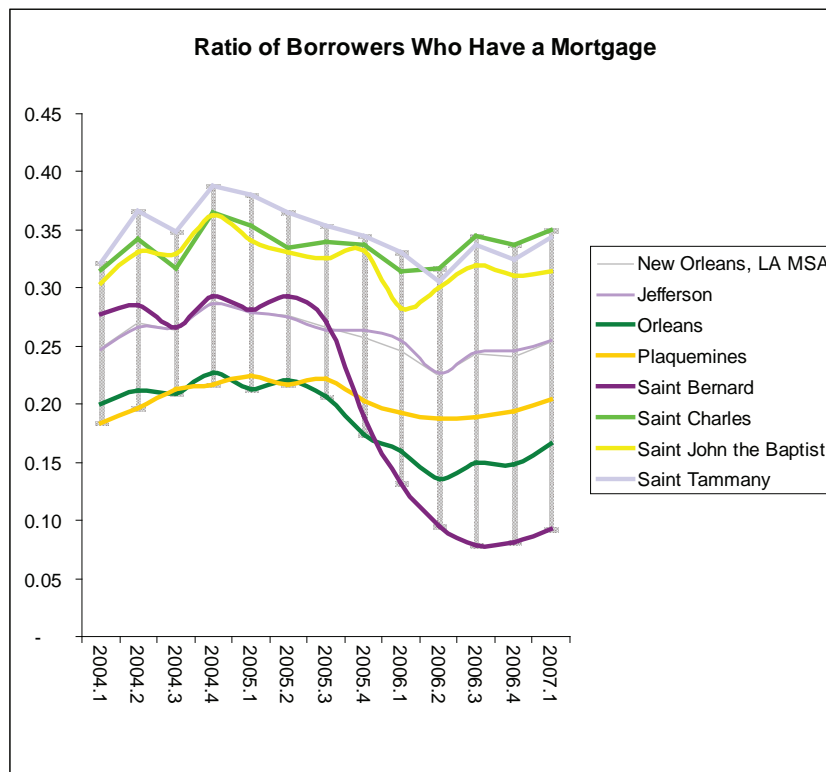
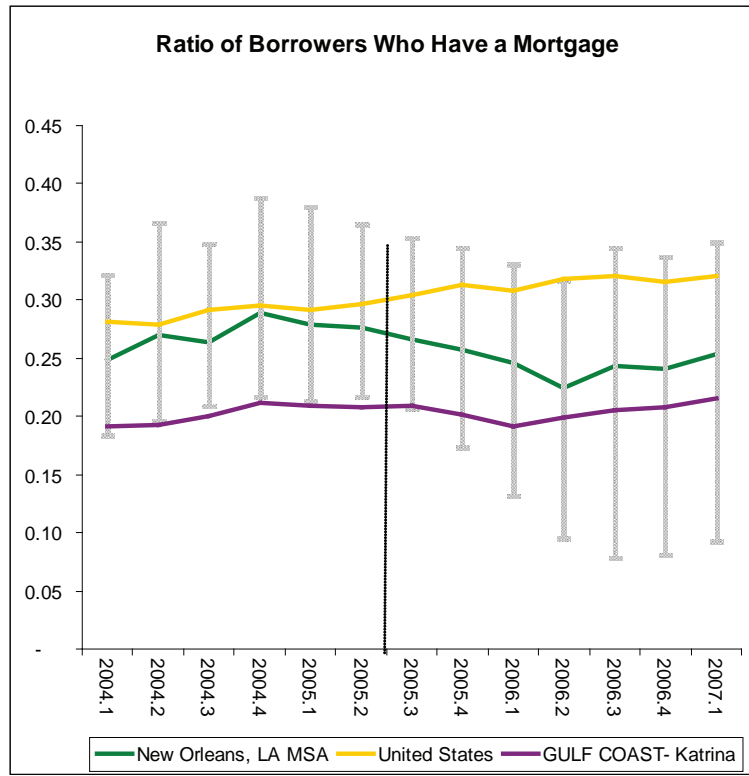
Within the parishes, the ratio of borrowers remained relatively similar until the impact of Hurricane Katrina. An examination of the parishes that comprise Greater New Orleans indicates the smallest decline in the ratio of borrowers occurred in St. Charles Parish (1.2%). The most significant drop in the ratio of borrowers with a mortgage occurred in New Orleans and St. Bernard parish.

The reduction in the proportion of homeowners with mortgages through mid-2006 does not indicate that there was a decline in homeownership. Yet this variable may be a new indicator to understand neighborhood change when combined with other traditional measures. The presence of owner-occupied households can tell us a great deal about the confidence in recovery.

The decline in the ratio of borrowers with a mortgage bottomed out in the second quarter of 2006. The turn around in the ratio of borrowers with mortgages occurred for the majority of parishes comprising greater New Orleans in the second quarter of 2006 (Figure 6). Early leaders turning around in the first quarter of 2006 were the St. John the Baptist and St. Charles parishes. Since that time, the ratio of borrowers with a mortgage has increased by four percent, a higher rate than that for the nation as a whole. This fluctuation may be a due to significant migration, still it indicates that invested individuals are returning to the region, or new investment in residential real estate in New Orleans, or a combination of both.

FIGURE 6:
Ratio of
Borrowers who
have Mortgage

Source: TrenData
 Brookings Analysis



Other seemingly related changes in the real estate market may provide some further explanation. For instance, an upswing in housing sale inventories occurred during the second quarter of 2006 due to the release of the newly developed FEMA maps. Greater New Orleans added 7,207 new units to the housing stock since September of 2006. As the housing sales inventories increased, the proportion of borrowers with a mortgage did as well. The mortgage debt per borrower also increased over this period. While this may be due to a change in the composition of mortgage borrowers, it could also be due to the price of housing being bid up as a result of scarcity. A review of home sales finds that new borrowers have purchased homes at higher sales prices.⁴⁶

4. Average Credit Score of Pre-Katrina and Post-Katrina Populations

The Post-Katrina population of greater New Orleans has a higher average credit score than its Pre-Katrina population. Credit scores typically incorporate debt levels, available credit and other factors, such as timeliness of past payments, to predict the risk of a serious delinquency or default in the future (usually 12 or 24 months in the future). Credit scores are also developed to predict other specific outcomes, such as bankruptcy or being 60 or more days late on a mortgage. A credit score is used as a proxy for the credit quality or risk of the individual. For generic credit scores, a serious delinquency is usually defined as the lack of payment on an account for 90 days or more. This section examines the distribution of credit risk by geography.⁴⁷ Since so much of the recovery of New Orleans is going to depend on the efforts,

contributions and underlying financial well-being of its population, it is critical that such a basic measure of financial well-being, be examined. In this section we use a generic TransUnion credit score.

