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## Analyzing Census tract foreclosure risk rates in mature and developing suburbs in the United States

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In the early 2000s, many policymakers and researchers became concerned about suburban decline. The recent national subprime, foreclosure, and economic crises have intensified these concerns. In this study, I analyze the 2010 Neighborhood Stabilization Program 3, the 2005/2009 American Community Survey, and other databases with descriptive statistics and weighted least squares regression models. Differentiating among tracts in central cities, mature suburbs, and developing suburbs in the 100 largest metropolitan statistical areas, I examine what factors determine the Census tract foreclosure risk rate and what differentiates these factors. Results show that mature suburbs have foreclosure rates similar to central cities and that similar factors determine the neighborhood foreclosure risk rates among central cities and mature and developing suburbs to a different degree. These results demonstrate the need for place-based interventions.

**Keywords:** foreclosure; foreclosure risk; suburbs; mature suburbs; developing suburbs

### Introduction

With about 65% of households owning a home and more than 50% of Americans residing in the suburbs, the United States is a nation of suburban homeowners (Alba & Logan, 1991; Logan & Golden, 1986; Nicolaidis & Wiese, 2006; Orfield, 2002; Puentes & Warren, 2006; Teaford, 2008). The enormous investment in homeownership is important both to homeowners and to the communities in which they live (Morrow-Jones, Irwin, & Roe, 2004). If suburbs have problems or are in decline, then property values may decrease and investment value will be lost (Anacker, 2009). With a large proportion of homeowners both living in suburbs and banking on home equity as a retirement nest egg, this is a serious public policy concern (Kneebone & Berube, 2013).

In the 1980s, scholars investigating suburban decline in the United States examined demographic, social, economic, and fiscal data, and concluded that suburbs are characterized by (1) socioeconomic separation and exclusion, (2) the spread of problems that have long been thought of as confined to central cities in the United States, and (3) a positive correlation between the age of a central city and its “troubled suburb”—although not every suburb necessarily experiences all three phenomena (Fernandez & Pincus, 1982; see also Baldassare, 1986). While these scholars focused on suburbs, based on descriptive statistics, rankings, and correlations, they did not differentiate between or among them, as the next generation of suburban scholars would do, based on multivariate methods. In the

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early 2000s, many policymakers and researchers became concerned that mature suburbs<sup>1</sup> would experience a decline similar to that witnessed by central cities in the 1950s, 1960s, and 1970s (Bier, 1991, 2001; Bier & Howe, 1998; Hudnut, 2003; Lucy & Phillips, 1995, 1997, 2000, 2001a, 2001b; Orfield, 2002; Puentes & Orfield, 2002; Puentes & Warren, 2006). In the context of this study, mature suburbs will be defined below. For the remainder of this study, the terms “suburb(s)” and “suburban Census tract(s)” will be used interchangeably.

Long-term concerns about decline in mature suburbs, discussed in the early 2000s, were overshadowed by medium-term concerns in connection with the national subprime, foreclosure, and economic crises that have taken place since the mid-2000s. These crises have had severe impacts on both mature and developing suburbs (Kneebone & Garr, 2010). While foreclosure studies have been undertaken at the national (e.g., Immergluck, 2009a, 2009b), regional (e.g., Laderman & Reid, 2008), and select metropolitan levels (e.g., Anacker & Carr, 2011; Immergluck & Smith, 2005), few authors have focused on suburbs, and even fewer have differentiated between mature and developing suburbs. As Immergluck (2010, p. 5) points out, “relatively little systematic research has examined [...] the spatial patterns [of foreclosed homes] during the U.S. foreclosure crisis.” This study fills this gap by analyzing Census tract foreclosure risk in central cities and mature and developing suburbs in the United States.

While central cities in the United States have a well-established social welfare and decades- or even centuries-old philanthropy infrastructure, most suburbs have been lagging behind in this regard, as they have been perceived as places with high proportions of home-owning non-Hispanic White and native-born householders with relatively high household incomes and levels of education and without any problems (Allard, 2009; Kneebone & Berube, 2013). Yet the suburban reality has been more nuanced and varied (Harris, 2010, 2013; Nicolaidis, 2002; Schulist & Harris, 2002; Wiese, 2004). Interestingly, somewhat recently some mature suburbs have begun establishing social welfare infrastructures, although the philanthropy infrastructure is still lagging behind (Allard & Roth, 2010; Mitchell-Brown, 2013). This trend is still nascent in the vast majority of developing suburbs, as “philanthropy has yet to fully adapt to the new geography of poverty” (Kneebone & Berube, 2013, p. 65).

More recently, the public policy framework for addressing foreclosures has been primarily people-based, not place-based. If mature suburbs have a similarly high rate of foreclosures compared to central cities yet a weaker social welfare and philanthropy infrastructure, and if the public policy framework that addresses the foreclosure crisis is primarily people based, mature suburbs may have more difficulties coping with the long-term trend of decline, diversity, and poverty, in addition to the impacts of the foreclosure and economic crises.

This study focuses on the Census tract scale instead of the household level as there are currently no data available at the household level for suburban Census tracts in the entire United States. In other words, the unit of analysis is the Census tract scale within metropolitan statistical areas (MSAs); it is not about the individuals who live in those Census tracts. This study asks the following two research questions, differentiating among Census tracts in (1) central cities, (2) mature suburbs, and (3) developing suburbs. First, what factors determine the Census tract foreclosure risk rate? Second, what are the differences among the factors that determine the Census tract foreclosure risk rate for cities, suburbs, and mature suburbs?

