

Determining Success of the Neighborhood Stabilization Program in Jacksonville, Florida

A Response to the Housing Collapse During the Great Recession

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Abstract

There has been much analysis of socioeconomic conditions precipitating the housing crisis of the Great Recession, the federal government's response to it by legislating the Neighborhood Stabilization Program (NSP) and local governments' struggles of leveraging this federal funding as the crisis worsened. There has been less analysis of the actual post-recession success of the NSP and none to be found specifically evaluating the NSP's effect in Jacksonville, Florida. There is also a gap in literature research in specifically analyzing how NSP investment strategy affected neighborhood change. This study examines the socioeconomic makeup of selected urban Jacksonville neighborhoods from which city officials delivered NSP funding to and analyzes whether the NSP had measurable effects on change in these neighborhoods after the recession in comparison to similar neighborhoods regarding race/ethnicity, median income, median housing values, tenancy, housing vacancies and educational attainment. It is a goal to show if NSP policy caused measurable change to a portion of these neighborhood characteristics given certain investment sizes or methods of implementation. It is an additional goal to show if city planners were on target by implementing a mixed-income funding strategy. It is this study's hypothesis NSP neighborhoods with more diversified median incomes had greater measurable success at some level in their recovery from the recession. This research is important because it is likely not the last housing crisis to occur locally or nationally. This gives it immediate relevancy to current land planners, developers and public policy elected officials in all metropolitan urban neighborhoods.

Introduction

Neighborhood Stabilization Program in Jacksonville, Florida

In response to the collapse of the housing sector during the Great Recession, which generally started in late 2007, Congress created the Neighborhood Stabilization Program (NSP), as part of the Housing and Economic Recovery Act (HERA) in July of 2008 (Rubin, 2009). The NSP, which began funding by Congress in 2009, eventually allocated nearly \$7 billion nationally during three phases of funding generally referred to as NSP 1 (\$3.92 billion), NSP 2 (\$2 billion) and NSP 3 (\$1 billion) from the U.S. Department of Housing and Urban Development (HUD) to local governments to acquire and redevelop or rehabilitate abandoned homes and vacant lots in the hopes of stabilizing the rapid decline of neighborhoods hit hardest by the rise of foreclosure (Joice, 2011). The City of Jacksonville (Duval County) received over \$22.4 million of NSP 1 funding in 2009 and after the housing crisis escalated, which saw their national foreclosure ranking leap from #40 to #17 in one

month during 2010, they received approximately \$4.75 million more during the NSP 3 funding round (City of Jacksonville, 2014; Coles (b), 2018). Jacksonville received no HUD funding during the NSP 2 phase.

City officials initially tapped the NSP 1 region to be the areas in the city hit hardest by high foreclosure rates, which included four urban zip-codes 32206, 32208, 32209 and 32254 and one suburban zip-code 32244 (City of Jacksonville, 2009). To receive NSP 3 funds, however, HUD now required local governments to start geographically concentrating their primary needs. Applying this new requirement, the City of Jacksonville selected within its 32206 zip-code a portion of the “East” neighborhood and the northern area of the “Springfield” neighborhood, which was inside a designated historic district. This selection was based from analyzing average home sale prices between December 2009 and November 2010, in which they determined the foreclosure crisis was still affecting the areas with particularly low sale prices (City of Jacksonville, 2014). City planners also liked its proximity to downtown and its heritage of once being a striving neighborhood containing some of the City’s oldest houses, including a variety of housing types such as single-family homeownership, single family rental and multi-family rental properties. Other considerations for selecting this urban target area included the decline in population due to public and private disinvestment, the high rate of poverty, high-school dropouts and vacated property. Overall, a noticeable socioeconomic distinction could not only be made between these five NSP zip-codes and the remaining county, but there were also economic and demographic differences, as well as an obvious spatial separation between the four urban NSP zip-codes and the one outlier NSP zip-code of 32244, which will be discussed.

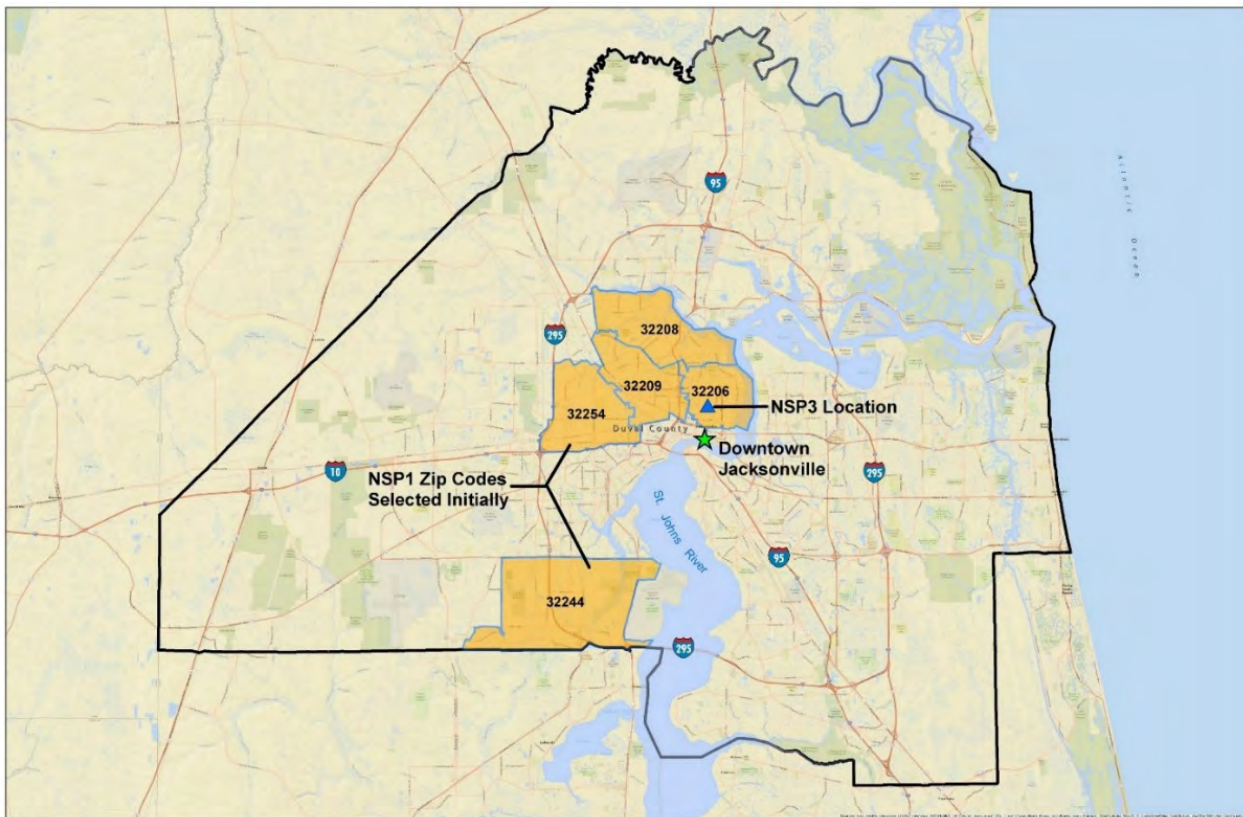


Figure 1. Map of Duval County showing (in orange) the location of selected target NSP 1 zip codes (City of Jacksonville, 2011) and adding the general vicinity of the East-Springfield neighborhood within the 32206 zip-code, just north of downtown, which received HUD funds during NSP 3.



Figure 2. Enlarged view of the NSP 3 selected target boundary within the East-Springfield neighborhood, which the City of Jacksonville produced using the HUD mapping tool (Coles (b), 2018) and (U.S. Department of Housing and Urban Development, 2010).

Rationale for project

In the years following the Great Recession, there was much analysis of the federal government’s response to the housing crisis, which destabilized the entire nation’s economy, and whether various local government’s ability to leverage part of this response through the allocation of federal money via the Neighborhood Stabilization Program was a success. It has been well documented local governments (grantees) receiving HUD funding had much competition from private investors not sharing the same interests, goals and vision of the NSP who were buying up large blocks of low-cost foreclosed real-estate properties owned by banks (Coles (a), 2018; Immergluck, 2012; Joice, 2011). An extensive study on the NSP 2 (Spader et al., 2015) concluded the federal program was not expansive enough to show investments having an effect on neighborhood components such as levels of home sales or vacancy rates during the time period of their study. Another study explained policy makers simply never saw the housing crisis coming since there was no national dataset on foreclosures which could provide timely and reliable data (Newman & Schafran, 2013).

Other critical evaluations of the Neighborhood Stabilization Program looked at the timing of the response (Immergluck, 2013) and the importance of understanding the neighborhood context (Fraser & Oakley, 2015). Although Fraser and Oakley called for more place-based evaluations in various urban neighborhoods to be done and Paul Joice has offered specific research questions to be asked, such as if there is a relationship between the size of NSP funding and any outcome or effect it has caused on the associated neighborhoods (Joice, 2011), ***no such post-recession analysis research has been found whether the City of Jacksonville’s implementation of the NSP was a success.*** Dayatra Coles, the Affordable Housing Administrator for the City of Jacksonville and Program Manager of the Jacksonville Neighborhood Stabilization Program, confirmed no post-recession analysis was done on the infusion of NSP funding into Jacksonville’s local program (Coles (a), 2018).

Project objectives

The objectives of this study were twofold. One basic objective of this study was to produce a reasonable quantitative method of determining whether neighborhoods receiving NSP funding in Jacksonville incurred any type of change, deemed successful or otherwise. A second objective was to shine a light on if certain types of NSP investments had measurable post-recession outcomes for specific neighborhoods when compared to other investments, whether intentional or not. Answering these objectives were important in understanding commonalities of NSP funding methodologies and determining the success of the NSP in Jacksonville because this would surely not be the last housing crisis to occur locally or at a national level. Implementing lessons learned of case studies from the Great Recession such as this could benefit these future HUD and local government funding programs.

Project goals

What would successful neighborhood change look like? Dayatra Coles explained the hope of HUD for this program was to bring qualified buyers back to neighborhoods suffering from heavy foreclosure and its associated blight, thus stop the trend of decline. In doing this, however, she went on to say the City of Jacksonville’s goal was also not to stir gentrification, but to provide a sustainable neighborhood framework for mixed-income families (Coles (a), 2018). This framework was formally defined in their “NSP 3 Substantial Amendment” report as providing affordable housing to low, moderate and middle income families by providing 90 dwelling units to low and moderate-income households ≤ 120% of the Area Median Income (AMI) and 35 dwelling units to income families under the poverty level ≤ 50% of the AMI (City of Jacksonville, 2014). The report also revealed a “rental housing preference”, which would receive the majority of the NSP 3 funds and give deference to multi-family rental projects in the East-Springfield neighborhood. In doing this, the City expected to demolish 93 low to moderate-income dwelling units and would allocate approximately \$1.75 million to purchase other abandoned residential parcels and/or redevelop foreclosed homes. This stated policy to allocate a majority of the money to families at this income threshold looking for rental housing supported Ms. Coles claim the City believed the success of the program was not dependent on everyone becoming a home owner. The general locations and ways the City invested the infusion of NSP funds from HUD was summarized in this table.

NSP1	SF units	MF units	Total units	Rental units	SF Investment	MF Investment	Total Investment	Rental Investment
32206	6	52	58	52	\$586,784.62	\$6,606,000.00	\$7,192,784.62	\$6,606,000.00
32208	30	0	33	3	\$3,671,808.09	\$0.00	\$4,256,624.40	\$584,816.31
32209	25	110	137	112	\$1,757,562.79	\$1,358,207.75	\$3,488,595.67	\$1,731,032.88
32254	7	0	7	0	\$645,751.01	\$0.00	\$645,751.01	\$0.00
32244	30	0	30	0	\$2,378,574.89	\$0.00	\$2,378,574.89	\$0.00
Subtotal	98	162	265	167	\$9,040,481.40	\$7,964,207.75	\$17,962,330.59	\$8,921,849.19
	37%	61%		63%	50%	44%		50%
NSP3	SF units	MF units	Total units	Rental units	SF Investment	MF Investment	Total Investment	Rental Investment
32206	17	38	55	38	\$4,320,733.36	\$5,300,000.00	\$9,620,733.36	\$5,300,000.00
Subtotal	17	38	55	38	\$4,320,733.36	\$5,300,000.00	\$9,620,733.36	\$5,300,000.00
	31%	69%		69%	45%	55%		55%
Total	115	200	320	205	\$13,361,214.76	\$13,264,207.75	\$27,583,063.95	\$14,221,849.19
	36%	63%		64%	48%	48%		52%

Figure 3. Totals and percentages derived from funding spreadsheet received (Coles (b), 2018)

These goals from the City of Jacksonville and its officials responsible for distributing local NSP funds gave indications on how best to frame a successful recovery of the NSP in Jacksonville as a whole. With the City’s documented intentions and the previous stated objectives of this study in mind, it became one of the goals of

this research to create a baseline measure of the various NSP tract components during the time the City was selecting these NSP neighborhoods so other comparable census aggregated areas with the same components which did not receive NSP funds could be selected and compared to NSP tracts before the Great Recession and after it as far as current data allowed. Doing so would help draw historical trend lines of measurable socioeconomic components before, during and after the recession in hopes conclusions could be drawn on four basic questions concerning the NSP implementation in Jacksonville:

1. Was change detected in NSP neighborhoods in comparison to similar (non-NSP) neighborhoods not receiving funding?
2. Was any change detected possibly caused by NSP policy?
3. Could any measurable effect be found on the neighborhoods receiving NSP funding as a function of the investment amount or type of investment the City made?
4. Was there a correlation between the City's goal of providing a diversified mixed-income housing to a recovery from the recession and did gentrification play a part for any found success?

To summarize another way, this study would attempt to show if NSP neighborhoods in Jacksonville saw changes in individual components being measured in comparison to the non-NSP funded areas and if a trend could be found which suggested those changes were caused by the NSP. This would help to answer the first two questions above. The third question would attempt to determine if changes inside the NSP tracts were caused by funding levels of a certain size or by investments in a particular land use, number of dwelling units or tenure type. Finally, the last question reflected an overarching goal of this research. This was to determine if NSP neighborhoods with more income diversification or mixed-income, such as the City's planned allocation for the East-Springfield NSP 3 funded district, showed greater signs of success in recovering from the Great Recession than more homogenous income-level NSP neighborhoods. Since the ideal of mixed-income neighborhoods could be inextricably associated with gentrification, these projected diversified income areas would also be analyzed to see if any measured neighborhood changes suggested any trend towards gentrification might have played a role in perceived success. While it was not part of this paper's goal to equate greater neighborhood income diversification to be the sole reason for any successful recovery, it was hoped to determine if the ideal of mixed-income neighborhoods still had relevancy in current land planning lexicon for designers, developers and public policy elected officials in metropolitan urban neighborhoods.

Literature Review: The Debate over Mixed-Income Neighborhoods and Gentrification

One 1990's HUD report characterized a lack of diversity in urban housing like this, "The concentration of the poorest families creates problems that predictably become unmanageable, and the larger the public housing development, the more complex the problems" (U.S. Department of Housing and Urban Development, 1995). So, are mixed-income neighborhoods necessary for urban communities? There was no conclusive answer to this question found in the literature, only that conventional planning theory generally liked diversified mixed-income developments. Perhaps the most impassioned argument for maintaining diversity in urban neighborhoods at all levels was in Jean Jacobs classic urban planning manifesto, "The Death and Life of Great American Cities." She maintained an "exuberant diversity" was essential to the well-being, safety and stability of an urban neighborhood because a "district" required more than one primary use and ideally more (Jacobs, 1961). Neighborhoods containing people with various income levels were undoubtedly part of this "generator of diversity" she spoke of, as they would occupy shared outdoor spaces at different times because of their different job sources creating various schedules, as she insisted was necessary for a neighborhood to thrive.

Subsequent theoretical papers explained mixed-income neighborhoods helped lower-income people improve their social networks to provide them upward mobility, allowing them to be influenced in a positive sense by learning improved social organization and providing them benefits from improved goods and services which inevitably came more readily to higher-income populations (DeFilippis and Fraser, 2010). One study simply defined these theoretical foundations as “social networks, social control, culture and behavior, and the political economy of place” (Joseph, Chaskin, & Webber, 2007). This study’s conclusion, however, could not find a socioeconomic correlation between low-income families faring better through any role modeling, interacting or building social networks from higher economic-status neighbors. However, they revealed evidence pointing towards a better quality of life benefit attained via informal social control and availability to better local services. These theoretical concepts of using mixed-income housing to help integrate very low-income households into the economic and social foundation of urban core communities had its origins in Henri Lefebvre’s concept ‘right to the city.’ His analysis attempted to show mixed-income housing gave people in public housing more access to the diversity of space and land use found in urban centers, while allowing them to be participatory members of this diversity (Duke, 2009).

Some evaluations of mixed-income policy pointed out that upward mobility for low-income households could be a reasonable goal, but simply providing mixed-income housing was not enough. The particular development needed to be well located, well designed and especially well managed (Brophy & Smith, 1997). In this article, Brophy and Smith also explained there needed to be income opportunities available to them, while the remaining ratio of units needed to favor higher income populations at a ratio of 80% market-rate to 20% subsidized units. While, it was not the intent of this project’s scope to examine income opportunities in the city’s urban neighborhoods or understand if the construction of multi-family housing the City oversaw through NSP investment was properly located and well managed, it would be worth mentioning the City considered improving job opportunities along with establishing a mixed-income implementation strategy, and planned giving priority tax status to small businesses willing to locate to the target area (City of Jacksonville, 2014).

Others more critical of mixed-income policies framed these efforts to overcoming barriers to integration of the low-income population into the economic and social fabric of urban life as an idealistic vehicle amounting to ‘positive gentrification’ (Chaskin & Joseph, 2013) and a way to increase the value of disinvested urban neighborhoods, once prominent in the city (Defilippis & Fraser, 2010). These arguments pointed to interesting challenges city planners in Jacksonville and other metropolitan areas faced. Could a city achieve mixed-income urban neighborhoods without creating an environment conducive to gentrification? The answer might be found in another question, was displacement of low-income households in urban neighborhoods such as what had been said to be occurring in the NSP 3 East-Springfield neighborhood caused by gentrification?

While the word ‘gentrification’ might have a negative connotation, many point out it was not synonymous with displacement of certain groups of people. After all, there were other reasons people of low-income might move. For example, a study in New York surprisingly showed lower-income households actually moved less often from gentrifying neighborhoods and that normal housing succession was actually the main reason causing urban neighborhoods to change (Freeman & Braconi, 2004). Even though other research theorized a demand for development with amenities increased housing costs because of associated restrictions on development and caused displacement (Hwang & Lin, 2016), Freeman and Braconi surmised in their study these families made certain efforts to stay in their homes despite higher rent because they enjoyed the newer amenities to the neighborhood. In a separate analysis, Lance Freeman stated more unequivocally there was not enough empirical evidence to show displacement as the primary reason of change in neighborhoods

experiencing gentrification (Freeman, 2005) and defined gentrification in more positive terms as “the process by which decline and disinvestments in inner-city neighborhoods are reversed.”

Nonetheless, gentrification was more conventionally viewed as neighborhood change characteristic of an increased cost of housing and a shift of overall socioeconomic status from lower to higher, which was often associated with a change to the neighborhood’s racial and socioeconomic diversity (Ehlenz, 2017). There was even evidence suggested these types of race and economic class changes could facilitate a neighborhood’s ability to recover after the recession more quickly (Hyra & Rugh, 2016), which supported the hypothesis some NSP neighborhoods with higher income diversification might recover quicker from the Great Recession. Derek Hyra and Jacob Rugh studied three iconic black neighborhoods between 2000 and 2012, Bronzeville in Chicago, Harlem in New York and the Shaw/U Street neighborhood in Washington D.C. All three experienced varying levels of gentrification in the 1990’s, but Shaw/U Street had the largest influx of Whites and wealthier African Americans followed next by Harlem (Hyra & Rugh, 2016). For comparison, in 1990 Bronzeville’s Black population was 95%, Harlem was 88% and Shaw/U Street’s population was 67% African Americans. By 2000, these percentages had changed to 92%, 77% and 52% respectively. While all three suffered from high subprime lending and foreclosures, their findings found the neighborhoods of Shaw/U Street and Harlem, which had greater levels of race and income diversity change during the 2000-2012 period, were not as severely affected by the recession as in the Bronzeville neighborhood having less income diversity change. Perhaps more importantly, the Shaw/U Street and Harlem neighborhoods appeared to have recovered more quickly than Bronzeville.

Literature Review Conclusion

This literature review attempted to put into context the challenge surrounding the City of Jacksonville’s goal of using the NSP funding vehicle to provide mixed-income opportunities in the East-Springfield neighborhood without precipitating continued cycles of gentrification. While many of the criteria they used in selecting this unique neighborhood for NSP 3 funding was laid out in the Introduction paragraph, a personal knowledge of this local urban neighborhood from living in Jacksonville for over 20 years allowed myself to know it has been targeted by many well-educated and higher income professionals during this time span because of its adjacency to downtown, as well as having the oldest and perhaps most architecturally prized homes in the city. A preliminary analysis from data found at NHGIS.org showed the population of black or African Americans shrunk 13% from the 2000 Census to the estimated population found in the 5-year average of the American Community Survey 2006-2010 dataset, while the white (non-Hispanic) population rose 32% during the same timeframe (Manson, Schroeder, Riper, & Ruggles, 2017). Of course, these numbers would not prove displacement of blacks have occurred because of gentrification. However, it provided additional motivation to examine success of the Neighborhood Stabilization Program overall, while drilling down into success (or lack of success) in relation to the roles mixed-income policy and potential gentrification played in this particular Jacksonville neighborhood.