Greater New Orleans has an average median score of 635. This is in contrast to the Gulf Coast average of 656, and the United States average of 680. Despite the impact of Hurricane Katrina, greater New Orleans experienced a net rise in its mean credit score from the first quarter of 2004 (624) to the first quarter of 2007 (644).

During the period from 2004 until mid-2007, the credit score trend for borrowers in greater New Orleans was consistent with the stable trends in the Gulf Coast and the United States. In mid 2007, credit scores reflect an upward trend in all parishes except St. Bernard, rebounding above pre-Katrina levels. The distribution of scores generally mirrors that of the United States (Figure 7). At the lowest end of the distribution (scores less than 421), greater New Orleans declined slightly, while the United States increased slightly.

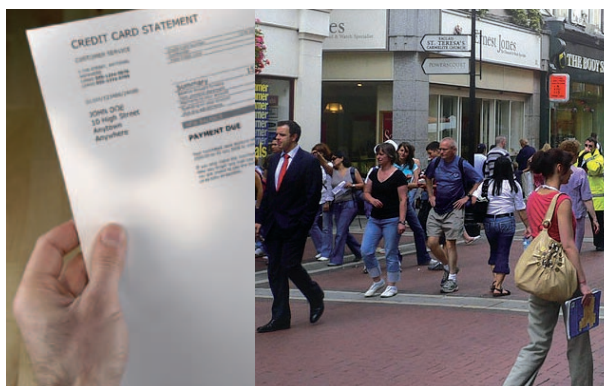
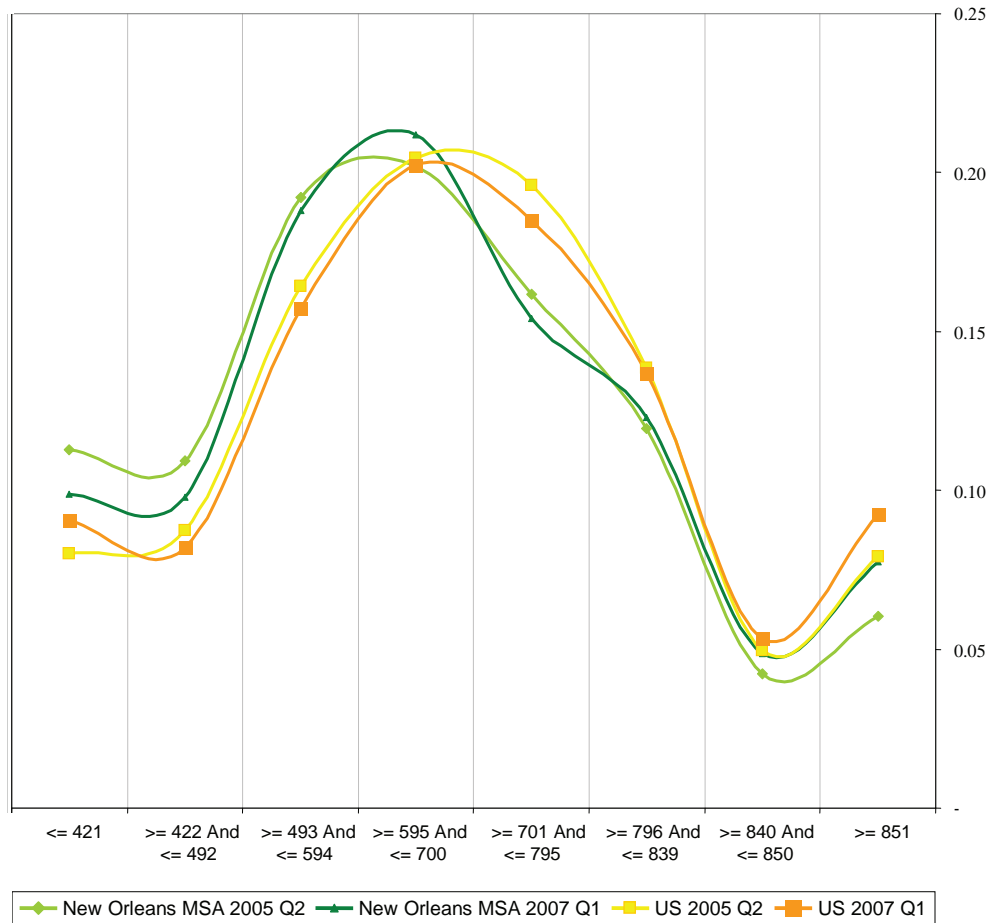


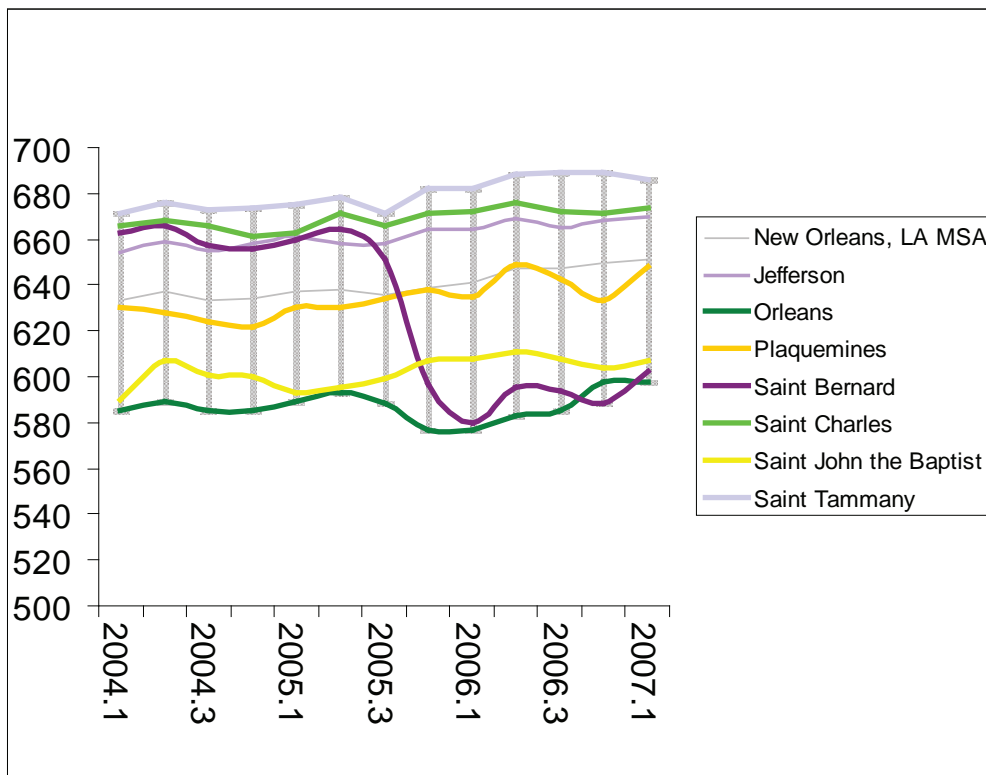
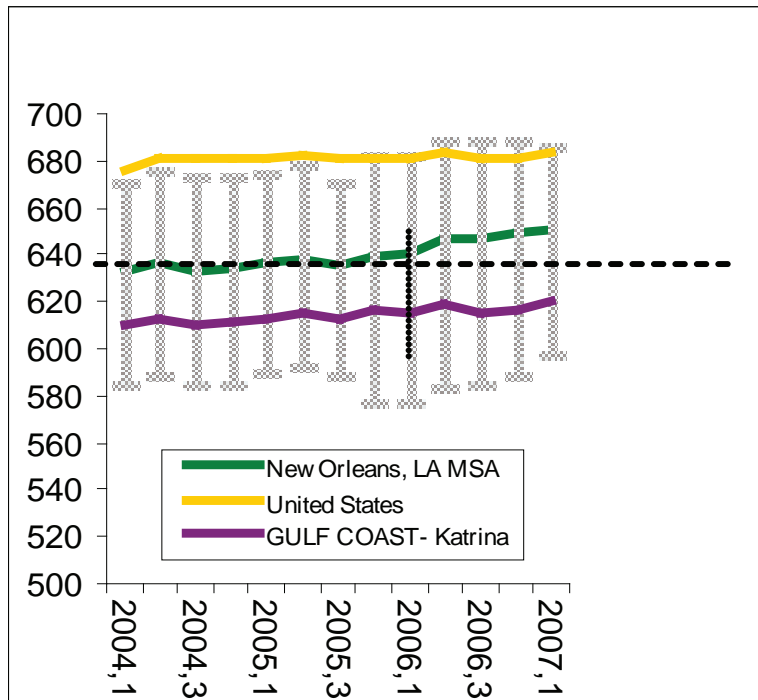
FIGURE 7: Score Distribution



