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Building Back Tremé Using PPGIS to Evaluate Neighborhood Stability

Michelle M. Thompson, PhD, GISP, *University of New Orleans*
Brittany N. Arceneaux, *University of New Orleans*
Elizabeth G. Major, *New College of Florida*

11

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Contents

INTRODUCTION

When Hurricane Katrina struck the Gulf Coast on August 29, 2005, the world watched as New Orleans and the surrounding area suffered one of the most destructive natural disasters in recent history. In the months to follow, the media reeled with updates on the condition of the city, harrowing personal accounts, and the debate about how to proceed. Many tried

249

to condemn New Orleans—for being too far below sea level, for having lost its relevance in the twentieth century, for its crime rates and poverty level—and argued to shut it down altogether. However, instead of abandoning the Crescent City, residents were overcome by the support of local, national, and international volunteers. Since it has been almost a decade since Hurricane Katrina, it is apparent that their efforts were not in vain.

Hurricane Katrina was not the first major storm to hit New Orleans, nor with certainty can it be determined to be the most destructive. The first recorded hurricane struck the nascent colonial settlement in 1722, destroying the existing structures on the riverbank and requiring a complete rebuild (Campanella, 2008, p. 22). The combination of factors that allow places such as New Orleans to regenerate is now identified by scholars as part of resilience. The type, measurement, and scale of factors are being studied and promoted for their benefits to communities as well as impact on built environments. In research provided, resilience and its relationship to two other urban phenomena, gentrification and neighborhood stabilization, will be examined through the lens of the Tremé neighborhood of New Orleans, Louisiana. Neighborhoods that are affected by either man-made or natural disasters require alternative methods to evaluate if, how, and when they have moved from *recovery* to *stabilization* or from *shock* to *resilience.* "A shock is defined as a sudden event that impacts on the vulnerability of a system and its components" (Roussey, 2013, p. 4). The information available to determine neighborhood stability postshock must include traditional and innovative approaches to integrate data.

The Success Measures neighborhood stability evaluation framework includes market strength in terms of tracking the visible physical conditions through field surveys, measuring neighborhood image and confidence through interviews of both residents and key outside informants, and gathering key baseline demographic and socioeconomic data (Neighborworks, 2011). "National studies, however, have usually relied on census tracts or other combinations of blocks as the best available proxy for a neighborhood" (Stewart, 1996, p. 39).

In order to measure the existence or change in gentrification, resilience, and neighborhood stabilization, similar qualitative and quantitative measures are utilized. Gentrification has varying definitions, but each includes ideals about municipal or community governance and revitalization. Some argue that this neighborhood change may lead to more stable communities that decimate social networks. "At its root, gentrification is the phenomenon of demographic succession (from poor or working-class to upper-income, from less-educated to more-educated, and from

250

minority to white), driven by market forces in poor, minority neighborhoods" (Tufts University, 2009, p. 5). This neighborhood change uses comparative and longitudinal studies that are influenced by similar baseline indicators. Most of the indicators use public information that is typically linked to census data. Public participation geographic information systems (PPGIS) in particular have become a complement to these data sources. Having considered a number of models, the goal of this research follows GIS empirical analysis that employs volunteered geographic information (VGI) data and "easily obtainable variables from administrative sources that will [use] neighborhood quality-measurement techniques" (Rybarczyk and Mohapatra, 2013). VGI is "crowdsourced" geographic information provided by a wide range of participants with varying levels of education, knowledge, and skills (Global Facility for Disaster Reduction and Recovery, 2014). In the case of Tremé, property condition data were obtained from primary and secondary data sources. The primary data were collected by residents and volunteers using property condition survey standards of WhoData.org. Municipal secondary data remain limited and many times need conversion to a spatial format. For example, GIS analysts obtained the location and disposition of blighted properties summarized in the city of New Orleans Blightstatus (City of New Orleans Blightstatus, 2014) database. By combining the municipal and community data into a single data set for mapping and analysis, the Tremé project demonstrated VGI model concepts.

Through an evaluation of the literature, we suggest a model that supports the use of spatial data to aid in measuring neighborhood stabilization. Crowdsourced data are typically current and provide the "ground truth" of municipal data. VGI data are not typically available but can be considered a reliable indicator of neighborhood change. For the purpose of this study, data collection and analysis were standardized using Federal Geographic Data Center (FGDC) and WhoData.org data collection models.