This study is structured as follows: the introduction is followed by a literature review that explores the gap in the foreclosure literature on suburbs. The third section deals with

the data sets and methods. These sections are followed by a discussion of public policies and a conclusion with suggestions for future research.

### Literature review

Over the past few years, metropolitan areas and central cities have been a focus of the literature on the foreclosure crisis, while different types of suburbs have been discussed to a lesser degree. Few authors have analyzed suburbs for the entire United States in a comparable fashion. Whereas some works that focus on the suburbs are noncomparative, focusing on one suburban county (Anacker, Carr, & Pradhan, 2012; Burnett, Herbert, & Kaul, 2002; Newman, 2009; Newman & Wyly, 2004), other works are comparative, comparing a few suburbs (and in some cases exurbs) against their respective central cities. Within the latter group, some argue that the foreclosure crisis has been more severe in central cities than in the suburbs, while others argue the opposite. Still others conclude that results are mixed.

Some argue, especially in earlier works, that the foreclosure crisis has been more severe in central cities than in suburbs due to the finding that subprime lending was disproportionately concentrated in central cities, which typically have many neighborhoods that have high proportions of residents who are low and moderate income and of color (Gruenstein & Herbert, 2000a, 2000b). As there is a positive causation between subprime lending and the foreclosure crisis, central cities are therefore assumed to be more affected by the foreclosure crisis than suburbs.

Others argue that the foreclosure crisis has been more severe in mature or developing suburbs than in central cities (Crump, 2007; Farrell, 2008; Hollander, 2011; Kaplan & Sommers, 2009; Leinberger, 2008; Schafran, 2013). For example, Niedt and Martin (2013) analyzed the National Suburban Survey, conducted by the National Center for Suburban Studies at Hofstra University, and the Princeton Survey Research Associates International. Although they did not differentiate between mature and developing suburbs, the authors found that almost 75% of the survey respondents who reported an experience with foreclosure lived in the suburbs. In addition, slightly more than 50% of the survey respondents who had someone in their household with a foreclosure experience, for example, a spouse or a child who moved back in with his/her parent(s), lived in the suburbs. Moreover, slightly more than 40% of the survey respondents who had a neighbor with a foreclosure experience lived in the suburbs. Furthermore, slightly more than 50% of the survey respondents who had a friend with a foreclosure experience lived in the suburbs.

Others have arrived at mixed results (for visual analyses, see Coulton, Chan, Schramm, & Mikelbank, 2008; Coulton, Schramm, & Hirsh, 2008, 2010; Immergluck, 2008; Immergluck & Smith, 2005, 2006; Newman & Wyly, 2004). For example, Newman and Wyly (2004) analyzed *lis pendens* notices<sup>2</sup> filed in the Newark MSA and found that pre-foreclosures were heavily concentrated in Newark and in distressed, aging suburbs but not “in the wealthy enclaves of the western half of the county” (Newman & Wyly, 2004, p. 61).

Grover and Lehnert (2008) analyzed zip codes in Hennepin and Ramsey counties in the Minneapolis area and found that delinquency and foreclosure rates were highest in central cities and exurban neighborhoods compared to suburban neighborhoods. More specifically, zip codes on the exurban fringe, located beyond the boundaries of Hennepin and Ramsey counties, showed a lower proportion of loans that are current. Delinquency and reset rates

were highest in suburban zip codes, and concentrations of real estate-owned (REO) properties were highest in northern neighborhoods in Minneapolis and nearby suburbs.

Lucy (2010) analyzed 35 MSAs, differentiating between the central county of each MSA and its surrounding suburban counties. Among these 35 MSAs, he took a closer look at eight MSAs where the “central cities are also counties” (Lucy, 2010, p. 13). He concluded that “the central city usually had a lower foreclosure rate than at least one of its surrounding suburban counties – and sometimes several” (Lucy, 2010, p. 13), although the picture appears to be somewhat mixed, as there were some analyzed MSAs that had suburban foreclosure rates that were similar to or higher than the foreclosure rates of the central city.

Reid (2010) analyzed 275 cities with populations over 25,000 in Arizona, California, and Nevada, differentiating among (1) established core cities, (2) steady-growth cities (which have a mixture of older and newer neighborhoods and housing stock and saw a moderate amount of growth and investment during the subprime boom), and (3) boomburb cities (which saw rapid growth in both population and their housing stock during the subprime boom). Analyses based on Lender Processing Services data show that boomburbs in the study communities have a higher concentration of REO properties and a higher proportion of delinquencies and foreclosures than steady-growth cities, with established core cities exhibiting the lowest REO delinquency and foreclosure rates among the three.

Immergluck (2010) analyzed REOs by zip code in the 75 largest MSAs of the entire nation, not differentiating between mature and developing suburbs. He concluded that during the peak of the subprime foreclosure crisis in late 2008 large central cities experienced higher levels of REO per mortgageable property than suburbs. However, he also concluded that there is variation with regard to the suburbanization of REOs; that is, the boom-bust regions experienced more suburbanization of REOs than weak- or mixed-market metros. However, when high-risk lending activity, the age of the housing stock, and the proportion of residents commuting over 30 minutes were controlled for, in addition to many other variables, REO growth was not associated with the central city or suburban location. Drilling down deeper, Immergluck (2010) analyzed the Atlanta, Cleveland, San Diego, and Las Vegas MSAs in greater detail. In the case of the Atlanta and Cleveland MSAs, zip codes in the central city and older, inner-ring suburbs had relatively high levels of REOs, but in the case of the Las Vegas and San Diego MSAs, zip codes in the suburbs had relatively high levels of REOs per mortgageable property.