Source: TrenData, Brookings Analysis

While there was an overall increase in the average credit score for Greater New Orleans, this masks the wide variation in scores by parish, as the grey bars indicate in Figure 8. The average credit score in St. Bernard parish fell as precipitously as its other variables, 13% to 580. Orleans parish experienced a 2% drop to a low of 577.

FIGURE 8:
Median Credit
Score



Of particular importance to note, the median credit scores for Orleans, St. Bernard, and St. John the Baptist parish do not indicate good credit quality. More than 50% of the populations in these parishes have credit scores that would not enable them to receive prime loans. The potential implication for residents of these parishes who have scores that are lower than 620 is that the self-finance cost to rebuild homes and other potentially small businesses will be higher and more expensive than for consumers with scores above 620.

It is not surprising that there would be a rise in the average credit score of the Greater New Orleans population following Katrina. In fact, it is consistent with findings of a change in the make up of the population following Katrina. Research shows that the poverty rate has decreased for families in New Orleans.⁴⁸ This change is reflective of hurricane-induced population loss which produced a population in 2006 that was less poor, and contained fewer children than the pre-hurricane population.⁴⁹

This is further supported by the recently released US Bureau of Economic Analysis indicating smaller populations with greater average personal incomes after Katrina in the New Orleans and Biloxi-Gulfport metropolitan areas (Table 16).

It is important to note that the changes in the average credit score for a parish or city do not indicate the same changes for its individuals. It is clear that one should not interpret an increase in the average credit rating for an area, in and of itself, as a positive development. In fact, it may represent the exodus

TABLE 16: Population and Per Capita Personal Income

Population (1,000c)	2004	2005	2006
US		296.51	299.40
New Orleans MSA	1.31	1.31	1.02
Biloxi-Gulfport MSA	0.25	0.25	0.23

Per Capita Personal Income (\$, 1000s)

US	33.1	34.5	36.3
New Orleans MSA	30.6	20.2	38.3
Biloxi-Gulfport MSA	25.9	26.2	30.8

Source: BEA

of the most vulnerable groups of the community. This being said, other factors may be dominant in St. Bernard Parish, which has witnessed precipitous declines in financial measures among businesses and individuals.

And finally, while this section found that average debt for the New Orleans MSA grew at a rate less than that found for the US as a whole, the individual section found that indebtedness grew at a rate faster than the average for the US in the hurricane hit areas of the Gulf Coast. While the difference may be due to the different time periods and geography covered, it may also be due to a changing and worsening distribution of debt by income. This is consistent with the findings in the individual section that found greater increases in indebtedness for individuals in lower income households.⁵⁰

So, looking at changes in average debt at the community level may be misleading in that such a measure does not indicate *who* is accumulating the debt.



V. Conclusions and Next Steps

This report was undertaken to understand if there are long-term negative financial impacts of disaster on individuals, households and businesses, which we consider the building blocks of the community. One of the key concerns we had following the hurricanes of 2005 was that given the enormous importance of credit history to individuals and businesses, that people and businesses might be penalized for years following the disasters, hampering recovery. While we may be too early to have any definitive answers, the preliminary findings of this report indicate that we have not observed the worst-case scenario in our analysis of current residents.⁵¹ The average level of indebtedness increased. At the same time, average credit performance, as observed in the credit score, has improved. Further analysis should determine why this has occurred.

The general finding that the population of the New Orleans MSA following Hurricane Katrina are less poor, more educated, and generally financially better-off may not hold for the all parishes in the New Orleans MSA, as we found a very large decline in the average credit score for St. Bernard Parish following Hurricane Katrina.

We have observed patterns of disparate financial impacts by race, income and age. African Americans and young adults experienced the highest increase in level of indebtedness. Furthermore, indebtedness increases for those making less than \$50,000 a year at a rate higher than for those who make over \$50,000. Against the overall trend, the very old showed a decline in credit performance and the young adults did the least well among other age groups. We can only hypothesize about the financial impacts on those who lived in the Gulf Coast in 2005 and migrated elsewhere. But given our findings in this analysis and the known characteristics of the migrated population with higher proportions of low and moderate income groups (African Americans in particular), we believe there may be cause for great concern. However, only when sufficient data is made available will we or others be able to test such a hypothesis.

Finally, we have observed that businesses—especially small businesses that comprise the core of the economy for most of those areas hardest hit by the 2005 hurricanes—are recovering at unequal rates. In greater New Orleans, for instance, there has been an evident recovery in businesses but there are disparate impacts based on ethnicity. Perhaps more troubling is the 32% increase in average days beyond term (DBT) for businesses in the New Orleans MSA, and 98% increase in

DBT for Orleans Parish. The consequences of these findings are amplified when combined with the dramatic increase in collections activity, which was up 482% for greater New Orleans, and 842% for Orleans Parish. In contrast, average DBT in the Gulfport-Biloxi MSA decreased 25% in the two years following Katrina, but collections activities increased a staggering 399% during the same period.

From these findings we believe that several policy recommendations should be implemented.