Methodology

Definitions and Limitations

Defining the following terms helped clarify certain challenges and limitations of the data utilized to steer the methodology.

- NSP boundary – Initially, only the NSP 3 East-Springfield neighborhood (see Figure 2) in a portion of the 32206 zip-code was going to be the focus of this study because of its importance to the urban fabric of the city.

However, there was a concern it might not be a large enough study area to deliver conclusive or definitive results about the role NSP played in any recovery overall. However, using the entire NSP 1 area, which had been defined by the city as five zip-codes (see Figure 1), would essentially split the NSP study area into two distinct pieces. There would be an urban NSP made up of four zip-codes (32206, 32208, 32209 and 32254) and one non-contiguous suburban NSP area along the southern Duval County border, which was defined by the 32244 zip-code. A data comparison of these two NSP zones revealed how different the various socioeconomic components to be measured were from each other.

Socioeconomic Comparison (ACS 2006-2010)			
Socioeconomic Variables	Urban NSP	Suburban NSP	Remaining
	Zip-Codes *	Zip-Code **	Duval County
Total Population	53,104	35,843	765,901
Median Home Values	\$97,967	\$127,386	\$191,817
Median Household Income	\$28,795	\$50,601	\$52,004
% of Vacant Units	21.1%	10.0%	13.3%
% of Renter-Occupied Units	44.7%	35.0%	36.3%
% of Pop w/ BA Degree or Higher	10.8%	15.8%	24.4%
% of White Population	15.9%	46.2%	60.9%
% of African American Pop.	79.3%	34.0%	26.4%

Note: Totals and averages using block group aggregated data from ACS 2006-2010;
 Median household income in the past 12 months (in 2010 inflation-adjusted dollars)

* Zip-Codes = 32206, 32208, 32209, 32254

** Zip-Codes = 32244

Figure 4. Socioeconomic variable totals and percentages of NSP areas versus remaining county derived from ACS 2006-2010 data.

Knowing this census data would be used to create a composite socioeconomic index of values of individual NSP neighborhoods to define similar but non-NSP funded neighborhoods, a decision was made to have this research focus only on the four urban zip codes of NSP 1 and the NSP 3 East-Springfield neighborhood adjacent to downtown Jacksonville, which was part of the 32206 zip-code.

Limitation: Taken from Figure 3, this meant the research would lose the ability to study the effects of \$3.2 million NSP dollars invested in 30 single-family homes in the 32244 zip-code, but the tradeoff seemed reasonable in hopes it would produce index values not so conflicted by socioeconomic variability.

- Neighborhood – The preference was initially to use the City’s “neighborhoods” spatial layer to narrow down the specific places NSP funding was used. However, these irregular boundaries, as illustrated in Figure 2 by the NSP 3 boundary, do not match up well with census data. For purposes of aggregating data more effectively, NSP neighborhoods were thus defined as the individual *block groups* from the U.S. Census Bureau where the City of Jacksonville made any amount of NSP investment. Non-NSP neighborhoods would be defined as the selected comparable block groups from the socioeconomic index from all remaining Duval County block groups which did not receive NSP funding support. In general, the use of the term “neighborhood” refers to an aggregated U.S. Census Bureau block group.

Limitation: The determination to use census block groups instead of tracts as the chosen aggregate for a neighborhood could be viewed as a limitation since block groups are known to have higher Margins of Error (MOE) in estimated 5-year averages found in American Community Survey datasets. An examination of the MOE’s of block groups versus tracts for Duval County bore this fact out, although the values were not terribly

different in many areas. Tracts, though, distorted the perception of a small neighborhood and gave the study less data to work. For instance, the 102 plotted NSP funded properties in the four, urban zip-codes from Figure 1 fell inside 25 census tracts, as opposed to 46 block groups. This could have had an effect when analyzing neighborhoods such as East-Springfield in the NSP 3 district, whose intersecting tracts encompassed demographics not altogether related to its population, which might be gentrifying. Using census block group data did not entirely match city defined neighborhood boundaries either but aggregated the data into finer spatial areas more closely resembling these smaller neighborhoods and potentially better located only those areas where NSP investments were made. For instance, census block group data inside the NSP 3 boundary showed there was an area within Tract 11 (Block 2) and Tract 174 (Block 2), where *no* NSP 3 investment was made, which in theory could produce better results when selecting comparative block group neighborhoods if those two neighborhoods were left out of the analysis (see two grey bands in graphic below).

NSP3 Comparison of Investment per Dwelling Unit (DU) type and Black/White Percentages at Block and Tract levels								
	WhitePop%	BlackPop%	SF DU	MF DU	Total DU	SF Investment	MF Investment	Total Investment
Census Tract 11, Block 1	25.7%	53.7%	1	0	1	\$166,934	\$0	\$166,934
Census Tract 11, Block 2	70.6%	29.4%	0	0	0	No Investment		
Census Tract 12, Block 1	29.4%	64.0%	1	14	15	266,295	2,200,000	\$2,466,295
Census Tract 12, Block 2	42.2%	45.9%	4	0	4	1,110,594	0	\$1,110,594
Census Tract 12, Block 1	20.5%	71.3%	1	0	1	164,027	0	\$164,027
Census Tract 174, Block 1	17.9%	80.5%	10	0	10	\$2,612,883	\$0	\$2,612,883
Census Tract 174, Block 2	38.2%	61.8%	0	0	0	No Investment - out of NSP3 boundary		
Census Tract 174, Block 3	6.9%	91.7%	0	24	24	\$0	\$3,100,000	\$3,100,000
Census Tract 11	34.0%	42.9%	1	0	1	\$166,934	\$0	\$166,934
Census Tract 12	29.5%	61.1%	6	14	20	\$1,540,916	\$2,200,000	\$3,740,916
Census Tract 174	15.4%	81.9%	10	24	34	\$2,612,883	\$3,100,000	\$5,712,883

Figure 5. Preliminary analysis of ACS 2006-2010 tracts and blocks intersecting with the NSP 3 East-Springfield boundary and correlated to the actual locations of funding properties found in the spreadsheet received (Coles (b), 2018).

- Neighborhood change – Analysis measured *percentage differences (or dollar amount when appropriate)* from one timeframe to another of different neighborhood components such as total population, ethnicity, median income, median housing values, or persons with a college degree, to name a few.

Limitation: Any individual component associated with a neighborhood, such as the examples listed above, could be measured to help answer whether change occurred. Concepts such as income diversity and gentrification, as discussed in the literature review and being analyzed for this project, were somewhat subjective to definition. But they helped guide selection of which neighborhood variables to be analyzed.

- Significant change – Inferential statistical analysis on nonspatial (tabular) data for this project was defined as a 95% (percent) likelihood a measured change did not occur by chance.

- Area Median Income (AMI) – The area median income for the Jacksonville metropolitan area will be adjusted for the census data of the years being analyzed. AMI was needed for the calculations used in the income diversity methodology to be discussed.

- Household – The basis of socioeconomic variable measurement, defined by the U.S. Census Bureau as all persons living in a single housing unit, which this study utilized from census data. This measurement differed

from the “family” variable, which referred to two or more people related by birth, marriage or adoption and living in the same household, as it made for a more inclusive measurement since it included not only families, but also unrelated individuals or single people living alone (Galster, Booza, & Cutsinger, 2008).

- Household Income – Research included income of all people living in household 15 years and older, whether or not they were related (Guzman, 2017).
- Household Income groupings – These groupings were based on HUD’s guidelines and income limits (U.S. Department of Housing and Urban Development, 2018):

Extremely low-income (ELI): households earning income not more than 30% of AMI ($\leq 30\%$)

Very low-income (VLI): households earning income not more than 50 percent of AMI (31%-50%)

Low-income (LI): Households earning income not more than 80 percent of AMI (51%-80%)

Moderate income (MI): Households earning income now more than 120 percent of AMI (81%-120%)

Middle income (UI): Households earning income not more than 165 percent of AMI (121%-165%)

High income (HI): Households earning income above 165 percent of AMI ($>165\%$)

Limitation: HUD used the “family” as the unit of measurement for these income groupings and adjusted it for differences in family size (Galster et al., 2008). The analysis in this study borrowed these HUD income group definitions but still utilized the census “household” unit of measurement.

- Neighborhood income diversity – The method used will be explained in more detail, but essentially had each block group in a zip-code aggregate area divided into one of four income diversification groups based on the household income group with the highest percentage within each zip-code.

ALL BLOCK GROUPS IN ZIP-CODE ARE ASSIGNED

High Diversity if block group with highest household income group % in zip code $< 40\%$

Moderate Diversity if block group with highest household income group % in zip code $< 55\%$

Low Diversity if block group with highest household income group % in zip code $< 70\%$

Very Low Diversity if block group with highest household income group % in zip code $\geq 70\%$

Limitation: There were different methods discussed to distribute neighborhood diversity into multiple groupings in the Galster, et al. study, “Income Diversity Within Neighborhoods and Very Low-Income,” but many of them appeared overly complex. The method they ultimately used was fairly straight-forward and even (Galster et al., 2008) described their income diversification methodology’s appeal as “intuitively pleasing.” This study borrowed their basic method of breaking household income groups into diversity groupings comprising of various percentage mixtures but modified it slightly to allow for a better percentage distribution fit found within the Duval County data.

Data & Timeframe

The primary source of data quantitatively analyzed for neighborhood change came from the U.S. Census Bureau. Given this data used aggregated census block group boundaries meant the goals and objectives discussed were analyzed from a macro-level view instead of a detailed micro-level perspective, which might be attained from using a more qualitative methodology approach regarding the properties invested in by the City. The necessary census data downloaded using the website NHGIS.org (Manson et al., 2017), already had data separated into geographic aggregate levels, topics and decennial versus non-decennial years, including American Community Survey (ACS) 5-year ranges. For this study, the 1990 and 2000 U.S. Census long-forms

were downloaded to determine where the block groups being analyzed stood before the run-up to the housing crisis. The ACS 5-year range from 2006-2010 were used for estimated data representative for the conditions going on right at the onset of the Great Recession starting in 2007 and worsening in the Jacksonville region into late 2010. This also best matched the timeframe the City of Jacksonville was using available data to select NSP 1 and NSP 3 areas of investment, as discussed in the introduction. For this reason, the ACS 2006-2010 dataset made the most sense to select comparative non-NSP block groups to the NSP's determined block group neighborhoods. Finally, the ACS 5-year range from 2012-2016 was the last 5-year range currently available, so best represented socioeconomic variables during the recovery from the recession. These four datasets provided a 26-year window with a range of approximately 17 years before the start of the recession in 2007 to 7 years after its technical end in 2009. Any reference to 2010 or 2016 data referred to the ACS 5-year 2006-2010 and 2012-2016 datasets respectively. However, for analysis purposes, any mention of the post-recession or recovery period simply referred to the differences found in the ACS 2012-2016 dataset from the values found in the ACS 2006-2010 dataset.

A spreadsheet listing the individual NSP 1 and NSP 3 properties selected by the City was received from the Program Manager of the Jacksonville NSP (Coles (b), 2018). This dataset broke down the NSP 1 and NSP 3 property address locations, as well as provided the investment amounts and of what types (i.e. rental vs owner and single-family vs multi-family dwelling units). Without the specific details in this provided dataset, this research could not have been possible.

Data Limitation: The census data analyzed was not a direct match to the data used to select these NSP properties. While many of the variables the City used to make their determination, such as tenure, vacant housing units and housing prices was found in downloaded census data, the origination source of the information the City used was different (City of Jacksonville, 2014). Also, a major variable which played into the City's selection was the mounting foreclosure rates during 2009 and 2010. Efforts to obtain historical locations of these foreclosures in Jacksonville to analyze were ultimately unsuccessful, so vacant housing units extracted from census data were used to partly capture this recession trend. Finally, the use of the ACS 2006-2010 and ACS 2012-2016 datasets was not ideal due to their collection sampling and estimated nature in comparison to the full census survey. The research might have yielded better results if more time could pass after the recession and the full long form results from the 2020 census data was thus available.

Creation of NSP and Non-NSP Neighborhoods

The basis of this research project was dependent on developing a control set of census block groups which did not receive NSP financial support from the City but could be considered "comparative" to the NSP neighborhoods. To do this, two primary spatial datasets were needed: one showing NSP block group neighborhoods and the other showing non-NSP neighborhoods. First using the NSP investment spreadsheet received from the City, all property locations were plotted using a City of Jacksonville "parcel" layer into an NSP point investment feature class, which was used to select 46 census block groups from the ACS 2006-2010. This became the NSP neighborhood dataset and would serve as the basis for selecting equivalent non-NSP block group neighborhoods from the 1990 and 2000 census block group datasets (see Appendix A for a crosswalk of each decennial block group dataset). It should be noted one additional block group without NSP investments had to be added to this selection and merged with another block group in order to match block groups from the 1990 and 2000 census and two other block groups, both having NSP investments, had to also be merged for the same reason. All remaining block group features not having any NSP investments became a second feature class and would serve as the neighborhood records available which all non-NSP comparable neighborhoods would be selected from.

Socioeconomic Index Components and Comparable Neighborhoods

The method to assign comparable block groups utilized an index made up of neighborhood characteristics appropriate to find other neighborhoods with a similar racial and economic makeup. Two studies using indexes to locate gentrification were examined (Bousquet, 2017; Hwang & Lin, 2016). Bousquet outlined various criteria five cities (Los Angeles, Portland, Seattle, Boston, and San Francisco) used to detect areas suitable for displacement caused from gentrification, while Hwang and Lin built a socioeconomic status (SES) index from census data to study gentrification trends over time within 168 large U.S. cities. This study adapted the Hwang and Lin method of building a socioeconomic index and based it on data taken from the ACS 2006-2010 dataset.

Since any index could be subjective based on the criteria selected to build it from, this study kept in mind the project objectives outlined in the Introduction. To best study the recovery success in various neighborhoods after the recession and the possible role a diversified mixed-income played in this recovery, the attributes *median housing values* and *median income* were logical selected from the census data. Easing of foreclosure rates would signal neighborhoods under distress were recovering from the recession, but since actual foreclosure data was not obtained, *vacant housing unit* percentages were used to somewhat reflect this component in the index. Other characteristics of a neighborhood which were likely determinants of defining a baseline for a comparative neighborhood were *race/ethnicity*, *tenure* (owner/renter-occupied), and *education* level. This last component, along with income and race, were important to varying degrees to determine whether the NSP 3 East-Springfield neighborhood was gentrifying.

These six neighborhood components (median housing values, median household income, vacant housing units, race/ethnicity, tenure and education level) formed the basis of the socioeconomic index value for each block group in both the NSP and non-NSP feature classes. Since the African American population in the four zip-codes representing the urban NSP was nearly 80% during the time the City was making their NSP investment selections (see Figure 4), the race/ethnicity component in the index used this population percentage attribute. To look at the potential of gentrification, the education variable utilized the percentage of population with a bachelor's degree or higher. Since the tenure component would either be owner or renter-occupied, either percentage values could have been used in the index formula to search for comparable block groups, but this study used the renter-occupied population given it was much higher than the Duval County average and thus an important variable to these urban neighborhoods. Not one variable was given more weight than another in the final calculation formula. Since the values and percentages of each component were measuring vastly different criteria, thus were at different scales, an important step in the process standardized each component value to ensure they all were at comparable scales with a z-score mean of zero (0) and a standard deviation of one (1). The six standardized component values were then added together for each block group in the NSP dataset and divided by six (6) to produce a composite index value of each neighborhood. The mean composite value for all block groups making up the NSP was then determined in order to repeat the process to find comparable non-NSP neighborhoods from the remaining Duval County block groups.

To be familiar with these conditions at a county-level view of Duval County during the time the City was selecting the NSP properties, a snapshot was taken of the six component attributes relating to this socioeconomic index. These thumbnail maps using the ACS 2006-2010 data were created and helped the visualization of the data being used in the study. The original NSP 1 zip codes the City used to make investments are shown in red for reference, including the one southern-most NSP zip-code 32244 for reference, which was not used because of its distinct differences with the urban NSP zone.

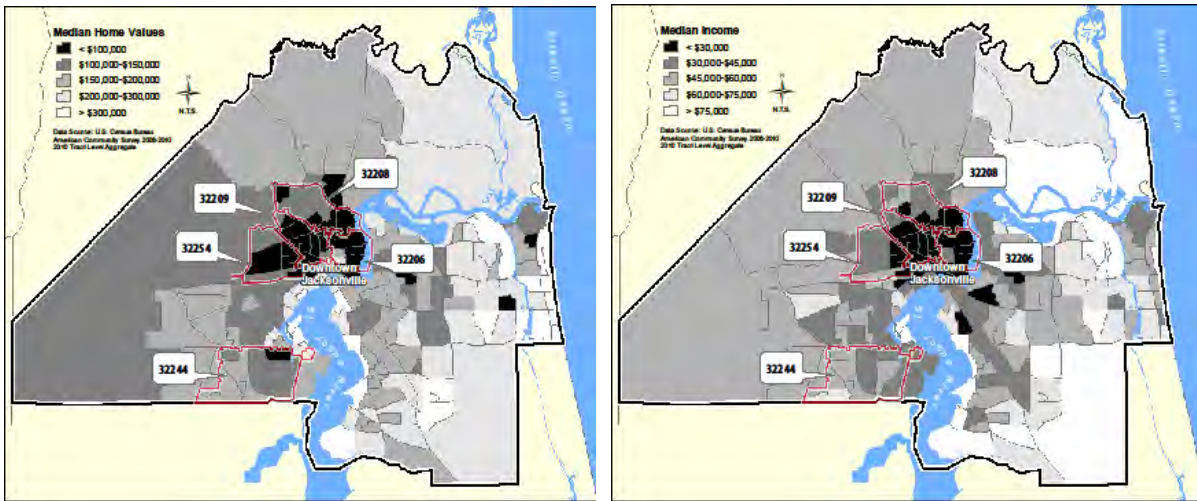


Figure 6a. Median home values on the left and median household income on the right. Darker values have lower home values and lower median household income respectively. Data reflects ACS 2006-2010 tract estimated values.

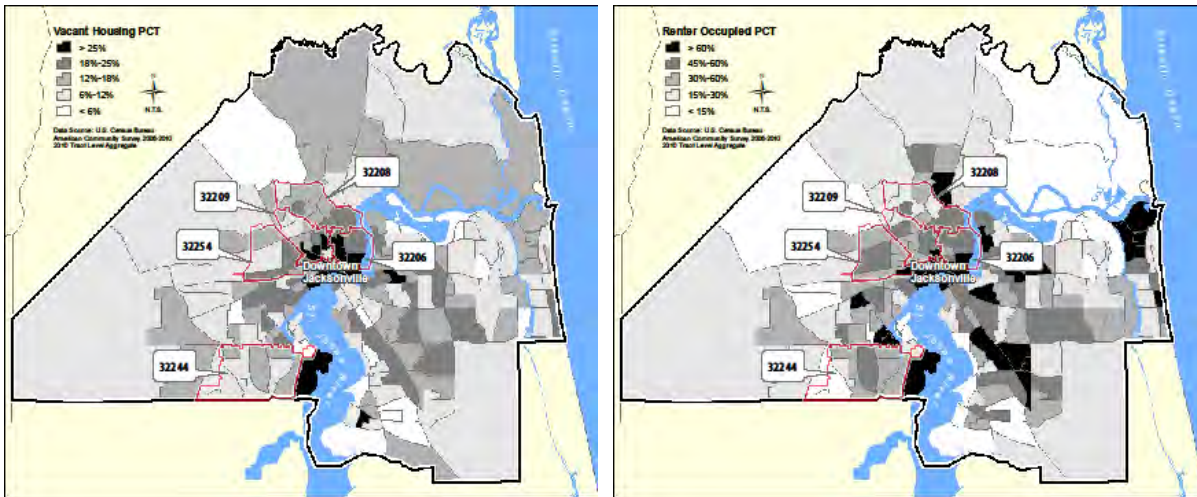


Figure 6b. Vacant housing unit percentages on the left and renter-occupied housing percentages on the right. Darker values have higher vacancy percentages and higher renter-occupied percentage homes respectively. Data reflects ACS 2006-2010 tract estimated values.

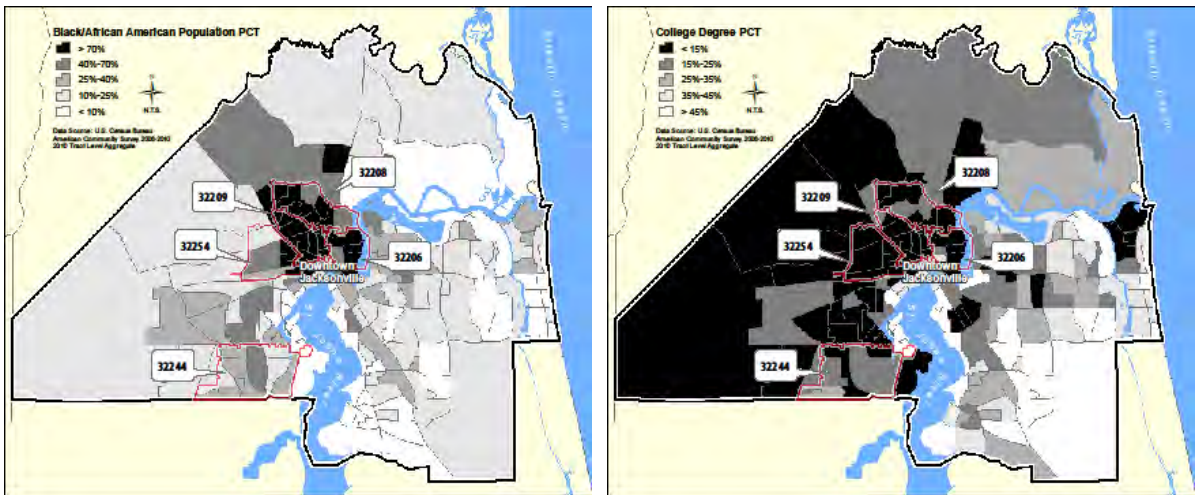


Figure 6c. Black/African American population percentages on the left and populations with college degree percentages on the right. Darker values have higher black population percentages and lower percentages of people with degrees respectively. Data reflects ACS 2006-2010 tract estimated values.

