Critical Data, challenging circumstances: Lessons learned from implementing the 2006 Louisiana Health and Population survey

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2005 Hurricanes

- Hurricanes Katrina and Rita made landfall on August 29, 2005 and September 23, 2005 respectively
- More than 12 percent (204,682) of the state's 1,656,053 housing units suffered major or sever damage from the two storms
- The most dramatic losses occurred in St Bernard, Cameron, Orleans and Plaquemines parishes (78.4%, 71.8%, 57.5%, 55.9% respectively)*
- Mass migration, coupled with complete and prolonged collapse of public infrastructure and services created the worst natural disaster in recent US history

*Source: Current Housing Unit Damage Estimates: Hurricanes Katrina, Rita and Wilma. 2006, Office of Policy Development and Research, U.S. Department of Housing and Urban Development: Washington, D.C. p. 1-45

Background

- Steady tracking of the repopulation in New Orleans area occurred through the City of New Orleans Emergency Operating Center*
- CDC and US Census Bureau assistance began with the EOC and evolved into the future survey collaboration
- A unique collaboration between federal, state (DHH, LRA) and non-profit agencies (LPHI) was formed
- 2006 Louisiana Health and Population Survey: Targeted 18 Hurricane affected parishes across southwest Louisiana

*Source: Stone, G., T. Grant, and N. Weaver, Rapid Population Estimate Project: January 28-29, 2006 Survey Report. 2006, City of New Orleans Emergency Operations Center: New Orleans, LA

Lessons Learned

Lessons Learned from the 2006 Louisiana Health and Population Survey encompass 3 main areas:

- Design
- **Implementation**
- Dissemination

Methods: Multi-stage sampling design

- The 2006 LHPS used the housing unit method of population estimates to determine household population
- The severe change in the number of households impacted the ability to survey a representative sample with census data
- Census block clusters were used as the primary sample unit. This created a reliable representative sample
- Selection was adjusted for presence of known trailer parks

Boots on the Ground: Listing and Surveying

Listing

- Entailed enumeration and survey packet drop off

Surveying

- Entailed returning to selected housing units 3-4 weeks after listing
- The survey collected information on the following: demographics, educational attainment, health status, health insurance coverage, access to healthcare, employment and migration since the hurricanes. Household level information was collected on monthly or yearly income and the mental health status of the respondent.

Parishes Surveyed

PARISH BY PARISH MAP

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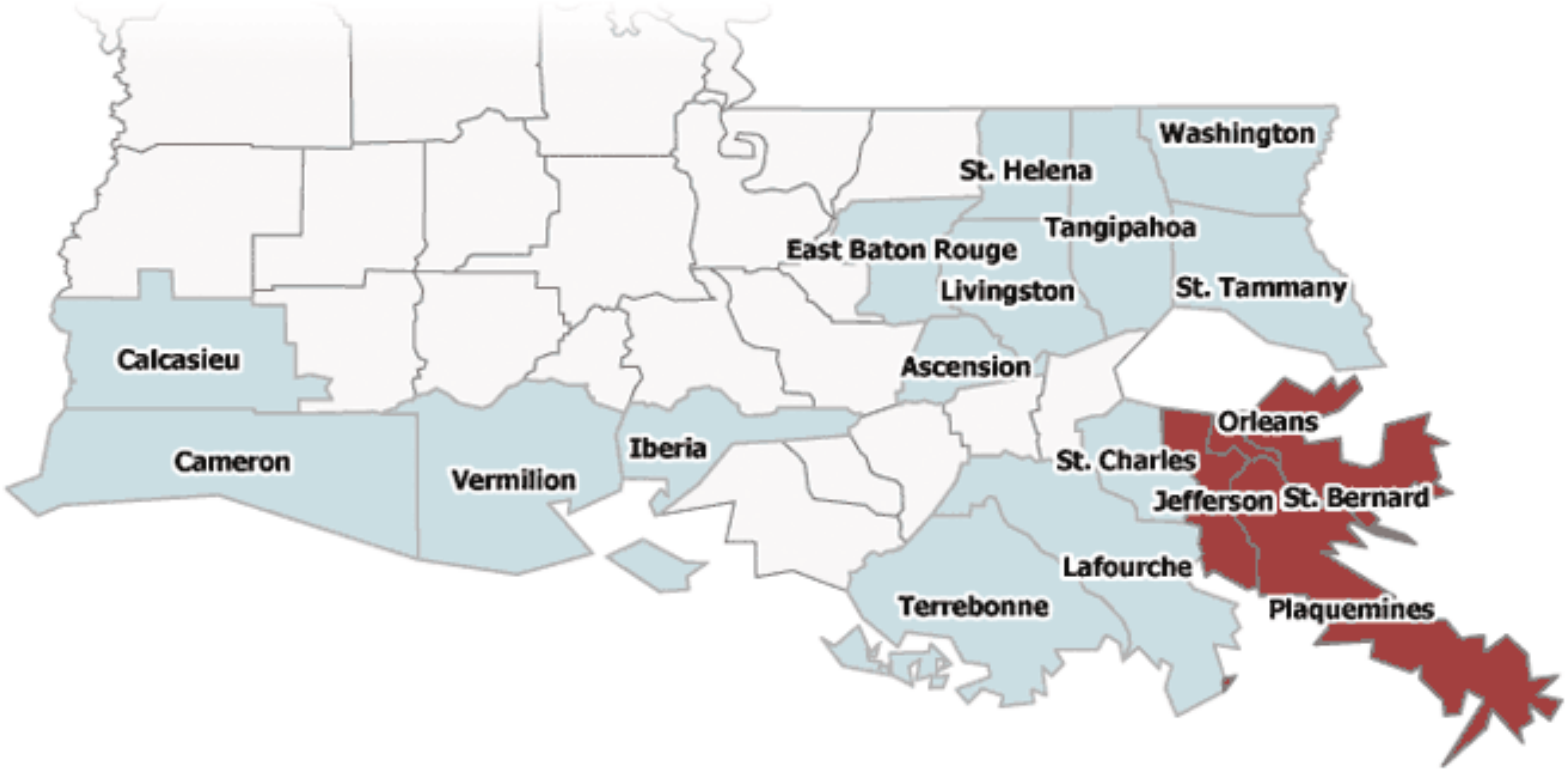