In a follow-up study, Immergluck (2011a) analyzed the REO property density in zip codes in the entire United States and compared and contrasted three different geographies: (1) suburban zip codes, (2) zip codes where less than 50% of the area fell into a central city, and (3) zip codes where more than 50% of the area fell into a central city. He used 600 REOs per 10,000 properties as a threshold for a severe level of distress. For all MSAs, Immergluck found that 65% of the zip codes with 600 or more REOs per 10,000 properties were suburban zip codes (compared to 32% of zip codes where more than 50% of the area fell into a central city) and that 73% of the zip codes with 200–599 REOs per 10,000 properties were suburban zip codes (compared to 21% of zip codes where more than 50% of the area fell into a central city). However, these proportions differ across three different types of MSAs in the typology he created. He concludes that “the neighborhoods most affected [by the accumulation and concentration of foreclosed properties] are located both in cities and suburbs” (Immergluck, 2011a, p. 143).

In sum, most studies provide a mixed answer about whether central cities or suburbs have been more affected by the foreclosure crisis, including Immergluck (2010, 2011a, 2011b), who conducted detailed comparative analyses at the zip code level. This study is

conducted at the Census tract level for the 100 largest MSAs, which is different from the zip code level for the 75 largest MSAs. Results may be different due to the modifiable area unit problem, where boundaries of different geographical units are demarcated artificially, thus leading to different data sets and contrasting results (Wong, 2004). In this case, zip code areas are larger than Census tracts. Whereas the former are determined by walking routes of the US Postal Service, the latter are determined by the US Bureau of the Census, often matching neighborhood definitions of residents. To the author's knowledge, there is currently no analysis at the Census tract level that differentiates among central cities and different types of suburbs for the entire nation in terms of the Census tract foreclosure risk rate. This study fills that gap.

## Data and methods

### Data

This study uses data from the 2010 Neighborhood Stabilization Program (NSP) 3 (US Department of Housing and Urban Development, 2012), the 2005/2009 American Community Survey (ACS) (US Bureau of the Census, 2012), and Rusk's (2003) elasticity scores<sup>3</sup> to answer the two research questions posed above. To the author's knowledge, only the first two publicly available databases provide information about location at the Census tract level. In particular, they both tell whether locations are in a central city, mature suburb, or developing suburb.

Based on the NSP 3, ACS, and Rusk (2003) data, a database was created as follows: first, a list of the 100 largest MSAs in the United States was obtained from the Office of Management and Budget (OMB; Executive Office of the President, Office of Management and Budget, 2009). Second, a data set was created containing all counties within the 100 largest MSAs. Phrased differently, the geography of this study is the counties of the 100 largest MSAs. Third, all Census tracts within the counties within the 100 largest MSAs were differentiated as follows: (1) Census tracts within central cities, as designated by the OMB; (2) Census tracts within mature suburbs, defined as Census tracts with a median year housing units were built of 1969 or earlier, located outside of the central city but within a county within one of the 100 MSAs; and (3) Census tracts within developing suburbs, defined as Census tracts with a median year housing units were built of 1970 or later, located outside of the central city but within a county within the 100 MSAs. The differentiation between mature and developing suburbs was determined by the literature (Lucy & Phillips, 2000, 2006; see also Hanlon, 2010). Thus, the unit of observation of this study was the Census tract level, based on the NSP 3 and ACS data sets. Both data sets have consistent Census tract boundaries for 2000 and were merged according to geographic identifiers for their respective Census tracts. In addition, Rusk's (2003) elasticity scores were added at the MSA level, based on the argument that central cities matter to their respective MSAs (Calthorpe & Fulton, 2001; Dodge, 1996; Downs, 1994; Hill, Wolman, & Ford, 1995; Ledebur, 1993; Ledebur & Barnes, 1992; Orfield, 1997, 2002, 2009; Pastor, Dreier, Grigsby, & Lopez-Garza, 2000; Rusk, 1999; Savitch, Collins, Sanders, & Markham, 1993; Voith, 1992).

### Methods

Descriptive statistics and weighted least squares (WLS) regressions were conducted to answer the two research questions. WLS regressions are utilized whenever there is heteroskedasticity, an undesirable violation of the rules of statistical inference

(Hamilton, 1992). In order to address heteroskedasticity, a WLS estimation is conducted, satisfying all the assumptions of a classical linear regression model (Nielsen, 2002). The functional form chosen for the model that explains the risk of foreclosure was the log-linear form, which is typically chosen when the dependent variable has a wide spread—as is the case here, since Census tracts in the top 100 MSAs were included in this analysis—and when several independent variables have a concave distribution (Cannaday & Sunderman, 1986).

The basic form of the WLS regression is as follows:

Census tract foreclosure risk rate = f (central city elasticity score, Census tract socioeconomic characteristics, and Census tract housing characteristics)

In this case, the dependent variable was the Census tract foreclosure risk rate, or the rate of mortgages that were seriously delinquent (SDQ\_RATE) (i.e., 90 or more days delinquent or in foreclosure in June 2010), as estimated by the US Department of Housing and Urban Development (HUD).<sup>4</sup> The independent variables, displayed in Table 1, fell into

Table 1. Description of variables, data, and literature sources.

