Mortgage Lending and the Residential Segregation of Owners and Renters in Metropolitan America, 2000-2010

Samantha Friedman

Department of Sociology
University at Albany, SUNY

Mary J. Fischer

Department of Sociology
University of Connecticut

Hui-Shien Tsao

Center for Social and Demographic Analysis
University at Albany, SUNY

Samuel Garrow

Michael Barton

Department of Sociology
University at Albany, SUNY

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*Direct correspondence to Samantha Friedman, Department of Sociology, University at Albany, SUNY, 348 Arts and Sciences Building, 1400 Washington Avenue, Albany, NY 12222 (samfriedman@albany.edu); phone (518-442-5458); fax (518-442-4936).

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Abstract

Homeownership, a marker of socioeconomic status, is considered an endpoint in the residential assimilation process. Recently, it has been found, however, that black homeowners are more segregated from whites than black renters. The question that we address here is whether there is any connection between the mortgage-lending boom then bust during the 2000s and segregation patterns by housing tenure. Using data from the 2000 to 2010 Home Mortgage Disclosure Act reports, Census 2000 and 2010, and the 2006-2010 American Community Survey, we examine the association of mortgage lending characteristics with changes in the segregation of black owners and renters from whites between 2000 and 2010. We find that metropolitan areas with greater proportions of conventional lending during the 2000s are more likely to have greater proportional increases in segregation between black owners and whites. With respect to changes in the volume of lending, we find that metropolitan areas with declines in conventional and subprime lending had proportional declines in black-renter/white segregation. This study suggests that the boom in mortgage lending may have contributed to increasing the segregation of blacks owners from whites, while the bust could be contributing more to the integration of black renters with whites.

Introduction

Disparities in wealth between whites and blacks are on the rise (Kochhar, Fry, and Taylor 2011). In 2009, the median wealth of white households had grown to be 20 times as high as that for black households, comprising the largest gaps in wealth between whites and blacks in 25 years (Kochhar et al. 2011: 14). Homeownership is one of the primary ways through which families accumulate wealth, particularly for blacks. For example, in 2009, black households held 56% of their net worth in the ownership of their homes compared to 38% of non-Hispanic whites (Kochhar et al. 2011).

No doubt, part of the disparity in wealth between blacks and whites relates to blacks' lower levels of homeownership. In 2010, the homeownership rates for blacks and whites were 45.4% and 74.4%, respectively. Yet, the minority-white wealth disparity also likely relates to where minority homeowners live. Interestingly, between 1995 and 2002, the homeownership rates of whites and blacks increased by 3.8 and 5.1 percentage points, respectively, but the median net worth of whites increased by $29,406 while for blacks it declined by $2870.

The decline in net worth for blacks could reflect the fact that they are more likely to buy homes in minority-dominant neighborhoods where property values tend to be lower than homes in predominantly white neighborhoods (Denton 2001; Massey, Condran, and Denton 1987). Only one study, to our knowledge, however, has explored racial residential segregation by housing tenure (Friedman, Tsao, and Chen 2012). Using data from Census 2000, the study finds that black homeowners are more segregated from whites than black renters, contrary to the pattern that is present for Hispanics and Asians and that is expected under the spatial assimilation model (Friedman, Tsao, and Chen 2012). Thus, it appears that black homeownership does not necessarily facilitate proximity to whites and therefore likely affects black wealth accrual. However, little is known about the trends in segregation from whites by housing tenure by race/ethnicity. The increase in access to homeownership for minorities largely took place during a mortgage-lending boom period in the U.S., but since 2007, there has been a "bust" in mortgage lending following the crash of the financial services market (Kochhar, Gonzalez-Barrera, and Dockterman 2009). Given these shifts in mortgage

lending have the trends in segregation of black owners and renters mirrored the overall trends for blacks? How do they compare to that of Hispanics and Asians?

Very little is also known about the link between mortgage lending and changes in relative segregation by housing tenure over time. Previous research has not explicitly examined the impact of lending on the segregation of black owners and renters from whites, overall, and relative to one another. Did lending in this period create more opportunities to integrate with whites and thereby reduce the segregation of black owners relative to that of black renters? Or did the rise in inequality in the mortgage lending system (Williams et al. 2005) exacerbate the relative disadvantage of black homeowners in their access to whites, relative to that of black renters? How has the segregation of these groups changed over time with the bust in lending that happened in the late 2000s? Are lending characteristics more important than ecological variables traditionally used in the literature in explaining changes in segregation by housing tenure?

