

Segregation and subprime lending within and across metropolitan areas

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TAKEAWAYS

More segregated metropolitan areas had higher concentrations of subprime loans in minority neighborhoods than less segregated metropolitan areas.

Subprime loans were targeted to relatively large, geographically concentrated minority areas within segregated metropolitan areas, rather than to individual minority neighborhoods interspersed with nonminority neighborhoods.

Segregation played a pivotal role in the housing crisis by creating relatively larger areas of concentrated minorities into which subprime loans could be efficiently and effectively channeled.



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The recent housing foreclosure crisis was a key feature of the

Great Recession. The rapid growth of subprime lending and concomitant rise of foreclosures adversely affected the economy and millions of homeowners. (See text box on subprime lending and foreclosures.) African American and Hispanic borrowers were disproportionately likely to receive subprime loans and to lose their homes to foreclosure.¹ Existing evidence, though limited, suggests that residential segregation by race created distinct geographic markets that allowed subprime lending practices to flourish. However, past studies have not explicitly tested whether the concentration of subprime loans in minority neighborhoods varied by segregation levels. In the study described in this article, we fill in this research gap by integrating neighborhood-level data and measures of residential segregation to examine the relationship between segregation and subprime lending across the 100 largest metropolitan areas in the United States.²

Our research questions include:

- Across metropolitan areas, were subprime loans more concentrated in minority neighborhoods in highly segregated metropolitan areas than in less segregated metropolitan areas?
- Does the relationship between segregation and the concentration of subprime loans in minority neighborhoods vary if the neighborhoods are clustered together or scattered through a metropolitan area?
- Do subprime lending rates in minority neighborhoods vary between highly segregated and less segregated metropolitan areas after accounting for neighborhood socioeconomic characteristics?

Prior research on segregation and the housing crisis

In their 1993 book *American Apartheid*, Douglas Massey and Nancy A. Denton detailed the history and continuing effects of racial residential segregation in the United States.³ The authors write that segregation began with the Great Migration after World War I, when large numbers of African Americans moved from the rural South to the urban Northeast, Midwest, and West, to meet the need for labor generated by increasing industrialization. As working-class neighborhoods swelled with black migrants, whites moved to new neighborhoods, leaving room for more black residents to move into the neighborhoods whites had left. As white residents found their housing options becoming more limited, they used neighborhood associations, racially restrictive covenants, and violence, to prevent blacks from moving into their neighborhoods. In addition, the set of lending policies known as “redlining” identified neighborhoods with minority residents. Lenders would not lend money for the purchase of homes in red-lined neighborhoods, and realtors would not show properties in those neighborhoods to white prospective homeowners. Ultimately, middle-class whites fled

to the suburbs, leaving blacks as the majority residents of many urban neighborhoods, though still very restricted in their housing options. While white suburban homeowners built wealth through home equity, black families did not, contributing to large wealth gaps between blacks and whites.⁴

Although the Fair Housing Act of 1968 made practices like racially restrictive covenants and redlining illegal, subsequent studies have shown that: (1) whites still prefer to live in neighborhoods that are mostly white; (2) lenders are more likely to deny loans to black and Hispanic homebuyers than they are to equally qualified whites; and (3) that discrimination against both blacks and Hispanics in the housing market still exists.⁵

Although residential segregation peaked in the 1960s and has generally declined since, levels remain high.⁶ Subprime loans, once relatively uncommon (accounting for only 8 percent of U.S. housing loans in 2003), constituted one-fifth of all U.S. housing loans in 2005 and 2006, with much higher rates of subprime lending in some areas.⁷ This subprime lending boom brought with it new ways for racial residential segregation to have disproportionately negative effects on minorities. Since blacks and Hispanics had lower homeownership rates than whites and limited access to and information on other lending options, areas with high concentrations of minorities likely provided a ready market for subprime loans, as residents had limited access to other lending options.

Many studies have shown that blacks and Hispanics disproportionately received subprime loans and lost their homes due to foreclosure. For example, over the period of 2004 to 2008, African American and Hispanic borrowers were 1.6 times as likely as non-Hispanic white borrowers to receive a subprime loan.⁸ In addition, as of February 2012, 11 percent of African American borrowers and 14 percent of Hispanic borrowers had lost their homes due to foreclosure, compared to 6 percent of non-Hispanic whites.⁹ Some studies suggest that segregation played an important role in the housing crisis by providing an opportunity for subprime lenders and brokers to efficiently and effectively target minority neighborhoods, resulting in more subprime loans in segregated metropolitan areas. However, our study is the first to explicitly test this theory.