Variable	Description	Data source/ time frame	Literature source
<i>Dependent variable</i>			
Census tract foreclosure risk rate	Proportion of mortgages seriously delinquent or in foreclosure	HUD NSP 3 (June 2010)	
<i>Independent variables</i>			
Metropolitan statistical area characteristic			
Central city elasticity score	Central city elasticity score	Rusk (2003)	Rusk (2003)
Census tract socioeconomic characteristics			
Proportion non-Hispanic White	Proportion of population non-Hispanic White alone	ACS 2005/2009	Anacker and Carr (2011)
Proportion Black/African American	Proportion of population Black/African American alone	ACS 2005/2009	Anacker and Carr (2011)
Proportion Asian	Proportion of population Asian alone	ACS 2005/2009	Anacker and Carr (2011)
Proportion Hispanic/Latino	Proportion of population Hispanic/Latino	ACS 2005/2009	Anacker and Carr (2011)
Median household income	Median household income	ACS 2005/2009	Anacker and Carr (2011)
Census tract housing characteristics			
Homeownership rate	Proportion of occupied housing units owner-occupied	ACS 2005/2009	
Proportion housing units vacant	Proportion of housing units nonoccupied	ACS 2005/2009	Mallach (2010)
Median year housing units built	Median year housing units built	ACS 2005/2009	Immergluck (2010)
Median value housing units	Median value housing units	ACS 2005/2009	Immergluck (2008, 2010)

three groups: MSA characteristics, Census tract socioeconomic characteristics, and Census tract housing characteristics.

Regarding the MSA characteristics, the following variable was utilized:

- the central city elasticity score, as calculated by Rusk (2003), based on the combined effect of a central city's population per square mile in 1950 (not weighted) and the degree to which it expanded its city limits between 1950 and 2000 (weighted three times the weight of initial density), ranked against all other central cities in Rusk's analysis ( $n = 119$ ).

Concerning Census tract socioeconomic characteristics, the following variables were utilized, based on the ACS 2005/2009:

- the proportion of the population that was non-Hispanic White alone;
- the proportion of the population that was Black/African American alone;
- the proportion of the population that was Asian alone;
- the proportion of the population that was Hispanic/Latino; and
- the median household income.

Regarding Census tract housing characteristics, the following variables were utilized, based on the ACS 2005/2009:

- the homeownership rate;
- the proportion of housing units that were nonoccupied;
- the median year the housing units were built; and
- the median value of the housing units.

## Results

My purpose is to explore two research questions. First, what factors determine the Census tract foreclosure risk rate? Second, how do the determinants of foreclosure risk vary across central cities, mature suburbs, and developing suburbs? The results are subject to selection biases, as only the top 100 largest MSAs are chosen for the analysis. As the ACS covers only 3% of the population, and as the ACS 2005/2009 is based on five-year averages, the margins of error are somewhat high, as shown in [Table A1](#), but still lower than three-year averages and one-year estimates. Thus, results should be considered with caution (US Bureau of the Census, 2012). Below, descriptive statistics and regression results are discussed. All tables differentiate among (1) central cities, (2) mature suburbs, and (3) developing suburbs.

### *Descriptive statistics*

The *Census tract foreclosure risk rate* is above 8% in all analyzed tracts, central cities, mature suburbs, and developing suburbs (see [Table 2](#)). However, not all delinquent mortgages necessarily complete the foreclosure process; only about 50% do (Cordell, Dynan, Lehnert, Liang, & Mauskopf, 2008). In other words, the analyzed Census tract foreclosure risk rate is about twice as high as the rate of completed foreclosures. Thus, the results for the Census tract foreclosure risk rate are consistent with other analyzed rates

Table 2. Descriptive statistics for all, central cities, mature suburbs, and developing suburbs.

Variable	All analyzed tracts: mean (standard deviation)	Central cities: mean (standard deviation)	Mature suburbs: mean (standard deviation)	Developing suburbs: mean (standard deviation)
<i>Dependent variable</i>				
Census tract foreclosure risk rate	9.24% (5.61)	9.72% (6.29)	9.18% (5.22)	8.83% (5.14)
<i>Independent variables</i>				
Metropolitan statistical area characteristic				
Central city elasticity score	16.18 (10.87)	18.19 (11.60)	11.47 (8.64)	18.29 (10.58)
Census tract socioeconomic characteristics				
Proportion non-Hispanic White	58.89% (31.90)	42.51% (32.03)	64.21% (31.11)	70.82% (24.78)
Proportion Black/African American	16.75% (25.77)	27.59% (32.75)	12.71% (21.38)	9.28% (15.46)
Proportion Asian	5.47% (9.62)	6.16% (11.03)	5.14% (9.00)	5.06% (8.49)
Proportion Hispanic/Latino	16.94% (22.33)	21.90% (25.67)	16.10% (22.46)	12.68% (17.04)
Median household income	\$59,463 (29,530)	\$48,295 (26,599)	\$62,375 (31,257)	\$68,328 (27,284)
Census tract housing characteristics				
Homeownership rate	64.92% (24.62)	51.83% (25.10)	68.14% (22.11)	75.43% (19.78)
Proportion housing units vacant	9.78% (8.86)	11.98% (9.71)	8.39% (7.85)	8.73% (8.30)
Median year housing units built	1966 (17.59)	1959 (17.93)	1955 (9.35)	1983 (8.16)
Median value housing units	\$287,087 (203,702)	\$279,736 (221,139)	\$310,467 (217,254)	\$274,325 (168,731)

including, for example, rates for mortgages that servicers started to foreclose (Colton, Chan, Schramm, & Mikelbank, 2008a; Grover & Lehnert, 2008; Immergluck & Smith, 2005; Kaplan & Sommers, 2009; Lucy, 2010; Newman & Wyly, 2004; Niedt & Martin, 2013; Reid, 2010). Geographically, results show that mature suburbs have a higher Census tract foreclosure risk rate (9.18%) than developing suburbs (8.83%), contradicting Egan (2010), Harvey (2009), Leinberger (2008), and Semuels (2010), who argue that exurbs are disproportionately affected by the foreclosure crisis.