We seek to address these unanswered questions in the literature. The primary goals of this paper are twofold. First, we document the segregation of black owners and renters, relative to whites, across metropolitan America between 2000 and 2010. To characterize such segregation, we use data from the 2000 and 2010 decennial censuses and calculate indices of dissimilarity for black owners and renters, relative to non-Hispanic whites (hereafter referred as whites). We examine the average dissimilarity scores for these groups and the ratio of black owner-white segregation to black renter-white segregation. Second, using these data and data from the 1996-2010 American Community Survey (ACS) and the 2000-2010 Home Mortgage Disclosure Act reports (HMDA), we explore the impact that loan type and changes in loan volume, overall, and by loan type have had on black segregation from whites by housing tenure, contrasting the effects of such variables to ecological ones traditionally used in explaining changes in residential segregation.

Theoretical Background

Theoretically, it is important to examine racial and ethnic segregation by housing tenure over time and its determinants. Residential segregation is built upon the mobility or immobility of blacks

and whites. Transitions within and between housing tenure statuses underlie this aggregated residential phenomenon, but housing tenure has not been the explicit focus of study in most segregation research. While overall segregation has been declining in recent decades, it is unclear whether all segments of the black population are integrating with whites. Recent research suggests that black homeowners are relatively disadvantaged in this regard, compared to black renters, contrary to previous research examining the integration of lower-, middle-, and upper-socioeconomic status groups of blacks with whites (Friedman, Tsao, and Cheng 2012). Whether this pattern has worsened or improved over time has not been examined, nor have the determinants of changes in the variation in segregation by housing tenure or in the ratio of segregation of black owners from whites, relative to black renters, been explored.

A key determinant of this relationship is likely to be the institutions within the mortgage-lending market that, until recently, had made credit widely available to minorities. However, a focus on the structural dimensions of the housing market has largely been absent from research on residential segregation, hampering a full understanding of the determinants of changes in segregation. Only one study has examined the effect of the mortgage market on changes in black-white segregation between 1990 and 2000 (Bond and Williams 2007). However, no attention has focused on the link between patterns in mortgage lending and segregation specifically by housing tenure. While the volume of lending to blacks and whites increased substantially in the early-to-mid 2000s, there have been considerable inequalities in the nature of lending between these groups (Williams et al. 2005). Moreover, since 2007, the mortgage- lending market underwent dramatic shifts due to the collapse of the financial services industry. Given the fact that many black homeowners fare worse in their integration with whites than renters (Friedman, Tsao, and Cheng 2012), it is important to examine these trends over time and explicitly examine the link between the mortgage market and segregation by housing tenure between 2000 and 2010.

Ecological Explanations of Changes in Residential Segregation

In general, the literature on segregation has adopted an ecological perspective in explaining changes in residential segregation across metropolitan areas (Farley and Frey 1994; Iceland et al.

forthcoming; Logan et al. 2004; Massey and Denton 1993). This tradition explains residential segregation as relating to the history of a metropolitan area's development, demographic shifts in the population, changes in the housing stock, and changing economic status of the populations living in these areas (Farley and Frey 1994). Prominent among these factors has been the role of region. Historically, metropolitan areas in the Northeast and Midwest have witnessed higher levels of black-white segregation and increases in segregation (Farley and Frey 1994; Logan et al. 2004). Region has been used as an ecological variable to gauge the type of governments located in particular areas and their impact on segregation (Farley and Frey 1984). In the Northeast and Midwest, segregation has traditionally remained high because suburban communities have enjoyed their own independent authority from cities, causing them in the post-1960s race riot era to become largely white. However, in the South and in most places in the West, local authority has largely laid in the hands of county governments, minimizing the extent that whites could control and use local municipalities as segregating forces.