Better financial risk mitigation policies must be developed for the vulnerable populations.

This recommendation echoes many that have been put forward in the past. What is unique in this instance is that we have information about the levels of disparate impacts on minorities, low and moderate income households, and the very old which enable us to better speak to the need for targeted policy interventions. Specifically, exploration should begin on the creation of credit enhancements to bridge the impact of hurricanes on personal finance capacity, and new public/private insurance markets to support rebuilding for those with limited assets.

The credit score distribution for the residents of the New Orleans MSA (even following Hurricane Katrina) is such that over 50% of the population is not eligible for prime loans. The SBA loan program

for homeowners is one product that provides low interest loans for the purposes of recovery. One example of a credit enhancement undertaken by the SBA following the disaster is making an underwriting decision utilizing the pre-Katrina credit scores. Similar types of credit enhancements should be explored in the private lending market. Furthermore, financial education on predatory lending is of particular importance in ensuring responsible to residents with particular credit profile vulnerabilities.

Results from the World Bank's research to create "beta" vulnerabilities indices (individual section) were sufficiently compelling enough so that it has decided to move towards pilot testing these indices in several developing countries that are prone to natural disasters. At their core, these vulnerability indices will rely on credit file data. They will attempt to gauge the ability of individuals to withstand natural disasters. That the World Bank is investing further resources into such a promising and innovative insurance policy tool suggests that there may be opportunities to use such tools in the near future, and possibly in the Gulf Coast as well.

The economic development implications of the uneven recovery of businesses need to be addressed. If recovery is an equitable process, vulnerable businesses should receive sufficient support to ensure recovery. While the evidence of business recovery is somewhat mixed in the New Orleans and Biloxi-Gulfport MSAs, Orleans and St. Bernard Parish businesses appear to have been particularly hard hit and slow to recover. We find business account delinquencies for these parishes to have risen considerably since Katrina. And in both the New Orleans and Biloxi-Gulfport MSAs there has been an apparent spike in collections on

business accounts, rising nearly 500% and 400% respectively in the two years following Katrina. This may indicate that there are many businesses on the brink of financial disaster. This finding, combined with other findings from a survey of 1032 small businesses located in some of the hardest hit areas of the Gulf Coast⁵², strengthens the case for the following recommendations.⁵³

New tools should be developed by governments and other stakeholders in disaster recovery utilizing data found in consumer and business credit files.

Recovery over the long-term, following the initial spike in efforts after a disaster, becomes dominated by 'organic' development in which private capital takes the lead. The flows of private capital to consumers and businesses are guided by the data found in credit files. And particularly helpful to those interested in fostering recovery, such data may also be useful in creating *leading* indicators of development, as credit file data is regularly used by the private sector for such purposes. And finally, credit scores are *actual* outcomes impacting consumer (and small business more and more) access to capital and terms of loans, and for this reason alone, such data should be monitored.

Appendix A: Why Use Credit File Data?

Credit file data has been little used, if at all, for vulnerability assessment, recovery analysis, and planning and economic development purposes. Therefore, it seems very reasonable to question the value in using such data. A simple answer could be that such data likely contains something of value and that more information is better than less. But since we live in a world with limited attentions and in which the addition of irrelevant information may actually increase confusion, such a simple answer is not satisfying. There are, in fact, a number of compelling reasons we believe credit file data, and data from other private sector datasets, may be of real material value for these purposes.

1. While population estimates, average wages, employment, number of businesses, and bankruptcies, and the like, may track a recovery well, some do so somewhat retrospectively or as lagging indicators. Credit file data is used in the market, among other things, to predict future outcomes. It tracks debt levels, credit usage, collections, and derogatories, and credit scores have been designed to use this information to assess risk of future defaults (among a host of other specific purposes). It may be the case that instead of witnessing a business exit months after the fact, we may be able to observe factors (such as increases in some types of debt, derogatories, or collections) that may suggest increased risk of a future exit. The ability to observe financial pressures building up for individuals, communities or small businesses may help speed and guide policy efforts and aid. Credit file data, may then enable better the creation of more leading indicators of recovery.
2. Credit file data are continuously updated and very quickly available. This contrasts with many of the datasets currently used for recovery analysis. For instance, for some data, such on the number of employers, the latest available quarterly figures may be several quarters old.
3. Credit file data and credit scores are not simply abstract indicators that can be used as a proxy of recovery; they are actual outcomes and they are used in the marketplace to direct flows of private capital.
4. Credit file data exists at the most granular level, the household and small business level, so it is extremely flexible (analysis can be performed over any desired geographic level or it can be segmented along any socio-demographic dimension in which data exists).
5. Finally, while data on population levels and employment levels may speak to recovery in a very broad or macro sense, credit file data may speak more to the quality of the recovery, and gauge well being better, supplementing other quality measures, such as crime statistics.

We also believe that these attributes of credit file data become more relevant the further a community is in the recovery process. After the initial shock of disaster, knowing credit scores may be less important than knowing such basics as how many people have evacuated and what has been damaged. The very initial recovery efforts are aimed at getting the power on, repairing bridges, fixing roads, opening hospitals, and other infrastructure basics.

Money pours in and many of the very basics are taking care of. During this initial phase many people decide whether to stay, leave, or return (depending on availability of housing, services, and the state of the communities). However, this necessarily transitions into much longer-term recovery/renewal stage. The January 15th New Orleans Index shows a considerable slow down in the recovery of population levels for Orleans Parish and the New Orleans MSA by late 2007. It may be that in this stage and going forward what dominates the recovery are not large top down efforts but locally generated organic growth.

This may likely be a much more nuanced stage in which private capital and market forces play ever-larger roles. Whether or not retail exists in a neighborhood may impact whether there is demand to live in that area which impacts the quantity of housing and without housing retail may have little incentive to move in or invest. In short, recovery becomes much more complex in which many factors are important and simultaneously impact one another. It is in this stage in which it will be most useful to drill down beneath population estimates, average wages, numbers of businesses, and the like, to see how well households and individuals are doing.

One of the reasons we believe that these sorts of datasets have not been used for planning and recovery purposes is that they are private. As private datasets, they have not been easily accessible to government agencies and academics, since, other than a few cases, those interested in testing them for these purposes would have needed to pay for the data. And paying for data with uncertain value is likely a difficult pill to swallow for relief agencies. And for the private data aggregators, testing and demonstrating the value of their data in an area they are not familiar with for the possibility of sales in the future with relatively small profit margins, likely less than they normally receive, may not represent a business imperative.

A larger objective of our work, therefore, is, to the extent we find value in these datasets, demonstrate the potential of credit file data for recovery, development and planning purposes. And, by doing so, bring the potential users and suppliers of these datasets together. Therefore, we hope not to simply show results from datasets few others access, but instead by showing results increase their use for these purposes, and by doing so benefit all parties involved, including, most importantly, the communities, households, and small businesses in need.

