

Negative Equity in the Sixth Federal Reserve District

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Negative Equity in the Sixth Federal Reserve District

Abstract: Using Zillow’s zip code level Negative Equity Report for the second quarter of 2014 and 2015, I map, describe, and analyze the characteristics of neighborhoods that have persistent negative equity in the Sixth Federal Reserve District, comprised of Alabama, Florida, and Georgia, and parts of Louisiana, Mississippi, and Tennessee. Persistent negative equity, when a house is worth less than outstanding mortgage debt, is high in the Sixth District and concentrated in urban areas. In a series of regressions, I evaluate the correlation of income, commute times, unemployment, housing stock quality, vacancy rates, mortgage market factors, and racial/ethnic composition on rates of negative equity. I also provide within-state and within-metropolitan estimates to understand the differences between the highest negative equity and moderate negative equity areas. I find that even after controlling for the housing market crash, the places with persistent high negative equity are in predominantly black zip codes with longer commute times, higher unemployment rates, and high rental vacancy rates. Economic indicators, housing stock quality, and measures of the local severity of the subprime and foreclosure crises are significant predictors of overall negative equity, but their inclusion as controls does not eliminate the strong association between racial composition and persistent negative equity. This research does not identify the causes of this pattern, but suggests that the housing market recovery is uneven and proceeding in a way that could widen the racial gap in housing wealth. Future research could investigate further the impact of transportation access, maintenance of vacant rental housing in hard-hit areas, and unemployment in areas with persistent negative equity.

JEL Classification: R31

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Although the 2007–09 recession ended more than six years ago, housing markets have not fully recovered. Even in cities where average home prices have rebounded, growth has been uneven. Some places have not recovered from the subprime and foreclosure crises, and negative equity—when a house is worth less than outstanding mortgage debt—remains a persistent problem.

Negative equity is bad for homeowners and for neighborhoods. Households with negative equity in their homes can experience “housing lock,” finding themselves unable to move because they cannot resolve their mortgages upon housing sale. Negative equity interferes with homeowners’ wage bargaining, preventing them from searching for new jobs knowing they cannot move. Cunningham and Reed (2013) find that having a home underwater corresponds to a 7 percent wage penalty. Negative equity makes households less resilient to income shocks, leaving them more prone to bankruptcy or foreclosure in the event of an illness or loss of a job. Scholars interested in wealth inequality have noted that housing wealth is one potential driver of the growing wealth divide, and negative equity is a plausible candidate for growing inequality in housing wealth (Shapiro, Meschede et al. 2013). In the absence of government programs, negative equity prevents households from taking advantage of low interest rates. Mian, Rao et al. (2013) find that declines in housing wealth by zip code are highly correlated with declines in consumption during the recent housing market crash. Concentrated areas of negative equity could lead to decreased spending in the local economy. Negative equity also leads to degradation of neighborhoods and the built environment, as households with negative equity are less likely to perform home improvements, not only because they do not have access to home equity loans but because they are unwilling to spend more money on a bad investment (Melzer 2010).

To help homeowners who are underwater on their loans, federal programs like the Home Affordable Refinance Program (HARP) and Home Affordable Modification Program (HAMP) have reached 3 million and 2 million underwater borrowers, respectively (Agarwal, Amromin et al. 2015; Treasury 2015). Still, approximately 14 percent of homeowners remain underwater (Gudell 2015). As the national economy recovers and interest rates begin to rise, and as the first generation of HAMP loan modifications approach their rate reset dates, persistent negative equity may leave some regions and neighborhoods vulnerable to continued increases in the foreclosure rate.