Detecting NSP Neighborhood Change using Comparable Neighborhoods

General neighborhood changes between NSP and non-NSP neighborhoods were examined by two methods. One method utilized analysis of variance (ANOVA) to determine if differences between NSP and non-NSP neighborhood mean percentages or dollar amounts were statistically significant. These mean averages were represented in trend lines graphs for each component making up the index score that compared NSP neighborhoods to their comparable non-NSP neighborhoods over three different time spans during the 1990-2016 study period. The comparison period between 1990 and 2000, clearly before the Great Recession took its toll, was valuable to look for any pre-recession signs of gentrification occurring in what would later become the NSP neighborhoods. The next study time period from 2000 to the estimated values of the ACS 2006-2010 dataset served as the baseline timeframe for comparing the NSP to non-NSP neighborhoods leading up to and including the recession years. The recovery timeframe was represented using the ACS 2006-2010 to the ACS 2012-2016 data and would be used to determine whether the NSP block groups reacted differently as their non-NSP comparable block groups during the post-recession years compared to the baseline. Steep differences between the two trend lines in the latter part of the graph, which defined the post-recession years might indicate a change occurred because of the NSP policy. Neighborhood change between NSP and non-NSP neighborhoods was also illustrated in *mean descriptive tables* for a general quantitative comparison of the mean percentage changes of the different components between the different study periods. A similar approach of statistical analysis using ANOVA and descriptive tables to test market and economic indicators was found in another study, but which compared University tracts and non-University tracts (Ehlenz, 2017).

Analyzing mean averages using ANOVA and descriptive tables was a good first look at potential differences between the NSP and non-NSP neighborhoods, but to gain a better understanding of these differences during the post-recession period, the distributions of these neighborhood components were also examined with box and whisker plots. This additional statistical analysis was needed since the American Community Survey used small sample sizes in their surveys, which created much variability in the results. These plots allowed visual examination if the distribution of NSP neighborhoods had much overlap with the non-NSP neighborhoods, thus whether differences between the two distribution groups existed. Another advantage of using box and whisker plots was that they revealed outlier neighborhoods to these quartile distributions, suggesting which block groups needed to be examined more closely for conditions causing the neighborhood to be different.

Detecting NSP Change as a Function of Investment

In the literature review, no research was found specifically analyzing how NSP investment size affected neighborhood change during the period after the Great Recession or if how the grantees distributed the funds made a difference in the recovery success. This project attempted to fill this possible research gap by associating the City investment data with the NSP neighborhood dataset. Since investment data was already used to create a point and polygon neighborhood feature classes, this census location information was transferred back to the investment spreadsheet to have it aggregated by neighborhood block group. Once this spreadsheet was joined back to the NSP neighborhood dataset, it allowed all 46 block groups in the feature class to relate the City's individual NSP investments regarding attributes such as investment amounts, number of total dwelling units, multi-family (MF) land use percentages versus single-family (SF) investment projects and whether these were intended to be occupied by renters or purchased by qualified home buyers.

It was these basic investment decisions the City made on investment amounts, land use type, number of

dwelling units and targeted tenure (owner versus renter populations) which were categorized in different ways with the intention of finding investment “sweet-spots” producing better results in terms of stabilizing the neighborhood. While the defined categories would always be somewhat subjective, they were ultimately based on limitations the data presented after the investments were grouped by neighborhood. For example, investment amounts per block group ranged from a low of \$1,539 to a high of over \$6.6 million, whereas there was much less variability in land use and tenure investments per block group. Nevertheless, it allowed each neighborhood to be analyzed on different categorized criteria as described by these design guidelines.

1. Determine *total investment* funded within each NSP neighborhood block group, then divide these investment amounts into six categories ranging from ‘Very Low’ to ‘Very High’. Since the goal was to look for an investment level which appeared to get better results and because this housing program had such a large investment range in the selected neighborhoods, two more subgroups were added examining *minimum* and *maximum* investment sizes on a ‘Very Low’ to ‘Very High’ investment scale.
2. Break the NSP funded block groups into two *land use* groups: investment in single-family properties or multi-family properties. Originally, each neighborhood was to have six categories based on different land use percentages of these two groups, but there was not enough variation of the data to produce six categories in all neighborhoods. Therefore, these were reduced to three ranging from ‘All Single-Family’ to ‘All Multi-Family’.
3. Use total renovated or redeveloped *dwelling units (DU)* located within each neighborhood to classify each NSP block group into six DU categories ranging from ‘Very Low’ to ‘Very High’.
4. Divide the NSP funded block groups into two *tenure* groups: investments in properties to be renter-occupied and ones to be owner-occupied. Again, there was not enough variation between these two groups to produced six percentage categories, so it was classified into three categories ranging from ‘All Owner-Occupied’ to ‘All Renter-Occupied’.

1a. Total Investment Size Groups		2. Land Use Type Investment % Groups	
<= \$75k	Very Low (VLI)	100% SF	All Single Family (SF) Units
>\$75k - \$150k	Low (LI)	Mix of SF and MF	Mix of SF and MF Units
>\$150k - \$200k	Moderately Low (MLI)	100% MF	All Multi-Family (MF) Units
>\$200k - \$400k	Moderately High (MHI)		
>\$400k - \$800k	High (HI)		
>\$800k	Very High (VHI)		
1b. Minimum Investment Size Groups		3. Dwelling Units (du) # Investment Groups	
<= \$30k	Very Low (VLI)	1 du	Very Low (VLdu)
>\$30k - \$60k	Low (LI)	2 du	Low (Ldu)
>\$60k - \$90k	Moderately Low (MLI)	3 du - 4 du	Moderately Low (MLdu)
>\$90k - \$120k	Moderately High (MHI)	5 du - 7 du	Moderately High (MHdu)
>\$120k - \$180k	High (HI)	8 du-15 du	High (Hdu)
>\$180k	Very High (VHI)	> 15 du	Very High (VHdu)
1c. Maximum Investment Size Groups		4. Tenure Type Investment % Groups	
<= \$100k	Very Low (VLI)	100% owner	All Owner-Occupied Units
>\$100k - \$200k	Low (LI)	Mix of owner/renter	Mix of Owner and Renter-Occupied
>\$200k - \$500k	Moderately Low (MLI)	100% renter	All Renter-Occupied Units
>\$500k - \$1m	Moderately High (MHI)		
>\$1m - \$3m	High (HI)		
>\$3m	Very High (VHI)		

Figure 7. NSP investment categories used to analyze neighborhood change in their associated census block groups during the post-recession years using the ACS 2006-2010 to ACS 2012-2016 estimated datasets.

Concerning the investment size categories for the 46 NSP block group neighborhoods, there were many ways to categorize such a large range of data. While some neighborhoods only had one investment, there were others which had a few investments of vastly different sizes or which had many investments of smaller amounts that added up to a significant size. An assumption was made total investment was not necessarily the best method to identify success, so the methodology conceived two additional investment size categories which would instead categorize the data based on the beginning minimum and maximum size investments made in the neighborhood. The total investment size group would classify the data categories close to their natural breaks, while the starting minimum and maximum investment groups had classified scales manually adjusted smaller or larger to better capture data ranges based on those differing criteria. If there was only one investment made for a neighborhood, all three investment groups would contain the same amount.

Trend line graphs on these six investment groups during the NSP implementation in Jacksonville was performed on each defined category, as was done with the comparison of target NSP and non-NSP block groups. Descriptive tables were again used to further visualize if the statistical changes indicated the NSP funding had an effect during the recovery. Individual NSP outlier neighborhoods showing up in the box and whisker plots during the NSP and non-NSP neighborhood analysis were investigated to see if investment choices could have been the reason for such large differences.

Determining Neighborhood Income Diversity Effect on Recovery and Gentrification

The last priority in the research focused on breaking each NSP neighborhood into one of four income diversity groups (high, medium, low or very low). This was done by first dividing each block group’s median household income using the ACS 2006-2010 dataset into Duval County’s overall Area Median Income (AMI) to create six general HUD income groupings (extremely low, very low, low, moderate, middle, and high) as previously discussed. Using Duval County’s AMI for 2010 of \$49,463 (Manson et al., 2017), the category breakdown of the six household income groups for the 46 NSP block group neighborhoods looked like this.

Percentage	Count	Income Criteria	Household Income Groups
6.5%	3	<=30% AMI	Extremely Low Income (ELow-I)
32.6%	15	31%-50% AMI	Very Low Income (VLow-I))
43.5%	20	51%-80% AMI	Low Income (Low-I)
17.4%	8	81%-120% AMI	Moderate Income (Mod-I)
0.0%	0	121%-165% AMI	Middle Income (Mid-I)
0.0%	0	>165% AMI	High Income (High-I)
100.0%	46	Total Block Groups	

Figure 8. Number of neighborhoods belonging to each household income group as defined by HUD and its percentage to the total number of neighborhood and using 2010 adjusted median income from the ACS 2006-2010 dataset.

To determine income diversity groups, these household income groups needed to be aggregated into larger income group subsets. Census tracts were considered, but generally only 2-4 block groups made up a tract, which was not enough neighborhoods in a single group to show whether reasonable income diversity existed. Therefore, zip-code boundaries were used to effectively aggregate household income groups into large enough groups to determine if diversity existed. Where block groups overlapped zip-code boundaries, it was aggregated with the zip-code where the actual investment(s) were executed. The household income group in a zip-code having the highest number of neighborhoods belonging to it was used to divide into the total number of neighborhoods or block groups inside the zip-code to get its maximum group percentage. Zip-codes under a maximum group percentage of 40% were considered having high income diversity, under 55% had moderate

income diversity and under 70% had low income diversity. Zip-codes with one neighborhood having a maximum group percentage over 70% was considered to have very-low income diversity.

Zipcode	Income Diversity Group	Max Group %	# of Neighborhoods within ACS 2006-2010 Household Income Groups						
			ELow-I	VLow-I	Low-I	Mod-I	Mid-I	High-I	Total
32206	Low Income Diversity	60%	0	3	6	1	0	0	10
32208	High Income Diversity	38%	0	3	5	5	0	0	13
32209	Moderate Income Diversity	50%	3	9	6	0	0	0	18
32254	Very Low Income Diversity	80%	0	0	4	1	0	0	5

Figure 9. Household income groups in yellow had the largest number of neighborhoods meeting HUD’s definition of that income group. This number was divided into the total number of neighborhoods to get a percentage to determine what income diversity group the zip-code fell into.

Statistical analysis on these four neighborhood income diversity groups within NSP urban zip-codes again used ANOVA significance testing to determine the probability if differences in mean variances on the six index components being studied existed. Trend lines graphs and a descriptive table for each neighborhood component were also used for visual comparisons of change to mean averages of these income diversity groups, as well as utilizing the bar and whisker plots to study distribution patterns of the data and look for outlier block group neighborhoods. This research on income diversity groups used the ACS 2006-2010 and the ACS 2012-2016 estimated datasets to span the recession recovery time-period.

The Analysis of Variance (ANOVA) Statistic

While Excel was used to perform the ANOVA calculations to test the population variances on NSP block group neighborhoods, a brief explanation of the ANOVA coefficient is warranted. The ANOVA testing coefficient, often referred to as the F statistic is a variance ratio with a formula of $VR (F) = \text{among groups mean square} / \text{within group mean square}$. In more basic language for this study, it allowed for comparisons of multiple population averages or means found in the various census block groups by comparing both the variation *between* those means in the block group being sampled and the variation *within* each of those samples. The math behind this testing can also be shown as

$$F = \frac{MST}{MSE} \text{ where } F = \text{ANOVA coefficient (variance ratio)}$$

MST = Mean sum of squares due to treatment (or among groups mean square - MS Group)

MSE = Mean sum of squares due to error (or within groups mean square - MS Error)

$$MST = \frac{SST}{p-1} \qquad MSE = \frac{SSE}{N-p}$$

The actual formula for MST and MSE is $SST = \sum n(x - \bar{x})^2$ and $SSE = \sum (n - 1)S^2$, where
 SST = Sum of squares due to treatment and SSE = Sum of squares due to error
 p = Total number of populations S = Standard deviation of the samples
 n = The total number of samples in a population N = Total number of observations
 (BYJUS.com, 2019)

Results

Comparable Neighborhoods

Using the final socioeconomic neighborhood index formula = standardized median home value + standardized median household income value + standardized African American population % value + standardized vacant

housing unit % value + standardized renter-occupied % value + standardized population with bachelor degree or higher % value / 6 using the ACS 2006-2010 data, the average **composite NSP index score** for all of its block group neighborhoods was found to be **0.832**. This was the value used to search for comparable block groups on the remaining Duval County dataset. Initially, neighborhoods with a composite score of 0.2 on either side of this value were searched for. Thirty urban comparable block groups with composite index scores ranging from a low of 0.648 to a high of 1.015 were found.

ID	COMPARABLE BLOCK GROUPS NEIGHBORHOODS	INDEX #
2010Comp01	Block Group 1, Census Tract 2, Duval County, Florida	0.925
2010Comp02	Block Group 2, Census Tract 2, Duval County, Florida	0.939
2010Comp03	Block Group 2, Census Tract 3, Duval County, Florida	0.925
2010Comp04	Block Group 3, Census Tract 3, Duval County, Florida	0.683
2010Comp05	Block Group 1, Census Tract 13, Duval County, Florida	0.711
2010Comp06	Block Group 3, Census Tract 13, Duval County, Florida	0.774
2010Comp07	Block Group 3, Census Tract 14, Duval County, Florida	0.835
2010Comp08	Block Group 4, Census Tract 14, Duval County, Florida	0.984
2010Comp09	Block Group 4, Census Tract 15, Duval County, Florida	0.995
2010Comp10	Block Group 1, Census Tract 25.01, Duval County, Florida	0.731
2010Comp11	Block Group 2, Census Tract 25.01, Duval County, Florida	0.835
2010Comp12	Block Group 1, Census Tract 26, Duval County, Florida	0.819
2010Comp13	Block Group 4, Census Tract 26, Duval County, Florida	0.959
2010Comp14	Block Group 1, Census Tract 27.01, Duval County, Florida	0.744
2010Comp15	Block Group 1, Census Tract 27.02, Duval County, Florida	0.795
2010Comp16	Block Group 2, Census Tract 27.02, Duval County, Florida	0.884
2010Comp17	Block Group 3, Census Tract 27.02, Duval County, Florida	1.014
2010Comp18	Block Group 1, Census Tract 28.01, Duval County, Florida	0.744
2010Comp19	Block Group 2, Census Tract 28.01, Duval County, Florida	0.973
2010Comp20	Block Group 3, Census Tract 28.01, Duval County, Florida	0.648
2010Comp21	Block Group 1, Census Tract 107, Duval County, Florida	0.826
2010Comp22	Block Group 2, Census Tract 108, Duval County, Florida	0.649
2010Comp23	Block Group 3, Census Tract 110, Duval County, Florida	0.691
2010Comp24	Block Group 2, Census Tract 112, Duval County, Florida	0.651
2010Comp25	Block Group 1, Census Tract 114, Duval County, Florida	0.655
2010Comp26	Block Group 2, Census Tract 115, Duval County, Florida	0.711
2010Comp27	Block Group 1, Census Tract 122, Duval County, Florida	0.663
2010Comp28	Block Group 2, Census Tract 122, Duval County, Florida	0.745
2010Comp29	Block Group 4, Census Tract 122, Duval County, Florida	0.848
2010Comp30	Block Group 2, Census Tract 14, Duval County, Florida	1.048

Figure 10. Comparable block group neighborhoods with associated standardized index values derived from ACS 2006-2010 census data. See Figure 11 for locations of these neighborhoods.

While the neighborhood representing the high index score of 1.015 was adjacent to the NSP East-Springfield neighborhood, it happened to be downtown Jacksonville, which was an atypical neighborhood at best. For more practical reasons, it was dropped from the comparable dataset when it was discovered it would need to be merged with three other block groups just to make its outer boundary somewhat match both 2000 and 1990 spatial block group datasets, each of which would also need seven (7) and nineteen (19) merged block groups respectively to make them spatially comparable as well. Thus, a neighborhood (Tract 14, Block Group 2) with a slightly higher, but similar index score of 1.048 was selected to simplify the calculations and process. This index score was barely outside of the original goal to find composite index scores within 0.2 of the NSP score of 0.832. Figure 11 illustrated the locations of the resulting NSP and comparable non-NSP block group neighborhoods in relation to the original four urban NSP 1 zip-codes the City used to make property selections.

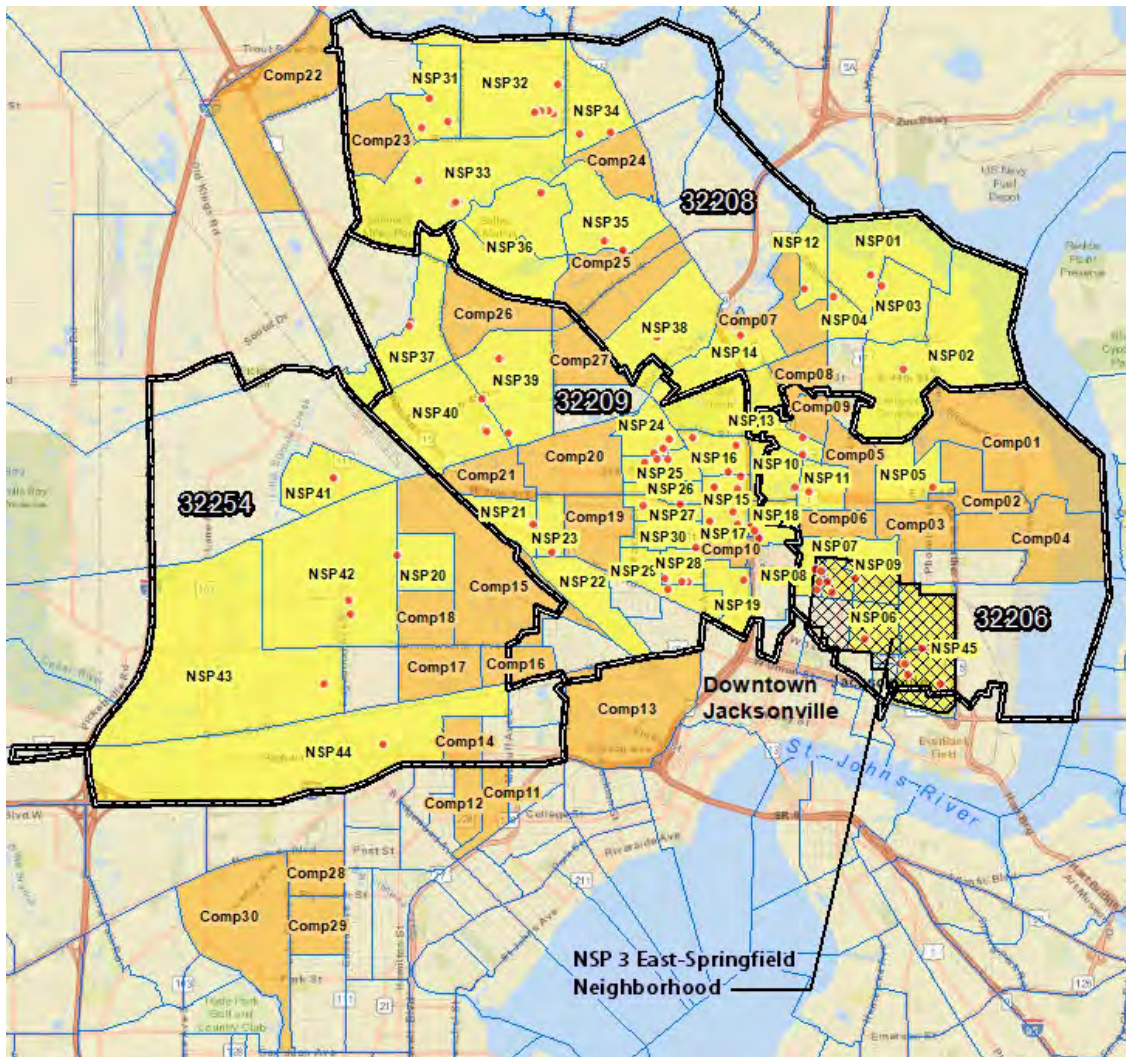


Figure 11. Map shows individual NSP neighborhoods (in yellow) and the 30 NSP comparable neighborhoods (in orange) created from 2010 census spatial data in relation to the original NSP 1 urban selection zip-codes. The NSP 3 East-Springfield neighborhood (cross-hatch) and the specific urban NSP investment locations (in red) are overlaid for reference. Street Map is from ESRI.

Since census tracts and block groups change, NSP and comparable feature classes encompassing the same areas were needed from the 2000 and 1990 census datasets. From the map in Figure 11, there were 47 total NSP block groups making up this selection area using the 2010 census spatial data, while 30 comparable block groups were selected. After matching the three decennial datasets, this equated to 62 NSP and 33 comparable block groups from the 2000 census spatial dataset, while 77 NSP and 41 comparable block groups were needed from the 1990 spatial datasets to create equivalent feature classes. See Appendix A for a full listing of this 1990-2000-2010 NSP and comparable non-NSP neighborhood crosswalk.