Measurement of neighborhood changes in sociodemographic, housing, employment, and land use patterns in New Orleans has been in place since 1718. The neighborhood life cycle of Tremé suggests that the magnitude of gentrification has been significant and verifiable since the 1980s (Gladstone and Préau, 2008). Tremé has been impacted by the redefinition of neighborhood boundaries for political reasons (e.g., tourism) and affected by infrastructure design (e.g., construction of Interstate 10 starting in 1966). For the purpose of this chapter and to compare VGI with municipal data, the boundaries of the city planning commission will be used for analysis. The neighborhood boundaries and the community name have

251

varied since its origin. The process of integrating VGI and municipal data is based upon the use of applied geographic information systems, specifically *public participation geographic information systems*. The quantitative measures used to identify the socioeconomic trends will include variables found in postdisaster studies of resilience and city change cycles defined as gentrification. This study will examine literature that describes neighborhood change models used to define and measure neighborhood stabilization. The next section will provide a history and summarize neighborhood trends in the Tremé neighborhood. The PPGIS model framework, using spatially integrated VGI with publicly accessible data, will be described. Scholars and planners in practice should consider the benefits of scalable data for neighborhood change measurement. The next section includes the case study of Tremé PPGIS mapping and analysis. Limiting conditions of the applied model will be followed by the conclusion.

DEFINING NEIGHBORHOOD STABILIZATION

Many of the variables used to evaluate neighborhood change, desirability, resilience, and stability are similar. The social and economic policies and planning initiatives were initially based on ethnic or race-based theories that have since proved faulty. The neighborhood life cycle was initially developed by the real estate industry, and then adopted by urban planners. This cycle suggested that there was an inevitable decline in neighborhood desirability when housing conditions and race changed from excellent to poor, from white to black. The real estate industry was initially supported by the Federal Housing Administration (FHA) and did not initially refute the risk factors that included using race as a basis for "redlining" to prevent funding for sale or rehabilitation in certain neighborhoods. Whether it was the five-stage Housing and Urban Development (HUD) neighborhood life cycle or the Real Estate Research Corporation's (RERC) life cycle model, the ability for ethnic minorities, in particular African Americans, to receive financing was limited due to perceived risk. The RERC life cycle model accommodated "racial infiltration" theories by encouraging planners to downgrade neighborhoods where African Americans lived (Metzger, 2000). Fair Housing and HUD funding increased opportunities to access affordable housing by establishing the first Neighborhood Housing Services (NHS) in 1968 (AllGov, 2014). NHS became Neighborworks America (also known as the Neighborhood Reinvestment Corporation) in 1978 to increase housing access for low- to

moderate-income residents through homebuyer education, financial fitness, and funding to purchase homes in areas previously deemed marginal or blighted.

As HUD and the RERC moved away from using race-based measures to define neighborhood change, block-level data and economic shifts were used to establish the health of a community. The ability to reverse the adverse effects of disinvestment came in many forms. Banks were required to expand federally backed mortgages in previously redlined neighborhoods through the Community Reinvestment Act of 1977. The Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA) required that real estate appraisals exclude race as a factor in valuation. HUD created Community Development Block Grant (CDBG) funds in 1974 to expand affordable housing options through dedicated development opportunities. The purpose of measuring trends changed from focusing on the stages of decline to evaluating the ability of a community to remain resilient, foster growth, and maintain stability. Neighborhood stabilization can be defined as "the process of fostering market recovery by reversing destabilizing trends and rebuilding resident and homebuyer confidence" (Mallach, 2008, p. 5).

Measuring market recovery, revitalization, resilience, gentrification, and neighborhood stability is based upon many of the same variables: demographics, employment, housing trends, transportation access, education, infrastructure, crime, and social networks. How these variables are measured, integrated, and evaluated depends upon the data available, the level of geography, and data definitions and exclusions. Many of the studies focus on city or regional analyses, since household and parcel-level data are difficult to obtain or not available. The discussion of resilience in this context has to do with the environmental and psychosocial aspects that affect, at the neighborhood level, the ability for the individual, household, and neighborhood to recover. "Because of the multidimensional nature of resilience and its different component parts, a broad model of resilience has yet to be empirically tested at the community level. However there is consensus within the research community that resilience is a multifaceted concept, which includes social, economic, institutional, infrastructural, ecological, and community elements" (Cutter et al., 2010, p. 6).