With regard to *socioeconomic characteristics*, the proportion of non-Hispanic Whites is lowest in central cities, and the proportion of people of color is lowest in developing suburbs, consistent with the literature (Hanlon, 2010; Kneebone & Berube, 2013; Lucy & Phillips, 2006; Wyly, Atia, Lee, & Mendez, 2007; Wyly, Moos, Foxcroft, & Kabahizi, 2007; Wyly & Ponder, 2011). Median household income is highest in developing suburbs and lowest in central cities, also consistent with the literature (Hanlon, 2010; Kneebone & Berube, 2013; Lucy & Phillips, 2006) (see Table 2).

With regard to *housing characteristics*, the homeownership rate is lowest in central cities and highest in developing suburbs, consistent with the literature (Anacker, 2009). The proportion of vacant units is highest in central cities and lowest in mature suburbs, the

former indicating some distressed neighborhoods and school quality issues and the latter indicating an affordable rental market and owner-occupiers staying in place (Beck Pooley, 2015). Regarding the median year housing units were built, mature suburbs have the oldest while developing suburbs have the youngest housing stock. As the conventional land development pattern occurs from the center of a city to the periphery, one would expect a decrease in the age of the housing stock from the center out (O'Sullivan, 2000). Here, however, the median year the housing units were built is 1955 in mature suburbs and 1959 in central cities. In younger MSAs, mature suburbs might have Census tracts with a housing stock with a median year younger than 1969. Thus, these tracts get classified as developing suburbs even though they are really more like mature suburbs in terms of their position within the metropolitan area. Also, the younger housing stock in central cities compared to mature suburbs can be attributed to the demand for housing downtown by millennials and empty nesters (Ezell, 2004, 2006).

Concerning the median value of housing units, mature suburbs have the highest while developing suburbs have the lowest median value. The former finding indicates somewhat high land values due to the proximity to central cities, house sizes larger than in central cities, and the proximity to amenities in both central cities and mature suburbs. The latter finding is consistent with the established house and land price literature (Alonso, 1964; Burgess, 1925; Harris & Ullman, 1945; Hoyt, 1939; Mills, 1972; Muth, 1969). Utilizing a different definition, Anacker (2009) finds that mature suburbs in Franklin County, Ohio, compared to Columbus and its developing suburbs, rank highest, although developing suburbs in Cuyahoga County and Hamilton County, both in Ohio, rank highest in terms of their median values. More research with different definitions of mature suburbs should be conducted to obtain more robust findings.

### **Regression analyses**

Table 3 presents a log-linear WLS regression model. Only those coefficients that were significant at the 5% significance level are discussed below. The regression model explains 71.07% of the total variation in the Census tract foreclosure risk rate for all analyzed Census tracts, 43.25% for central cities, 62.36% for mature suburbs, and 44.24% for developing suburbs. Almost all signs are consistent with the literature and expectations (except the proportion of Asians in mature suburbs).

Whereas much has been published on race and ethnicity in connection with the foreclosure crisis at the national, regional, or MSA level (Immergluck, 2009a, 2009b; Immergluck & Smith, 2005; Laderman & Reid, 2008), little has been published on race and ethnicity and the foreclosure crisis that differentiates between central cities and suburbs, differentiates among suburbs, or studies a single suburb (Anacker et al., 2012; Gruenstein & Herbert, 2000a, 2000b; Immergluck, 2010, 2011a, 2011b; Newman & Wyly, 2004).

In terms of *Census tract socioeconomic characteristics* and the proportion of Blacks/African Americans, the signs of the coefficients are positive, consistent with the literature (Anacker & Carr, 2011; Bocian, Li, & Ernst, 2010; Gerardi, Shapiro, & Willen, 2007; Immergluck & Smith, 2005; Lauria & Baxter, 1999), yet their magnitude is different for central cities (11.92), mature suburbs (11.73), and developing suburbs (9.89). Thus, Black/African American Census tracts in developing suburbs, compared to tracts in mature suburbs and central cities, have a reduced risk of foreclosure, contradicting a previous case study of Prince George's County, Maryland (Anacker et al., 2012). There may be many reasons for this finding,

Table 3. WLS regression results for all analyzed tracts, central cities, mature suburbs, and developing suburbs (dependent variable: neighborhood foreclosure risk rate).