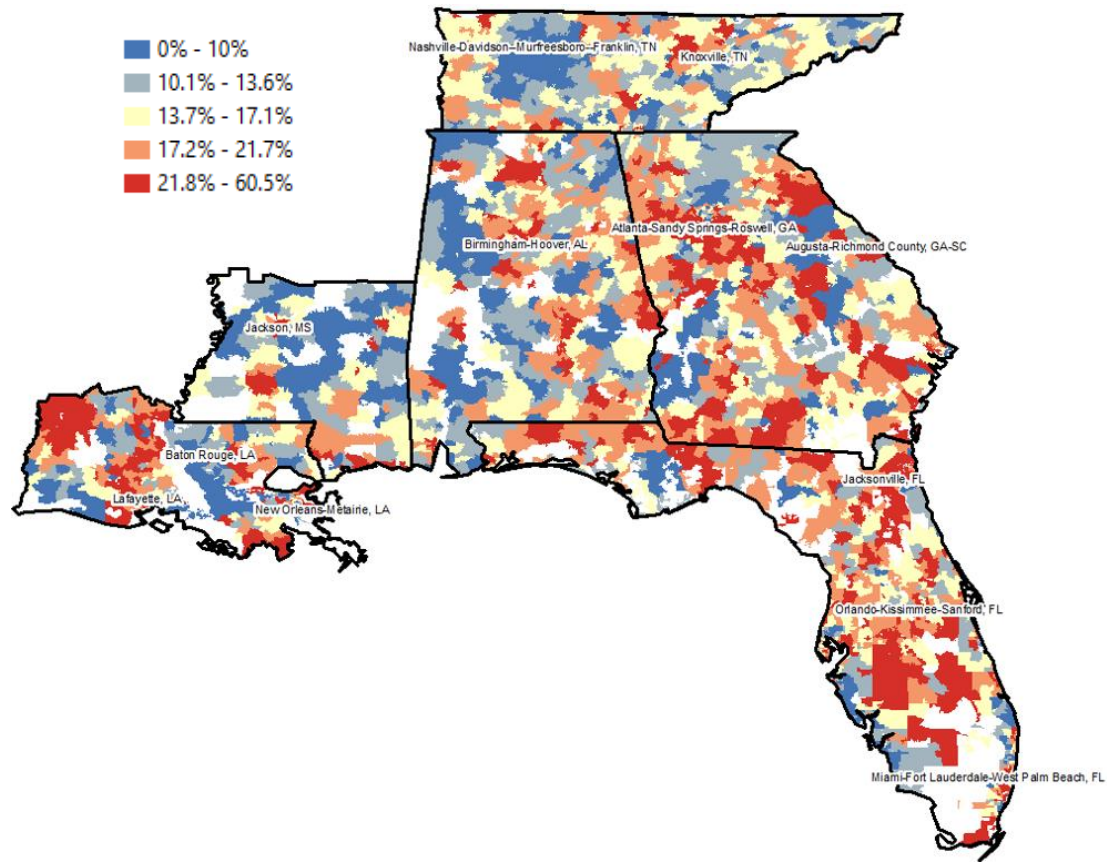
What are the causes of persistent negative equity? High-risk lending during the real estate bubble generated unsustainable price increases and also resulted in clustered foreclosures (Dell’Ariccia 2012; Igan et al. 2012; Pavlov, Wachter et al. 2014). This combination of high levels of mortgage debt and declining prices leads to negative equity. But why has negative equity persisted even as average housing prices have been rising? There are likely several contributing causes. First, high-risk lending leads to high levels of leverage in the very places where home prices subsequently crashed. Second, clustered foreclosures and vacancies lead to prolonged home price stagnation (Mian and Sufi 2009; Levitin and Wachter 2012; Levitin and Wachter 2013). Where distressed and vacant homes became run down, this disamenity can in some instances depress nearby home prices. Dilapidated homes have a well-researched negative effect on neighboring home prices during this crisis (Whitaker and Fitzpatrick 2011; Gerardi, Rosenblatt et al. 2015). If and when foreclosed or vacant homes do sell, they often sell at steeply discounted prices, adding to housing supply in a depressed market and placing negative pressure on appraisals for other homes nearby (Hartley 2014). Because high-risk loans created local housing

bubbles ending in crashes and foreclosures, as the foreclosure crisis progressed, neighborhoods with long periods of vacancy exhibited the cumulative effect of multiple downward pressures (Immergluck and Smith 2006; Harding, Rosenblatt et al. 2009). During the crisis, nearly half a million homes passed into the single-family rental space. Whether a neighborhood's properties were attractive to investors, and the way investor-owners maintain and rent their properties, have strong ramifications for local home prices (Immergluck and Law 2014; Mallach 2014). Finally, it may be that the reason for continued negative equity is that policy remedies like loan modifications and access to cheap refinances were not structured in the most effective ways, or simply did not reach the places they were needed the most.

Some studies have found a strong connection between racial segregation and uneven housing market recovery. A recent study suggests that places that have not recovered are those that experienced the strongest growth in home prices leading up to the crash. These home prices are associated with strong levels of subprime lending, and subprime lending was concentrated in minority communities in segregated cities (Rugh and Massey 2010). Raymond, Wang et al. (2015) find that black segregation is a stronger predictor of persistently depressed home prices after the crash than a variety of housing market and economic indicators. In this paper, I describe the level, distribution, and correlation with potential causes of negative equity in the Sixth Federal Reserve District, comprised of Alabama, Florida, and Georgia, and parts of Louisiana, Mississippi, and Tennessee (see figure 1).

Figure 1. Sixth District

Percent of Homes Underwater by Zip Code, Second Quarter 2015



Source: Zillow's Negative Equity Report, Zip Code Level, Second Quarter 2015

I start with descriptive statistics on the social and economic characteristics of places with high levels of negative equity, then evaluate whether economic conditions, factors related to housing markets, mortgage lending, or social factors like race have the strongest association with negative equity in a series of regression models. I find that even after controlling for the housing market crash, the places with persistently high negative equity are lower middle-income, predominantly black areas with higher unemployment rates and high rental vacancy rates. Economic indicators and housing stock quality are significant predictors of overall negative equity but do not differ significantly between moderately and hard-hit areas, and their inclusion as controls does not eliminate the strong association between race and persistent negative equity.

Negative Equity in the 12 Federal Reserve Bank Districts

Table 1 shows that, as of 2014, the Atlanta Fed's Sixth District had the highest percentage of homes with negative equity, compared to all other Federal Reserve Districts. The Sixth District also had a high level of concentrated negative equity, with 51 zip codes in the worst 1 percent. That is one of the

worst levels of negative equity in the country. Atlanta, along with the New York and Philadelphia Districts, also experienced high levels of mortgage delinquency.