The focus of this research is to use standard quantitative measures of evaluating neighborhood change by examining the case study of Tremé. "We recognize that exogenous factors such as federal policies and state regulations do exert powerful influences on resilience at the community level" (Cutter et al., 2008, p. 602). Externalities such as interstate

253

development and urban renewal decimated the social and economic networks of this historic African American community. We will not focus on the social aspects but consider that "the relationship between homeownership and neighborhood stability is likely to be reciprocal. That is, living in a relatively stable neighborhood will further encourage participation in community organizations, local social interaction and attachment, property maintenance, neighborhood satisfaction, and positive expectations about the future of the neighborhood" (Rohe and Stewart, 1996, pp. 54–55). The issue of changes that result from processes such as job loss, recession, natural disaster, uneven redevelopment, increases in rent, value anticipation which leads to price inflation and lack of community cohesion, loss of leadership, fracturing of culture tied to the place can be measured using a "Disaster Resilience of Place (DROP) model" (Cutter et al., 2010, p. 5). The DROP model is based primarily on theoretical notions of resilience after measurement of vulnerability and risk. Cutter et al. suggest that

> the next step is to operationalize the model, develop a set of common indicators, and then test it in a real-world application. This necessitates additional research on resilience metrics. Such an application should provide sound measurements for assessing what makes some places more resilient in the face of natural disasters than others and would permit the comparison of community resilience over time and across space using the same set of measures. It should provide the guidance for implementing more sustainable practices that empower local communities to take their risks seriously, and at the same time provide guidance on the structural, economic, social, and environmental policy changes needed to enhance their own resilience. (Cutter et al., 2008, p. 604)

The Tremé research will apply the framework of the DROP model to a real world situation by

1. Identifying federal, regional, and local indicators that can be analyzed using common definitions and standards
2. Using variables that are measured at different levels of geography but within the same time frame
3. Creating a framework for capturing data before, during, and after a disaster (natural or man-made) event
4. Empowering residents to engage in collection, management, and evaluation of VGI data to engage in policies and plans that aid in measuring and supporting neighborhood change

While it may be another source of data that could be used to triangulate quantitative measures, we did not collect any new qualitative data.

The Katrina fatigue effect (which focuses on the reduction of compassion by those not affected directly by the storm) on the interview responses (Pezzullo, 2010) was a concern. We considered alternative ways to diffuse potential data reliability, validity, and error when conducting interviews of Tremé residents. There is significant variability of former to current residents based on demographics (age, gender, race, etc.), homeowner-ship type (renter vs. homeowner), tenure, education, and employment type. Additionally, in the case of New Orleans in general, and the case study of Tremé in particular, there was a fatigue related to the incessant community meetings, surveys, and resident interviews. Survivor fatigue included the emotional, psychological, and sometimes physical effects that could skew responses from disaster experiences due to varying levels of trauma. To some extent, informal discussions about the pre- and post-disaster history of Tremé were used to inform the study. Given this, and understanding that the residents included in the study had limited tenure and demographics from longer-term Tremé and New Orleans residents, we restricted our research to primary and secondary quantitative data.

"Empirical literature on neighborhood stability and these [neighbor-hood satisfaction] attitudes and behaviors is scant, primarily because it is difficult to collect data sets that contain both individual and neighborhood variables" (Neighborworks, 2011). This study provides information on the individual parcel data along with block and community data that are typ-ically not available in neighborhood change measurement. "While local data could be used, such data would not be comparable or always avail-able across regions" (Cutter et al., 2010, p. 17). "However, the usefulness of quantitative indicators for reducing complexity, measuring progress, mapping, and setting priorities makes them an important tool for deci-sion makers" (Cutter et al., 2008, p. 608). The Tremé study uses integrated data (VGI and municipal sources) at different scales and time periods to provide a more holistic framework from which to measure neighborhood stability. In the case of New Orleans, comparisons of census data from 2000 to 2010 will not reflect the current state of the socioeconomic or demo-graphic reality of the city. Beyond the interruption of Hurricane Katrina, there was a significant change in U.S. Census data collection from the long form to the short form. The more refined or "small data" (Gordon, 2014) previously available from the U.S. Census affects the validity, reliability, and acceptable error of New Orleans longitudinal data. Scholars will ben-efit from identifying ways to use "middle through" (Ferreira, 1998) data, which are obtained from bottom up (Volunteered Geographic Information [VGI], crowdsourced) and top down (federal census, city blight) sources.