Some previous research about credit risk and catastrophe has been undertaken to better understand and better plan the private market reaction. This work focuses on improving insurance risk transfer mechanisms by pooling risk and improved access to insurance⁵⁴, diagnosis of the risk of default to credit lending institutions,⁵⁵ and packaging risk as a credit derivative.⁵⁶ Yet, very little quantitative information is available to track the impact of disasters, both natural and man-made, on the financial well-being of consumers and businesses in affected areas with a specific focus on credit data and credit access.

Anecdotal evidence suggests that the financial burden of Katrina on families and small businesses could be profound and enduring.⁵⁷ Other research to understand the impact has focused on tracking of key industrial segments of the region.⁵⁸ This approach focuses on tracking data related to track employment, business growth, and other external variables that are measurable. Other efforts aim to track economic well-being⁵⁹ through the use of data on services and consumption, accumulation of assets, and income.⁶⁰ Not having sufficient access to data used to determine the financial capacity of individuals and families hinders effective public, private and non-profit decision-making for reconstruction. This handicap has occurred at a time when the need to access credit has increased significantly.

Since the datasets used, geography covered and time periods examined differ across the three levels of analysis undertaken, household, business, and community, we have devoted a separate section to each. In the conclusion section we discuss the immediate implications for policy action and future directions for research.

Subsequent research will have an opportunity to refine methodologies and update findings. The credit and demographic data used in this report can be supplemented to include other datasets, including public administrative datasets, privately collected data and survey data. The relationships among variables in these diverse datasets should be explored.

Appendix B: Counties affected by Hurricanes Katrina and Rita

Louisiana Parishes		Mississippi Counties		Alabama Counties
Acadia	Pointe Coupee	Adams	Lee	Baldwin
Allen	Rapides	Alcorn	Leflore	Bibb
Ascension	Red River	Amite	Lincoln	Choctaw
Assumption	Richland	Attala	Lowndes	Clarke
Avoyelles	Sabine	Benton	Madison	Colbert
Beauregard	St. Bernard	Bolivar	Marion	Cullman
Bienville	St. Charles	Calhoun	Marshall	Greene
Bossier	St. Helena	Carroll	Monroe	Hale
Caddo	St. James	Chickasaw	Montgomery	Jefferson
Calcasieu	St. John the Baptist	Choctaw	Neshoba	Lamar
Caldwell	St. Landry	Claiborne	Newton	Lauderdale
Cameron	St. Martin	Clarke	Noxubee	Marengo
Catahoula	St. Mary	Clay	Oktibbeha	Marion
Claiborne	St. Tammany	Coahoma	Panola	Mobile
Concordia	Tangipahoa	Copiah	Pearl River	Monroe
De Soto	Tensas	Covington	Perry	Perry
East Baton Rouge	Terrebonne	De Soto	Pike	Pickens
East Carroll	Union	Forrest	Pontotoc	Sumter
East Feliciana	Vermilion	Franklin	Prentiss	Tuscaloosa
Evangeline	Vernon	George	Quitman	Washington
Franklin	Washington	Greene	Rankin	Wilcox
Grant	Webster	Grenada	Scott	Winston
Iberia	West Baton Rouge	Hancock	Sharkey	
Iberville	West Carroll	Harrison	Simpson	Florida Counties
Jackson	West Feliciana	Hinds	Smith	Escambia
Jefferson	Winn	Holmes	Stone	Franklin
Jefferson Davis		Humphreys	Sunflower	Gulf
La Salle		Issaquena	Tallahatchie	Okaloosa
Lafayette		Itawamba	Tate	Santa Rosa
LaFourche		Jackson	Tippah	Walton
Lincoln		Jasper	Tishomingo	
Livingston		Jefferson	Tunica	
Madison		Jefferson Davis	Union	
Morehouse		Jones	Walthall	
Natchitoches		Kemper	Warren	
Orleans		Lafayette	Washington	
Ouachita		Lamar	Wayne	
Plaquemines		Lauderdale	Webster	
		Lawrence	Wilkinson	
		Leake	Winston	
			Yalobusha	
			Yazoo	

Louisiana Parishes	Mississippi Counties	Alabama Counties
Acadia Parish	Adams County	Baldwin County
Ascension Parish	Amite County	Choctaw County
Assumption Parish	Attala County	Clarke County
Calcasieu Parish	Choctaw County	Greene County
Cameron Parish	Claiborne County	Hale County
East Baton Rouge Parish	Clarke County	Mobile County
East Feliciana Parish	Copiah County	Pickens County
Iberia Parish	Covington County	Sumter County
Iberville Parish	Forrest County	Tuscaloosa County
Jefferson Parish	Franklin County	Washington County
Jefferson Davis Parish	George County	
Lafayette Parish	Greene County	
Lafourche Parish	Hancock County	
Livingston Parish	Harrison County	
Orleans Parish	Hinds County	
Plaquemines Parish	Jackson County	
Pointe Coupee Parish	Jasper County	
St. Bernard Parish	Jefferson County	
St. Charles Parish	Jefferson Davis County	
St. Helena Parish	Jones County	
St. James Parish	Kemper County	
St. John the Baptist Parish	Lamar County	
St. Landry Parish	Lauderdale County	
St. Martin Parish	Lawrence County	
St. Mary Parish	Leake County	
St. Tammany Parish	Lincoln County	
Tangipahoa Parish	Lowndes County	
Terrebonne Parish	Madison County	
Vermilion Parish	Marion County	
Washington Parish	Neshoba County	
West Baton Rouge Parish	Newton County	
West Feliciana Parish	Noxubee County	
	Oktibbeha County	
	Pearl River County	
	Perry County	
	Pike County	
	Rankin County	
	Scott County	
	Simpson County	
	Smith County	
	Stone County	
	Walthall County	
	Warren County	
	Wayne County	
	Wilkinson County	
	Winston County	
	Yazoo County	

Appendix C: Design of Financial Health Score

We used the following variables from the TransUnion database for LI score and CP score.

LI score

1. RE33 – total balance of all revolving trades
2. IN33 – total balance of all installment trades
3. MT33 – total balance of all mortgage trades
4. RE34 – ratio of total balances to total limits on revolving trades
5. RE20 – months since the oldest revolving trade was opened*
6. G098 – number of inquiries within last 6 months
7. BC01 – number of bankcard trades

CP score

1. G059, G064, G069 – number of trades 30+, 60+, 90+ days past due in 12 months
2. G082, G083, G084, G085, G086, G087 – number of trades currently 30, 60, 90, 120, 150 days past due
3. MT49, MT50, MT51, MT51, MT52, MT53, MT54 – any mortgage trade currently past due, 30, 60, 90, 120, 150 days past due.
4. MT47 – number of mortgage delinquencies in 12 months
5. G095 – months since most recent derog public record
6. MT57 – total amount now past due on mortgage trades
7. (G091 – MT57) total amount now past due on all traded except mortgage = total amount now past due less total amount now past due on mortgage trades

First step towards the Financial Health score is calculation of unscaled component variables for both LI_score and CP_score:

LI1_unscaled, LI2_unscaled, LI3_unscaled, LI4_unscaled, LI5_unscaled,
LI6_unscaled, LI7_unscaled,

CP1_unscaled, CP2_unscaled, CP3_unscaled, CP4_unscaled, CP5_unscaled,
CP6_unscaled, CP7_unscaled.