Variable	All analyzed tracts: parameter estimate standard error ( $Pr >  t $ )	Central cities: parameter estimate standard error ( $Pr >  t $ )	Mature suburbs: parameter estimate standard error ( $Pr >  t $ )	Developing suburbs: parameter estimate standard error ( $Pr >  t $ )
Intercept	-28.5403 ( $<0.0001$ )	-59.0442 ( $<0.0001$ )	-25.1144 ( $<0.0001$ )	-10.5085 (0.0798)
<i>Metropolitan statistical area characteristic</i>				
Central city elasticity score	-0.0662 ( $<0.0001$ )	-0.0187 ( $<0.0001$ )	-0.0082 (0.0389)	-0.0390 ( $<0.0001$ )
<i>Census tract socioeconomic characteristics</i>				
Proportion Black/ African American <sup>a</sup>	9.0262 ( $<0.0001$ )	11.9177 ( $<0.0001$ )	11.7320 ( $<0.0001$ )	9.8929 ( $<0.0001$ )
Proportion Asian	-1.3524 ( $<0.0001$ )	-4.3815 ( $<0.0001$ )	1.0485 ( $<0.0001$ )	-5.0784 (0.2770)
Proportion Hispanic/ Latino	13.5695 ( $<0.0001$ )	13.0271 ( $<0.0001$ )	12.5379 ( $<0.0001$ )	16.4779 ( $<0.0001$ )
Median household income	-0.0000 ( $<0.0001$ )	0.0000 ( $<0.0001$ )	-0.000 ( $<0.0001$ )	-0.0000 ( $<0.0001$ )
<i>Census tract housing characteristics</i>				
Homeownership rate	1.9545 ( $<0.0001$ )	4.2622 ( $<0.0001$ )	3.5917 ( $<0.0001$ )	4.4395 ( $<0.0001$ )
Proportion housing units vacant	7.6358 ( $<0.0001$ )	5.8440 ( $<0.0001$ )	4.1915 ( $<0.0001$ )	12.0519 ( $<0.0001$ )
Median year housing units built	0.0180 ( $<0.0001$ )	0.0307 ( $<0.0001$ )	0.0155 ( $<0.0001$ )	0.0080 (0.0089)
Median value housing units	-0.0000 ( $<0.0001$ )	-0.0000 (0.0019)	-0.0000 ( $<0.0001$ )	-0.0000 (0.0031)
Adjusted $R^2$	0.7107	0.4325	0.6236	0.4424
N	38,714	13,680	11,575	13,637

Note: <sup>a</sup>Base case: non-Hispanic White.

including that Black/African American borrowers in developing suburbs may be less targeted for subprime mortgages or have a better credit history and thus access to mortgages with better terms compared to Black/African American borrowers in central cities. More research should be conducted, utilizing a data set with observations at the individual level.

With regard to the proportion of Hispanics and Latinos, the signs of the coefficients are also positive, consistent with the literature (Anacker & Carr, 2011; Bocian et al., 2010; Gerardi et al., 2007; Immergluck & Smith, 2005; Lauria & Baxter, 1999), with the magnitude being different for central cities (13.03), mature suburbs (12.54), and developing suburbs (16.48). However, unlike Blacks/African Americans, the coefficient is largest in developing suburbs, consistent with Anacker (2010), who analyzed Prince William County, Virginia, and Anacker et al. (2012), who analyzed Prince George's County, Maryland, both located in the Washington, DC MSA. More research should be conducted utilizing a data set with observations at the individual level.

With regard to the proportion of Asians, the signs of the coefficients are negative for all analyzed tracts and central cities (the coefficient for developing suburbs is insignificant), consistent with the literature (Anacker & Carr, 2011; Bocian et al., 2010; Gerardi

et al., 2007; Immergluck & Smith, 2005; Lauria & Baxter, 1999), yet they are positive in mature suburbs. Also, the magnitude of coefficients has quite a range (−4.38 for central cities, −1.35 for all analyzed tracts, and 1.05 for mature suburbs). Asians have a relatively high heterogeneity with regard to income and wealth among the different subgroups (Patraporn, Ong, & Houston, 2009). Thus, there might also be heterogeneity with regard to mortgage terms. This could mean that a particular subgroup of Asian borrowers residing in mature suburbs might be more targeted for subprime mortgages or have a worse credit history than Asian borrowers who reside in other parts of the metropolitan region.<sup>5</sup> More research should be conducted utilizing a data set with observations at the individual level.

In terms of *Census tract housing characteristics* and the homeownership rate, there is also quite a variety among the coefficients, ranging from mature suburbs (3.59) to central cities (4.26) to developing suburbs (4.44). This finding indicates that Census tracts with a higher homeownership rate in developing suburbs have an increased risk of foreclosure, possibly demonstrating that borrowers in these types of suburbs are being targeted for subprime mortgages because they have a worse credit history and thus worse access to mortgages with better terms than other borrowers. Conversely, it may be an effect of the mortgage lending frenzy during the national house price bubble from 2000 to 2006, particularly in developing suburbs (Egan, 2010; Harvey, 2009; Leinberger, 2008, March; Semuels, 2010).

With regard to the proportion of vacant housing units, the sign of the coefficient is positive, confirming the literature (Kaplan & Sommers, 2009; Mallach, 2010), yet it varies widely, ranging from mature suburbs (4.19) to central cities (5.84) to developing suburbs (12.05). Therefore, Census tracts that have higher rates of vacancy in developing suburbs are more at risk of foreclosure than in central cities or mature suburbs. The reason for this finding could be that neighborhoods in developing suburbs have a homogeneous housing stock, whereas neighborhoods in most central cities and many mature suburbs have a heterogeneous housing stock. The property values of nearly identical adjacent houses in recently built subdivisions might be particularly impacted by adjacent vacant houses, as the sameness and the aesthetic blight of the building stock might exacerbate vacancies<sup>6</sup> (Egan, 2010; Harvey, 2009; Leinberger, 2008; Semuels, 2010). This result calls for more place-based interventions in suburbs affected by foreclosures and vacancies.