255

When a disaster occurs, the combination of these data sources makes for a better means to develop short- and long-term planning strategies that will improve the likelihood of neighborhood stabilization. While some may argue that a shift in the demographics from people of color to whites, rise in housing prices, reduction of affordable rental dwellings, reduction in household size, increase in unrelated renters/homeowners, and increase in niche commercial establishments may appear similar to the definition of gentrification, the alternative view can be one of measuring positive growth and measurable effects of neighborhood stabilization. The use of similar variables to define, assess, evaluate, and portray the state of neighborhood change on a continuum should be considered when similar historic neighborhoods, such as Tremé, are being defined using similar matrices but ending up with a planner-defined result.

TREMÉ AND HISTORY OF NEIGHBORHOOD CHANGE

Located directly northwest of New Orleans's French Quarter is the neighborhood known as Tremé, simultaneously one of the most notable and most endangered places in the city. Considered to be the oldest African American neighborhood in the United States, Tremé has been a center of resistance both politically and socially since the earliest days of the French occupation, even before it was established as a neighborhood in 1812 (Campanella, 2008, p. 28). Its rich multicultural history bred many of New Orleans's most cherished traditions, with many scholars tracing the creation of jazz music to the blend of African, Caribbean, and European heritages that mixed unbidden in early Tremé. The neighborhood has a grand tradition of performance, starting with Sunday gatherings in Congo Square. These were the precursors to the second-line parades and colorful Mardi Gras displays, like the Skull and Bones Gang and the gathering of the Mardi Gras Indians, which take place annually. However, decades of disinvestment and damage from Hurricane Katrina have left Tremé vulnerable, and recent trends indicate that much of Tremé's native population is at risk of being displaced, if they haven't been already.

Even before the land was subdivided into the neighborhood we recognize today, it was a place where enslaved Africans and free people of color could meet and exchange goods and ideas. Originally known as the Place de Nègres, the slave market was a gathering place where dance and music was permitted and seasonal events like the Congo Circus were held (Crutcher, 2010, p. 27). While there is little evidence that free people

of color outnumbered white Europeans as landowners in the beginning, Tremé would come to distinguish itself as a politically prominent African American neighborhood in the years to come (Campanella, 2008, p. 28). Active in abolition efforts leading up to the Civil War and ultimately instigating the 1896 "separate but equal" Supreme Court mandate in the landmark *Plessy v. Ferguson* decision, residents of Tremé have a long-standing tradition of organization and engagement. However, the twentieth century brought with it numerous slum clearance projects and, consequently, new challenges that residents were not able to repulse (Figure 11.1).

As early as 1926, the city of New Orleans began clearing blocks of Tremé that it deemed to be deteriorating in the name of public works. The first block was demolished to build a new performing arts center, the municipal auditorium, completed in 1929 (Crutcher, 2010, p. 40). The majority of New Orleans's urban renewal took place in the 1960s, as federal funding became available in the form of housing and highway grants. In 1964, over a hundred families were displaced to make way for a new cultural center adjacent to the municipal auditorium. The project was approved and undertaken without any serious long-term planning and was never completed, despite having removed residents from their homes and cleared the land. The majority of the families were relocated to new public housing developments across the river (Crutcher, 2010, p. 44). After many years, the project area was reimagined as Louis Armstrong Park, the gated National Park Service–run heritage park that occupies the southwest corner of Tremé today.

Perhaps the most disruptive of the urban renewal projects was the construction of Interstate 10 through New Orleans between 1961 and 1969. The elevated expressway was built over Claiborne Avenue, a major African American business corridor and recreation area that bisects Tremé and provided much needed public space while many parks and playgrounds remained segregated (Lewis, 2003, p. 98). Locating the expressway over an existing road was favorable when compared with outright slum clearance, but 170 families and 50 businesses were still uprooted to make way for three sets of exit ramps for the interstate (Crutcher, 2010, p. 60). Although its construction is not the only reason accredited to the decline of Claiborne Avenue's livelihood, the following years saw significant disinvestment in the area.