Data Analysis

- Response outcomes included: Complete and partial interviews, confirmed and probable vacant units
- Non-response outcomes included: refusals, confirmed and probable occupied units, units whose occupancy status was uncertain
- Statistical weights were produced to account for unequal sampling probabilities across clusters
- Two subsequent revisions were completed: the incorporation of refusals as occupied units and weighing to control estimates to match Census Bureau's annual estimates

Table 1: Comparison of survey estimates against July 2006 Census estimates

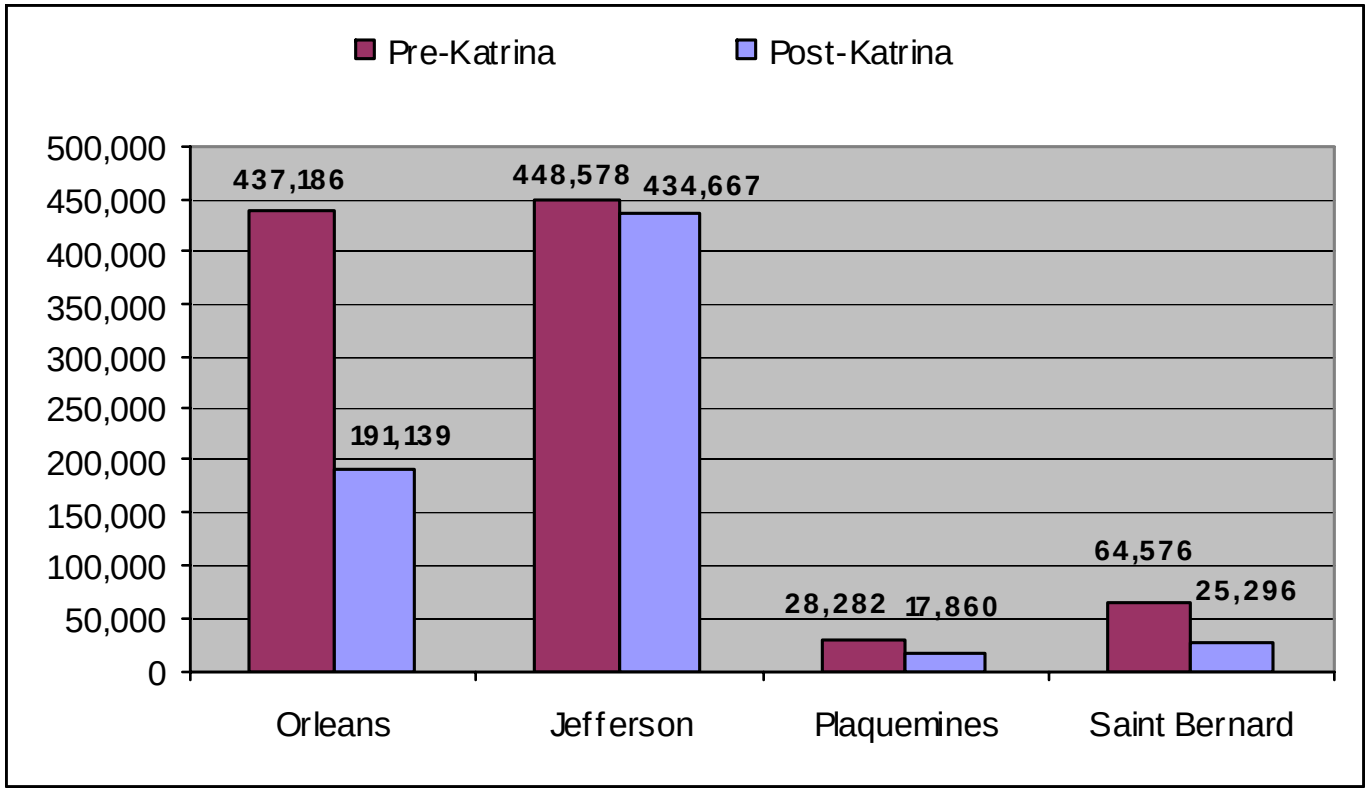
Parish	Original Weighting Design* (data released Oct. 5, 2006)	Revised Weighting Design* (data not released)	Revised Weighting Design Controlled to Match Census Bureau Population Estimates** (data released Aug. 27, 2007)
Ascension	81,513 (8.8)	84,067 (8.5)	96,689
Calcasieu	189,768 (10.7)	197,021 (10.4)	179,814
Cameron	7,403 (19.7)	7,507 (19.5)	7,743
East Baton Rouge	403,774 (10.7)	422,409 (10.4)	414,391
Iberia***	-	59,759 (8.7)	73,894
Jefferson	434,666 (10.4)	440,678 (10.1)	427,776
Lafourche***	-	78,763 (12.0)	91,918
Livingston	100,416 (12.9)	103,629 (12.7)	114,221
Orleans	191,139 (9.6)	208,664 (9.6)	215,399
Plaquemines	17,860 (13.8)	18,549 (13.2)	22,006
St. Bernard	25,296 (13.5)	27,785 (13.0)	15,344
St. Charles***	-	56,666 (20.9)	52,331
St. Helena	11,189 (9.6)	11,645 (9.6)	10,687
St. Tammany	220,656 (11.9)	225,197 (11.7)	228,561
Tangipahoa	110,342 (16.5)	113,050 (16.8)	109,896
Terrebonne***	-	91,041 (12.8)	107,935
Vermillion	58,114 (10.1)	60,019 (9.6)	55,254
Washington	42,731 (9.5)	43,863 (9.1)	43,093