Methods

We use census-tract (neighborhood) level data on subprime loans and demographic characteristics for the 100 largest U.S. metropolitan areas, and we use Geographic Information Systems (GIS) software to determine the degree to which subprime loans were concentrated within metropolitan areas. We control for metropolitan-level factors that also influenced the housing crisis, such as population, median household income, and percentage of residents who were black or Hispanic. We also control for regional differences between housing markets, and for real estate market conditions by including measures of overbuilding and the housing-price boom.

Studies on segregation generally consider black-white and Hispanic-white segregation separately, but in our analyses, we combine blacks and Hispanics as a minority population. In the West and Southwest, neighborhoods

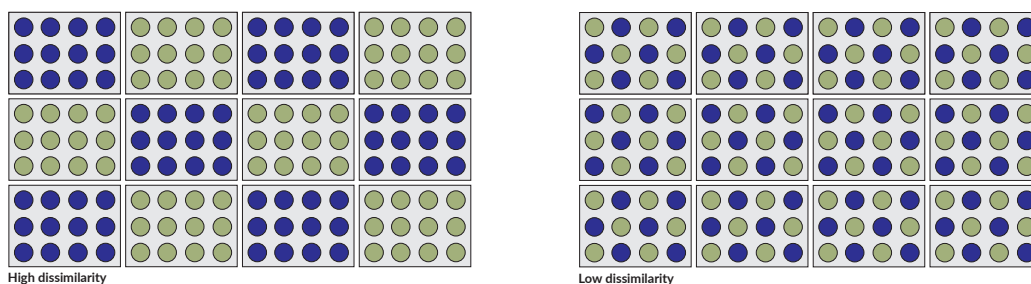
Subprime lending and foreclosures

Subprime loans are offered to borrowers who are identified as being at greater risk of defaulting on the loan, because of poor credit histories or other factors such as unemployment, divorce, or large unexpected expenses, that suggest they might have trouble keeping up with loan payments. Subprime loans have terms that are less favorable to the borrower such as higher interest rates, adjustable interest rates that can be raised at some point in the future, or prepayment penalties that can preclude a borrower from converting to a lower-interest loan if they qualify for one in the future. Proponents touted subprime lending as a road to homeownership for those with poor credit or little savings. However, the large increase in people given mortgages led to a shortage in housing, an increase in housing prices, and thus an increase in the amount that new prospective homeowners needed to borrow. Lending to high-risk borrowers at high interest rates, along with the inflation of home prices, resulted in many borrowers who could not, in fact, make their monthly mortgage payments, resulting in a flood of defaulted loans and housing foreclosures. This housing foreclosure crisis had serious financial effects for both borrowers and lenders, and has negative and long-lasting economic consequences in the United States and beyond.

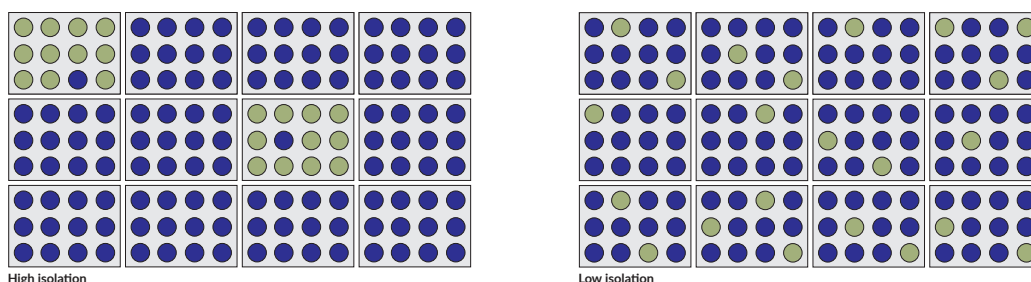
that were particularly susceptible to subprime lending were more likely to be Hispanic than black. In addition, as the Hispanic population has grown over the past two decades, blacks and disadvantaged Hispanics increasingly live in the same or neighboring areas, providing larger potential markets for subprime lending. While we recognize that there are important differences between the experiences of blacks and Hispanics in the housing crisis, we believe that combining the two groups for an analysis across a large number of metropolitan areas provides a more accurate portrait of vulnerable markets.