Table 1. Negative Equity Levels by Federal Reserve Bank District

Bank District	Percent of Homes with Negative Equity	Percent of Mortgages 90-Days Delinquent	Zip Codes			
			Worst 1%	Worst 5%	Worst 10%	Worst 20%
Atlanta	23%	1.9%	51	209	413	843
Boston	16%	1.2%	9	40	69	154
Chicago	21%	1.1%	68	285	532	938
Cleveland	18%	0.9%	17	103	177	336
Dallas	12%	0.5%	6	23	46	99
Kansas City	15%	0.5%	18	63	138	263
Minneapolis	15%	0.4%	7	24	54	139
New York	14%	2.3%	7	69	129	255
Philadelphia	19%	1.8%	4	40	118	258
Richmond	19%	1.2%	17	117	222	444
San Francisco	16%	1.0%	18	132	301	638
St. Louis	19%	0.8%	13	66	142	312

Source: Zillow's Negative Equity Report, Zip Code Level, Second Quarter 2014

What are the characteristics of places with high negative equity in the Sixth District? The following tables describe a variety of economic, financial, and social characteristics in places with high concentrations of negative equity. Table 2 shows the unemployment rate rises with negative equity, as does commute time. Commute times measure how long it takes for individuals to get to work, regardless of whether they take public transit or drive. Places with high rates of negative equity experienced steep home price declines since the peak of the housing bubble, and home values in zip codes at the 10th percentile have not recovered to precrisis levels. These places tend to have lower-valued housing stock now and at the peak of the housing market.

Table 2. Economic Characteristics of Places with High Negative Equity in Sixth District

	Estimated Housing Value at Peak	Housing Value 2015 Q2	Housing Value Decline from Peak	Unemployment Rate	Commute Time (Minutes)
Worst 1%	\$140,936	\$ 88,897	-37%	17.8	31.1
Worst 5%	\$154,943	\$ 101,852	-34%	14.7	27.8
Worst 10%	\$167,937	\$ 109,768	-33%	14.2	27.0
Worst 20%	\$179,641	\$ 123,156	-30%	13.1	26.3
All zip codes	\$223,190	\$ 172,613	-22%	11.1	25.7

Sources: Zillow's Negative Equity Report, Zip Code Level, Second Quarter 2015, U.S. Census Bureau's 2009–13 5-Year American Community Survey

Table 3 examines the income composition of depressed zip codes. All areas have roughly 60 percent of families making between \$25,000 and \$100,000 a year, but hard-hit areas have slightly more moderate-income families, many more low-income households, and many fewer high-income (\$100,000-plus households).

Table 3. Income Composition of Places with High Negative Equity in Sixth District

	Household Income				
	Less than \$25,000	\$25,000–\$49,999	\$50,000–\$74,999	\$75,000–\$100,000	\$100,000+
Worst 1%	26.4%	28.6%	19.0%	11.8%	14%
Worst 5%	25.4%	28.1%	19.7%	12.2%	15%
Worst 10%	25.1%	28.5%	19.8%	12.0%	15%
Worst 20%	23.3%	27.6%	20.0%	12.6%	16%
All zip codes	19.4%	25.0%	19.5%	13.3%	23%

Source: U.S. Census Bureau

In table 4, I review the characteristics of the housing stock in distressed areas. Typically, high owner-occupancy rates are associated with higher home prices. Vacancy rates often indicate low demand in a housing market, and in the last decade, vacant housing can become a disamenity when properties are not maintained or become a magnet for crime. Research has found a mixed relationship with age of housing: in some situations, older housing is more degraded and is associated with lower home values than newer housing. In other situations, older housing is valued, particularly where gentrification and a revival of areas close to the city center is occurring. A third scenario is that of excess supply in new housing. During the real estate bubble, cities like Atlanta with very elastic construction industries built housing to meet inflated demand, leading to high vacancy rates in brand-new construction after the crash.

As shown in table 4, the most troubled areas have 10 percent less owner-occupied housing than the average for all zip codes. In hard-hit areas, vacancy rates are higher among owner-occupied properties and considerably higher among rental properties, which may include owner-occupancy housing stock that has become rental housing in the aftermath of the crisis. The most distressed areas appear to have older housing stock than less and non-distressed areas.

Table 4. Housing Characteristics of Zip Codes with High Negative Equity in Sixth District

	Percent Housing Stock Owner Occupancy	Percent Vacant, Owner Occupancy Housing Stock	Percent Vacant, Rental Housing Stock	Age of Structure 25th–75th percentile
Worst 1%	56.6%	4.5%	14.3%	1970–88
Worst 5%	59.2%	3.8%	11.4%	1973–89
Worst 10%	60.7%	3.6%	10.5%	1974–87
Worst 20%	62.8%	3.3%	10.0%	1975–87
All zip codes	67.5%	3.0%	9.2%	1976–86

Note: Age of structure data are reported in 10-year buckets; average age is calculated by multiplying the frequency of properties against the middle value in each bucket, and using 1930 for all structures older than 1935.

Source: U.S. Census Bureau’s 2009–13 5-Year American Community Survey

Most striking are the differences along racial lines, reviewed below. Places with concentrated negative equity are racially concentrated, with the hardest-hit areas having, on average, a population that is 72.7 percent black, as shown in table 5. Moderately distressed areas appear to have higher percentages of black and Hispanic/Latino families and fewer white households. These results are in line with other research that suggests subprime lending was concentrated in racially segregated areas (Calem, Hershaff et al. 2004; Bocian, Ernst et al. 2008; Rugh and Massey 2010), though these figures may reflect aspects of the recovery since 2009 rather than the depth of the housing market crash.