* Margin of error in parenthesis

** Census Bureau does not calculate a margin of error for its modeled population estimates

*** Estimates were not produce according to original weight design

Repopulation of the GNO Region



Source: Louisiana Health and Population Survey (January 9, 2007); US Census Population Estimates (July 1 2005)

U.S. Census Bureau, Population Division, Population Estimates Program (2005, July 1). Official Series. Retrieved October 10, 2006

Evaluation of Methods and Implementation

Process data were analyzed to understand the breadth and impact of particular logistical challenges faced. Three areas are of particular interest for future methodological and logistical considerations:

- Changes in the Household Numbers
- Response by mail
- In person follow-up

Changes in Household Numbers

- Anecdotal accounts from field staff indicated that there were changes in the number of housing units during the period between listing and surveying due to demolition, rehabilitation or removal of FEMA trailers.
- Analysis of 3 parishes where demolition or FEMA trailers were prevalent indicated that significant changes in the housing numbers occurred at .51% or 7 out of the 1, 378 sampled Hus.
- Enumeration of HU in sampled block clusters did not change significantly.

Response by Mail

- Response rate by mail was 12.3%.
- The quality of surveys returned by mail was very poor.
- Duplicate surveys: More than one questionnaire was completed in 26.2% of households that returned the survey by mail.
- Non-sampled addresses: Household owners retrieved survey packets from vacant sampled units and completed the questionnaire for their new place of residence.

Practice versus Protocol: In Person Follow-Up

- The initial protocol for surveyors required a minimum of four attempts, one on the weekend, one before 5PM and two after 5PM. In cases where a non-responding housing unit was believed to be occupied, two additional attempts were made.
- The odds of completing the survey went down drastically from the first to sixth visit.
- Attempts made after 5PM on a weekday, assumed to have the highest probability of success, were in fact the least successful.
- A revised protocol was instated which produced a marginally higher response rate and a drastic improvement in logistical efficiency.

Limitations

The limitations of the survey can be summarized in three areas:

- Sampling design
- Definition of habitability
- Inability to provide small area demographic estimates

Discussion: Implications for future surveys

- Multistage cluster sampling design is the ideal survey method in a post disaster setting where there is no adequate sampling frame.
- Lessons learned from the 2006 LHPS can impact the survey process and protocol of future surveys in post disaster settings.
- PDAs would improve survey logistics dramatically.
- There is a need for small area estimates.

Acknowledgements

CDC

Kris Bisgard
Stephanie Davis
Alden Henderson
Aisha Jumaan
Ramesh Krishnamurthy
Micheal Lewin
Iris Shimizu

US Census

Christa Jones
David Megill
Randy Parmer
Jennifer Scully

DHH

Jonathan Chapman

LRA

David Bowman
Makiko Hori

LPHI Survey Team

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