According to the city planning commission, Tremé is the 2 km^2 swath bounded by Rampart Street, Esplanade Avenue, Broad Street, and St. Louis Street. Within those parameters are some of New Orleans's most historic structures, notably St. Augustine's Church, built in 1842. When

257

Figure 11.1 Tremé neighborhood within the city of New Orleans, LA. (From Arceneaux, 2014.)
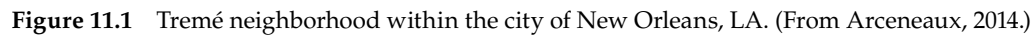
Hurricane Katrina struck New Orleans in August 2005, much of Tremé escaped with comparatively little damage, as it is built on relatively high ground adjacent to the natural levee from the Mississippi. This is not to say that the neighborhood went unscathed, as many homes sustained serious damage from partial inundation and wind, and many still stand empty. As of the 2010 census, Tremé has a population of 4,155, roughly half of its 2000 count. Perhaps more alarming are the demographic shifts we are seeing in conjunction with this population loss—patterns that could potentially change the face of Tremé forever. The Tremé community held strong neighborhood ties and high levels of homeownership, was predominantly African American, has easy access to retail and transportation, and is in close proximity to employment centers. According to Gladstone and Préau, the processes of gentrification, which have already been completed or are nearly completed in all of the surrounding neighborhoods, were in their beginning stages in the early 2000s in Tremé, prior to Hurricane Katrina. Their block-by-block longitudinal study of the areas surrounding the tourist zone, namely, the French Quarter, observed changes in race, owner occupancy, and housing value from 1970 to 2000 (Gladstone and Préau, 2008, p, 146). "During the past three decades, nearly every census block in Tremé lost black residents at a much higher rate than either the study area or the city as a whole, evidence of both housing abandonment in the 1970s and 1980s and displacement of poor renters during the 1990s. Between 1990 and 2000, while the number of black residents declined by 11.4% and the neighborhood continued to lose population, white residents increased by nearly 17%. In parts of Tremé, the increase in white population has exceeded 40%" (Gladstone and Préau, 2008, p. 163). In this study, we hope to update prior findings using a similar methodology to determine what stage in the process Tremé is at currently.

METHODOLOGY AND RESULTS

This chapter aims to conduct an analysis using national and community gathered data sets in order to characterize local circumstances. Community gathered data provide a perspective of on-the-ground conditions within a local context. Since 2010, New Orleans neighborhood groups in conjunction with WhoData.org have been gathering and mapping parcel-level data throughout the city in order to gauge recovery, identify infrastructure problems and blight, and encourage businesses and residents to return. The mapped data are used as a tool by local government regarding recovery

progress, unidentified infrastructure problems, and levels of blight. In 2011 and 2013 volunteers from the University of New Orleans, WhoData.org, Project Homecoming, and Providence Housing conducted parcel-by-parcel property condition surveys throughout the Tremé neighborhood utilizing survey methods developed by WhoData.org after Hurricane Katrina. The ability to collect survey data, create condition maps, and communicate the findings could not have been accomplished without developing this GIS implementation plan. Since 2010, the survey methods developed by WhoData.org have been implemented throughout Orleans Parish, collecting information regarding more than 80,000 parcels.

Several meetings were held with WhoData staff and neighborhood volunteers before the project plan was complete in order to ensure that residents were comfortable with the maps and the surveying process itself. The survey teams were then trained to evaluate and collect property condition data using a standardized set of indicators that had been used in neighborhoods across the city. Each of the survey teams received a walking map that was created using Esri's ArcMap, a printed survey sheet, and an overall map of their neighborhood, which denoted where their specific survey sector was. The WhoData team created the walking maps by using the city of New Orleans parcel data. The Tremé was split into survey team sectors, which had roughly the same number of parcels. The data collected by hand on hard-copy survey forms was then imported into a spreadsheet, where it was matched to a specific row based on a unique identifier (GeoPin). When the survey data was finally collected and systematically entered into preformatted spreadsheet databases by residents, it was returned to WhoData for mapping and analysis. This was the one drawback to the current VGI process. There was a significant time commitment that had to be devoted to input the results from 800 parcels with multiple variables. After the survey had been input into a database and imported into ArcMap for analysis, a condition map was created for the neighborhood. The condition map served as a focal point for residents to develop their land use redevelopment plan, focusing on blight, persistent problem areas, neighborhood blocks that are struggling to recover, areas that are emerging, and those with growth potential.