A quick visual analysis of Figure 11 revealed two basic points. The majority (23) of the NSP comparable neighborhoods (in orange) fell inside of the original four urban zip-codes the City used to select NSP properties with. Four of the seven neighborhoods outside of the original NSP selection zip-code district were adjacent to this zip-code selection area boundary. Thus, nearly all if not all NSP and non-NSP comparable neighborhoods fell into what is considered the central urban core of the City of Jacksonville. The second thing obvious from the map was many of the NSP investments were grouped in a single neighborhood while other investment properties appeared strangely isolated from any other NSP activity. The value of consolidating dwelling unit investments within neighborhoods, in contrast to having stray investments, was later analyzed for success.

Baseline Neighborhood Change Analysis: 2000-2010

The initial assumption the NSP and non-NSP neighborhoods during the period between the 2000 census and the ACS 2006-2010 (2010) would look very similar, mainly because the non-NSP neighborhoods were selected as comparable to the NSP neighborhoods using the 2010 data (see value similarities in Figure 12a), was validated. Both NSP and non-NSP neighborhoods were marked by moderate increases to average median household income, African American population and renter-occupied percentages. It should be noted that the black population percentage change went up slightly faster in the NSP neighborhoods and conversely had a larger drop in the white population percentage compared to its non-NSP neighbors, but none of these components had a statistically significant difference when doing analysis of variance (ANOVA) testing. There were large average percentage change increases to populations with college degrees, median home value prices and vacant housing percentages across the entire urban core. Vacancies in NSP and non-NSP areas started high in 2000 and both unsurprisingly went higher with the recession, as reflected in the 2010 data.

Indicators	NSP Neighborhoods			Non-NSP Neighborhoods		
	2000	2010*	% Change	2000	2010*	% Change
Total Population	958	1165	21.6%	1125	1163	3.4%
% white	21.2%	15.6%	-26.6%	20.7%	18.4%	-10.8%
% African American	76.0%	79.6%	4.8%	75.4%	76.3%	1.2%
% Hispanic	1.2%	2.8%	133.9%	1.7%	3.1%	85.5%
Educational attainment:						
% with BA degree or higher	7.4%	10.8%	46.1%	7.1%	9.0%	26.5%
Median household income	\$25,197	\$28,454	12.9%	\$25,829	\$28,110	8.8%
% Vacant housing units	16.0%	21.2%	32.5%	12.8%	20.1%	56.9%
Median home value	\$49,452	\$97,966	98.1%	\$49,355	\$95,733	94.0%
Tenure occupancy:						
% renter-occupied	42.0%	45.4%	7.9%	38.7%	43.7%	13.0%
% owner-occupied	58.0%	54.6%	-5.7%	61.3%	56.3%	-8.2%

Socio-economic variables used in index to select comparable (non-NSP) neighborhoods to NSP neighborhoods using 2010 Census Bureau block group data
 * 2010 data derived from ACS 5-year range 2006-2010 estimated block group census data

Figure 12a. Descriptive mean statistics comparing NSP and non-NSP averages and percentage change on index and other neighborhood components from the 2000-2010 time period.



Figure 12b. Line graphs comparing mean averages of NSP (green) and non-NSP (orange) index components from the 2000-2010 time period. The 2010 data is derived from the 5-year ACS 2006-2010 survey estimates.

1990's Neighborhood Change Analysis: 1990-2000

A look back to the previous decade at equivalent NSP and comparable block group neighborhoods was done to see if there were trends that continued into the baseline timeframe of 2000-2010. In general, most of the trend lines for the components being used in the index moved in the same direction as the following decade, although mostly at lower percentage rates. But there were exceptions. For instance, while percentages for non-NSP neighborhoods only increased modestly during the 1990's for vacant housing and renter-occupied units, NSP neighborhoods actually had slightly falling vacancy and renter-occupied percentage rates. These differences in percentage change were not found to be statistically significant using ANOVA testing. The race/ethnicity mix again showed black population percentage changes increasing modestly for both NSP and comparable neighborhoods, however, the percentage decline of white population for non-NSP neighborhoods was much greater during the 1990's than in the following decade, while the NSP neighborhoods interestingly had the exact same decrease of -25.6% during both time periods.

Indicators	NSP Neighborhoods			Non-NSP Neighborhoods		
	1990	2000	% Change	1990	2000	% Change
Total Population, mean	848	958	13.0%	934	1125	20.4%
% white	28.5%	21.2%	-25.6%	31.4%	20.7%	-34.1%
% African American	70.1%	76.0%	8.4%	66.9%	75.4%	12.7%
% Hispanic	0.7%	1.2%	61.8%	1.0%	1.7%	63.2%
Educational attainment:						
% with BA degree or higher	6.3%	7.4%	18.5%	6.0%	7.1%	19.8%
Median household income	\$16,000	\$25,197	57.5%	\$17,641	\$25,829	46.4%
% Vacant housing units	16.9%	16.0%	-5.6%	12.2%	12.8%	4.7%
Median home value	\$33,142	\$49,452	49.2%	\$34,590	\$49,355	42.7%
Tenure occupancy:						
% Renter-occupied	42.5%	42.0%	-1.1%	36.4%	38.7%	6.3%
% Owner-occupied	57.5%	58.0%	0.8%	63.6%	61.3%	-3.6%

Figure 13a. Descriptive mean statistics comparing NSP and non-NSP averages and percentage change on index and other neighborhood components from the 1990-2000 time period.



Figure 13b. Line graphs comparing mean averages of NSP (green) and non-NSP (orange) index components from the 1990-2000 time period. Data was produced from the 1990 and 2000 Census Bureau surveys.

Post-Recession Neighborhood Change Analysis: 2010-2016

After gaining an understanding of the socio-economic trends occurring in these urban Jacksonville neighborhoods during the 1990’s and into the runup of and including the Great Recession, the critical part of this study dealt with the recovery period to determine if noticeable changes could be attributed to the NSP policy. As an introduction to this post-recession time period, a comparison summary was graphed for illustration purposes of the first two time periods already discussed and how they compared to the years characterized as the recovery period (see Figure 14).

From the line graphs below, it visually appeared most of the neighborhood variables analyzed reacted in similar ways throughout the 26-year study period. Economic components of the index such as median household income and median home values means were practically identical between NSP and non-NSP neighborhoods when viewed at this scale. These two variables highlighted the effects of the lingering recession in what is called the recovery period, as median incomes leveled off during this time and median home values made their first step correction after 20 years of large average percentage increases. This indicated home foreclosures was greatly affecting urban neighborhoods in general after the technical end to the recession and what the City had already pin-pointed happening to the Springfield neighborhood in particular. Other socio-variable trends in both NSP and comparable neighborhoods also leveled off or declined during the recovery period such as total population, including its individual sub-components of white, black and Hispanic populations. While vacant housing percentage averages declined for non-NSP block groups during the post-recession, NSP neighborhood vacancies kept rising at the approximate same rate as previously. The post-recession time period also appeared not to affect either NSP or non-NSP neighborhood trends toward increasing renter-occupied percentages or rates at which people were obtaining college degrees.

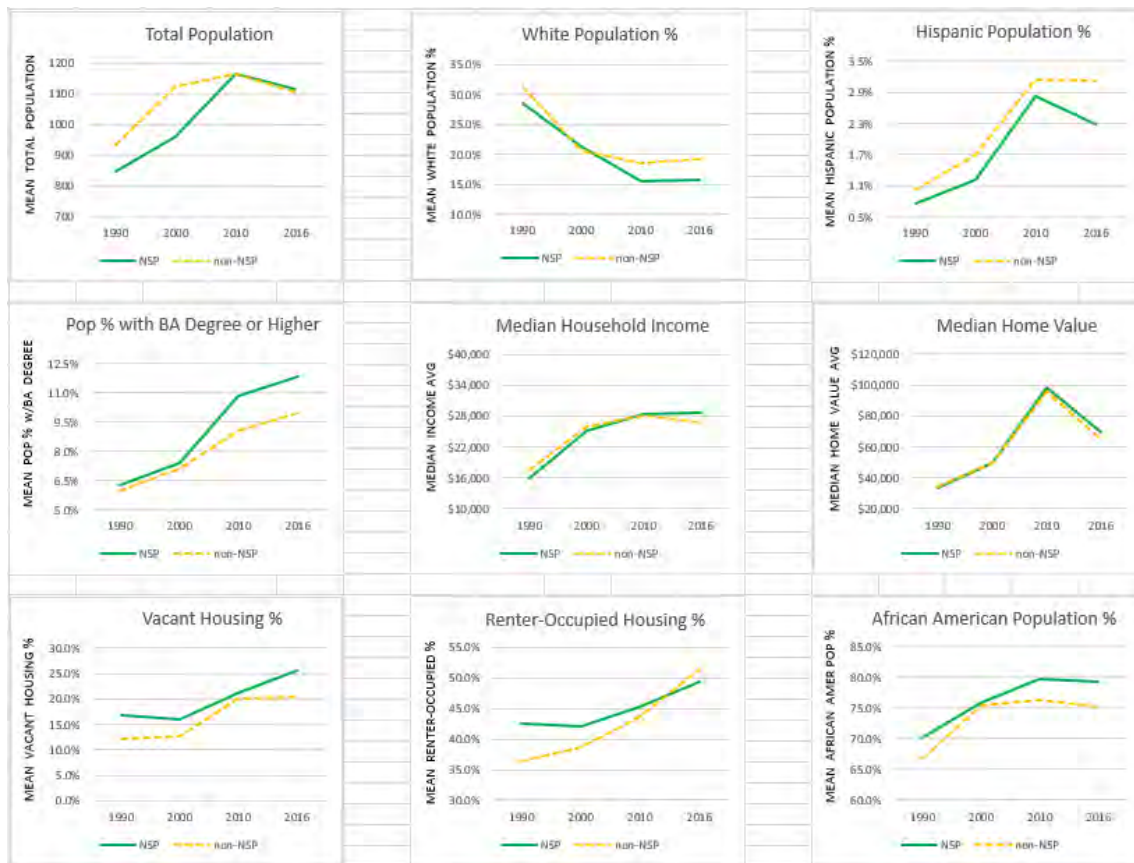


Figure 14. Line graphs comparing mean averages of NSP (green) and non-NSP (orange) index components from the entire 1990-2016 study time period. The 2010 and 2016 data are derived from the 5-year ACS 2006-2010 and ACS 2010-2016 survey estimates.

It was initially disconcerting to associate reductions in economic trend lines, such as with median household income and median home values with what was supposed to be a “recovery” period. To get a proper perspective of these and all the neighborhood components being studied, the NSP was not only compared to its comparative non-NSP neighborhoods for this time period but was also compared to the remaining neighborhoods in Duval County to understand if the NSP neighborhoods and the city’s urban core in general were following basic post-recession trends found city-wide. It was not altogether surprising the city’s urban core declined in total mean population by 4%-5% during this timeframe, while the rest of Jacksonville (Duval County) increased over 6%. This mean variance had a P-value statistic of 0.043, less than the 0.05 alpha level needed for it to be a statistically significant difference. This may not be too unusual, however, if compared to many other major metropolitan urban population trends in the United States. While the population declined in comparison to the overall city, the percentage change of people having at least a bachelor’s degree did not. Both the NSP and non-NSP urban neighborhoods kept pace with the overall city’s 9.3% college degree increase by posting 9.5% and 10.3% gains respectively during the same time period. Renter and owner-occupied housing percentage increases and decreases were also in line with trends found throughout the city.

Indicators	City-Selected NSP Neighborhoods			Comparative Study-Selected Non-NSP Neighborhoods			No NSP or Comparative BG's The rest of Duval County		
	2010*	2016**	% Change	2010*	2016**	% Change	2010*	2016**	% Change
Total Population	1165	1116	-4.2%	1163	1105	-5.0%	1866	1984	6.3%
% white	15.6%	15.8%	1.6%	18.4%	19.3%	4.8%	63.7%	61.2%	-4.0%
% African American	79.6%	79.2%	-0.5%	76.3%	75.1%	-1.5%	23.0%	23.4%	2.0%
% Hispanic	2.8%	2.3%	-19.4%	3.1%	3.1%	-0.5%	7.1%	8.5%	20.0%
Educational attainment:									
% with BA degree or higher	10.8%	11.9%	9.5%	9.0%	10.0%	10.3%	25.3%	27.7%	9.3%
Median household income	\$28,454	\$28,717	0.9%	\$28,110	\$26,722	-4.9%	\$53,800	\$54,391	1.1%
% Vacant housing units	21.2%	25.7%	21.3%	20.1%	20.4%	1.2%	12.7%	13.0%	2.1%
Median home value	\$97,966	\$69,220	-29.3%	\$95,733	\$65,173	-31.9%	\$197,029	\$164,957	-16.3%
Tenure occupancy:									
% renter-occupied	45.4%	49.5%	9.1%	43.7%	51.4%	17.6%	35.8%	40.4%	12.8%
% owner-occupied	54.6%	50.5%	-7.5%	56.3%	48.6%	-13.7%	64.2%	59.6%	-7.1%
Socio-economic variables used in index to select comparable (non-NSP) neighborhoods to NSP neighborhoods using 2010 Census Bureau block group data									
* 2010 data derived from ACS 5-year range 2006-2010 estimated block group Census Bureau data									
** 2016 data derived from ACS 5-year range 2012-2016 estimated block group Census Bureau data									

Figure 15. Descriptive mean statistics comparing NSP, non-NSP and the remaining Duval County mean averages and percentage change on index and other neighborhood components from the 2010-2016 time period.

There were other notable statistics from Figure 15. While the NSP had less of a white population percentage increase and less of an African American population percentage decrease than its non-NSP neighbors, both of their mean trend lines were going in the same direction. These were opposite of changing population trends in the remaining county as there was a modest uptick of 2% for the African American population and decrease of 4% for its white population. The steep decline in home value prices evident in Figure 14 also occurred in the city, although the negative change percentage was less city-wide even though the average loss in dollar amount was essentially equal. The median household income percentage increase for the NSP neighborhood was basically equal to the city-wide mean average gain of 1% too, while NSP comparable neighborhoods fell nearly 5% in its average median household income. This was a positive sign for the NSP, but the percentage of vacant housing units had a peculiar finding. For this index component, the NSP neighborhoods had a surprising 21.3% increase in vacated homes compared to the non-NSP comparable neighborhoods modest 1.2% mean increase. While the analysis of variance test was close to being statistically significant with a P-value calculation of 0.156, the high NSP vacancy mean was statistically significant when compared to the remaining Duval County vacancy mean with a P-value statistic of 0.016.

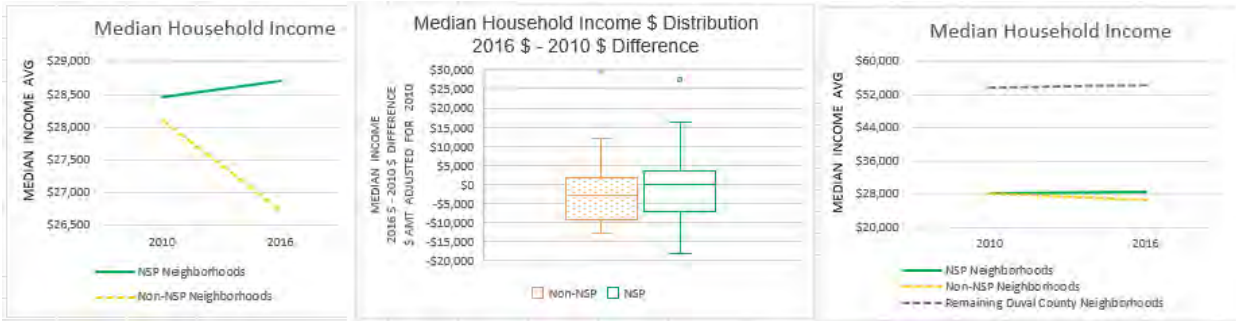


Figure 16a. Line graphs comparing median household income mean averages of NSP (green), non-NSP (orange) and Duval County (purple) from the 2010-2016 time period. The Box and Whisker plot shows income distribution of NSP versus non-NSP neighborhoods.

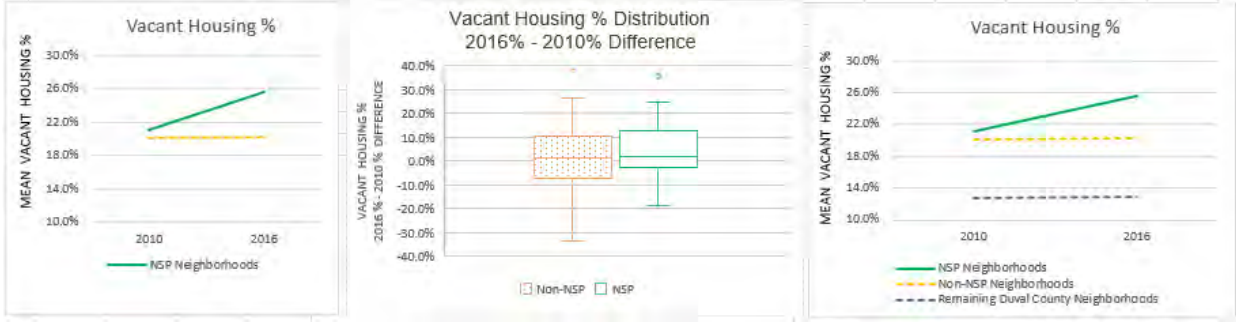


Figure 16b. Line graphs comparing vacant housing percentage mean averages of NSP (green), non-NSP (orange) and Duval County (purple) from the 2010-2016 time period. The Box and Whisker plot shows income distribution of NSP versus non-NSP neighborhoods.

A further analysis of these diverging median lines was necessary for both index component variables. The box and whisker plot in the center of both figures was created to show the overall distributions of both the NSP and non-NSP median household income and vacant housing percentages. In both plots, the distributions greatly overlap one another indicating there is not significant difference between the two, which the ANOVA test confirmed. Interestingly, the NSP outlier (in green) for both the highest median income difference between 2010 and 2016 (\$27,404) and highest vacant housing percentage difference (35.7%) was the same neighborhood, NSP 21 (see Figure 17). Between these two time periods, mapping all the NSP median income differences over \$5000 (left map) and vacancy percentage differences over 10% (right map) revealed there was not a concentrated area of higher median household incomes or higher vacancies, but a widespread distribution of these neighborhoods. The same result was found with the comparable neighborhood of median income differences over \$5000 and vacancy differences over 10%.

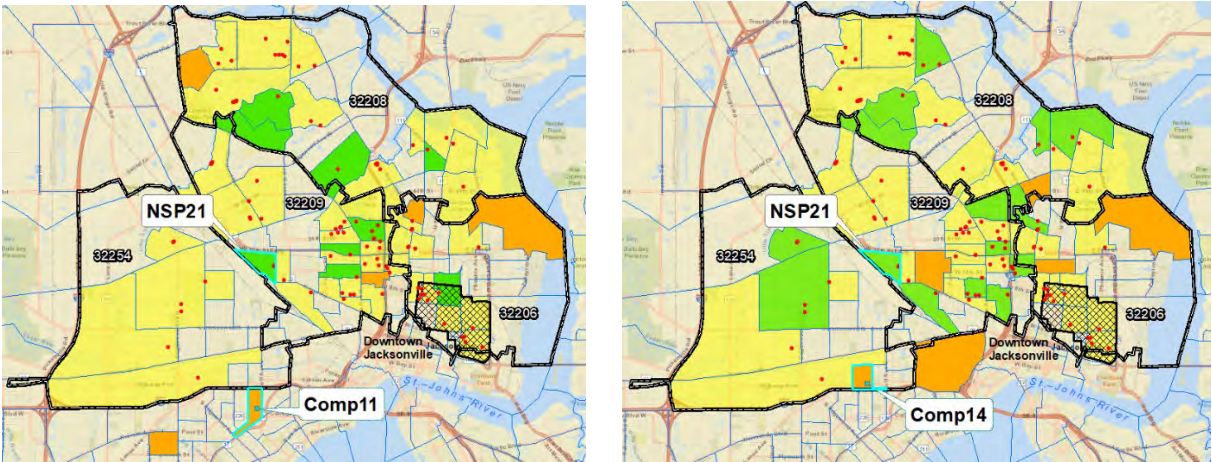


Figure 17. These maps show some of the higher distribution values from the box plots in Figure 16a-16b for NSP (in green) and non-NSP (in orange). The map on the left gives all median household income differences between 2016 and 2010 over \$5000. The map on the right shows vacant housing percentage differences over 10%. NSP and comparable outliers from the box plots above are labeled.

Even though there was a difference in the trend lines regarding median household income and vacant housing percentages when comparing the NSP neighborhoods and non-NSP neighborhoods, the distributions of these two variables were not very different from one another. In fact, when comparing the overall NSP as a single group to the entire group represented by the non-NSP neighborhoods, there was very little differences to be measured in most of the components used to create the socioeconomic index. Most of the trend lines of mean values from the ACS 2006-2010 data to the ACS 2012-2016 ran in the same direction and the distribution of the differences from these two time periods mostly overlapped one another. These similarities were apparent when comparing some of the line graphs and box plots between these two neighborhood groups. It told a general story of the urban core, whether a NSP neighborhood or a selected comparable neighborhood for this research project, reacting similarly in most ways during the post-recession period.