Measures of residential segregation

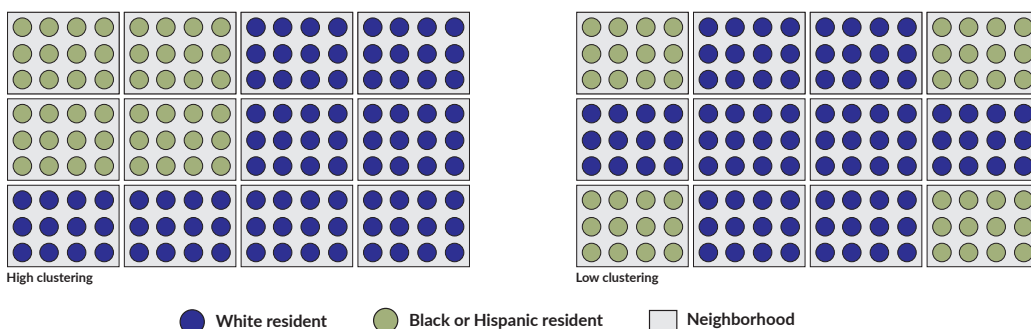
Evenness: The *dissimilarity index* measures the evenness between two groups by calculating the proportion of a group that would need to change residence in order for each neighborhood to have the same percentage of that group as the overall metropolitan area. This index will be high if individual neighborhoods have very different racial makeups than the metropolitan area as a whole.



Exposure: The *isolation index* measures the extent to which members of a group are exposed only to other people in that group by calculating the percentage of people in a group within a neighborhood for the average person in that group. This index will be high if most blacks and Hispanics live in neighborhoods composed of mostly blacks and Hispanics.



Clustering: The *clustering index* measures the degree to which members of a group live near each other, forming contiguous geographic areas. This index will be high if blacks and Hispanics tend to live in adjoining neighborhoods, rather than in neighborhoods scattered across a metropolitan area.



Source: J. Iceland, D. H. Weinberg, and E. Steinmetz, "Racial and Ethnic Residential Segregation in the United States: 1980–2000," *Census 2000 Special Reports*, CENSR-3, U.S. Bureau of the Census, Washington, DC, 2002.

To measure the degree of segregation in each metropolitan area, we use three indices: (1) a dissimilarity index, which measures the evenness of different racial groups within neighborhoods; (2) an isolation index, which measures the exposure of one group to another within neighborhoods; and (3) a clustering index, which measures the degree to which minority neighborhoods are grouped together rather than scattered throughout a metropolitan area. See text box on measures of residential segregation for more information.

The relationship between segregation and subprime lending

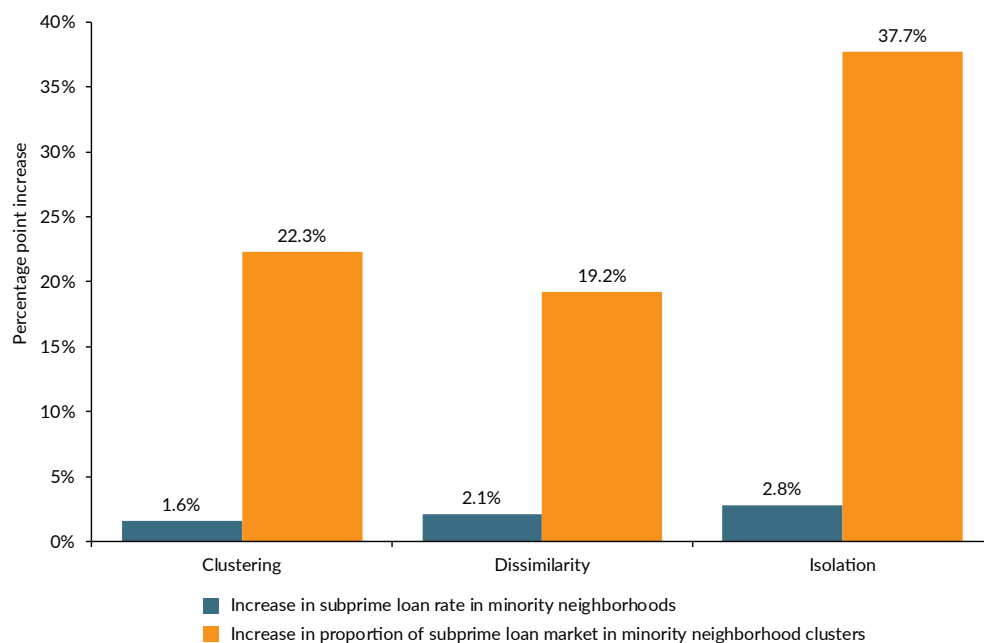
Addressing each of our research questions in turn, we test whether minority neighborhoods in metropolitan areas with higher levels of segregation were particularly vulnerable to subprime lending.