The property metric for buildings is based on a good, fair, or poor status using the WhoData property condition rating system. Good includes buildings with no structural damage, no repairs needed, or that need minor cosmetic work; fair includes buildings with no structural damage, minor repairs needed, or they need significant cosmetic work; and poor refers to a structure with visible structural damage and major repairs

needed. Land use refers to whether a parcel is an empty lot or has a permanent structure. Occupancy is based on indicators such as active meters, trash cans, and general signs of an occupied residence.

Statistics regarding building conditions reflect growth and investment within the study area. Between 2011 and 2013, 31% of the surveyed buildings showed improvement, 16% of the buildings showed a digression, and 53% remained the same in condition rating. Unlike the building conditions, the land use patterns and occupancy levels showed minimal change between 2011 and 2013. There were only 3% of land use changes between empty lot and structural presence, while 97% remained the same. Similarly, 16% of parcels showed a change in occupancy; 10% became occupied, while 9% became vacant. These statistics do not show large changes of the landscape and land use within the historic Tremé, but rather, the increase in building conditions implies an increase in investment.

Because the Tremé is categorized as a historic preservation neighborhood and is listed by the New Orleans Historic District Landmarks Commission, demolition, maintenance, and development involve compliance with strict guidelines and are subject to a more stringent permitting process. Initially, "the [urban] pioneers who bought, rehabilitated, and usually reconverted the buildings to single-family occupancy often had difficulty obtaining bank financing for the work necessary to make needed improvements" (Garvin, 2014, p. 332). Many of these pioneers were young urban professionals (YURPs) or suburban transplants who contributed to the "New-Towns-In-Towns" movement. Therefore, many of the improvements were self-financed. This may suggest that building condition could be an indicator of a higher economic class of residents moving into the neighborhood and repairing these historic buildings.

As seen in Figure 11.2, 80% of the parcels within Tremé were identified as having a structure. The structures could be a residential, commercial, church, or mixed-use building. Based upon the VGI survey, 50% of these structures were rated good, 19% fair, and 10% poor. A separate assessment is made on the use of the lots based on if there was a structure or a lot was vacant. Of the total number of lots, 31% of the parcels were identified as vacant.

The building assessment included properties that were rated as occupied or vacant. Properties that are occupied must meet external inspection criteria, such as being secure and having an electric meter in place, a mowed lawn, window treatments, and (if applicable) evidence of transportation. Out of the vacant buildings surveyed, 64% were rated fair, 31% good, and 5% poor. Figure 11.2 summarizes the 2013 results of the

Figure 11.2 Tremé property condition survey results. (From WhoData.com.)

public participation geographic information systems (PPGIS) property condition survey provided by the Historic Faubourg Tremé Neighborhood Association, Project Homecoming, WhoData, and students from the University of New Orleans Department of Planning and Urban Studies.

Data from the 2000 and 2010 U.S. Census were also compared and analyzed at the block group level to supplement the findings of the crowd-sourced parcel survey. Census data at the household level remain restricted, and therefore block-level data are the most relevant and readily available to the public. Tremé contains four census tracts split into nine block groups, although the entirety of Census Tract 44.02, which encompassed the Lafitte Housing Project, was cleared for demolition in 2008. The Lafitte remains unoccupied and skews the data for Tremé as a whole; therefore, Census Tract 44.02 will not be included in most of the statistical analysis. Regardless, it is important to consider the implications of the demolition of this project, which was 99% African American occupied in 2000, to make way for mixed-income housing in a centrally located and in-demand area.

In 2010, Tremé's population was 4,155 total residents—less than half of its 2000 total of 8,869. The demolition of Lafitte alone accounts for the loss of 2,622 residents from the area, with the remainder divided among

262

the seven other census tracts in the neighborhood. Excluding Lafitte, the block groups averaged a loss of 299 people each, although the block groups bordering the French Quarter in Census Tract 39 lost far fewer than the other block groups. However, it is the demographic and economic changes that occurred since 2000 that have given a better indication of the direction of neighborhood change in the Tremé. In order to determine whether the native population of Tremé is being displaced, several population characteristics and changes were observed from 2000 to 2010. These characteristics included race, household size, age, and renter versus owner occupancy.