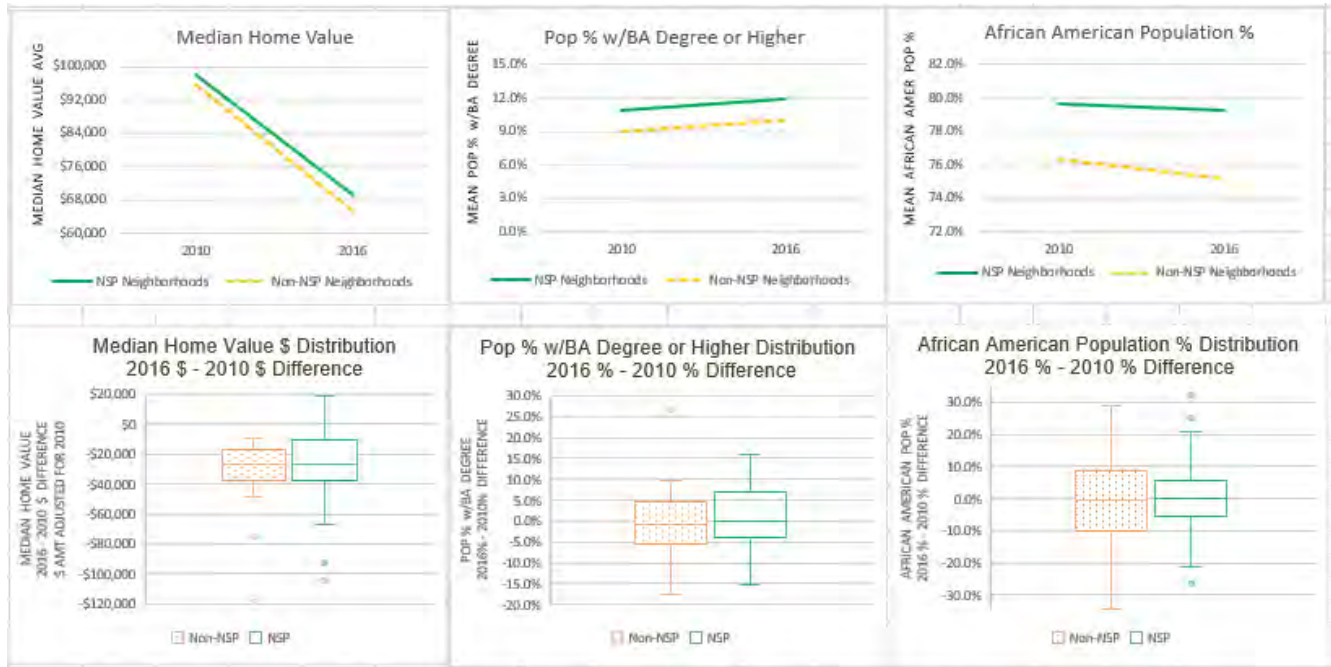


Figure 18. Line graphs and box and whisker plots of NSP (green) versus non-NSP comparable (orange) neighborhoods for three of the index components analyzed during the post-recession time period.

NSP Investment Analysis

The hope of categorizing the investments the City made into the NSP in different ways was to reveal patterns of recovery success, whether they be related to a certain investment size amount, a proper number of dwelling units needed, a particular mix of single-family to multi-family land use or the related tenure ratios of renter to owner-occupied housing percentages. It is important to note any findings of an investment classification having higher or lower percentages in any one neighborhood component being examined would not prove the NSP deserved credit or blame for the finding. In fact, none of the differences between the 2016 neighborhood data and the 2010 data were found to be statistically significant using ANOVA between the various investment categories from Figure 7. Nonetheless, certain trends emerged deserving of special attention and discussion. While only the NSP neighborhoods were being analyzed against themselves, each of these trends found in the investment groups discussed in the methodology was anticipated to be more complex since each analysis would be comparing three or six categories instead of just the NSP versus non-NSP neighborhoods. All descriptive mean statistic tables and investment category maps analyzed were added to Appendix B.

Investment Size

Analysis of investment size or dollar amount might be the easiest way to conceptualize change caused by a federally funded program, such as the NSP. Of the six categories ranging from 'Very Low' to 'Very High' in the Total Investment Size Group, it was the seven 'Moderately High' classification (>\$200k - \$400k) neighborhoods which showed the most variation when compared to other Total Investment classes. Regarding population, this class had the largest percentage drop for African Americans and the largest Hispanic population percentage gain. The NSP vacant housing increase compared to non-NSP neighborhoods in the last section was shown to have been caused mostly by dwelling units from this category, rising an estimated 72.8% from 2010 to 2016. However, median household incomes rose over 30% in these same neighborhoods, symbolized green in Figure 19 below. This seemed significant since all other classifications were either barely positive or had negative trend lines.

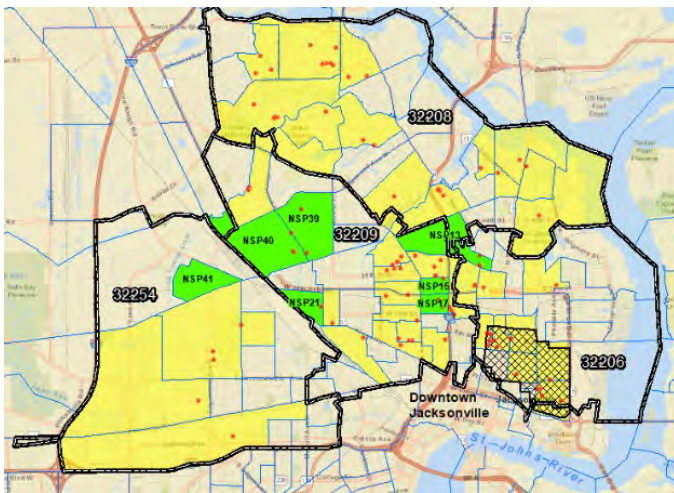


Figure 19a. Map shows the 'Mod High' Investment (>\$200K - \$400K) classification neighborhoods (in green) of the Total Investment Size Category.



Figure 19b. Total Investment Size neighborhoods are reflected in the line graphs showing the classification with largest percentage increases for both the vacant housing mean percentage and median household income variables during the post-recession timeframe to be the 'Mod High' Investment Size (solid green lines).

There were two other potentially relevant findings in the Total Investment Size group. First, its two highest NSP classifications, which included all investments in a neighborhood over \$400K, returned the lowest vacancy percentage changes of the six classes. These 12 neighborhoods stretched from the NSP 3 East-Springfield region in the southeast corner of the study area to the northwest corner, peculiarly following a straight-line

path. The second interesting finding was the five highest Total Investment classifications, defined as investments over \$75K, had positive renter-occupied housing trend lines during the post-recession time period. The ten neighborhoods where city planners invested the least NSP funding, represented by the ‘Very Low’ Investment Size classification, decreased nearly 10% in renter-occupied housing. This was an indication the City, whether intentionally or not, was early in the program placing NSP 1 funding emphasis and promoting a rental housing preference strategy, which was later formalized in their published “NSP 3 Substantial Amendment” report and discussed in the Project Goals of this paper.

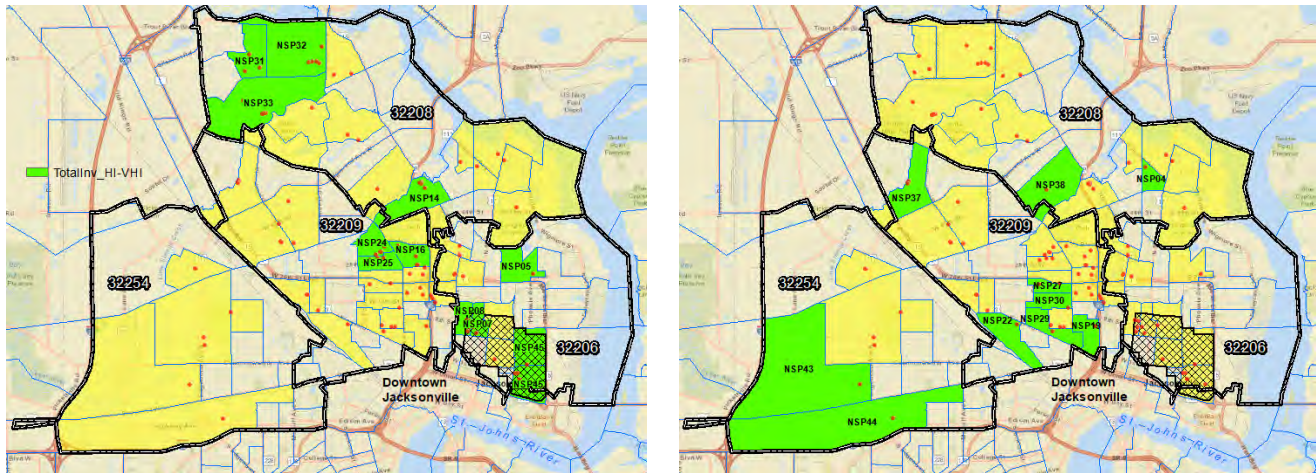


Figure 20. ‘High’ and ‘Very High’ Total Investment Size classes containing the lowest vacant housing percentage differences are at left, while the ‘Very Low’ Total Investment neighborhoods having the only falling rental-occupied housing percentage differences through 2010-2016 is at right.

The reason for establishing the Minimum and Maximum Investment Size categories was to simply aggregate the vast range of NSP investments in different ways to reveal potentially helpful trends possibly not showing up in the Total Investment Size group. It could also reinforce findings already discovered. Staying focused on the vacant housing index variable, the Minimum Investment Size group’s two highest classes identified by NSP minimum investments made over \$120K were the only two which had declining vacant housing percentages during the post-recession years of the study. When aggregating the investments per the Maximum Investment Size group, the only two classes with falling vacant housing percentages were the ‘Mod Low’ (>\$200K - \$500K) and ‘Very High’ (>\$3 million). The vacant housing percentage for the ‘High’ (>\$1m - \$3m) investment class in the Maximum Investment Size group increased by nearly 12%.

The Minimum and Maximum Investment Size categories also revealed interesting results regarding population trends. The Minimum Investment Size group’s top three classes with investments over \$90k all had rising total population percentages between 4%-10%. It was these top two, the ‘High’ and ‘Very High’ classes which also similarly saw declining African American percentages, rising white population percentages, and were the only two classifications in the group where median household income amounts decreased. The ‘Very High’ investment size classification in the Maximum Investment Size group, conversely characterized by a population with increasing African American percentages, decreasing white population percentages and a high rate of declining percentages of persons without a bachelor’s degree or higher, showed the highest estimated total population percentage increase of the group at 22.7%. There were only two neighborhoods in this ‘Very High’, Maximum Investment Size group, both in the 32206 zip-code and the resultant of a 52-unit and 24-unit multi-family construction projects totaling \$6.6 and \$3.1 million respectively (see Figure 21, right map). This could

suggest the City was achieving its goal of stabilizing these neighborhood's population numbers by providing affordable housing to person's with lower household incomes.

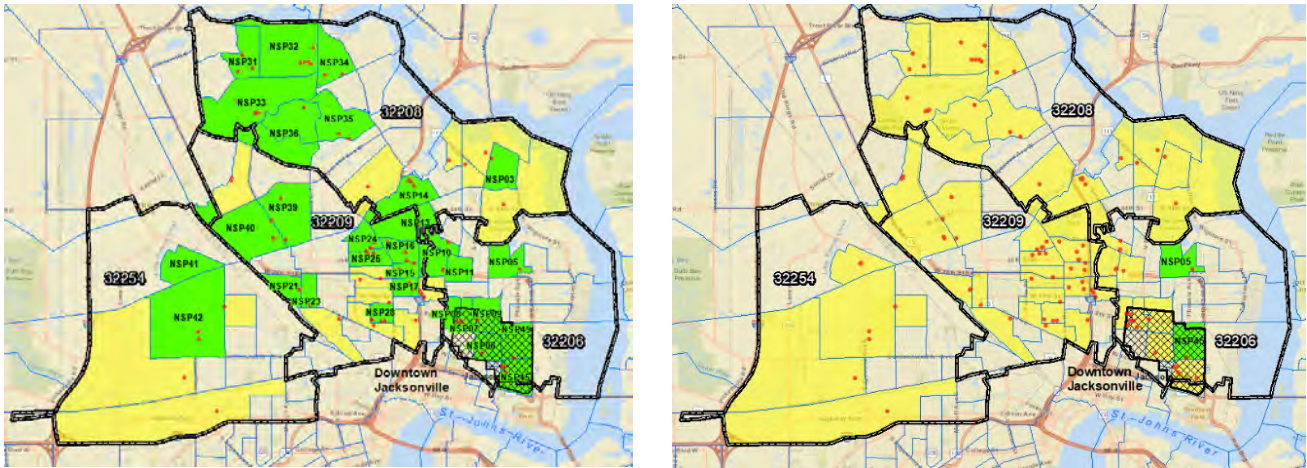


Figure 21. 'High' and 'Very High' Min Investment Size classes containing the lowest vacant housing percentage differences are at left, while the only two 'Very High' Max Investment neighborhoods also had falling vacant housing percentage differences and a rising population trend.

Dwelling Unit Investment

While it was not in the scope of this research to perform spatial analytics on how the spread or distance between dwelling units (DU) invested in by the NSP affected recovery success, it was important to gain insight on whether the number of dwelling units in a particular area potentially affected the neighborhood index components being used in this study. Investments the City made were still aggregated by census block group as the neighborhood, but this time the investment focused not on investment size but how many dwelling units per neighborhood the City invested in. The assumption made early on was that many dwelling units receiving support from the NSP in a given neighborhood would be better than only one or even two units. While nearly 40% of the neighborhoods only contained one dwelling unit investment, this assumption was able to be analyzed since the 46 neighborhoods ranged all the way up to a high of 73 dwelling units.

Two trends emerged from the analysis. Neighborhoods where the City invested in five or more units all had positive median household income gains and were the three DU classification areas where percentage increases in the African American population were found. The highest classification defined by investments of over 15 dwelling units per neighborhood had a vacant housing percentage decline of -2.5%, the lowest of the six classifications. The only other class without a positive vacant housing percentage was the neighborhoods with only one NSP investment property. This 'Very High' dwelling units class also stood out with the biggest jump in population percentage. It was overall very similar to the 'Very High' classification of the Maximum Investment Size group because it contained both of the block groups shown in the right map in Figure 21 as two of its three neighborhoods (see Figure 22). The biggest vacant housing percentage increase was neighborhoods the City invested only 2-3 dwelling units in.

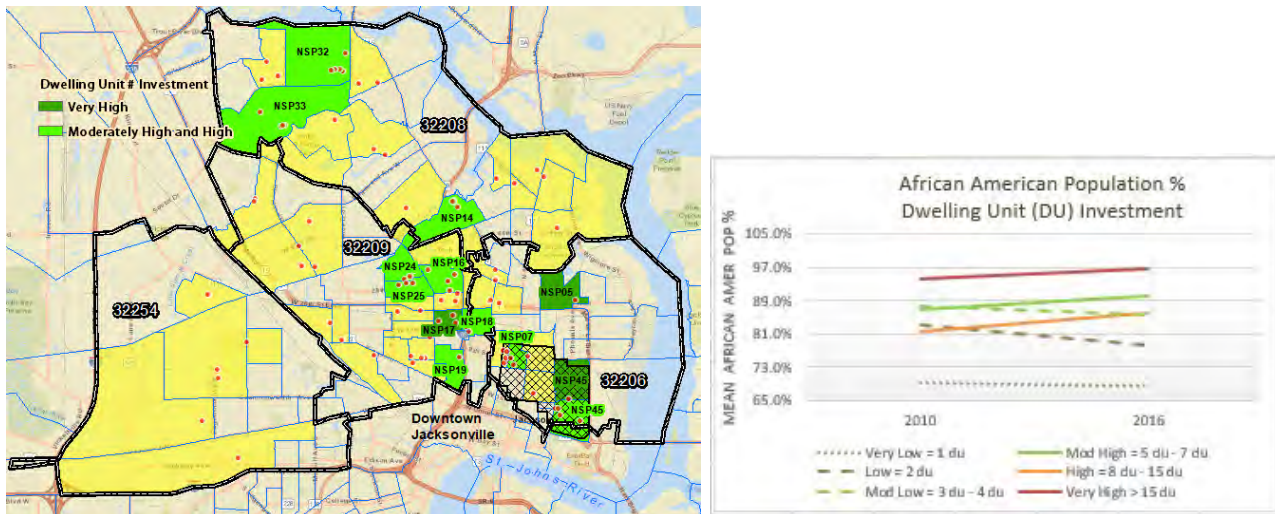


Figure 22. ‘Very High’ Dwelling Unit class (dark green on map) had the largest vacant housing percentage difference decrease and population increase. Together with the ‘Moderately High’ and ‘High’ classifications (lighter green on map), these three categories were the only dwelling unit classes with increasing African American percentages and also had positive median housing income trend lines.

Land Use and Tenure Investment

The last two investment groups looked at were Land Use and Tenure Type Investments. These two groups were related since one categorized single-family properties the NSP invested in versus multi-family and the other aggregated properties it constructed or renovated as owner-occupied units versus investments it made to be rented out. There were no multi-family townhomes or condominiums the NSP invested in for owner-occupied housing, but there were investments in single-family homes for the purpose of renter-occupied units, so the two categories differed somewhat. However, since the land use investment group turned out to be over 75% single-family and the tenure investment group was nearly 70% owner-occupied, the data did not lend itself to six classifications. The tenure investment group revealed the ‘100% Tenant-Occupied’ class almost had no percentage increase in vacant housing and the owner-occupied housing and mixed owner/tenant neighborhoods had 22% and 36% increases in vacant housing respectively. The ‘100% Tenant-Occupied class also was the only one of the three which showed total population gains in its neighborhoods.

Likewise, the ‘100% Multi-Family’ class in the land use investment group showed a vacant housing percentage increase of over 12%, but this still was not nearly as high as the other two classes, which posted over 21% vacant housing percentage increases. It was also the only class which had population gains in its neighborhoods during this time period. The African American and white population percentages were both nearly flat in these five all-MF investment neighborhoods, as were the rental-occupied housing percentages. This suggested the City was not simply dedicating its multi-family housing projects in predominantly African American populated areas or in neighborhoods without a diverse mix of housing types.

NSP Income Diversity Analysis

The last major area of focus in this research was to determine if income diversity could have had an effect on neighborhood recovery and identify elements of gentrification that might have played a role in the results. Since the methodology for defining income diversity groups utilized zip-code aggregate areas, a brief analysis of these zip-code investment zones was reviewed. As discussed in the goals of this paper, the City formally stated their NSP 3 strategy would implement a rental-housing preference, part of a diversified mixed-income NSP strategy. Since the NSP 3 focused on the East-Springfield neighborhood, which was inside the 32206 zip-

code, it was an assumption the 32206 zip-code would reflect this priority. Looking at the Figure 3 investment totals, the City indeed spent approximately \$1,000,000 more NSP 3 funding in multi-family (MF)/rental investments than in single-family (SF) homes for this area. This same 32206 zip-code also had a substantial investment during the NSP 1 phase of \$6.6 million for a 52-unit MF housing project. Figure 3 also showed while the City invested \$400,000 more into SF homes in the 32209 zip-code, 112 of the 137 total dwelling units (DU) invested there were in renter-occupied units.

Comparing income diversity groups created from the ACS 2012-2016 data using the same methodology and classifications determining income diversity levels to the ACS 2006-2010 data previously discussed and shown below again for convenience, it appeared the City of Jacksonville’s mixed income investment strategy could partly be responsible for creating greater income diversification in some neighborhood areas. In the 32206 zip-code, investing \$11.9 million (just over 70% of NSP funds there) in 90 rental DU (almost 80% of the total DU for this zip-code) could have contributed to this area changing from a low-income diversity group in 2010 to a moderate-income diversity group by 2016. In the 32209 zip-code where nearly 82% of NSP investments were in renter-occupied units, the income diversity group stayed moderate in definition, but the household income group with the maximum number of neighborhoods which this moderate-income diversity level was based on increased from the ‘Very Low’ income group to the ‘Low’ household income group. For this zip-code overall, there was a decline in ‘Extremely Low’ household income neighborhoods from 3 to 1, a decline in ‘Very Low’ household income neighborhoods from 9 to 5 and an uptick of ‘Low’ and ‘Moderate’ household income groups from 6 to 8 and 0 to 2 respectively. Conversely, in the 32208 zip-code where the City invested in a ratio of 90% owner-occupied to 10% renter-occupied units, the income diversity group dropped from a high to moderate income diversity level. See Figure 24 for a descriptive comparison of all the income diversity group results.

			# of Neighborhoods within ACS 2006-2010 Household Income Groups						
Zipcode	Income Diversity Group	Max Group %	ELow-I	VLow-I	Low-I	Mod-I	Mid-I	High-I	Total
32206	Low Income Diversity	60%	0	3	6	1	0	0	10
32208	High Income Diversity	38%	0	3	5	5	0	0	13
32209	Moderate Income Diversity	50%	3	9	6	0	0	0	18
32254	Very Low Income Diversity	80%	0	0	4	1	0	0	5
			# of Neighborhoods within ACS 2012-2016 Household Income Groups						
Zipcode	Income Diversity Group	Max Group %	ELow-I	VLow-I	Low-I	Mod-I	Mid-I	High-I	Total
32206	Moderate Income Diversity	50%	1	3	5	1	0	0	10
32208	Moderate Income Diversity	46%	0	3	6	4	0	0	13
32209	Moderate Income Diversity	50%	1	5	8	2	0	0	16
32254	Very Low Income Diversity	80%	0	0	4	1	0	0	5
32209 zip-code had 2 null block group's for median income value									

Figure 23. Comparison of Income Diversity groups per aggregated zip-code using ACS 2012-2016 data in the bottom chart and the ACS 2006-2010 data in the top chart. Household income groups in yellow had the largest number of neighborhoods meeting HUD’s definition of that income group. This number was divided into the total number of neighborhoods to get a percentage to determine what income diversity group the zip-code fell into.

