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TECHNICAL
REPORT

The Repopulation of New Orleans After Hurricane Katrina

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SUMMARY

INTRODUCTION

Hurricane Katrina struck New Orleans, Louisiana, on August 29, 2005. The city suffered moderate damage from the hurricane, but substantially more harm from extensive flooding caused by breaks in several levees. Thousands of residents had fled the city in advance of the hurricane, and virtually all of the remaining residents were evacuated in the week following the hurricane. The city's population, estimated at 485,000 in 2000, was reduced to fewer than several thousand by the end of the first week of September 2005.

In November 2005, RAND was asked by New Orleans city leaders to estimate the repopulation of the city in the aftermath of Hurricane Katrina. The Bring New Orleans Back Commission needed estimates of the city's population in the immediate future (the next three to six months) and the near-term future (the next one to three years) to guide the redevelopment planning process. The study, completed in early January 2006, draws on the best available information at the time and documents extensively and in detail the methodology and assumptions used. Nevertheless, it was constrained by the urgent need for results, by limited data availability, and by the considerable uncertainty that surrounded the entire post-Katrina situation in New Orleans and the region.

APPROACH

Our estimates are guided by a conceptual framework based on the costs and benefits of migration and on the role of social networks and physical constraints. Damage to housing currently appears to be the most significant obstacle to repopulation, and the key assumption of our population estimates is that the rate of repair or reconstruction for flood-damaged dwellings will be the major determinant of the future population of New Orleans. There are likely to be substantial differences in housing habitability and the amount of time required to return damaged dwellings to a habitable state according to the depth and duration of flooding and characteristics of the dwelling. Other factors likely to shape the repopulation of New Orleans include the provision of basic services and infrastructure, storm protection and flood control, employment, schools and colleges, and social networks.

Given the determination that housing habitability is the key driver of the future population of New Orleans, we developed an equation that yields estimates of the future population of New Orleans for four points in time based on estimates of housing habitability. Those estimates are the product of the two terms in that equation: (1) an estimate of the pre-Katrina population by the condition of its housing *after* Katrina, organized into the four damage categories; and (2) an estimate of future repopulation rates for the four damage categories at the four points in time.

RESULTS

Pre-Katrina Population Estimates Based on Post-Katrina Housing Habitability

We assumed that flood damage to housing was directly related to the depth of the floodwater. We first classified all dwellings in New Orleans according to the extent of the damage they sustained based on the maximum depth of floodwater. Data on dwellings and population by block, for each of the 10,181 census blocks in New Orleans, was obtained from the 2000 Census. Blocks were classified into four categories based on floodwater depth: no flooding (no housing damage), less than 2 feet (minor damage), 2–4 feet (serious damage), and more than 4 feet (severe damage).

We calculated that approximately 25 percent of the pre-Katrina population of New Orleans was not exposed to flooding and their housing likely suffered little or no floodwater damage, while about 55 percent of the population experienced more than four feet of flooding, and their housing likely suffered severe damage.

Estimates of Repopulation Rates

We then estimated repopulation rates for each of the four flood/damage categories for four periods: three months post-flood (December 2005), six months post-flood (March 2006), one year post-flood (September 2006), and three years post-flood (September 2008).

A quantitative approach to estimating the repopulation rates was impossible because of the extremely limited data available on evacuees' current locations and circumstances and on the number and characteristics of current residents of New Orleans, and because of the lack of parallel past events that could be used to derive these rates. We determined that a qualitative approach to estimating the repopulation rates, based on a consensus process, was the best choice given the constraints we faced—in particular, given the short amount of time we had to produce estimates. As part of the consensus process, the authors of this report jointly agreed on a set of repopulation estimates after conducting a review and discussion of the available evidence and in consultation with various experts.

We gathered and used a wide array of primary and secondary information to develop our repopulation estimates, including media reports of the circumstances in, and recovery of, New Orleans; data gathered by local, state, and federal officials; post-Katrina data assembled and analyzed by organizations such as the Brookings Institution and the Urban Land Institute; telephone interviews with professionals in areas such as insurance, planning, architecture, building and inspections, real estate, business development, employment, and demography; and on-the-ground assessments of the recovery in New Orleans.

The repopulation rates arrived at through the consensus process are based on the flood-depth/housing-damage category and change by period, reflecting our assumptions that housing habitability will increase across all flooding and damage categories over time. Although our estimated

repopulation rates in the serious and severe damage categories also rise over time, the rate of increase is much slower and the repopulation rates substantially lower.

Estimates of the Future Population of New Orleans

Based on the pre-Katrina population and the estimated repopulation rates, the population of New Orleans in December 2005 was approximately 91,000. This figure is expected to rise rapidly to about 155,000 by March 2006, as basic repairs and stabilization of housing are completed, public services and infrastructure are restored, and schools and universities reopen. Subsequently, repopulation starts tapering off: One year after the storm, in September 2006, we estimate a population of about 198,000. Three years post-Katrina, we estimate that the New Orleans population will reach about 272,000—about 56 percent of the pre-Katrina population.

Spatial patterns of repopulation for New Orleans based on our results show that the population returning to the city in aftermath of Hurricane Katrina is initially concentrated in the high-elevation areas on either bank of the Mississippi River. Repopulation of other parts of the city proceeds very slowly, and even by September 2008 the density of population in Lakeview, Gentilly, and New Orleans East neighborhoods is far below what it was prior to Katrina.

Sensitivity Analyses

We conducted limited sensitivity analyses to examine how changing various assumptions would alter our population estimates. The most significant finding is that the estimates of the future New Orleans population for the near term are substantially more sensitive in relative terms—though not in absolute terms—to our assumptions than are the estimates for the more distant future. The sensitivity analyses also make it clear that the rate of progress in reconstructing the most severely flood-damaged areas of New Orleans will set the pace of repopulation of the city and will also determine, to a large extent, the city's total population in three years' time. The sensitivity analyses also point to the considerable uncertainty that surrounds our estimates of the future population of New Orleans and the entire repopulation process.

CONCLUSIONS AND NEXT STEPS

Our conceptual framework and analysis suggest that an important role for policymakers in shaping the repopulation process in New Orleans is to minimize the uncertainty faced by residents and businesses. Speeding up the reconstruction process would be an important way to achieve this reduction in uncertainty. This could be achieved by streamlining the process for obtaining permits to repair or to demolish and reconstruct housing in the city. Providing clearer and more comprehensive information about progress and the ultimate goals for restoring the levee system, reconstructing schools, hospitals, libraries, and other facilities, and the provision of public services such as public transportation and public safety may also increase the likelihood of former residents and new residents moving to the city.

As future research, the best way to understand how the repopulation process is unfolding in New Orleans is to collect better data on evacuees and current residents and to collect such data at regular intervals. Accurate population estimates from surveys would be perhaps the best gauge of how well the recovery process in New Orleans is proceeding. Detailed demographic data are also needed to plan public services, such as schooling and public safety. Nongovernmental and private-sector entities also need accurate data to assure proper provision of health care, services, and infrastructure.