Across metropolitan areas, were subprime loans more concentrated in minority neighborhoods in highly segregated metropolitan areas than in less segregated metropolitan areas?

Overall, as shown in Figure 1, we find that segregation does little to explain differences between metropolitan areas in the distribution of subprime loans between minority and non-minority neighborhoods. All three measures of segregation are positively but weakly associated with the share of metropolitan-area subprime loans in minority neighborhoods. For example, a one-standard-deviation increase in the isolation index increases the rate of subprime loans in minority neighborhoods by 2.8 percentage points.

These results are not surprising, given that (1) metropolitan areas with high proportions of blacks and Hispanics have a large number of minority neighborhoods, and (2)

Figure 1. In more segregated compared to less segregated metropolitan areas, subprime loans were only somewhat more likely to be concentrated in minority neighborhoods, but were much more likely to be concentrated in relatively large, geographically concentrated minority areas (clusters).



Note: Figure shows percentage point increases associated with one standard deviation increase in the given segregation index.

Source: J. Hwang, M. Hankinson, and K. S. Brown, "Racial and Spatial Targeting: Segregation and Subprime Lending within and across Metropolitan Areas," *Social Forces* 93, No. 3 (March 2015): 1081–1108.

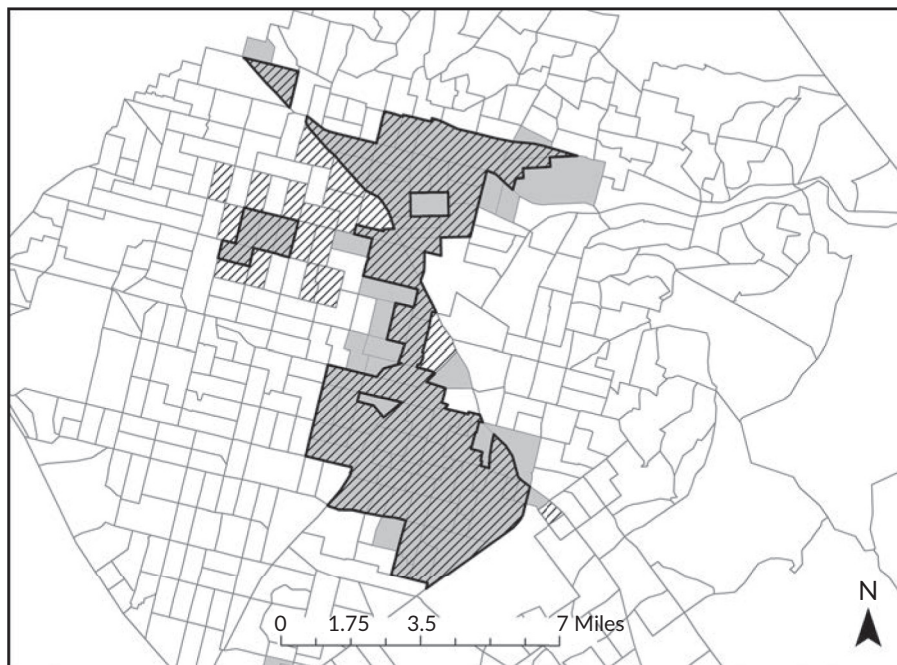
minorities were more likely overall to receive subprime loans. Thus, the degree of subprime lending in minority neighborhoods is explained more by the proportion of black and Hispanic residents in a given metropolitan area than by patterns of racial segregation.

Does the relationship between segregation and subprime loans in minority neighborhoods vary if the neighborhoods are clustered together or scattered through a metropolitan area?

We find a very different result when we consider the extent to which subprime loans are clustered in clusters of minority neighborhoods rather than spread throughout a metropolitan area. The large clusters of minority neighborhoods that segregation creates could provide markets to which lenders could efficiently target subprime loans. Therefore, rather than examining the proportion of a metropolitan area's subprime loans within minority neighborhoods, as in the analysis described above, we examine the degree of correspondence between clusters of subprime loans and clusters of minority neighborhoods.