### Public policies

Over the past 10 years or so, many researchers and policy analysts have become concerned about suburban decline and have discussed the policy landscape for suburbs. One of the first was Bier (1991), who pointed out that

policy working against the city is more powerful than policy working for the city. As a consequence, cities like Cleveland have an almost impossible job in attempting to avoid decline. But the central city is not the only loser; in time, suburbs face the same, which in turn will affect the strength and stability of Cuyahoga County, and in turn the region. (p. 43)

Almost 10 years later, Puentes and Orfield concluded that the so-called First Suburbs in the Midwest were “caught in a policy blindspot” (Puentes & Orfield, 2002, p. 3; see also Anacker, 2009, for alternative findings). These policy concerns have increased in connection with the discussion on the suburbanization of poverty. Kneebone and Berube (2013) point out that “suburbs increasingly face the challenges of concentrated

disadvantage. The nation may be at risk of replicating in suburbs the mistakes it has worked for decades to reverse in cities” (p. 35), yet resources and nonprofit infrastructure are still focused on urban areas where poverty has historically been concentrated. “[T]raditional urban centers were much more likely to attract and fund social service resources and infrastructure than their surrounding suburbs, in large part because that was where the poor were concentrated” (p. 62), while “philanthropy has yet to fully adapt to the new geography of poverty” (p. 65). Nevertheless, research shows that some suburban providers have been successful (Allard, 2009; Allard & Roth, 2010; Anacker, 2009; Mitchell-Brown, 2013).

Suburban decline and the suburbanization of poverty have accelerated since the beginning of the national subprime, foreclosure, and economic crises in 2007. As shown above, findings on whether the foreclosure crisis has affected central cities, mature suburbs, or developing suburbs more are mixed. Over the past several years, many policies to address the foreclosure and economic crises have been introduced. Government interventions for consumers and borrowers occurred through the Economic Stimulus Act of 2008, signed into law in February 2008; the Housing and Economic Recovery Act (HERA), passed in July 2008; and the American Recovery and Reinvestment Act, signed into law in February 2009. Government interventions for foreclosed homeowners and communities have consisted of several initiatives and programs, for example, the FHA Secure program, announced in August 2007; the HOPE NOW Alliance, announced in October 2007; the National Foreclosure Mitigation Counseling program, launched in December 2007; the Neighborhood Stabilization Programs (NSP 1, NSP 2, and NSP 3) and the Hope for Homeowners (H4H) program through HERA; the Financial Stability Act of 2009; and the Making Home Affordable (MHA) initiative, which includes the Home Affordable Modification Program and the Home Affordable Refinance Program (Carr & Anacker, 2013).

Interestingly, most of these programs are people based, enabling some individuals to remain in their homes and thus reducing the number of vacant and abandoned homes in neighborhoods. The only place-based acts or programs were the American Recovery and Reinvestment Act, which purchased goods and services by funding construction and other investment activities, provided funds to states and localities, and increased aid for transportation projects (Reichling et al., 2012), and the three NSPs, which stabilized communities ravaged by the foreclosure crisis (Schwartz, 2012). However, the degree of place-based intervention has differed across space, and the impacts of these programs have not yet been analyzed at the Census tract level (The American Recovery and Reinvestment Act, n.d.; US Department of Housing and Urban Development, n.d.).

Results shown in Table 3 illustrate variations of factors that determine the Census tract foreclosure risk rate with regard to MSA and socioeconomic and housing characteristics. While the variations in socioeconomic characteristics that explain Census tract foreclosure risk rates might be addressed by the few current people-based interventions such as the MHA initiative, all of the variations in housing characteristics are not currently addressed by public policies. Thus, place-based public policies focusing on suburbs are needed.

## Conclusion

Place is the node that influences one’s quality of life and opportunities, including access to career-enhancing jobs, excellent educational and health facilities, good retail choices, safe and aesthetically pleasing neighborhoods, quality housing, and supportive social networks, among other factors. While until the 1970s many suburbs were perceived as

places that provided such access, the gradual suburban decline in the 2000s and the rapid national subprime, foreclosure, and economic crises since early 2007 have caused many to reevaluate this assumption.

Recent literature, as discussed above, comes to mixed results on whether the foreclosure crisis has hit central cities, mature suburbs, or developing suburbs harder. In this study, descriptive statistics show that the Census tract foreclosure risk rate is 9.72% in central cities, 9.18% in mature suburbs, and 8.83% in developing suburbs. It remains to be seen whether Census tracts (and borrowers) in central cities or mature suburbs will recover faster and in a more sustainable fashion from these crises, as many policies are people based but place neutral.

This study asked what factors determine the Census tract foreclosure risk rate and whether there are differences among the factors that determine this rate, differentiating among Census tracts in (1) central cities, (2) mature suburbs, and (3) developing suburbs. Results show that there are noteworthy variations for Blacks/African Americans, Asians, and Hispanics/Latinos and in terms of the homeownership rate and the proportion of housing units that are vacant among central cities, mature suburbs, and developing suburbs. These variations do not match place-based government interventions. Future research efforts could utilize more recent longitudinal data, differentiate among different states, and utilize additional socioeconomic and housing variables. Future research efforts could also evaluate the impact of public policies, differentiating among central cities, mature suburbs, and developing suburbs.