For the past century, Tremé was primarily an African American neighborhood. As of 2010, it was majorly African American at 75.3%, although this is considerably less than the 93.6% it was at in 2000, or 91.3% excluding Lafitte. Further, Tremé has experienced an uneven shift in racial change. The percentage of African American residents in the two block groups within Census Tract 39 declined by an average of 29.3%, while the block groups in Tracts 40 and 44.01 (which are on the other side of the Claiborne Expressway) only declined 7.77%. Conversely, the percentage of white residents increased by 24.8% in the block groups of Census Tract 39, but only an average of 5.6% in the block groups in Tracts 40 and 44.01. The Hispanic population has also increased since 2000, by 8.2% in Tract 39 and 2.8% in Tracts 40 and 44.02 (Figure 11.3).

To capture the shift from large families occupying rented homes to smaller households of young professionals with buying power, 2000 and 2010 levels of renter occupancy, household size, and age were compared. The percentage of renter-occupied homes decreased an average of 5.9% in the neighborhood, although in this instance there was not a great disparity between the census tracts on the two different sides of Claiborne Avenue; Tract 39 decreased 6.8% in renter occupancy and Tracts 40 and 44.01 decreased an average of 5.5%. Median age increased in the 10-year period by an average of 6.2 years in the three tracts. This characteristic also didn't demonstrate a large difference between Tracts 39, 40, and 44.01, averaging 5.6-, 6.1-, and 6.6-year increases in median age, respectively. The percentage of households with more than three occupants was used to determine whether the larger, multigenerational families had been driven out in favor of smaller ones. The Lafitte Housing Project had primarily large households in 2000, with 54.3% consisting of three or more inhabitants. Excluding Lafitte, the decrease in households hosting over three people is 7.1% on average, also without a significant difference in the three tracts.

The results of this comparative study suggest that there is a positive correlation of factors that suggest both gentrification and neighborhood
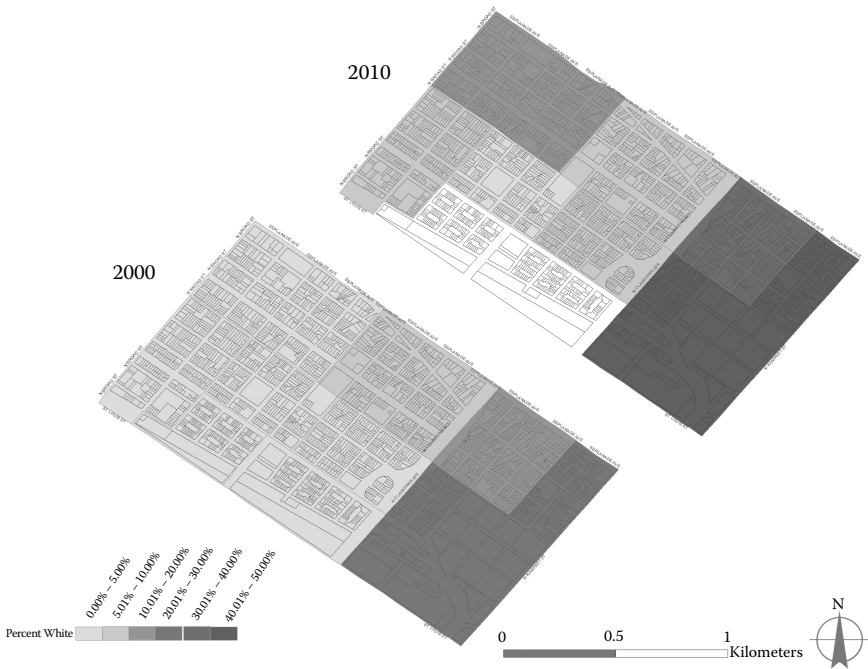
Figure 11.3 Change in percentage of white residents in Tremé, 2000–2010. (From Major, 2014.)

stabilization at the same time. Specifically, there has been a shift in the race of neighborhood citizens from primarily African American to white; the building condition improved overall, with a larger percentage surveyed as good; and the price of housing and rents have increased, while lot vacancy rates and family size both decreased in the 10-year period. After examining the combination of data at varying scales, and using the definition provided earlier, the results of this study suggest that Tremé has moved from a neighborhood recovering from a disaster to a more stable neighborhood.