The variables are designed in the way that the higher level of indebtedness (LI variables) and the worse credit performance (CP variables) are, the higher value of the variable they correspond to. For both types of variables zero is the best score.

For calculating some of the component variables we will need information about the household's income. Following income coding is available from the TransUnion data profile:

Income Code	Frequency	Percent	Valid Percent	Cum.%
1	16.025	16,4	19,8	19,8
2	5.629	5,8	7,0	26,8
3	9.936	10,2	12,3	39,0
4	8.552	8,7	10,6	49,6
5	7.006	7,2	8,7	58,3
6	13.676	14,0	16,9	75,2
7	8.028	8,2	9,9	85,1
8	4.447	4,5	5,5	90,6
9	7.618	7,8	9,4	100,0
Valid Total	80.917	82,7	100,0	
Missing	16.914	17,3		
Total	97.831	100,0		

As you can see from the above tables, to each of 80,917 households, income code of the range 1 to 9 is assigned. The next step is to create a probability distribution corresponding coding for RE33, IN33, MT33, MT57 and (G091 – MT57). For each of these variables we calculated 19.8%-, 26.8%-, 39.0%-, 49.6%-, 58.3%-, 75.2%-, 85.1%, 90.6%-percentiles. Coding is then carried out as follows

RE33_code = 0, if RE33=0
 1, if $0 < RE33 \leq RE33_{19.8\text{-percentile}}$
 2, if $RE33_{19.8\text{-perc}} < RE33 \leq RE33_{26.8\text{-perc}}$
 3, if $RE33_{26.8\text{-perc}} < RE33 \leq RE33_{39.0\text{-perc}}$
 4, if $RE33_{39.0\text{-perc}} < RE33 \leq RE33_{49.6\text{-perc}}$
 5, if $RE33_{49.6\text{-perc}} < RE33 \leq RE33_{58.3\text{-perc}}$
 6, if $RE33_{58.3\text{-perc}} < RE33 \leq RE33_{75.2\text{-perc}}$
 7, if $RE33_{75.2\text{-perc}} < RE33 \leq RE33_{85.1\text{-perc}}$
 8, if $RE33_{85.1\text{-perc}} < RE33 \leq RE33_{90.6\text{-perc}}$
 9, if $RE33_{90.6\text{-perc}} < RE33 \leq RE33_{100\text{-perc}}$

Then we calculate LI1_unscaled as “income-indexed version” of RE33_code

LI1_unscaled = 0, if RE33_code = 0
 (9 – income_code + RE33_code), else

In an analogous way, we calculate IN33_code, MT33_code, MT57_code and

$(G091 - MT57)_{code}$

$LI2_{unscaled} = 0$, if $IN33_{code} = 0$
 $(9 - income_{code} + IN33_{code})$, else

$LI3_{unscaled} = 0$, if $MT33_{code} = 0$
 $(9 - income_{code} + MT33_{code})$, else

$CP6_{unscaled} = 0$, if $MT57_{code} = 0$
 $(9 - income_{code} + MT57_{code})$, else

$CP7_{unscaled} = 0$, if $(G091 - MT57)_{code} = 0$
 $(9 - income_{code} + (G091 - MT57)_{code})$, else

INCOME CODE –

ESTIMATED HOUSEHOLD

- 1 = LESS THAN \$15,000
- 2 = \$15,000 - \$19,999
- 3 = \$20,000 - \$29,999
- 4 = \$30,000 - \$39,999
- 5 = \$40,000 - \$49,999
- 6 = \$50,000 - \$74,999
- 7 = \$75,000 - \$99,999
- 8 = \$100,000 - \$124,999
- 9 = MORE THAN \$124,999

DEFAULT IS BLANK(S)

We can easily see, that calculated variables $LI1_{unscaled}$, $LI2_{unscaled}$, $LI3_{unscaled}$, $CP6_{unscaled}$, $CP7_{unscaled}$ can take integer values from 0 to 17.

We then calculate other LI and CP variables as follows

$LI4_{unscaled} = 0$, if $RE34 = 0$
 1, if $0 < RE34 < 20\%$
 2, if $20\% \leq RE34 < 40\%$
 1, if $40\% \leq RE34 < 60\%$
 1, if $60\% \leq RE34 < 80\%$
 1, if $80\% \leq RE34 < 100\%$
 1, if $RE34 \geq 100\%$

LI5_unscaled = 0, if RE20 > 12
 1, if RE20 <=12

LI6_unscaled = 0, if G098 = 0
 1, if G098 = 1
 2, if G098 = 2
 3, if G098 = 3
 4, if G098 = 4
 5, if G098 >= 5

LI7_unscaled = 0, if BC01 = 2
 1, if (BC01 = 1) OR (BC01 = 3) OR (BC01 = 4)
 2, if (BC01 = 5) OR (BC01 = 6) OR (BC01 = 7)
 3, if BC01 = 0
 4, if BC01 >= 8

CP1_unscaled =NTPD_NDPD_indexed_12m, if NTPD_NDPD_indexed_12m < 32
 32, if 32 <= NTPD_NDPD_indexed_12m <= 34
 34, if 36 <= NTPD_NDPD_indexed_12m <= 38
 36, if 40 <= NTPD_NDPD_indexed_12m <= 42
 38, if 44 <= NTPD_NDPD_indexed_12m <= 48
 40, if 50 <= NTPD_NDPD_indexed_12m <= 58
 42, if 60 <= NTPD_NDPD_indexed_12m <= 68
 44, if NTPD_NDPD_indexed_12m >= 70

where NTDD_NDPD_indexed_12m denotes “Number of trades past due in 12 months – number days past due indexed” and is calculated as

$$\text{NTPD_NDPD_indexed_12m} = (\text{G059} - \text{G064} - \text{G069}) * 2 + (\text{G064} - \text{G069}) * 4 + \text{G069} * 8$$