While the City appeared to achieve its goal of creating an environment of mixed-income diversity inside the 32206 zip-code, it was the 32208 zip-code which started as a high-income diversity group, as defined by this study’s methodology, even though it slipped to become a moderate-income diversity group using post-recession ACS 2012-2016 data. These neighborhoods were characterized as the only zip-code in the study having a decreasing white population percentage and an increasing African American population percentage, both with statistically significant average differences using analysis of variance when compared to the other

diversity groups. This 32208 high income diversity group's median household income percentage average was almost flat during the recovery period, but this was slightly better than both the falling median income percentage averages for both the Low and Very Low-income diversity groups (see Figure 25).

The 32209 zip-code, which the City invested heavily in SF and MF rental properties, was defined as a 'Moderate' income diversity group using both ACS 2006-2010 and ACS 2012-2016 datasets. Its population during the post-recession period was characterized by no change between white and African American percentages. It did, however, have the largest total population decrease which also explained having the largest vacant housing percentage increase. Nonetheless, this income diversity zip-code group also had the only positive median household income percentage (see Figure 25), as well as the lowest average housing value decline of any of the income diversity groups. One outlier housing value of -\$92,100 in the NSP19 neighborhood (Tract 16, Block Group 2) kept this income diversity group from having a statistically significant higher home value average than the other three groups. It should be mentioned this outlier neighborhood, NSP19, also had the lowest NSP investment sum (\$1539) of any of the NSP neighborhoods (see Figure 26).

As mentioned, much attention was given to the 32206 zip-code by the City, which was defined as a low-income diversity group using ACS 2006-2010 data in this study, but ended the post-recession period as a moderate-income diversity group. The trend there had rising white population percentages averaging over 5% and falling African American population percentages averaging just under 5%. This trend also saw an already well-educated area grow its population having a college degree at a faster rate. This average would have been even higher if not for one outlier neighborhood on the box and whisker plot in the East neighborhood, Tract 174, Block Group 3 (NSP 45), which had its population with at least a BA degree drop over 15%. While the City spent \$3.1 million NSP dollars in this outlier neighborhood to build a new 24-unit multi-family apartment building, it should be noted the college-educated percentage decrease or other values used in this study's socioeconomic composite index for this neighborhood were likely not affected by this investment since the MF complex was not completed until after 2016.

Home values and vacant housing percentages had interesting results in this 32206 'Low' income diversity zip-code as well. Home values in the 32206 zip-code had an average decrease for the recovery period of -\$43,100, the largest of any income diversity category and statistically significant using ANOVAR when compared to the moderate-income diversity zip-code, which had the lowest average drop (-\$19,855) of the four income diversity groups. This large drop in home values was due in particular to the NSP 3 East-Springfield neighborhoods, which plunged an estimated average of \$54,617, a statistically significant lower average than the remaining NSP home value drop of \$25,330 (see Figure 26 - plot at right). However, these 32206 home value averages appeared not to correlate to the vacant housing percentages, as this low-income diversity group was the only zip-code to have a negative average difference (-1.4%) for vacancies. In fact, the box and whisker plot (Figure 26 – plot at left) shows one outlier neighborhood with a positive 24.9% vacant housing percentage difference, which kept the average vacancy percentage difference from being even lower. This neighborhood was Tract 14, Block Group 5 (NSP 13), which was primarily in the 32209 zip-code, but was aggregated with the 32206 zip-code since this was where the three NSP investments were made. If this neighborhood had been aggregated with the 32209 zip-code, the low-income diversity group of 32206 would have had a statistically significant lower average for vacant housing percentage differences than the other three income diversity groups.

	High Income Diversity		Moderate Income Diversity		Low Income Diversity		Very Low Income Diversity	
	2010	2016	2010	2016	2010	2016	2010	2016
Total Population, mean	1397	1427	1103	973	1006	953	1005	1017
% white	26.8%	17.5%	0.8%	2.4%	16.0%	21.2%	41.8%	52.4%
% African American	70.1%	77.6%	95.3%	94.9%	76.9%	72.0%	50.1%	37.3%
% Hispanic	1.1%	2.3%	3.1%	1.1%	3.5%	2.6%	5.5%	6.4%
Educational attainment:								
% with BA degree or higher	10.5%	12.2%	9.6%	10.1%	15.4%	18.7%	7.2%	5.6%
Median household income	\$35,504	\$34,857	\$22,258	\$24,888	\$29,463	\$27,280	\$33,548	\$29,729
% Vacant housing units	16.5%	19.1%	19.9%	28.3%	28.8%	28.4%	21.7%	25.5%
Median home value	\$103,223	\$70,433	\$76,811	\$56,956	\$133,940	\$90,840	\$88,520	\$66,200
Tenure occupancy:								
% Renter-occupied	35.8%	39.9%	47.9%	52.1%	52.5%	57.9%	41.0%	43.8%
% Owner-occupied	64.2%	60.1%	52.1%	47.9%	47.5%	42.1%	59.0%	56.2%

Figure 24. Descriptive mean statistics comparing Income Diversity Group averages on index and other neighborhood components from the 2010 and 2016 time periods. Results utilize 2010 income diversity aggregation for the following zip-codes: 'High' Income Diversity = 32208 zip-code; 'Moderate' Income Diversity = 32209; 'Low' Income Diversity = 32206 and 'Very Low' Income Diversity = 32254.



Figure 25. Line graphs and box and whisker plots for income diversity groups on three of the index components analyzed during the post-recession time period. Results utilize 2010 income diversity aggregation for the following zip-codes: 'High' Income Diversity = 32208; zip-code; 'Moderate' Income Diversity = 32209; 'Low' Income Diversity = 32206 and 'Very Low' Income Diversity = 32254.

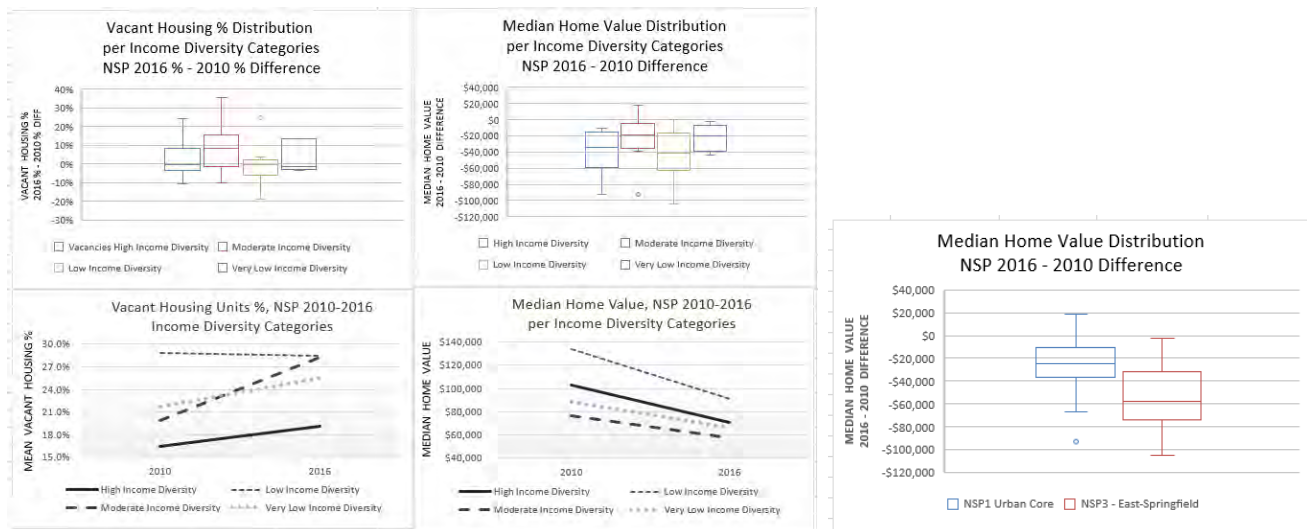


Figure 26. At left and center, line graphs and box and whisker plots for income diversity groups on two index components analyzed during the post-recession time period. Results utilize 2010 income diversity aggregation. Box plot at right shows post-recession home value distribution differences for East-Springfield neighborhoods (in red) versus the remaining NSP urban core neighborhoods (in blue).
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The Question of Gentrification

Since the literature review discussed gentrified neighborhoods might allow mixed income neighborhoods to avoid the worst of damaging recessions, the Springfield neighborhood needed to be examined. The Springfield area, located on the west side of the enlargement map shown in Figure 2 and its NSP investments there represented by the four neighborhoods shown below in Figure 27a, had long been thought in Jacksonville planning circles to be gentrifying. Dayatra Coles confirmed as much when she acknowledged in an interview the City wanted to discourage continued gentrification in this area through use of the NSP 3 funding (Coles (a), 2018). Indeed, the data showed there was a huge influx of an educated white population starting around 2000 and continuing into the post-recession years (Figure 27b). From looking at the ethnicity population trends in Figure 29b, it could be questioned whether their goal of slowing gentrification was met.

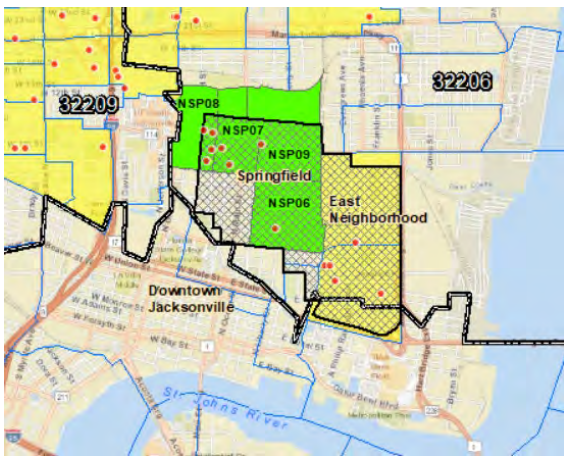


Figure 27a. Map of NSP Springfield block group neighborhoods (in green); entire East-Springfield NSP 3 district is cross-hatched area.

NSP ID	White Population % Change			African American Pop % Change			Bachelors or Higher % Change		
	1990-2000	2000-2010	2010-2016	1990-2000	2000-2010	2010-2016	1990-2000	2000-2010	2010-2016
2010NSP06	-22.8%	-5.7%	92.2%	6.6%	-24.3%	-9.4%	18.2%	221.8%	-12.3%
2010NSP07	-32.0%	12.6%	7.1%	13.3%	-4.9%	-8.8%	35.8%	505.9%	4.7%
2010NSP08	-25.7%	83.4%	35.2%	6.2%	-37.8%	-19.3%	-24.6%	115.6%	87.3%
2010NSP09	-31.1%	-18.4%	96.7%	19.3%	2.9%	-35.5%	9.5%	198.1%	30.8%

NSP ID	Median Income Change			Vacant Housing % Change			Renter-Occupied % Change			Median Home Value Change		
	1990-2000	2000-2010	2010-2016	1990-2000	2000-2010	2010-2016	1990-2000	2000-2010	2010-2016	1990-2000	2000-2010	2010-2016
2010NSP06	47.0%	139.5%	-8.7%	-4.6%	25.0%	-18.0%	3.5%	-17.4%	-1.2%	90.7%	263.1%	-27.1%
2010NSP07	139.4%	55.9%	1.4%	-23.5%	9.6%	7.3%	-8.1%	-44.0%	61.1%	118.4%	151.4%	-20.2%
2010NSP08	121.9%	26.7%	-22.5%	8.2%	-10.5%	-0.4%	-4.3%	-21.3%	6.8%	35.5%	253.1%	-46.5%
2010NSP09	27.3%	20.1%	35.5%	5.3%	6.8%	-0.8%	-11.3%	-35.8%	31.4%	95.5%	204.7%	-35.8%

Figure 27b. Percentage change from four different time periods includes 1990 and 2000 Census data. ACS 2006-2010 data represents 2010 and ACS 2012-2016 is used for 2016 figures (Manson et al., 2017).

While most of the references in this paper referred to an East-Springfield neighborhood, this was only due to it being part of the NSP 3 funding vehicle. These should be viewed as two very distinct neighborhoods, where the East side does not show the same gentrification trends found in the Springfield (west) half. In the income diversity section, it was mentioned the East-Springfield neighborhood's housing values decreased from 2010 to 2016 an estimated -\$54,617. Upon removing the East neighborhood out of this equation, it was found Springfield's housing values sunk by over -\$68,000, fueled in part by the -\$104,000 decrease by the NSP08 neighborhood (Tract 12, Block Group 2). This neighborhood received \$1.1 million to build four new houses, including the most expensive investment of \$358,500 on any single-family home in the Jacksonville NSP. Another major investment included a new \$2.2 million, 14-unit multi-family apartment building in the NSP07 neighborhood. All told, the City invested a total of \$3,907,849 in these four Springfield neighborhoods.

While the style of architecture in this historic neighborhood made it more expensive to build in this high priority neighborhood, these investments still mostly reflected the City's stated desire for a rental housing preference and to promote mixed housing neighborhoods. As Figure 27b showed, their large and directed investment in these four neighborhoods could have helped reverse 20 years of tenure trends as all four NSP neighborhoods saw dramatic gains in renter-occupied housing percentages. Despite the huge losses in home values, the average vacant housing percentage difference during the recovery period in Springfield was -3%, lower than other NSP neighborhoods. It would be hard to argue the gentrifying trends in this neighborhood spared it from a worse fate than it might have otherwise received from the Great Recession. Rather, it could be easier to point to these very trends as the cause which created the overzealous demand for these historic homes during the last decade that saw its average home valuations skyrocket over 218%. Conversely, the sudden increase in renter-occupied housing and low vacant housing percentage rates in Springfield, which were not present in most post-recession neighborhoods, appeared more likely the result of an impactful response by the City in a small area to help create an environment allowing income diversity to increase. This response could quite possibly have kept the housing bottom in this unique neighborhood from completely falling out.

Discussion

To determine whether the NSP was a success in Jacksonville, the discussion needed to be brought back to the original questions asked in the project goals of this paper. Have NSP neighborhoods changed in comparison to similar neighborhoods not receiving funds and if so, was there any indication the NSP policy was the reason for the change? Did the City's investment allocations per location or other funding choices cause an effect on the recovery of individual neighborhoods and was there a link to more diversified mixed-income housing faring better during this post-recession period. If neighborhoods with a greater income diversification had success, did gentrification play a part in this success? Better understanding these answers would help draw conclusions to the success of the Neighborhood Stabilization Program in Jacksonville.

The creation of 30 comparable (non-NSP) neighborhoods using a composite socioeconomic index based on a cross-section of ethnicity, education, economic and housing variables gave the ability to analyze change between these 30 neighborhoods and the 45 combined neighborhoods receiving NSP funds. The short answer for the time period from 1990 to 2010 was the NSP neighborhoods showed change compared to their non-NSP neighbors, but very little and certainly none statistically significant. For example, where non-NSP neighborhoods begun 1990 with a higher total population and wider percentage difference gap between owner and renter-occupied dwelling units than NSP block groups, by 2010 the total population was almost identical and the 27% to 15% owner/renter gap ratio non-NSP neighborhoods held over NSP neighborhoods in 1990 narrowed to a 12.5% to 9% owner/renter ratio 20 years later. Both NSP and its comparable non-NSP urban core neighborhoods saw their populations change from 1990 to 2010 to a higher percentage of African Americans and a slightly higher percentage of persons holding college degrees. By 2010, both groups of these neighborhoods benefited from pre-recession economic prosperity with similar increasing percentages of median household incomes and median home valuations. Of course, since the ACS 2006-2010 data was used to create the composite index, it was no surprise NSP and non-NSP block group neighborhoods ended the recession in 2010 with very similar numbers and percentages in these various components being measured.

Answering the question whether the NSP policy was the cause of any change could only be determined by examination of the post-recession data. The analysis during this period used the ACS 2006-2010 and the ACS 2012-2016 datasets did not reveal statistically significant change between NSP and non-NSP neighborhoods either, but when taken in combined comparison to overall Duval County trends during this same timeframe, there were interesting differences. While increasing total populations for both NSP and non-NSP neighborhoods over the previous 20 years reversed and begun to decline during the post-recession years in this study, the trend of the population moving towards higher African American percentages in NSP neighborhoods actually reversed and saw white population percentages grow in the 45 NSP neighborhoods, but still not as much as the 30 non-NSP block groups. Interestingly, this was a direct contrast to the overall population in Duval County, which brought about rising total population and African American percentages but falling white population percentages. Also noteworthy was the population for Jacksonville’s urban core continued to move towards predominantly renter-based housing, but for the first time in 26 years, NSP neighborhoods now had a higher owner-occupied housing percentage than non-NSP neighborhoods.

The biggest change during the recession recovery period between NSP and non-NSP neighborhoods, as mentioned in the ‘Results’ section, dealt with median household income and vacant housing percentages. At first glance, it appeared the NSP could be credited for its neighborhoods keeping a positive percentage pace with the remaining Duval County’s median household income, considering non-NSP comparable neighborhoods were nearly a negative 5%. However, it was difficult to then explain why NSP urban neighborhoods had a vacant housing percentage increase 20% higher than non-NSP neighborhoods, which were approximately at 1%. A further look into the timing of initiating NSP project investments might offer a clue. The City utilized over 27% of its NSP allotment to begin urban stabilization projects early on during 2009 and 2010 while the recession was still raging or just over. This early investment of \$6.1 million into the zip-codes shown in Figure 28 could likely have slowed foreclosure rates inside NSP neighborhoods and vacant housing percentages which were directly tied to these foreclosures. From Figure 12a, the vacant housing percentage in NSP neighborhoods during the 2000-2010 period increased a high of 32.3%, but not nearly as high as its comparable neighborhoods in the non-NSP block groups, which had a staggering 56.9% increase in vacant housing percentages during this same time period. The higher percentages of vacant housing the NSP neighborhoods posted after 2010 in the recovery period might have simply been these neighborhoods finally succumbing to the domino-effects caused by the worst recession in modern times.

	NSP1 Investments				
	32206	32208	32209	32254	Totals
2009	\$88,947	\$850,212	\$384,757	\$555,352	\$1,879,268
2010	\$497,837	\$801,280	\$2,847,975	\$90,399	\$4,237,491
Totals	\$586,784	\$1,651,492	\$3,232,732	\$645,751	\$6,116,759

Figure 28. NSP investments made by the City per zip-code early on in the program.

The analysis of the different classes of investment size and investment type provided the ability to compare the NSP neighborhoods during the recovery years against itself. This was especially useful to analyze the vacant housing percentage index components since it was again revealed in the investment results section to be the component showing the greatest variability. To simplify the consensus of the analysis findings, the Figure 29 map on the left simply now showed neighborhoods within the ACS 2012-2016 dataset with the *highest vacant housing percentages* instead of mapping the *differences* between the ACS 2012-2016 data and the ACS 2006-2010 percentage data, as previously done. Isolating only the post-recession 5-year period allowed an opportunity to visualize where NSP investments did better by comparing this map to investment category maps found in Appendix B.

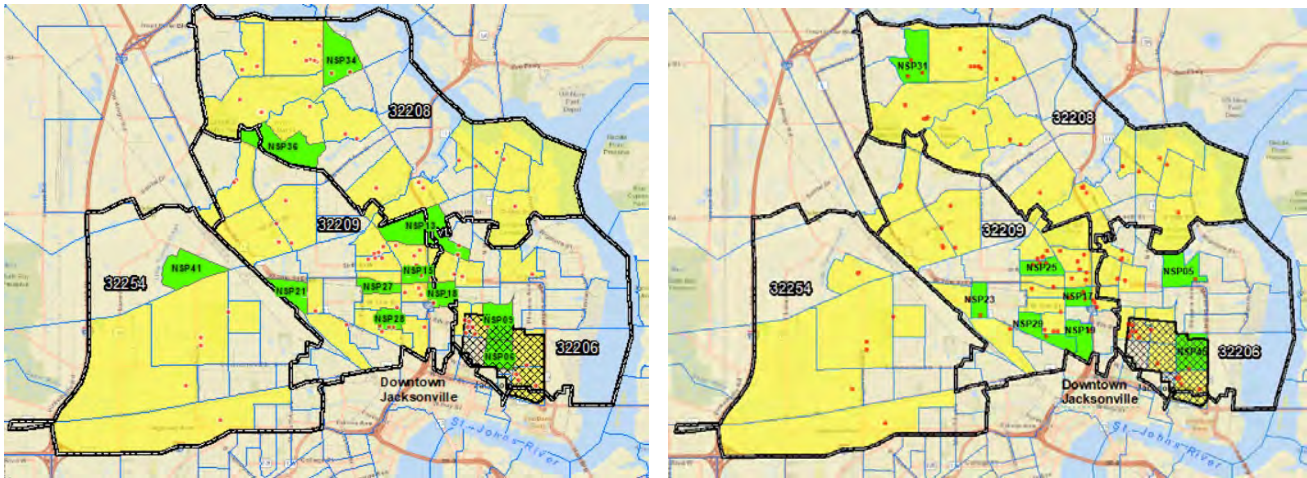


Figure 29. Left map shows highest NSP vacant housing percentages (40.4% average) using the ACS 2012-2016 dataset. Right map shows neighborhoods where 100% of NSP investment went towards renter-occupied housing, which for comparison has a 23% vacant housing percentage average using same post-recession dataset.