Table 5. Demographics of High Negative Equity Zip Codes in Sixth District

	Percent White	Percent Black	Percent Hispanic	Percent Nonwhite Hispanic
Worst 1%	20.5%	72.7%	7.7%	3.8%
Worst 5%	46.5%	45.4%	14.0%	4.5%
Worst 10%	53.9%	38.2%	17.6%	4.5%
Worst 20%	61.8%	30.6%	17.8%	4.0%
All zip codes	72.0%	21.0%	13.8%	3.0%

Source: U.S. Census Bureau’s 2009–13 5-Year American Community Survey

Table 6 shows that the 10 largest metropolitan statistical areas (MSAs) in the Sixth District have very different levels of negative equity. Within each column, the cells are shaded by value on a color gradient from red (highest) to green (lowest), visually displaying the most and least distressed areas. Atlanta and Jacksonville have large swaths of their cities underwater. Fifty-six percent of Atlanta’s zip codes have high levels of negative equity as measured on a national scale. As of the second quarter of 2014, nearly one-fifth of Atlanta’s zip codes ranked as the hardest-hit areas in the nation.

Table 6. Concentration of Negative Equity by MSAs in Sixth District

NAME	Worst 1%	Worst 5%	Worst 10%	Worst 20%
Atlanta-Sandy Springs-Roswell, GA	18%	33%	42%	56%
Miami-Fort Lauderdale-West Palm Beach, FL	1%	9%	23%	39%
Tampa-St. Petersburg-Clearwater, FL	2%	9%	20%	44%
Nashville-Davidson-Murfreesboro-Franklin, TN	0%	0%	3%	8%
Birmingham-Hoover, AL	0%	8%	21%	41%
Orlando-Kissimmee-Sanford, FL	2%	7%	19%	46%
New Orleans-Metairie, LA	3%	6%	8%	19%
Baton Rouge, LA	5%	13%	16%	24%
Jacksonville, FL	7%	33%	46%	63%
Chattanooga, TN	0%	0%	5%	11%

Source: Zillow’s Negative Equity Report, Zip Code Level, Second Quarter 2014

Table 6 and the map in figure 1 suggest that high levels of negative equity are spatially concentrated, particularly in Atlanta and Jacksonville. Even at the national scale, Atlanta is notable for its high concentration of negative equity. Among urban regions with populations greater than 200,000,

Atlanta has the third-highest absolute number of underwater homes, just behind Chicago and New York, and the third-highest rate of underwater homes, just behind Jacksonville and Las Vegas.

Taken as a whole, these descriptive statistics suggest that economic characteristics such as income, employment, and commute time might be important but may not completely explain Sixth District trends in negative equity. They also suggest that race is highly correlated with negative equity. Negative equity is problematic in its own right; it is even more troubling that negative equity is occurring in a way that could likely widen racial gaps in housing wealth and other aspects of household and neighborhood well-being.

What policy levers can be used to address negative equity? The subsequent model will evaluate several policy-relevant causes for continued negative equity. Potential candidates are the continued distress due to high-risk subprime lending, high levels of vacancies, and low market demand from households or private investors. In the next section I construct a regression model to differentiate between the contribution of economic factors, social factors, mortgage factors, and home price dynamics on generating high levels of negative equity.

Regression Models Data

Table 7 displays summary statistics for each variable used in the regressions. For the dependent variable I use Zillow's zip code level measure of negative equity for the second quarter of 2015. I use Zillow's Home Price Index decline from the peak of the housing market bubble to the second quarter of 2014 in order to measure the severity of the housing crash in each zip code. Zillow uses tax assessors' data, sales data, and data on physical attributes of houses, then constructs a hedonic model to estimate a value for each home in an area. The negative equity data set matches these value estimates with data on existing mortgages, providing a property level estimate of negative equity. Zillow's method of estimating home values is fundamentally different from other commonly used home price indices like CoreLogic and Case Shiller, which estimate home price increases by looking at repeat sales (Fleming and Humphries 2013). A repeat sales index is based on changes in the price of a property between when it was sold most recently and the time prior to that. After evaluating the change in repeat sales, as properties transacting in a given time period may not be representative of properties overall, the estimates are reweighted so they resemble the overall housing stock of an area. Because properties in negative equity are far less likely to transact than others, I have chosen to use Zillow's hedonic estimates to understand local levels of home equity.

Table 7. Summary Table of Dependent and Independent Variables

Variable	Number of Observations	Mean	Std. Dev.	Min.	Max.
Percent of homes in negative equity (Q2 2015)	2,815	20.3%	9.6%	0.0%	70.6%
Percent black	2,815	19.3%	21.6%	0.0%	98.4%
Percent nonwhite Hispanic	2,815	2.0%	3.1%	0.0%	34.8%
Median household income	2,815	\$45,885	\$16,128	\$9,106	\$166,976
Unemployment rate	2,815	11.0%	4.9%	0.0%	36.4%
Mean commute time (minutes)	2,815	26.8	6.0	11.2	75.3
Owner-occupied rate	2,815	72%	14%	0%	100%
Average age of housing (year built)	2,815	1981	9	1937	2006
Homeowner vacancy rate	2,815	2.8%	3.5%	0.0%	100.0%
Rental vacancy rate	2,815	8.4%	9.0%	0.0%	100.0%
Percent subprime loans at peak	2,815	28.1%	11.5%	0.0%	100.0%
Percent subprime loans resulting in foreclosure	2,815	27.9%	9.5%	0.0%	100.0%
Home value change from peak	1,820	-19.3%	15.3%	-57.3%	0.0%