CP2_unscaled =NTPD_NDPD_indexed_curr, if NTPD_NDPD_indexed_curr < 29
 29, if 29 <= NTPD_NDPD_indexed_curr <= 32
 30, if 33 <= NTPD_NDPD_indexed_curr <= 36
 31, if 37 <= NTPD_NDPD_indexed_curr <= 46
 32, if NTPD_NDPD_indexed_curr >= 47

where NTDD_NDPD_indexed_curr denotes “Number of trades currently past due – number days past due indexed” and is calculated as

$$\text{NTPD_NDPD_indexed_curr} = \text{G082} + \text{G083} * 2 + \text{G084} * 4 + (\text{G085} + \text{G086} + \text{G087}) * 8$$

$$\text{CP3_unscaled} = \text{AMTPD_NDPD_indexed_curr},$$

where AMTPD_NDPD_indexed_curr denotes “Any mortgage trades currently past due – number days past due indexed” and is calculated as

$$\text{AMTPD_NDPD_indexed_curr} = \text{MT49} + \text{MT50} * 2 + \text{MT51} * 4 + (\text{MT52} + \text{MT53} + \text{MT54}) * 8$$

$$\text{CP4_unscaled} = \text{MT47}, \text{ if } \text{MT47} < 10 \\ 10, \text{ if } \text{MT47} \geq 10$$

$$\text{CP5_unscaled} = 1, \text{ if } \text{G095} \leq 12 \\ 0, \text{ if } \text{G095} > 12$$

CP6_unscaled and CP7_unscaled have been already calculated above.

For designing the variables LI4_unscaled, LI5_unscaled, LI6_unscaled, LI7_unscaled, CP4_unscaled and CP5_unscaled, we used the benchmark values provided in [FairIsaac.CreditScoring101.FederalTradeCommissionTalk.July22/99] available from FTC website.

Next step is to scale the LI and CP component variables to the same range. We chose the range from 0 to 10. The table below summarises the ranges of the calculated unscaled variables.

In order to scale the variables to the range 0 to 10, we proceed as follows:

$$\text{LI1} = \text{LI1_unscaled} * 10 / \text{Max_LI1_unscaled}$$

In an analogous way, we calculate LI2, LI3, LI4, LI5, LI6, LI7, CP1, CP2, CP3, CP3, CP4, CP5, CP6, CP7. Now, all these variables have the same range range 0 to 10.

With help of the calculated LI and CP variables, we now can calculate the Current Level of Indebtedness score and the Current Credit Performance score Resulting scores are weighted sums of calculated variables.

$$\text{LI_score} = \text{LI1} \cdot 35 + \text{LI2} \cdot 25 + \text{LI3} \cdot 20 + \text{LI6} \cdot 20$$

$$\text{CP_score} = \text{CP1} \cdot 15 + \text{CP2} \cdot 10 + \text{CP3} \cdot 20 + \text{CP4} \cdot 15 + \text{CP6} \cdot 25 + \text{CP7} \cdot 15$$

Choosing the weighting factors, we tried to match our understanding of how important each single component variable within the total score should be. One can easily see that the theoretical possible range of the calculated scores LI_score and CP_score is 0 to 1000.

References

1. FairIsaac. CreditScoring101. FederalTradeCommission Talk. July22/99. available from FTC website
2. FairIsaac. Understanding Your Credit Score, 07/02. available from FairIsaac website
3. TransUnion Credit Report Training Guide. available from TransUnion website

Endnotes

¹ Brookings Institution Metropolitan Policy Program and Greater New Orleans Community Data Center. *The New Orleans Index*. <http://www.brookings.edu/reports/2007/08neworleansindex.aspx> and www.gnocdc.org

² Future research should address the causes of vulnerability or specific disaster impacts.

³ There has been a significant rise in the amount of reported collections (outstanding and not) two years after Katrina.

⁴ Annie Clark and Kalima Rose, "Bringing Louisiana Renters Home: An Evaluation of the 2006-2007 Gulf Opportunity Zone Rental Housing Restoration Program". Policylink, June 2007

⁵ Amy Liu, Bruce Katz, and Matt Fellowes, "The State of New Orleans: An Update" *The New York Times* July 5, 2006

⁶ Unpublished Event Transcript, "The Credit And Insurance Consequences Of Natural And Man-Made Catastrophes", Urban Markets Initiative At Brookings, September 7, 2006

⁷ Amy Liu and Allison Plyer, "the Katrina Index", The Brookings Institution, XXXX

⁸ Amy Liu and Allison Plyer, "the Katrina Index", The Brookings Institution, XXXX

⁹ William H. Frey, Audrey Singer and David Park, "Resettling New Orleans: The First Full Picture from the Census", The Brookings Institution, August 2007

¹⁰ The final report will offer a more unified treatment of the impact of disasters in which one can look at the impact of each element in the context of a larger perspective.

¹¹ There is healthy discussion among researchers in this area about the ability of a consumer to correct errors, and the overall accuracy of the datasets.

¹² Hurricane Katrina Hurricane Katrina - Information for Consumers and Bankers in the Affected Areas, Agencies Encourage Insured Depository Institutions to Continue Efforts to Meet the Financial Needs of Customers Recovering from the

Aftermath of Hurricane Katrina, Federal Financial Institutions Examination Council (FFIEC) on November 30, 2005 accessed at <http://www.fdic.gov/hurricane/ffiecpresrelease.html>

¹³ Three or more data sources is the threshold for an individual to be scored using existing models. These data sources are called trades in the credit files. As a point of reference, the average number of trades in the United States is 13, and 12 trade in greater New Orleans and the Gulf Coast. See the discussion about the credit score for a more detailed explanation of a trade.

¹⁴ These estimates represent a conservative view of this population. Fair Issac estimates 50 to 70 million individuals fall into this category described as thin or no file.

¹⁵ Turner, Lee et al Give Credit where Credit is Due.

¹⁶ A portion of the number of files could include fragmented files, which show a consumer is located in one place, but in reality that consumer has moved to another and a new credit file was started. Fragmented files could account for this change. Over two years of analysis for this series, those partial files will be vetted out of the dataset.

¹⁷ Give Credit Where Credit Is Due

¹⁸ Brookings Institution Metropolitan Policy Program and Greater New Orleans Community Data Center. *The New Orleans Index*. <http://www.brookings.edu/reports/2007/08neworleansindex.aspx>

¹⁹ Dek Terrell and Ryan Bilbo. A Report on the Impact of Hurricanes Katrina and Rita on Louisiana Businesses: 2005Q2-2006Q4. 2007. http://www.bus.lsu.edu/centers/ded/reports/2006Q4_Business_Report.pdf

²⁰ Some of their figures can be found in *The New Orleans Index*.

²¹ Michael Turner, Robin Varghese, and Patrick Walker, "Recover, Renewal, and Resiliency: Gulf Coast Small Businesses Two Years Later." The Political Economic Research Council, August 2007.

²² Since many small businesses are setup as Corporations, LLCs or LLPs and legally do not have an owner or owners, we use the term operator(s) to denote the principal officer(s). In the initial analysis we have not made a distinction between the two and use the term owner/operator simply to remind the reader of this. In later analysis, of course, we may find some interesting differences between owners and other types of operators or equivalently between one type of business entity and another and conduct comparative analysis between the two, but initially we make no such distinction.