At first glance, the high vacant percentage neighborhoods shown in Figure 29's left graphic appeared to have no spatial pattern. But upon closer analysis, the majority of these eleven block groups ranging in vacant housing from 34% to over 55% are primarily neighborhoods the City invested less than \$200,000 and in four or less dwelling units (2.6 du average). Nine of these eleven neighborhoods were where the City invested 100% in single-family homes and eight of those neighborhoods only had renovated homes designated for owner-occupied tenure. None of these eleven highest vacant housing percentage neighborhoods were ones the City invested 100% in multi-family or renter-occupied dwelling units. For comparison, the map on the right in Figure 29 identified neighborhoods where the City only invested in renter-occupied housing with a 21.75 du average, which also had a 57.5% lower vacant housing percentage average during the recovery period. In fact, going back to Figure 28 showing the investments the City made early in the recession per zip-code, which may have slowed vacancy housing percentages relative to the non-NSP neighborhoods, 111 of those 164 dwelling units the \$6.1 million investment represents were renter-occupied units. It is also worth mentioning again from the results discussion, the neighborhoods with a dwelling unit classification having 15 or more investments units saw the largest vacant housing percentage decrease of any of the classifications. These factors evidenced *the City was most successful when they allocated larger investments to affect greater number of units in fewer neighborhoods.*

As discussed in the literature review, Jane Jacobs felt income diversity was a requirement of a neighborhood to be healthy because it essentially allowed people to use and monitor public spaces at different hours of the day. Since creating neighborhoods of mixed-income was also a stated goal of city planners implementing the NSP, this research wanted to determine whether the City was successful in this goal and test whether neighborhoods of higher income diversity contributed to the healing of ills brought on by this massive recession. Even though only four of the lowest six HUD-defined household income groupings were present in this urban NSP district, the methodology used to create four income diversity groups showed the City was partly successful in achieving this goal and reinforced findings about the recovery period discovered in the investment analysis. Three of these income diversity groups were discussed regarding the success of city goals to promote mixed-income neighborhoods in order to stabilize them.

Over \$16.8 million, the highest amount of Jacksonville NSP allocated funds, went to the 32206 zip-code and helped change it from a 'Low' income diversity classification using ACS 2006-2010 data to a 'Moderate' income

diversity area using post-recession ACS 2012-2016 data. Most of this money went towards higher dwelling units, multi-family and renter-occupied housing, which the City formally had stated was a preference for using a majority of their \$9.6 million NSP 3 funds for. Considering other high vacant housing percentage rates for NSP neighborhoods during the post-recession period, it seemed significant the City received value for this large investment of over 60% of total NSP funding to witness these particular neighborhoods post the only negative percentages of vacant housing for this important variable used to measure recovery success.

The defined 'Moderate' income diversity group with the third highest investment amount of nearly \$3.5 million, had the City focus heavily in higher dwelling unit, renter-occupied housing. In addition to seeing its population trend towards higher HUD-defined household income groups overall, it was the only income diversity group to enjoy positive median household income percentage gains and was only one outlier neighborhood away from having a statistically significant lower housing value average decline from the other income diversity groups. Although it had the highest vacant housing percentage averages of any of the four groups, the very highest percentages of these neighborhoods shown in green in Figure 29 were interestingly all under \$200,000 with a low 3.8 DU average per neighborhood. The other NSP investments made in this 'Moderate' income diversity zip-code with lower vacant housing percentages had an investment average over \$200,000 with more than 9 DU per neighborhood.

Finally, this income diversity study classified the 32208 zip-code's initial income diversity as 'High' using the ACS 2006-2010 dataset. This made it of real interest since mixed-income was a goal of the City and was theorized by this research higher income diversity areas would have more success in the recession recovery than lesser income diversified areas. However, it appeared the City chose a lower density, owner-occupied strategy here and invested the second highest amount allocated to a zip-code (\$4.25 million) for only 33 dwelling units, 30 of which were single-family owner-occupied homes. This came out to an average investment of \$122,394 per single-family home, which was possibly more importantly was spread out over 12 of the 13-block group NSP neighborhoods in this income diversity zip-code. This non-diversified and unconsolidated investment strategy might be a reason for one its neighborhoods falling from a 'moderate' household income HUD status to a 'low' household income status (see Figure 23), which contributed to this zip-code being reclassified as a 'Moderate' income diversity group after applying the post-recession ACS 2012-2016 data. This decline of income diversity coincided with a falling median income average and nearly the highest median housing value average drop of any of the income diversity zip-codes. Although this income diversity population had a statistically significant lower percentage of a white population, as well as a statistically significant higher percentage of African Americans, this factor surely did not have bearing on these results because these population percentages were roughly unchanged from before the recession.

Conclusion

This research set out to explore whether the NSP program had an effect on stabilizing urban neighborhoods in Jacksonville, Florida as intended by City officials who implemented the program there. Success was partly measured by comparing NSP neighborhoods to comparable neighborhoods not receiving federal funding based on key socioeconomic components taken from U.S. Census and American Community Survey data. Success was also measured by comparing NSP neighborhoods to themselves by categorizing them into various groups of investment size and character. Ultimately, the best measure of success might determine if city planners achieved higher income diversity areas in this urban district by their mixed-income funding strategy and if so, have higher income diversity areas shown more signs of recovery.

The U.S. Census Bureau and American Community Survey data was analyzed from four different time periods dating back to 1990 and covering a 26-year period to 2016, the last year data was available for this research. The timing of the Great Recession and the City's implementation of the NSP, as well as this study's analysis of it necessitated some less than ideal research decisions and created other limiting factors which might be overcome with time if future research revisited Jacksonville's Neighborhood Stabilization Program after 2020 census data comes available or even later. In addition to not being reliant on estimated ACS data prone to higher margins of error than what could be gleaned from the complete long-form decennial census data, results recorded by future research on Jacksonville's NSP would utilize data after the program there was allowed to fully play out. For example, a couple NSP multi-family apartment complexes had not existed long enough to be captured adequately or at all in the ACS 2012-2016 data. For this reason, waiting until after the 2020 census data had been published would have been beneficial.

This research found there was little change of statistical significance when comparing NSP neighborhoods to similar neighborhoods without help from the Neighborhood Stabilization Program. While there were subtle differences of various magnitude in all composite index variables studied, it was the key indicator component of vacant housing percentage which showed the most variability so was focused on the most. Once NSP investment sizes and methods of investment were analyzed for NSP neighborhoods during the post-recession period from 2010 to 2016, a trend emerged worthy of future consideration and study. This overall trend predominantly showed larger-sized NSP investments in neighborhoods and for higher numbers of dwelling units had lower vacant housing percentages than neighborhoods receiving smaller amounts of funding or spreading the number of housing units too thin across multiple neighborhoods. Since higher investment amounts on numerous dwelling units often were associated with multi-family and rental-occupied housing construction or renovation projects, this showed these types of investments were also generally more successful during the recovery than single-family or units intended for owner-occupied housing, especially when analyzing the vacant housing percentages.

This research initially stated a hypothesis that neighborhoods with higher diversity median incomes would recover in some fashion better than lower diversity median income neighborhoods. This was based on the City's stated belief neighborhood income diversity was vital for success and their investment policy reflected this viewpoint by supporting a diversity of mixed-incomes. The challenge realized by this study was income diversity however defined in a neighborhood was not always static and changes. The methodology this research used to define the urban NSP zip-codes income diversity using ACS 2006-2010 data had its 'High' income diversity 32208 zip-code see declines in its HUD-defined household income groups, which lowered this zip-code area to a 'Moderate' income diversity after taking the ACS 2012-2016 data into account. This change in income diversity status happened to coincide with the City spending the second largest amount of any zip-code almost exclusively on a low number of single-family homes and saw these neighborhoods post poor results on various components of the socioeconomic index. This finding contrasted to the initially defined 'Low' income diversity zip-code of 32206, where the City spent over 60% of NSP funds while spreading it out over the largest number of income types, including construction of three new multi-family rental complexes. This zip-code increased to a 'Moderate' income diversity status using post-recession data and enjoyed the lowest vacant-housing percentages of any of the urban NSP zip-codes during the recovery. The 32209 zip-code, which started and ended the study as a 'Moderate' income diversity area, supported the success of the City's investment strategy in an indirect way. Even though the City invested in an extremely high percentage into renter-occupied housing types, these neighborhoods surprisingly had the highest vacant-housing percentage rates of any zip-code. However, this research revealed the very highest of these vacant housing percentages were located in the very neighborhoods where the city invested less than \$200,000 and in four or less units.

It may be difficult to definitively say the Neighborhood Stabilization Program in Jacksonville was a success. However, looking through the historical lens of the City responding to a national housing crisis not of its own making and using the written objectives it later gave in its NSP 3 Amendment document as a barometer of its own success with this program, it can surely be argued the City of Jacksonville was successful in slowing the free-fall of many of its urban neighborhoods in which it designed its local NSP funding allocation to reach. In doing so, this research shows its investment strategy was definitely on the right path with findings giving credibility to the notion consolidation of investments into smaller and harder hit areas with larger amounts of funding and dwelling unit numbers would likely give better results than spreading funding support across too many affected areas. Whether investments in higher density multi-family and renter preference projects was the cause of this finding or the result of it, these types of investments appeared to have a greater impact on the Great Recession recovery effort in these urban Jacksonville neighborhoods. These discoveries and lessons learned could be of huge importance to policy makers in Jacksonville or elsewhere to gain understanding of better ways of implementation of a federal housing program such as the NSP, so future iterations of it distribute taxpayer money the most efficiently and effectively.

Appendix A

U.S. Census Bureau Block Groups used in Study Crosswalk between 2010, 2000 and 1990 Datasets

ID	2010* Area Name
NSP Block Group "Neighborhoods" (2010 Census)	
2010NSP01	Block Group 1, Census Tract 1
2010NSP02	Block Group 2, Census Tract 1
2010NSP03	Block Group 3, Census Tract 1
2010NSP04	Block Group 5, Census Tract 1
2010NSP05	Block Group 3, Census Tract 2
2010NSP06	Block Group 1, Census Tract 11
2010NSP07	Block Group 1, Census Tract 12
2010NSP08	Block Group 2, Census Tract 12
2010NSP09	Block Group 3, Census Tract 12
2010NSP10	Block Group 2, Census Tract 13
2010NSP11	Block Group 4, Census Tract 13
2010NSP12	Block Group 1, Census Tract 14
2010NSP13	Block Group 5, Census Tract 14
2010NSP14	Block Group 6, Census Tract 14
2010NSP15	Block Group 1, Census Tract 15
2010NSP16	Block Group 2, Census Tract 15
2010NSP17	Block Group 3, Census Tract 15
2010NSP18	Block Group 5, Census Tract 15
2010NSP19	Block Group 2, Census Tract 16
2010NSP20	Block Group 3, Census Tract 27.01
2010NSP21	Block Group 4, Census Tract 28.01
2010NSP22	Block Group 3, Census Tract 28.02
2010NSP23	Block Group 4, Census Tract 28.02
2010NSP24	Block Group 1, Census Tract 29.01
2010NSP25	Block Group 2, Census Tract 29.01
2010NSP26	Block Group 3, Census Tract 29.01
2010NSP27	Block Group 4, Census Tract 29.01
2010NSP28	Block Group 1, Census Tract 29.02
2010NSP29	Block Group 2, Census Tract 29.02
2010NSP30	Block Group 3, Census Tract 29.02
2010NSP31	Block Group 1, Census Tract 108
2010NSP32	Block Group 1, Census Tract 109
2010NSP33	Block Group 2, Census Tract 109
2010NSP34	Block Group 4, Census Tract 110
2010NSP35	Block Group 1, Census Tract 112
2010NSP36	Block Groups 2 & 1, Census Tract 113
2010NSP37	Block Group 2, Census Tract 114
2010NSP38	Block Group 1, Census Tract 115
2010NSP39	Block Group 1, Census Tract 116
2010NSP40	Block Group 2, Census Tract 116
2010NSP41	Block Group 2, Census Tract 117
2010NSP42	Block Group 1, Census Tract 118
2010NSP43	Block Group 3, Census Tract 118
2010NSP44	Block Group 1, Census Tract 121
2010NSP45	Block Groups 3 & 1, Census Tract 174
4-2010 Block Groups merged into 2 NSP BGs * These Block Groups also used for ACS 2012-2016	

ID	2010* Area Name
Comparable Block Group "Neighborhoods"	
2010Comp01	Block Group 1, Census Tract 2
2010Comp02	Block Group 2, Census Tract 2
2010Comp03	Block Group 2, Census Tract 3
2010Comp04	Block Group 3, Census Tract 3
2010Comp05	Block Group 1, Census Tract 13
2010Comp06	Block Group 3, Census Tract 13
2010Comp07	Block Group 2, Census Tract 14
2010Comp08	Block Group 3, Census Tract 14
2010Comp09	Block Group 4, Census Tract 14
2010Comp10	Block Group 4, Census Tract 15
2010Comp11	Block Group 1, Census Tract 25.01
2010Comp12	Block Group 2, Census Tract 25.01
2010Comp13	Block Group 1, Census Tract 26
2010Comp14	Block Group 4, Census Tract 26
2010Comp15	Block Group 1, Census Tract 27.01
2010Comp16	Block Group 1, Census Tract 27.02
2010Comp17	Block Group 2, Census Tract 27.02
2010Comp18	Block Group 3, Census Tract 27.02
2010Comp19	Block Group 1, Census Tract 28.01
2010Comp20	Block Group 2, Census Tract 28.01
2010Comp21	Block Group 3, Census Tract 28.01
2010Comp22	Block Group 1, Census Tract 107
2010Comp23	Block Group 2, Census Tract 108
2010Comp24	Block Group 3, Census Tract 110
2010Comp25	Block Group 2, Census Tract 112
2010Comp26	Block Group 1, Census Tract 114
2010Comp27	Block Group 2, Census Tract 115
2010Comp28	Block Group 1, Census Tract 122
2010Comp29	Block Group 2, Census Tract 122
2010Comp30	Block Group 4, Census Tract 122
No Block Groups merged for 2010 * These Block Groups also used for ACS 2012-2016	

ID	2000 Area Name
NSP Block Group "Neighborhoods" (2000 Census)	
2000NSP01	Block Groups 1 & 4, Census Tract 1
2000NSP02	Block Group 2, Census Tract 1
2000NSP03	Block Group 3, Census Tract 1
2000NSP04	Block Group 5, Census Tract 1
2000NSP05	Block Groups 3 & 4, Census Tract 2
2000NSP06	Block Groups 1 & 2, Census Tract 11
2000NSP07	Block Group 3, Census Tract 12
2000NSP08	Block Groups 4 & 5, Census Tract 12
2000NSP09	Block Groups 1 & 2, Census Tract 12
2000NSP10	Block Group 7, Census Tract 13
2000NSP11	Block Groups 5 & 6, Census Tract 13
2000NSP12	Block Group 1, Census Tract 14
2000NSP13	Block Group 5, Census Tract 14
2000NSP14	Block Groups 6 & 7, Census Tract 14
2000NSP15	Block Group 6, Census Tract 15
2000NSP16	Block Groups 7 & 8, Census Tract 15
2000NSP17	Block Group 5, Census Tract 15
2000NSP18	Block Groups 2 & 3, Census Tract 15
2000NSP19	Block Group 2, Census Tract 16
2000NSP20	Block Group 3, Census Tract 27.01
2000NSP21	Block Group 3, Census Tract 28.01
2000NSP22	Block Group 3, Census Tract 28.02
2000NSP23	Block Group 4, Census Tract 28.02
2000NSP24	Block Group 1, Census Tract 29.01
2000NSP25	Block Group 2, Census Tract 29.01
2000NSP26	Block Group 3, Census Tract 29.01
2000NSP27	Block Group 4, Census Tract 29.01
2000NSP28	Block Group 2, Census Tract 29.02
2000NSP29	Block Groups 3 & 4, Census Tract 29.02
2000NSP30	Block Group 1, Census Tract 29.02
2000NSP31	Block Group 1, Census Tract 108
2000NSP32	Block Group 1, Census Tract 109
2000NSP33	Block Group 2, Census Tract 109
2000NSP34	Block Groups 4 & 5, Census Tract 110
2000NSP35	Block Group 1, Census Tract 112
2000NSP36	Block Group 1, Census Tract 113
2000NSP37	Block Group 2, Census Tract 114
2000NSP38	Block Group 2, Census Tract 115
2000NSP39	Block Group 1, Census Tract 116
2000NSP40	Block Group 2, Census Tract 116
2000NSP41	Block Group 2, Census Tract 117
2000NSP42	Block Groups 1 & 2, Census Tract 118
2000NSP43	Block Groups 4 & 5, Census Tract 118
2000NSP44	Block Groups 1, 3 & 4, Census Tract 121
2000NSP45	Tract 4, Block Groups 2 & 3 and Tract 5, Block Group 2
32-2000 Block Groups merged into 15 NSP BGs	

ID	2000 Area Name
Comparable Block Group "Neighborhoods"	
2000Comp01	Block Group 1, Census Tract 2
2000Comp02	Block Group 2, Census Tract 2
2000Comp03	Block Group 4, Census Tract 3
2000Comp04	Block Group 1, Census Tract 3
2000Comp05	Block Groups 1 & 2, Census Tract 13
2000Comp06	Block Groups 3 & 4, Census Tract 13
2000Comp07	Block Group 2, Census Tract 14
2000Comp08	Block Group 3, Census Tract 14
2000Comp09	Block Group 4, Census Tract 14
2000Comp10	Block Group 4, Census Tract 15
2000Comp11	Block Group 2, Census Tract 25.00
2000Comp12	Block Group 7, Census Tract 25.00
2000Comp13	Block Groups 1 & 2, Census Tract 26
2000Comp14	Block Group 5, Census Tract 26
2000Comp15	Block Group 1, Census Tract 27.01
2000Comp16	Block Group 1, Census Tract 27.02
2000Comp17	Block Group 2, Census Tract 27.02
2000Comp18	Block Group 3, Census Tract 27.02
2000Comp19	Block Group 4, Census Tract 28.01
2000Comp20	Block Group 1, Census Tract 28.01
2000Comp21	Block Group 2, Census Tract 28.01
2000Comp22	Block Group 4, Census Tract 107
2000Comp23	Block Group 2, Census Tract 108
2000Comp24	Block Group 3, Census Tract 110
2000Comp25	Block Group 2, Census Tract 112
2000Comp26	Block Group 1, Census Tract 114
2000Comp27	Block Group 1, Census Tract 115
2000Comp28	Block Group 1, Census Tract 122
2000Comp29	Block Group 2, Census Tract 122
2000Comp30	Block Group 4, Census Tract 122
6-2000 Block Groups merged into 3 Comparable BGs	

ID	1990 Area Name
NSP Block Group "Neighborhoods" (1990 Census)	
1990NSP01	Block Groups 1 & 6, Census Tract 1
1990NSP02	Block Groups 2 & 3, Census Tract 1
1990NSP03	Block Groups 4 & 5, Census Tract 1
1990NSP04	Block Group 7, Census Tract 1
1990NSP05	Block Groups 5 & 6, Census Tract 2
1990NSP06	Block Groups 1, 2 & 3, Census Tract 11
1990NSP07	Block Groups 4 & 5, Census Tract 12
1990NSP08	Block Groups 6 & 7, Census Tract 12
1990NSP09	Block Groups 1, 2 & 3, Census Tract 12
1990NSP10	Block Group 7, Census Tract 13
1990NSP11	Block Groups 5 & 6, Census Tract 13
1990NSP12	Block Group 1, Census Tract 14
1990NSP13	Block Group 5, Census Tract 14
1990NSP14	Block Groups 6 & 7, Census Tract 14
1990NSP15	Block Group 6, Census Tract 15
1990NSP16	Block Groups 7 & 8, Census Tract 15
1990NSP17	Block Group 5, Census Tract 15
1990NSP18	Block Groups 2 & 3, Census Tract 15
1990NSP19	Block Groups 3-4, Census Tract 16 and Block Group 7, Tract 17
1990NSP20	Block Group 7, Census Tract 27.00
1990NSP21	Block Group 7, Census Tract 28.00
1990NSP22	Block Group 5, Census Tract 28.00
1990NSP23	Block Group 6, Census Tract 28.00
1990NSP24	Block Group 1, Census Tract 29.00
1990NSP25	Block Group 2, Census Tract 29.00
1990NSP26	Block Group 3, Census Tract 29.00
1990NSP27	Block Group 4, Census Tract 29.00
1990NSP28	Block Group 6, Census Tract 29.00
1990NSP29	Block Groups 7 & 8, Census Tract 29.00
1990NSP30	Block Group 5, Census Tract 29.00
1990NSP31	Block Group 1, Census Tract 108
1990NSP32	Block Group 1, Census Tract 109
1990NSP33	Block Group 2, Census Tract 109
1990NSP34	Block Groups 4 & 5, Census Tract 110
1990NSP35	Block Group 1, Census Tract 112
1990NSP36	Block Group 1, Census Tract 113
1990NSP37	Block Group 2, Census Tract 114
1990NSP38	Block Group 2, Census Tract 115
1990NSP39	Block Group 1, Census Tract 116
1990NSP40	Block Group 2, Census Tract 116
1990NSP41	Block Group 2, Census Tract 117
1990NSP42	Block Groups 1 & 2, Census Tract 118
1990NSP43	Block Groups 4, 5 & 6, Census Tract 118
1990NSP44	Block Groups 1, 2, 5 & 6, Census Tract
1990NSP45	Tract 4, Block Groups 2-8 and Tract 5, Block Groups 5 & 6
51-1990 Block Groups merged into 19 NSP BGs	

ID	1990 Area Name
Comparable Block Group "Neighborhoods"	
1990Comp01	Block Groups 1 & 2, Census Tract 2
1990Comp02	Block Groups 3 & 4, Census Tract 2
1990Comp03	Block Groups 4 & 5, Census Tract 3
1990Comp04	Block Group 1, Census Tract 3
1990Comp05	Block Groups 1 & 2, Census Tract 13
1990Comp06	Block Groups 3 & 4, Census Tract 13
1990Comp07	Block Group 2, Census Tract 14
1990Comp08	Block Group 3, Census Tract 14
1990Comp09	Block Group 4, Census Tract 14
1990Comp10	Block Group 4, Census Tract 15
1990Comp11	Block Group 2, Census Tract 25.00
1990Comp12	Block Group 7, Census Tract 25.00
1990Comp13	Block Groups 1-4, Census Tract 26
1990Comp14	Block Group 8, Census Tract 26
1990Comp15	Block Group 1 & 8, Census Tract 27.00
1990Comp16	Block Group 4, Census Tract 27.00
1990Comp17	Block Group 5, Census Tract 27.00
1990Comp18	Block Group 6, Census Tract 27.00
1990Comp19	Block Group 2, Census Tract 28.00
1990Comp20	Block Group 1, Census Tract 28.00
1990Comp21	Block Group 8, Census Tract 28.00
1990Comp22	Block Group 4, Census Tract 107
1990Comp23	Block Group 2, Census Tract 108
1990Comp24	Block Group 3, Census Tract 110
1990Comp25	Block Group 2, Census Tract 112
1990Comp26	Block Group 1, Census Tract 114
1990Comp27	Block Groups 1 & 4, Census Tract 115
1990Comp28	Block Group 1, Census Tract 122
1990Comp29	Block Group 2, Census Tract 122
1990Comp30	Block Group 4 & 5, Census Tract 122
20-1990 Block Groups merged into 9 Comparable BGs	

Appendix B
Investment Categories
Maps and Descriptive Mean Statistics

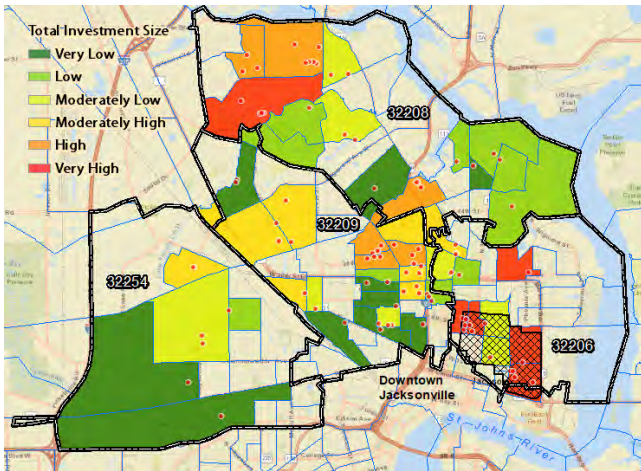


Figure B-1a. Total Investment Size classifications.