Many have termed the national subprime, foreclosure, and economic crises the Great Recession due to significant effects similar to those experienced during the Great Depression. Some have questioned homeownership as the desired choice of tenure (Florida, 2010) and discussed the increase in the proportion of single-person households (Klinenberg, 2012), while others have discussed the effect of current and future public policies on obtaining a mortgage and becoming homeowners (Carr & Anacker, 2013). The current public policy framework is people based, not place based. Most suburbs do not have a well-developed philanthropy infrastructure, and they only have a somewhat developed welfare infrastructure. Due to the long-term trends of decline, diversity, and poverty and the short-term impacts of the foreclosure and economic crises, and due to the unwillingness of national policymakers to assist some challenged suburbs, the suburban social infrastructure will be put to a stress test in the years and decades to come. Many researchers have conducted analyses and raised awareness of the fate of some suburbs. National policymakers should take advantage of these analyses and implement the many recommendations of these researchers.

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### **Notes**

1. Mature suburbs are also often called first-ring suburbs (Rokakis & Katz, 2001); inner-ring suburbs (First Suburbs Consortium Housing Initiative, 2002); inner-ring cities (Advisory

- Commission on Intergovernmental Relations, 1984); inner suburbs (Sutker, 1974); first suburbs (Puentes & Orfield, 2002; Puentes & Warren, 2006); first-tier suburbs (Hudnut, 2003); older suburbs (Kotkin, 2001; Lucy & Phillips, 2001a; among others); older hubs (Listokin and Beaton, 1983); or mature suburbs (Listokin & Patrick, 1983), among other labels. These labels are used interchangeably in the literature (Hudnut, 2003), indicating that there is not a generally accepted definition.
2. "A *lis pendens* is a notice filed on public record to provide warning that the title to a particular property is in litigation. *Lis pendens* notices on mortgaged properties are filed by the lender holding the note *after* the borrower has defaulted, but *before* a court judgment of foreclosure has been rendered. These notices are commonly known as 'pre-foreclosures' [...]" (Newman & Wyly, 2004, p. 59).
  3. The author thanks one of the anonymous reviewers for this suggestion.
  4. The dependent variable (SDQ\_RATE) is calculated through a regression analysis based on the following model:  $SDQ\_RATE = -2.211 - (0.131 * \text{percent change in MSA OFHEO current price relative to the maximum in the past eight years}) + (0.152 * \text{proportion of total loans made between 2004 and 2006 that are high-cost}) + (0.392 * \text{unemployment rate in respective county in June 2008})$ . Note the differences among (1) the dependent variable based on variables utilized by HUD, as enumerated below, and (2) the independent variables utilized by the author, enumerated above. HUD used a July 2010 extract of the rate of seriously delinquent mortgages at the county level provided by McDash Analytics to develop a predictive model using publicly available data for every Census tract in the United States. The model, based on a weighted number of mortgages in each county, predicted most of the variance between counties with regard to their rate of seriously delinquent mortgages with an  $R^2$  of 0.821. HUD's model at the county level was as follows:  $0.523$  (intercept) +  $0.476$  unemployment change 03/2005 to 03/2010 (based on BLS LAUS) –  $0.176$  rate of low-cost high-leverage loans 2004 to 2007 (based on HMDA) +  $0.521$  rate of high-cost high-leverage loans 2004 to 2007 (based on HMDA) +  $0.090$  rate of high-cost low-leverage loans 2004 to 2007 (based on HMDA) –  $0.188$  decrease in home values since peak (FHFA metro and nonmetro area). HUD then applied this model at the Census tract level to calculate the rate of mortgages that were seriously delinquent. See [http://www.huduser.org/portal/datasets/nsp\\_foreclosure\\_data.html](http://www.huduser.org/portal/datasets/nsp_foreclosure_data.html)
  5. While the US Bureau of the Census provides a breakdown for Asians by subgroup, regression models that include Asian subgroups lead to inconsistent results.
  6. The author is thankful to reviewer #1 for making this point.

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## Appendix

Table A1. Margins of error for all analyzed tracts, central cities, mature suburbs, and developing suburbs.

Estimates (margins of error)	All analyzed tracts	Central cities	Mature suburbs	Developing suburbs
<i>Census tract socioeconomic characteristics</i>				
Population	4,798.17 (±429.05)	4,172.17 (±474.24)	3,873.14 (±406.60)	5,958.39 (±457.45)
Number of non-Hispanic Whites	2,872.64 (±329.68)	1,828.70 (±295.84)	2,039.47 (±282.42)	3,913.97 (±387.51)
Number of Black/African Americans	678.54 (±223.63)	955.08 (±268.08)	710.51 (±223.48)	641.61 (±224.51)
Number of Asians	278.85 (±144.67)	277.92 (±154.03)	236.20 (±138.76)	331.59 (±151.05)
Number of Hispanics/Latinos	872.62 (±257.62)	1,028.76 (±292.10)	818.63 (±247.60)	942.05 (±269.81)
Median household income	\$59,464.70 (±10,166.73)	\$48,295.60 (±10,537.37)	\$54,640.36 (±10,761.54)	\$65.576 (±9,454.33)
<i>Census tract housing characteristics</i>				
Number of owner-occupied housing units	3,184.58 (±393.94)	2,217.69 (±381.44)	2,295.52 (±357.61)	4,298.68 (±439.56)
Number of housing units vacant	190.64 (±95.85)	198.48 (±98.31)	159.51 (±86.71)	228.89 (±107.29)
Median year housing units built	1966 (±3.82)	1959 (±4.64)	1952 (±4.43)	1983 (±3.21)
Median value housing units	\$287,238.66 (±32,566)	\$279,840.54 (±45,466.63)	\$302,992.40 (±38,227.56)	\$268,142 (±25,807.33)