Figure 1 also shows that when we take into account whether minority neighborhoods are clustered together or scattered across a metropolitan area, we find much stronger effects of segregation on subprime loans compared to the first analysis, which looked only at the relationship between segregation and subprime lending in minority neighborhoods. We find that in more segregated metropolitan areas, subprime loans were disproportionately concentrated in minority clusters. For example, an increase in the isolation index by one standard deviation is associated with a 37.7 percentage point increase in the proportion of the subprime loan market that is within clusters of minority neighborhoods. This finding means that in highly segregated metropolitan areas, there tends to be a high degree of overlap between clusters of subprime loans and clusters of minority neighborhoods. This is illustrated in Figure 2, which shows this overlap in the metropolitan area of Anaheim-Santa Ana, California.

Figure 2. In Anaheim-Santa Ana, California, there is a high degree of overlap in subprime loan and minority clusters.



Legend:

Gray-filled tracts: Clustered minority tracts
 Stripe-filled tracts: Clustered subprime lending
 Bold-outlined tracts: Overlapping clusters

Source: J. Hwang, M. Hankinson, and K. S. Brown, "Racial and Spatial Targeting: Segregation and Subprime Lending within and across Metropolitan Areas," *Social Forces* 93, No. 3 (March 2015): 1081-1108.

The significant findings for clusters are consistent with a process in which subprime loans were channeled to relatively large, geographically concentrated, minority areas, rather than simply targeting minority neighborhoods. However, it is still possible that minority neighborhoods may be the primary targets of subprime loans due to socioeconomic differences, rather than racial differences. We address this possibility in the next section.

Do subprime lending rates in minority neighborhoods vary between highly segregated and less-segregated metropolitan areas after accounting for neighborhood socioeconomic characteristics?

In our third analysis, we compare subprime lending patterns across neighborhoods, accounting for neighborhood socioeconomic characteristics. We find that, while minority neighborhoods had subprime loan rates that average 14 percentage points higher than non-minority neighborhoods, this difference is even higher in highly segregated metropolitan areas. For example, in a metropolitan area with a clustering index that is one standard deviation higher than another, the difference in the subprime lending rate between minority and non-minority neighborhoods would be an additional 3.2 percentage points. These results show that even after taking into account neighborhood socioeconomic characteristics, minority neighborhoods in highly segregated metropolitan areas were more likely to receive subprime loans than similar minority neighborhoods in less segregated metropolitan areas.

Conclusions and policy implications

Prior research has identified segregation as a key factor in the housing crisis and has documented a relationship between segregation and higher subprime lending and foreclosure rates at the metropolitan level. These studies hypothesize that segregation created distinct geographic markets that enabled subprime lenders and brokers to leverage the spatial proximity of minorities to disproportionately target minority neighborhoods. Our study is the first to test this hypothesis by examining whether the patterns of subprime lending *within* metropolitan areas differ across metropolitan areas with different levels of segregation. We find that metropolitan areas with high levels of segregation are more likely than less segregated metropolitan areas to have had higher concentrations of subprime loans within clusters of minority neighborhoods. However, if we just consider the effect of segregation on the proportion of subprime loans in minority neighborhoods without looking at whether those neighborhoods are grouped together, we find a much weaker effect. This suggests that larger clusters of minorities may have provided markets to which subprime loans could be efficiently and effectively targeted. Residents of minority neighborhoods that are interspersed with more advantaged neighborhoods may be more likely than those living in large

Research to watch

A new study by Jacob W. Faber further supports the hypothesis that racial segregation creates markets into which expensive, low-quality financial products can be channeled. "Alternative" financial services—such as payday lenders and check cashers—have proliferated in low- and moderate-income communities. Because these services are more costly to end users than traditional banking, they constitute what some have called a "ghetto tax." Using a unique dataset comprising every alternative financial services provider in the United States in 2015, Faber finds that not only are alternative financial services significantly more common in non-white compared to white neighborhoods, but also that these differences are largest in the most segregated metropolitan areas. These findings suggest that racial segregation creates easily identifiable markets for alternative financial services providers to target, and for mainstream banking institutions to avoid. Faber also finds that although alternative financial services become less common as neighborhood income rises, the gap between black and white neighborhoods is widest among higher-income neighborhoods. That is, even affluent black neighborhoods are much more likely than affluent white neighborhoods to feature alternative financial services. Faber's study is detailed in a forthcoming *Social Forces* article, "Segregation and the Cost of Money: Race, Poverty, and the Prevalence of Alternative Financial Institutions."

geographic areas of concentrated disadvantage to learn about and be able to access mainstream lenders, or may be less easily targeted through strategies such as zip code-based marketing.