Sources: Zillow's Negative Equity Report, Zip Code Level, Second Quarter 2015, U.S. Census Bureau's 2009–13 5-Year American Community Survey

As in the tables above, I use zip code tabulation area level economic and demographic data from the U.S. Census Bureau's 2009–13 5-Year American Community Survey. In addition to racial and ethnic composition, I draw median household income to evaluate the impact of income and economic health. Unemployment rates and commute times measure the economic vibrancy of a zip code. To measure housing stock quality, I use the average age of housing and the owner-occupancy rate. To capture demand for housing, I draw on the vacancy rate for owner-occupied and rental housing stocks.

Finally, in order to measure the impact of high-risk lending independently of other socioeconomic factors, I use 2005 mortgage origination data from Lender Processing Services to calculate the percentage of subprime loans per zip code at the peak of the bubble (2005) as well as the percentage of subprime loans that terminated in foreclosure.

The data cover all zip codes within the Sixth District. There were 50 zip codes for which data were not consistently available across all metrics, and after checking that elimination would not affect results significantly, these zip codes were dropped from the data set.

Regression Model Results

In the following set of models, I examine how social factors, economic factors, housing market factors, and mortgage finance factors relate with the percentage of homes with negative equity in the Sixth District. All models report standardized coefficients. For example, in the third regression, a one standard deviation increase in the average age of housing increases the negative equity rate by 0.149

standard deviations. All models use robust standard errors, and all factors have a variance inflation factor below 3, suggesting that multi-collinearity is not a pressing concern.

The first regression reveals strong correlation between race and negative equity even after controlling for income. The relationship between negative equity and percent black is very strong, with a standardized coefficient (or beta) of 0.46. The relationship between persistent negative equity and percent Hispanic is smaller, and it disappears once factors for mortgage lending and fixed effects for state or metropolitan area are included. This suggests negative equity is systematically higher in MSAs/states with high Hispanic populations, but that within these MSAs, Hispanic neighborhoods do not have higher levels of negative equity than other zip codes after one controls for mortgage lending. The relationship between percent black and negative equity remains strong even as measures of economic health, quality of housing stock, mortgage lending, and spatial fixed effects are included. Even including the home price decline from the peak in the fifth regression does not diminish the strong correlation between percent black and negative equity. This suggests the recovery has not reached predominantly black residential areas, and neither the depth of the crisis nor current physical and economic factors are sufficient to explain this persistent decline.

The second regression adds two measures of local economic well-being beyond income: the local unemployment rate and mean commute times. There are strong, consistent relationships between commute times and negative equity. In the first specification, increasing the unemployment rate by one standard deviation increases the percent of homes in negative equity by 0.17 standard deviations. This relation declines to 0.13 as controls for housing stock quality and subprime lending are included. In regressions (6) and (7), unemployment is not significant, suggesting that negative equity is systematically higher in the same states where negative equity is high, but that within a given MSA or state, high unemployment does not lead to higher negative equity after controlling for other factors like access to jobs (commute times). Commute times are strongly and consistently related to negative equity in all specifications. One standard deviation longer commute time is associated with negative equity rates that are 0.11 standard deviations higher. The strength of this relationship persists even as controls for housing stock quality, subprime lending, and foreclosure rates are included, and in specifications with city and state fixed effects. This variable probably measures exurban locations that are physically far from job centers as well as places where people are reliant on slower modes of transportation like buses, and it suggests that lack of access to jobs is correlated with negative equity. Figures 2, 3, and 4 depict maps of the spatial distribution of negative equity in three cities: Atlanta, Miami, and Jacksonville. The maps show that there are high concentrations of negative equity in urban cores of larger cities, and distressed areas extend to suburban zip codes.

The third regression adds factors relating to the quality of housing stock and local housing market demand. Areas with low rates of owner occupancy and older housing stock are less likely to have high negative equity, suggesting that negative equity is concentrated in places with more dilapidated housing stock. Vacant housing, an indicator of low demand for housing, is also associated with negative equity. There are separate measures for owner-occupied and rental vacancy rates. Both are positively associated with negative equity, with slightly higher impacts associated with vacant owner-occupied housing stock.

In the fourth regression, I add in covariates for mortgage lending: the percent of loans that were subprime at the peak of the bubble, and the percent of loans that terminated in foreclosure. In the fifth regression, I replace the foreclosure rate with a measure of local home price crash, as many who bought or refinanced homes near the peak of the housing market are more likely to suffer from negative equity. These factors control for the impact of high-risk lending and the depth of the housing market crash and can help reveal what factors are associated with recovery. The inclusion of the home price decline deflates most coefficients. Measures of housing stock quality and demand become less important; however, the percent of residents who are black becomes an even stronger predictor of negative equity than when controlling for subprime lending and the foreclosure rate. Research has shown that subprime lending and home price volatility were concentrated in racially segregated areas. But including these factors does not explain away persistent negative equity in predominantly black areas, leading to the interpretation that the housing market recovery has been uneven.