²³ Recall that Hurricane Katrina made its Gulf Coast landfall on August 29th, 2005, Hurricane Rita on September 24th, and Hurricane Wilma on October 24th.

²⁴ In this case, we do not include those that went out of business or have been added to the database following the disaster.

²⁵ Michael Turner, Robin Varghese, and Patrick Walker, "Recover, Renewal, and Resiliency: Gulf Coast Small Businesses Two Years Later." The Political Economic Research Council, August 2007.

²⁶ With a smaller database and since we will be breaking down results by ethnicity, we will refrain from breaking results down for the parishes and counties with smaller populations, since we would be left with some cells with small sample sizes.

²⁷ William H. Frey, Audrey Singer and David Park, “Resettling New Orleans: The First Full Picture from the Census”, September 2007, The Brookings Institution.

²⁸ Christina Paxson and Cecilia Rouse. Returning to New Orleans after Hurricane Katrina. WP #522 Princeton University, IRS. January 2008. <http://www.irs.princeton.edu/pubs/pdfs/522.pdf>

²⁹ Jeffrey Groen and Anne Polivka. The Effect of Hurricane Katrina on the Labor Market Outcomes of Evacuees. http://www.aeaweb.org/annual_mtg_papers/2008/2008_592.pdf

³⁰ Matt Fellowes, “Credit Scores, Reports, and Getting Ahead in America”. The Brookings Institution, May 2006

³¹ 15 U.S.C. § 1681 et seq. A copy of the Fair Credit Report Act that includes all amendments through 2004 can be accessed at: <http://www.ftc.gov/os/statutes/031224fcra.pdf>

³⁴ The changes in the sample of the specific geographies for this analysis are noted in the limitations section.

³⁵ Quarterly samples are available within 45 days of the close of a quarter.

³⁶ A portion of the number of files could include fragmented files, which show a consumer is located in one place, but in reality that consumer has moved to another and a new credit file was started. Fragmented files could account for this change. Over two years of analysis for this series, those partial files will be vetted out of the dataset.

³⁷ “What Moves Americans to Move? About 40 Million Americans Move Each Year According to US Census Bureau. Downloaded from: <http://usgovinfo.about.com/library/weekly/aa060401a.htm>

³⁸ Jabor Vigdor employed a people-based analysis entitled “The Katrina’s Effect: Was there a bright side to the evacuation of Greater New Orleans” National Bureau Of Economic Research, April 2007. This paper utilized data from the Current Population Survey.

³⁹ This definition was utilized in the census special report (detail)

⁴⁰ William H. Frey, Audrey Singer and David Park, “Resettling New Orleans: The First Full Picture from the Census”, September 2007, The Brookings Institution.

⁴¹ Normalizing the level of debt by individual income growth (also known as per capita income growth) further accentuates the difference between the United States, and greater New Orleans, though we are not certain how comparable such figures from the BEA are with the TrenData figures.

⁴² Credit Matters: Low-Income Asset Building Challenges in a Dual Financial Service System, Eric Belsky and Allegra Calder, February 2004.

⁴³ One method to test whether lower utilization is due to constricted access to capital is to use inquires in credit reports to proxy for credit seeking rates.

⁴⁴ The ratio of consumers with a mortgage is calculated by the number of consumers who have a mortgage as a trade divided by the total number of consumers. Mortgage is a broad term which includes home equity or loans that are secured with real estate.

⁴⁵ The value of the equity is unknown.

⁴⁶ Liu and Plyer, The Katrina Index

⁴⁷ Fellowes, Matthew, "Borrowing to Get Ahead, and Behind" and the subsequent paper, "The Credit Boom and Bust in Lower-Income Markets"

⁴⁸ Pre-hurricane period is defined as January through August 2005; post-hurricane period is September through December 2005.

⁴⁹ Frey, William H. and Audrey Singer, "Katrina and Rita Impacts on Gulf Coast Populations: First Census Findings"

⁵⁰ An example of a mean (debt) preserving increase in overall indebtedness is if \$10,000 of debt were transferred from an individual in the top ten percent of income earners and shifted to an individual in the bottom ten percent of income earners. The indebtedness of the person with the higher income would decline only slightly, while the indebtedness of the person at the bottom would increase greatly, and since both are weighted equally, overall indebtedness would rise, even though average debt did not change. Hence, looking at average debt levels for a community, even if the underlying populations are not changing, may be misleading if what we are really interested in is indebtedness, since debt burdens may rise at different rates for different income groups.

⁵¹ Press Release, "Credit Reporting Agencies Reject an Important Step to Help Hurricane Survivors: Many Katrina Victims Will Face Additional Economic Difficulties as Credit Scores Drop Due to Disaster", October 2005

⁵² The survey found that while the initial grants and credits promised seemed reasonable, there were difficulties in applying for the grants and loans and qualifying for them. In addition, the final amount of business aid received in many cases was reduced because personal and business loans and grants were tied together. This report finds disproportionate impacts on minority businesses, a group that should be prioritized in the implementation of the business recommendations.

⁵³ Michael Turner, Robin Varghese, and Patrick Walker, "Recover, Renewal, and Resiliency: Gulf Coast Small Businesses Two Years Later." The Political Economic Research Council, August 2007.

⁵⁴ Pollner, J.D. 2001, Catastrophe Risk Management: Using Alternative Risk Financing and Insurance Pooling Mechanisms, The World Bank, Policy Research Working Paper Series.

⁵⁵ Kau, J.B. & Keenan, D.C. 1999, "Catastrophic Default and Credit Risk for Lending Institutions," Journal of Financial Services Research, vol. 15, no. 2, pp. 87-102.

⁵⁶ Csiszar, Ernst N., An Update on the Use of Modern Financial Instruments in the Insurance Sector The Geneva Papers, Volume 32, Number 3, July 2007 , pp. 319-331(13)

⁵⁷ Alyssa Lee and Michael Turner, Making a Better Life: Preparing for the Post-Katrina Personal Finance Crisis, The Brookings Institution, October 18, 2005

⁵⁸ Loren C. Scott, Advancing in the Aftermath IV: Tracking the Recovery from Katrina and Rita, February 2007

⁵⁹ Economic-wellbeing focuses on four dimensions: consumption, accumulation, income distribution, and economic insecurity. See Lars Osberg and Andrew Sharpe, Index of Economic Well-being: An Overview, Center for the study of Living standards, Osberg. Conceptual foundation for this work comes from Nordhaus & Tobin's Measure of Economic Welfare (MEW) and the Human Development Index (HDI) developed by the United Nation's Development Program (UNDP).

⁶⁰ Amy Liu and Allsion Plyer, "the Katrina Index", The Brookings Institution.

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