LIMITING CONDITIONS

There was no data aggregation or weighting, as this is another model for integrating parcel-level data that has collection standards to measure and triangulate perception, municipal/public policy, and community

264

knowledge. While methods exist for determining weights that are subjective or data reliant, such weighting schemes do not always reflect the priorities of decision makers (Esty et al., 2005; Cutter et al., 2008).

Due to a fluid landscape within the historic Tremé neighborhood, VGI or crowdsourced data were used to summarize statistics only for buildings that existed in both 2011 and 2013. In 2011, buildings made up 48% of parcel land use, while in 2013, buildings made up 80%. The statistics included in the collection of VGI data reflect patterns within the neighborhood, but do not account for all parcels within the historic Tremé. Forty-three percent of the 2011 data are missing due to property record changes, modified city parcel layers, and incomplete surveys. The statistics in the section only account for those 1,254 parcels that were surveyed in 2011 and 2013.

CONCLUSION

Planning literature classifies neighborhoods in flux and measures their resilience, state of gentrification, or level of neighborhood stabilization using similar models and metrics. Many of the same variables are used to measure community status. This study focuses on defining a contemporary measure of neighborhood stabilization after a man-made or natural disaster using crowdsourced and municipal (integrated) data. The DROP model was applied to the case study of Tremé and included municipal neighborhood boundary definitions, standardized property condition assessments, and small sociodemographic, integrated temporal, and scalable data. It is important to involve residents in the type of community data collected and agree upon the definition, standards, dissemination, and goals for use prior to using a VGI model. The model results can aid residents in making informed planning decisions, but not when a neighborhood and its residents remain in shock after traumatic events. This research can be used to establish a baseline for neighborhood change and a model that can be applied for older cities, whether or not they are recovering from a catastrophe such as Hurricane Katrina in 2005.

Traditional planning education requires a more contemporary approach to evaluating the state of a neighborhood after a man-made or natural disaster. Many of the data sources used in longitudinal studies rely on U.S. Census data, which has, in recent years, decreased the availability of small data. City databases that may include demographic profiles with less margin of error are typically not accessible or in compatible formats. Variables, such as race, age, household size, property value,

and housing condition, are used, while the level of geography varies. This research considers ways to create an advanced model for neighborhood planning analysis. The focus of this research portrays neighborhood stability using national data sets, specifically the U.S. Census, while integrating VGI, which is typically not available.

A review of literature outlines similar measures to monitor gentrification and determine neighborhood stability. The definitions focus on demographics from African American to white, lower income to higher, improved property conditions, a reduction in blight and vacancies, and housing multigenerational families or single or unrelated couples. The conceptual framework established in this chapter focuses on a neighborhood level of analysis. The research framework used analytical techniques that are easily replicable, data that are freely available, and spatial analysis that is based on industry standards.

Using geographic information systems, comparative statistics of demographics, housing condition, and ownership were provided. Based upon the findings, progress toward neighborhood stability was exemplified in the shift in specific variables such as race, where the population shifted from primarily African American to white; income, which increased significantly from lower to higher; and homeownership and age, which increased. The status of property and use condition received an added benefit from using VGI collected through collaboration with a Tremé resident association, student volunteers, and university and neighborhood organizations. While other studies include weighted overlays of data, this model provides a way to use readily available public data that individually or collectively demonstrate trends and factors that contribute to the stabilization of neighborhoods and should be used by policy makers in a postrecovery context.

By using methodology that uses U.S. Census data, the ability to identify and compare neighborhood change is replicable. This data-driven model integrates public and crowdsourced or VGI data. In this case, the VGI used the WhoData model for data collection, which can integrate with other New Orleans data sets. The results of this, and the former Gladstone–Prieu study, suggest that this neighborhood has been in the process of gentrification since the 1970s. While there are negative connotations related to gentrification, the variables used to measure this phenomenon are similar to those for defining neighborhood stabilization. Scholars and planners in practice should consider the impact of applying labels of neighborhood cycles that are evaluated using the same metrics. These labels can affect the resident perception and the ability of a neighborhood to emerge, grow, revitalize, or stabilize through public and private investment.

Future research should consider how the data used to evaluate different phases of the neighborhood life cycle can be used in an integrated study using spatial data at varying levels of geography. In summary, the research presented for Tremé suggests a conceptual framework for neighborhood planning that is not complex, is replicable, and allows for empirical analysis of communities that aids in policy, practice, and theoretical study of neighborhood stability.

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267

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