The sixth and seventh regressions add MSA and state fixed effects to provide within-MSA and within-state estimates. Overall, the results are consistent with those in previous regressions.

Table 8. Ordinary Least Squares Regression Results Predicting Percent of Homes in Negative Equity

Sixth District

Unit: Zip code, weighted by adult population

Dependent variable: Percent of homes in negative equity, second quarter 2015

n=2,788

	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p	Beta	p
Percent black	0.461	0.000	0.406	0.000	0.391	0.000	0.217	0.000	0.262	0.000	0.182	0.000	0.220	0.000
Percent nonwhite Hispanic	0.136	0.000	0.105	0.000	0.045	0.027	0.002	0.915	-0.026	0.170	-0.034	0.066	-0.032	0.096
Median household income	-0.232	0.000	-0.180	0.000	-0.211	0.000	0.004	0.853	0.057	0.028	-0.018	0.453	-0.052	0.078
Unemployment rate			0.172	0.000	0.159	0.000	0.129	0.000	-0.017	0.483	0.040	0.094	0.029	0.245
Mean commute time			0.111	0.000	0.127	0.000	0.087	0.000	0.110	0.000	0.104	0.000	0.056	0.015
Owner-occupied rate					-0.127	0.000	-0.207	0.000	-0.206	0.000	-0.216	0.000	-0.157	0.000
Average age of housing					0.149	0.000	0.122	0.000	0.053	0.014	0.077	0.000	0.057	0.011
Homeowner vacancy rate					0.053	0.004	0.085	0.000	0.081	0.000	0.074	0.000	0.059	0.000
Rental vacancy rate					0.043	0.044	0.051	0.002	0.021	0.160	0.048	0.002	0.042	0.006
Percent subprime loans at peak									0.339	0.000	0.457	0.000	0.482	0.000
Percent foreclosure rate									0.197	0.000			0.000	0.000
Home price decline from peak									-0.429	0.000				
Metropolitan statistical area fixed effects														x
State fixed effects (Omitted AL)											x			
FL													0.112	0.002
GA													0.118	0.000
LA													-0.149	0.000
MS													-0.132	0.000
TN													-0.131	0.000
R-squared	0.377		0.413		0.440		0.507		0.689		0.565		0.709	

Note: Omitted AL indicates that AL is the baseline or reference category.

Sources: Zillow's Negative Equity Report, Zip Code Level, Second Quarter 2015, U.S. Census Bureau's 2009–13 5-Year American Community Survey, Lender Processing Services

Conclusion

This research describes the characteristics of Sixth District neighborhoods where the housing market crisis persists at very high levels even six years after the official end of the recession. I find that the crisis is geographically concentrated in urban areas of the Sixth District, particularly in predominantly black areas. Controlling for spatial fixed effects suggests that within a given city, predominantly Hispanic/Latino areas do not fare any worse than other areas in that city.

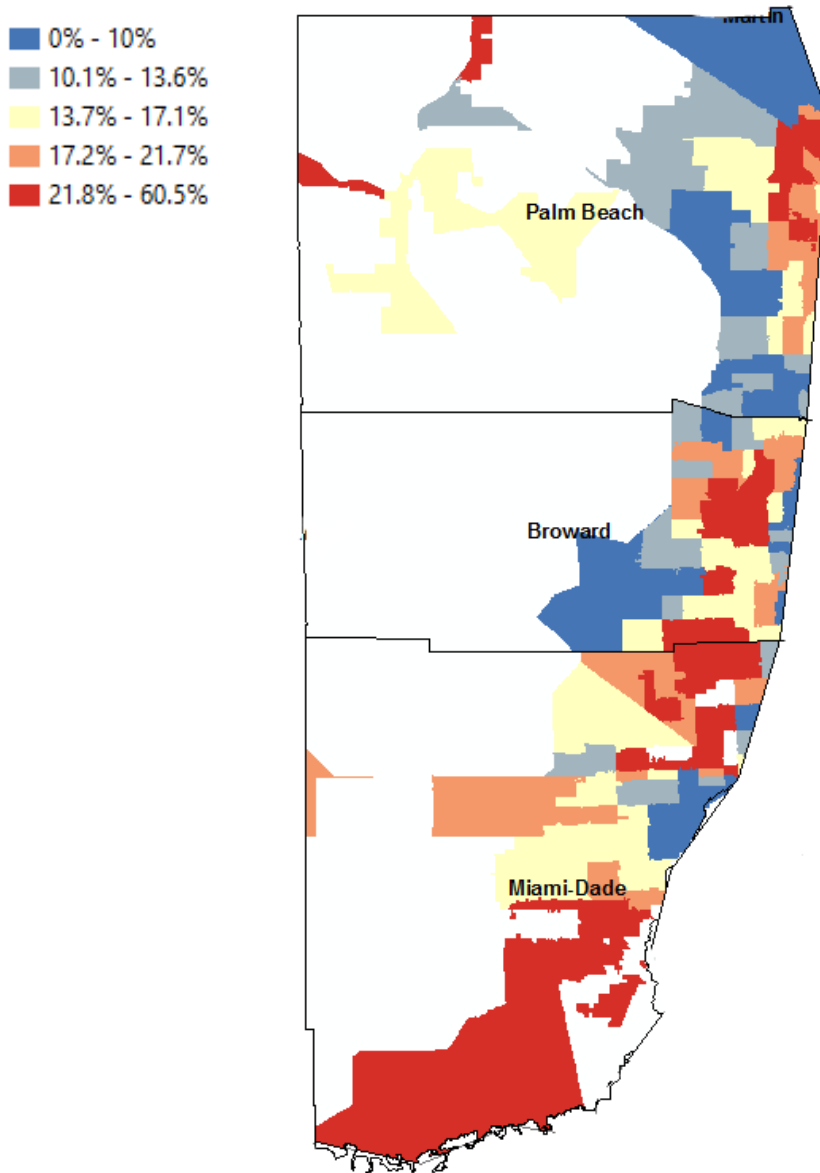
The results from the fifth regression, which control for the depth of the housing crash, show that the uneven distribution of negative equity is not solely due to the concentration of foreclosures and housing market crash in some areas, but that the recovery phase of the crisis has also been uneven. I find that the factors of vacancies, unemployment, longer commute times, housing stock quality, and mortgage lending all contribute separately to prolonged negative equity. However, even after controlling for a complete set of economic and housing market factors, racial and ethnic demographic factors remain powerful predictors, suggesting that the uneven recovery may be exacerbating the housing wealth gap between races and ethnicities.