We also find that minority neighborhoods in metropolitan areas with higher levels of segregation have higher subprime lending rates than those in less segregated metropolitan areas, even when we consider the socioeconomic and housing characteristics of neighborhoods and metropolitan areas.

Although the worst of the housing crisis is behind us, it likely has continuing effects on neighborhoods with large concentrations of minority residents in highly segregated metropolitan areas. The disparity in lending patterns will likely have enduring consequences on wealth accumulation for blacks and Hispanics and the trajectory of black and Hispanic neighborhoods that will last well into the future.

Although the worst of the housing crisis is behind us, it likely has continuing effects on neighborhoods with large concentrations of minority residents in highly segregated metropolitan areas.

Although the greatly increased availability of home loans during the peak of subprime lending temporarily provided blacks and Hispanics with a path to homeownership and a way to build assets and wealth, the disproportionate concentrations and consequences of subprime loans in disadvantaged minority communities suggest that the housing crisis has only exacerbated racial and ethnic wealth inequality.

Minority neighborhoods, especially those in highly segregated metropolitan areas, are particularly in need of attention. Possible interventions could include introducing regulatory controls structured to prevent targeted predatory lending, increasing financial education, and promoting mainstream financial institutions. The onus also falls on financial institutions to assist blacks and Hispanics in rebuilding credit and wealth in order to mitigate the increased inequality that resulted from the housing crisis.

Finally, our results highlight the need to either decrease residential segregation or to provide increased opportunities and resources to those residing in minority neighborhoods in order to reduce the disproportionate effects of any future economic setbacks on minority neighborhoods. Policy efforts such as zoning for mixed-income housing and implementing regulations against housing discrimination could reduce racial inequality and poverty. ■

¹D. G. Bocian, D. Davis, S. Garrison, and B. Sermons, *The State of Lending and Its Impacts on U.S. Households*, Center for Responsible Lending, Washington, DC, 2012.

²This article draws on J. Hwang, M. Hankinson, and K. S. Brown, "Racial and Spatial Targeting: Segregation and Subprime Lending within and across Metropolitan Areas," *Social Forces* 93, No. 3 (March 2015): 1081–1108.

³D. S. Massey and N. A. Denton, *American Apartheid: Segregation and the Making of the Underclass*, (Cambridge: Harvard University Press, 1993).

⁴M. L. Oliver and T. M. Shapiro, *Black Wealth/White Wealth: A New Perspective on Racial Inequality* (New York: Routledge, 1997).

⁵For a review, see C. Z. Charles, “The Dynamics of Racial Residential Segregation,” *Annual Review of Sociology* 29 (2003): 167–207.

⁶For example, in 2010, in 367 U.S. metropolitan areas, the typical white person lived in a neighborhood that was three-quarters white, while the typical black person lived in a neighborhood that was nearly half black and about one-third white, and the typical Hispanic person lived in a neighborhood that was nearly half Hispanic and about one-third white. J. R. Logan and B. J. Stults, “The Persistence of Segregation in the Metropolis: New Findings from the 2010 Census,” Census Brief prepared for Project US2010, 2011.

⁷Joint Center for Housing Studies of Harvard University, *The State of the Nation's Housing, 2008*. Available at: <http://www.jchs.harvard.edu/sites/default/files/son2008.pdf>

⁸Bocian et al. 2012, *The State of Lending in America & its Impact on U.S. Households*.

⁹Bocian et al. 2012, *The State of Lending in America & its Impact on U.S. Households*.

Type of analysis: Regression

Data source: 2006 census tract-level loan data from the Home Mortgage Disclosure Act report; tract-level data from the 2000 U.S. Census metropolitan-level 2005–2007, American Community Survey three-year estimates, and metropolitan-level housing and foreclosure data obtained from Jacob Rugh and Douglas Massey for the 100 largest US metropolitan areas

Type of data: Administrative data

Unit of analysis: Metropolitan areas and neighborhoods (census tracts)

Sample definition: Loans that reached the final stage of origination in the 100 largest metropolitan areas.

Time frame: 2006

Limitations:

- We do not examine the specific mechanisms that led to the overlap between subprime loan markets and minority neighborhoods.
- Cross-sectional data, our limited sample size, and the complexity of segregation itself limit causal claims and precise causal estimates.
- Our study focuses on racial segregation, but economic segregation and the intersection of race and class in both segregation and the fallout of the housing crisis are important dimensions for future studies to consider.