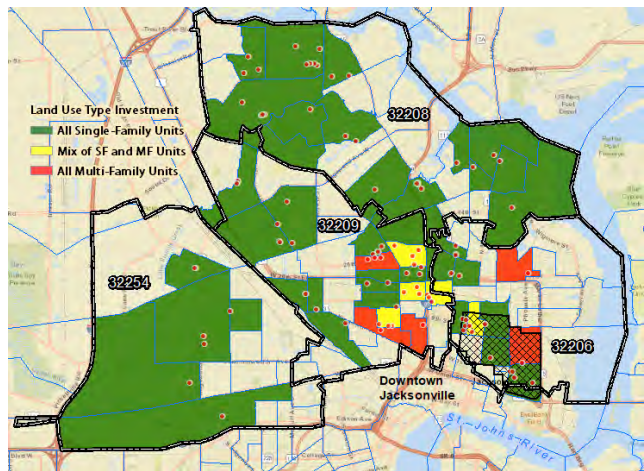


Figure B-2. Land Use Investment classifications.

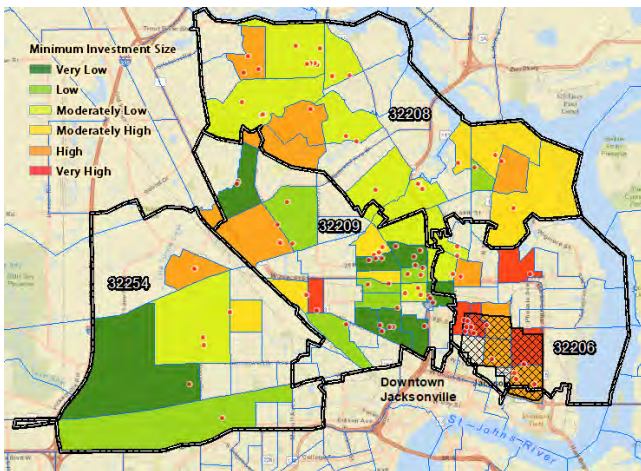


Figure B-1b. Minimum Investment Size classifications.

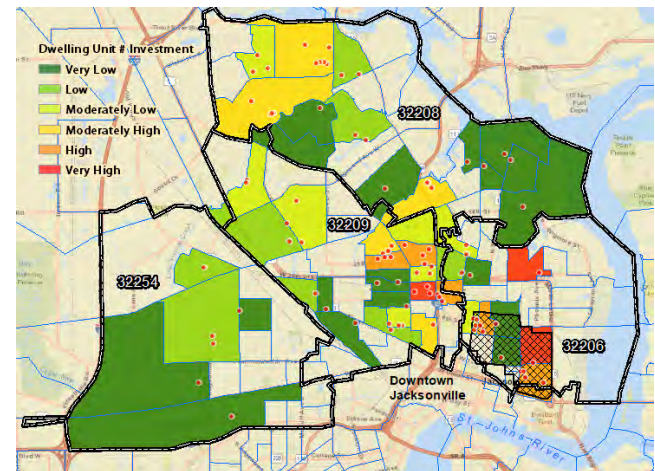


Figure B-3. Dwelling Unit (du) # Investment classifications.

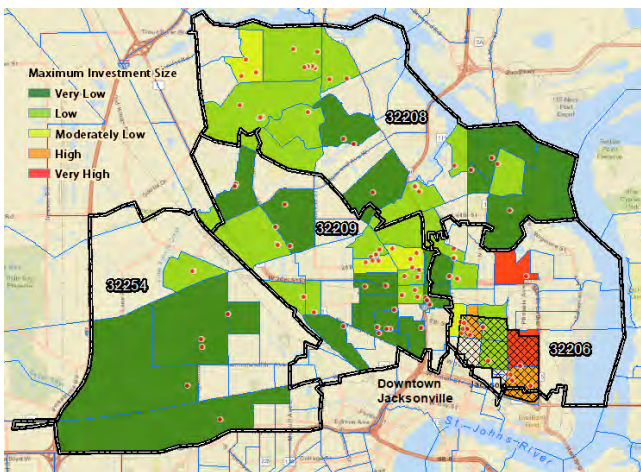


Figure B-1c. Maximum Investment Size classifications.

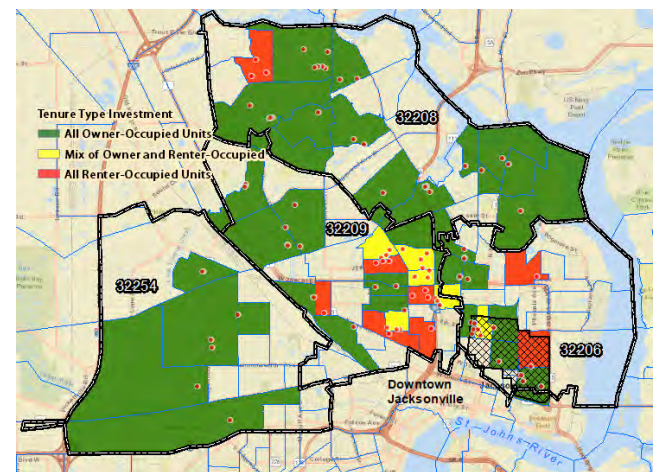


Figure B-4. Tenure Type Investment classifications.

Table B-1a: Descriptive Mean Statistics: Post Recession NSP % Changes for Total Investment Size Categories, 2010-2016

Indicators	(1) Very Low <= \$75k			(2) Low > \$75k - \$150k			(3) Mod Low > \$150k - \$200k			(4) Mod High > \$200k - \$400k			(5) High > \$400k - \$800k			(6) Very High > \$800k		
	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change
Total Population, mean	1145	1080	-5.7%	1019	1144	12.3%	991	1049	5.9%	1163	885	-23.9%	1620	1421	-12.3%	1115	1078	-3.3%
% white	13.5%	19.0%	40.6%	28.9%	20.4%	-29.2%	13.3%	17.0%	27.5%	9.3%	13.2%	42.2%	9.5%	6.2%	-34.8%	18.1%	17.5%	-3.6%
% African American	80.6%	77.1%	-4.4%	65.7%	73.8%	12.3%	80.2%	75.0%	-6.5%	90.2%	82.1%	-9.0%	84.7%	92.5%	9.2%	77.8%	76.7%	-1.5%
% Hispanic	4.1%	1.8%	-56.2%	3.4%	3.2%	-6.3%	2.3%	2.4%	6.7%	0.3%	3.3%	1103.2%	4.7%	0.7%	-85.8%	2.1%	2.4%	13.8%
Educational attainment:																		
% with BA degree or higher	9.5%	9.8%	4.0%	10.8%	11.1%	2.8%	11.4%	14.4%	25.7%	12.5%	14.1%	13.3%	8.1%	7.7%	-5.5%	13.3%	16.3%	22.1%
Median household income	\$27,105	\$27,956	3.1%	\$33,415	\$30,114	-9.9%	\$29,957	\$27,518	-8.1%	\$23,913	\$31,145	30.2%	\$27,265	\$27,920	2.4%	\$30,358	\$30,037	-1.1%
% Vacant housing units	18.6%	22.7%	21.8%	20.3%	23.1%	13.8%	24.9%	29.5%	18.4%	18.9%	32.7%	72.8%	22.5%	21.9%	-2.3%	22.4%	23.1%	2.7%
Median home value	\$87,860	\$63,730	-27.5%	\$93,389	\$55,413	-40.7%	\$116,425	\$83,463	-28.3%	\$74,443	\$57,543	-22.7%	\$92,233	\$68,083	-26.2%	\$130,250	\$91,700	-29.6%
Tenure occupancy:																		
% Renter-occupied	52.9%	47.8%	-9.6%	45.9%	53.7%	16.8%	37.5%	50.3%	34.0%	44.0%	45.8%	4.0%	34.7%	43.2%	24.4%	49.7%	52.1%	4.8%
% Owner-occupied	47.1%	52.2%	10.7%	54.1%	46.3%	-14.3%	62.5%	49.7%	-20.4%	56.0%	54.2%	-3.2%	65.3%	56.8%	-12.9%	50.3%	47.9%	-4.8%

Table B-1b. Descriptive Mean Statistics: Post Recession NSP % Changes for Minimum Investment Size Categories, 2010-2016

Indicators	(1) Very Low <= \$30k			(2) Low > \$30k - \$60k			(3) Mod Low > \$60k - \$90k			(4) Mod High > \$90k - \$120k			(5) High > \$120k - \$180k			(6) Very High > \$180k		
	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change
Total Population, mean	1112	999	-10.2%	1216	1025	-15.7%	1413	1321	-6.5%	942	993	5.3%	1230	1282	4.2%	694	763	9.9%
% white	10.0%	12.5%	25.2%	8.7%	14.2%	64.0%	12.8%	8.8%	-31.2%	26.5%	19.3%	-27.3%	21.2%	24.5%	15.5%	17.5%	20.2%	15.4%
% African American	81.8%	85.7%	4.7%	87.4%	79.7%	-8.9%	84.7%	87.3%	2.6%	68.8%	76.4%	11.1%	73.3%	67.9%	-8.4%	78.2%	72.7%	-7.5%
% Hispanic	6.4%	1.0%	-84.3%	2.6%	3.4%	30.9%	0.9%	1.7%	80.2%	3.1%	2.6%	-0.14509	2.4%	3.9%	59.0%	2.1%	1.2%	-43.3%
Educational attainment:																		
% with BA degree or higher	11.2%	9.6%	-14.2%	8.9%	10.5%	18.2%	9.8%	13.9%	41.1%	8.7%	10.9%	25.8%	13.1%	13.5%	0.3%	14.0%	13.5%	-0.3%
Median household income	\$23,512	\$23,386	-0.5%	\$26,133	\$28,282	8.2%	\$30,404	\$31,221	2.7%	\$31,405	\$32,554	3.7%	\$30,382	\$29,540	-2.7%	\$31,246	\$28,220	-9.7%
% Vacant housing units	19.6%	27.6%	40.9%	23.1%	26.6%	15.0%	18.9%	24.3%	28.0%	16.0%	26.7%	66.7%	25.3%	24.8%	-0.1%	25.3%	21.7%	-14.1%
Median home value	\$84,525	\$62,788	-25.7%	\$74,557	\$58,671	-21.3%	\$96,520	\$63,330	-34.3%	\$96,729	\$54,714	-43.4%	\$109,511	\$87,725	-19.9%	\$136,100	\$95,740	-29.6%
Tenure occupancy:																		
% Renter-occupied	51.6%	60.3%	16.8%	49.8%	41.0%	-17.7%	36.4%	44.6%	22.6%	41.4%	44.4%	7.0%	45.9%	52.0%	13.1%	45.5%	52.1%	14.5%
% Owner-occupied	48.4%	39.7%	-18.0%	50.2%	59.0%	17.5%	63.6%	55.4%	-12.9%	58.6%	55.6%	-0.5%	54.1%	48.0%	-11.1%	54.5%	47.9%	-12.1%

Table B-1c. Descriptive Mean Statistics: Post Recession NSP % Changes for Maximum Investment Size Categories, 2010-2016

Indicators	(1) Very Low <= \$100k			(2) Low > \$100k - \$200k			(3) Mod Low > \$200k - \$500k			(4) Mod High > \$500k - \$1 m			(5) High > \$1m - \$3m			(6) Very High > \$3m		
	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change
Total Population, mean	1154	1144	-0.9%	1165	1055	-9.4%	1281	1198	-6.5%	N/A	N/A	N/A	1074	909	-15.4%	890	1092	22.7%
% white	15.2%	17.4%	14.6%	17.6%	16.0%	-9.4%	12.2%	15.4%	26.5%	N/A	N/A	N/A	23.3%	20.6%	-11.8%	7.8%	2.9%	-63.1%
% African American	79.4%	78.0%	-1.8%	78.8%	78.2%	-0.7%	78.2%	82.1%	4.9%	N/A	N/A	N/A	72.2%	70.0%	-3.1%	91.4%	94.7%	3.5%
% Hispanic	3.6%	2.6%	-27.3%	1.5%	2.2%	52.3%	6.5%	1.3%	-79.5%	N/A	N/A	N/A	4.4%	4.2%	-4.3%	0.0%	0.9%	#DIV/0!
Educational attainment:																		
% with BA degree or higher	9.7%	10.2%	4.2%	11.7%	14.0%	19.4%	9.4%	12.6%	34.3%	N/A	N/A	N/A	14.7%	18.8%	28.2%	13.0%	6.1%	-52.8%
Median household income	\$27,597	\$26,840	-2.7%	\$30,834	\$33,048	7.2%	\$28,007	\$25,250	-9.8%	N/A	N/A	N/A	\$29,642	\$31,277	5.5%	\$23,157	\$23,488	1.4%
% Vacant housing units	19.1%	24.2%	26.6%	21.8%	27.6%	26.5%	23.8%	22.2%	-6.6%	N/A	N/A	N/A	24.7%	27.7%	11.9%	24.7%	22.0%	-11.0%
Median home value	\$89,380	\$58,480	-34.6%	\$100,894	\$73,359	-27.3%	\$113,425	\$85,300	-24.8%	N/A	N/A	N/A	\$138,450	\$116,600	-15.8%	\$86,100	\$59,350	-31.1%
Tenure occupancy:																		
% Renter-occupied	47.7%	51.9%	8.7%	40.6%	44.5%	9.5%	35.1%	45.7%	30.2%	N/A	N/A	N/A	50.1%	56.2%	12.2%	65.0%	60.8%	-6.5%
% Owner-occupied	52.3%	48.1%	-7.9%	59.4%	55.5%	-6.5%	64.9%	54.3%	-16.3%	N/A	N/A	N/A	49.9%	43.8%	-12.2%	35.0%	39.2%	12.0%

Table B-2. Descriptive Mean Statistics: Post Recession NSP % Changes for Land Use Investment Categories, 2010-2016

Indicators	(1) 100% Single Family (SF)			(2) Mix of SF and MF			(3) 100% Multi-Family (MF)		
	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change
Total Population, mean	1218	1149	-5.7%	829	805	-2.9%	1022	1056	3.3%
% white	18.7%	19.3%	2.9%	7.6%	7.0%	-2.9%	3.9%	3.1%	-0.22217
% African American	76.4%	75.0%	-1.8%	83.7%	89.9%	11.8%	95.6%	95.0%	-0.00655
% Hispanic	2.7%	2.8%	4.1%	7.1%	0.3%	-4.1%	0.0%	1.0%	#DIV/0!
Educational attainment:									
% with BA degree or higher	10.8%	12.7%	18.3%	14.7%	11.6%	-18.3%	7.5%	7.9%	0.042522
Median household income	\$30,841	\$30,304	-1.7%	\$21,201	\$24,243	14.4%	\$21,655	\$23,150	6.9%
% Vacant housing units	20.0%	24.3%	21.5%	27.4%	33.5%	21.5%	22.7%	25.6%	0.126015
Median home value	\$99,542	\$70,629	-29.0%	\$96,060	\$69,820	-29.0%	\$88,540	\$57,740	-34.787
Tenure occupancy:									
% Renter-occupied	41.5%	44.4%	7.0%	51.2%	68.4%	7.0%	61.1%	62.8%	0.027525
% Owner-occupied	58.5%	55.6%	-5.0%	48.8%	31.6%	-5.0%	38.9%	37.2%	-0.04328

Table B-3. Descriptive Mean Statistics: Post Recession NSP % Changes for Dwelling Unit (du) Investment Categories, 2010-2016												
Indicators	(1) Very Low = 1 du		(2) Low = 2 du		(3) Mod Low = 3 du - 4 du		(4) Mod High = 5 du - 7 du		(5) High = 8 du - 15 du		(6) Very High > 15 du	
	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change
Total Population, mean	1059	1093	3.2%	1152	1196	3.8%	1211	975	-0.19488	1656	1380	-0.16667
% white	23.8%	25.1%	5.3%	15.3%	15.3%	-0.2%	7.5%	11.4%	0.517539	11.2%	7.9%	-0.30137
% African American	69.3%	68.4%	-1.4%	82.9%	78.3%	-5.6%	87.4%	85.4%	-0.02334	86.6%	90.2%	0.042119
% Hispanic	4.0%	2.6%	-34.5%	0.3%	3.5%	1005.9%	3.1%	2.3%	-0.2419	1.2%	0.5%	-0.56705
Educational attainment:												
% with BA degree or higher	10.3%	11.2%	9.1%	6.9%	13.0%	89.3%	18.3%	16.7%	-0.0899	8.5%	9.6%	0.136148
Median household income	\$32,167	\$30,787	-4.3%	\$26,719	\$29,054	8.7%	\$30,577	\$27,171	-0.11139	\$29,516	\$31,258	0.059018
% Vacant housing units	23.2%	23.1%	-0.6%	16.4%	28.1%	71.2%	18.2%	29.9%	0.640019	16.3%	20.8%	0.272556
Median home value	\$101,172	\$70,976	-29.8%	\$87,075	\$63,613	-26.9%	\$100,114	\$73,886	-0.26199	\$113,460	\$61,740	-0.45584
Tenure occupancy:												
% Renter-occupied	46.6%	46.0%	-1.3%	40.9%	46.2%	12.9%	36.3%	49.0%	0.351129	41.6%	46.6%	0.121168
% Owner-occupied	53.4%	54.0%	1.1%	59.1%	53.8%	-8.9%	63.7%	51.0%	-0.19974	58.4%	53.4%	-0.0862

Table B-4. Descriptive Mean Statistics: Post Recession NSP % Changes for Tenure Investment Categories, 2010-2016												
Indicators	(1) 100% Owner-Occupied			Mix of Owner & Tenant-Occup			(3) 100% Tenant-Occupied			2010	2016	% Change
	2010	2016	% Change	2010	2016	% Change	2010	2016	% Change			
Total Population, mean	1229	1175	-4.4%	1062	864	-18.6%	924	988	6.9%			
% white	21.0%	21.3%	1.4%	6.1%	6.1%	-3.4%	2.9%	3.3%	16.4%			
% African American	73.7%	73.1%	-0.8%	85.9%	89.4%	4.1%	96.6%	93.7%	-2.9%			
% Hispanic	2.9%	2.8%	-3.3%	6.1%	1.9%	-69.0%	0.2%	0.6%	234.6%			
Educational attainment:												
% with BA degree or higher	11.1%	13.5%	21.9%	13.7%	11.3%	-17.8%	7.7%	6.9%	-10.4%			
Median household income	\$31,206	\$31,036	-0.5%	\$21,555	\$22,826	5.9%	\$24,581	\$23,831	-3.0%			
% Vacant housing units	19.6%	23.9%	22.1%	27.1%	36.8%	36.0%	22.7%	23.1%	1.7%			
Median home value	\$102,688	\$71,416	-30.5%	\$90,200	\$67,867	-24.8%	\$84,913	\$61,088	-28.1%			
Tenure occupancy:												
% Renter-occupied	42.8%	44.7%	4.6%	52.5%	64.3%	22.4%	46.6%	54.7%	17.4%			
% Owner-occupied	57.2%	55.3%	-3.4%	47.5%	35.7%	-24.7%	53.4%	45.3%	-15.2%			

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