This analysis is descriptive, not causal, and does not attempt to settle the many causal debates about whether negative equity causes or is caused by highly correlated factors. This research does not attempt to address the debate about to what degree negative equity causes unemployment and low wages by creating housing lock, and to what extent areas that are undesirable for workers to live in (either because they have long commute times or other reasons) languish from slack demand for housing. Similarly, there are currently debates about whether the negative externalities from foreclosures stem primarily from physical disrepair or from the impact that excess supply of housing has on home prices, which this analysis cannot resolve. Most importantly, the association between racial and ethnic residential patterns and negative equity should not be interpreted as causal.

Future research might include further investigation into the association between high rental vacancies and negative equity, and given the uneven nature of the recovery, research into whether policy responses like demolitions and HARP and HAMP loan modifications were performed in the areas where they were most needed.

Appendix

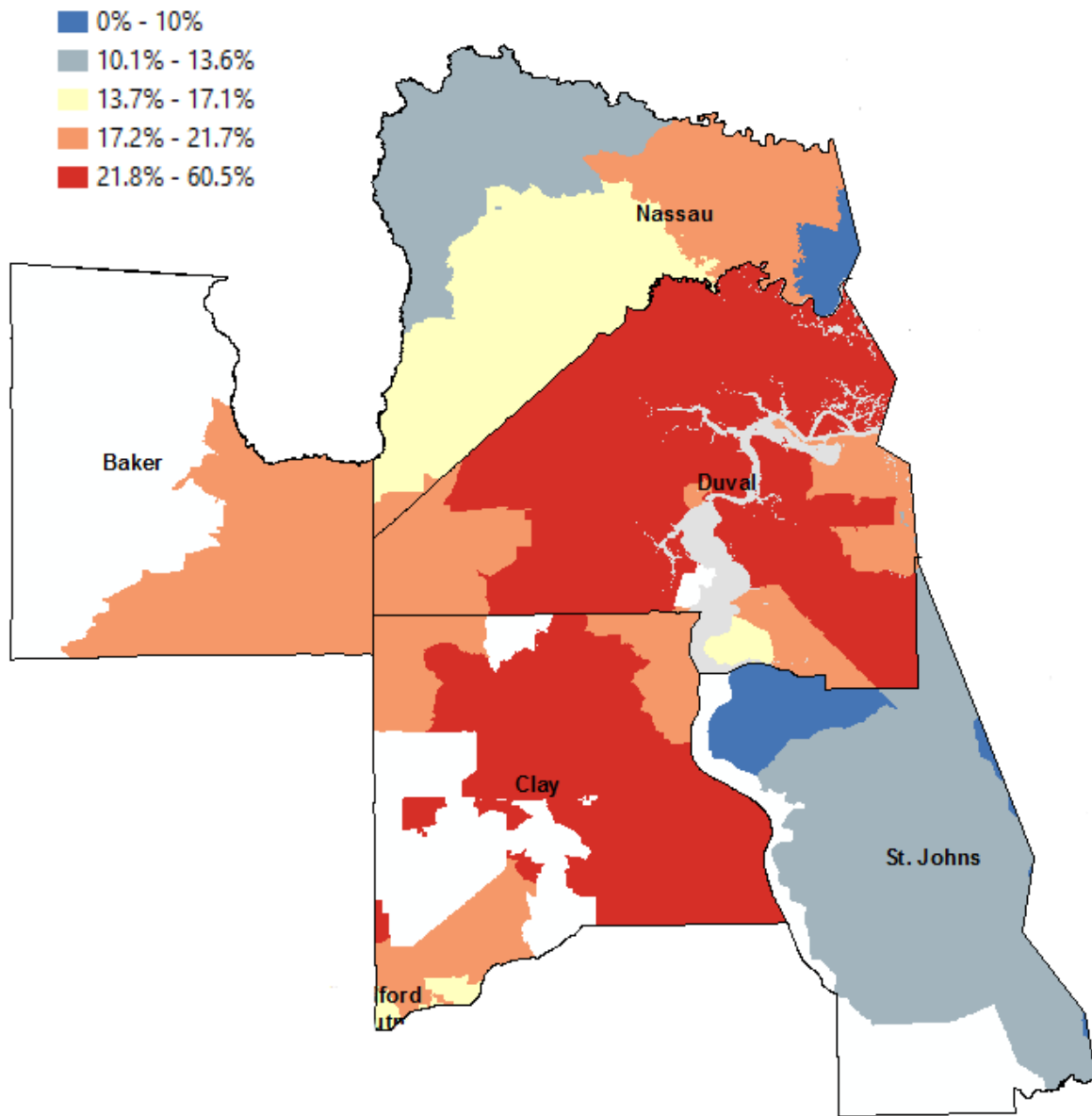
Figure 2. Miami-Fort Lauderdale-West Palm Beach, FL
Percent of Homes Underwater by Zip Code, Second Quarter 2015



Source: Zillow's Negative Equity Report, Zip Code Level, Second Quarter 2015

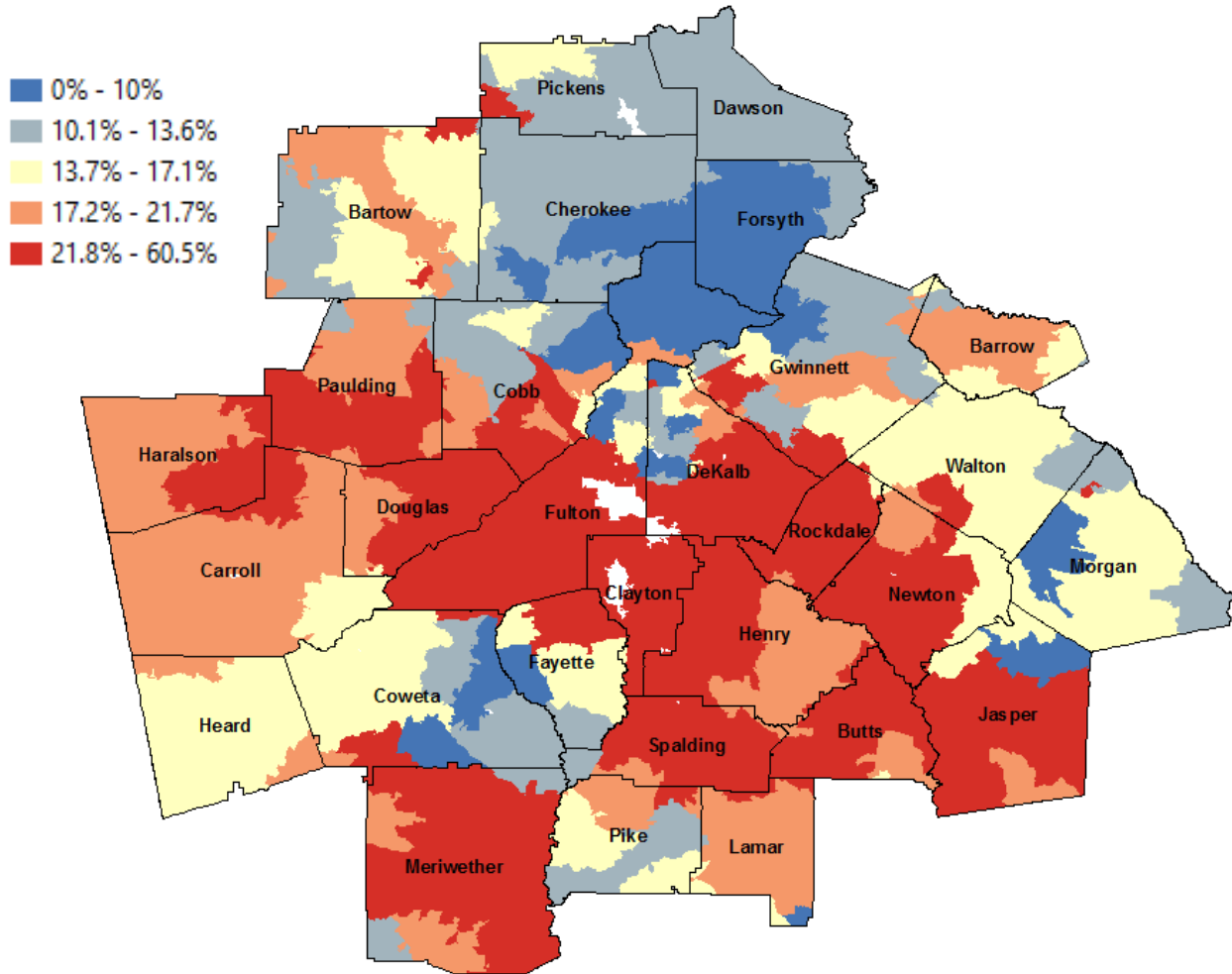
Figure 3. Jacksonville, FL

Percent of Homes Underwater, Second Quarter 2015



Source: Zillow's Negative Equity Report, Zip Code Level, Second Quarter 2015

Figure 4. Atlanta-Sandy Springs-Roswell, GA
Percent of Homes Underwater, Second Quarter 2015



Source: Zillow's Negative Equity Report, Zip Code Level, Second Quarter 2015

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