Whether region continues to be important today remains to be seen and in addition, it is unclear if it is as much of a force in predicting changes in segregation on the basis of housing tenure. With immigration to suburbs (Singer 2004) and the opening of suburbs to racial and ethnic minorities (Friedman et al. 2007; Fischer 2008), the difference in the influence of government structure across regions may have lessened in predicting changes in segregation during the past decade. Perhaps region could play more of a role in predicting changes in segregation of renters because communities with their own, independent governing bodies may scrutinize the growth in rental housing more than areas that have countywide governance structures.

The functional specialization of metropolitan areas, determined by their economic bases, has also been found to be an important correlate of changes in residential segregation. Farley and Frey (1994) suggest that the influence of such specialization on segregation happens in at least two ways: 1) through the structure of housing (e.g., that found in an area predominated by the military is different than that found in a metropolitan area defined primarily by manufacturing); and 2) based upon the social and economic characteristics associated with such economic bases. With respect to explaining

changes in black-white segregation, retirement communities have tended to experience increases in such segregation, most likely due to the racial and ethnic attitudes of the elderly population and because fewer elderly blacks own homes (Farley and Frey 1994). This could potentially play more of a role in increasing black-white owner segregation relative to black-white renter segregation. On the other hand, military-based communities tend to experience declines in black-white segregation largely because the military is a racially integrated institution and such integration is reflected in residential patterns of those involved in the institution (Farley and Frey 1994; Logan et al. 2004).

Demographic factors are also potentially important in explaining changes in black-white segregation by housing tenure. Previous research has found that population size has been associated with increases in black-white segregation mainly because large metropolitan areas have well established minority communities and often have tighter housing markets (Farley and Frey 1994; Iceland et al. forthcoming; Logan et al. 2004). Given the escalation in housing values of the owner-occupied housing market in the early 2000s, it is likely that larger metropolitan areas could have witnessed greater increases in black-white owner segregation, relative to black-white renter segregation.

The growth of the black, white, and other minority populations as well as in the foreign-born population may also play an important role in explaining changes in residential segregation. Many argue that the growth in other minority populations relative to blacks may act as a "buffer," which increases whites' contact with minorities, reduces their prejudices and stereotypes against minorities more generally, and thereby potentially reduces black-white residential segregation (Farley and Frey 1994; Fischer and Tienda 2006; Frey and Farley 1996; Logan et al. 2004). On the other hand, there are mixed views as to how black population growth, relative to white population growth, may affect changes in residential segregation between these two groups. Some argue that greater levels of black growth, relative to white growth, could increase black-white segregation by creating a "threat" to the white population, especially to those that own their homes and are concerned about their housing values (Farley and Frey 1994; Taeuber and Taeuber 1965). On the other hand, it might be the case that when black population growth exceeds white population (net of other factors) segregation scores

may decline. During the past decade, there has been considerable black return migration to the South and it has been selective of younger and more educated blacks (Hunt et al. 2008). Iceland et al. (forthcoming) find that this return migration has played an important role in reducing overall, black-white segregation. Therefore, the relative growth of the black population to the white population is also expected to affect black-white segregation by housing tenure.

Recent growth in the housing market has been a consistent, significant predictor of declines in black-white segregation (Farley and Frey 1994; Logan et al. 2004). Housing built after 1968 is subject to the regulations mandated by the Fair Housing Act (Farley and Frey 1994). In addition, metropolitan areas that witness growth in new housing also experience higher levels of residential mobility, which could also facilitate declines in segregation. It is unclear, however, whether the segregation of black owners and black renters, relative to whites, will both decline in response to new housing construction or if it will be more likely to affect renters through a "filtering" process whereby renters transition to homeownership leaving more housing opportunities available for those remaining renters. Although not as significant in previous research, increases in the population living in suburbs could also cause declines in black-white residential segregation by opening up housing opportunities there. Minorities living in suburbs tend to experience lower segregation (Adelman 2004; Fischer 2008; Massey and Denton 1988).

The final factor considered under the ecological perspective to be associated with declines in segregation is the improvement in the economic standing of blacks relative to whites (Farley and Frey 1994; Logan et al. 2004; Massey and Denton 1993). It is expected that increased parity in economic status between blacks and whites will result in declines in segregation because blacks will be able to afford housing in whiter residential areas. It is likely that black-white relative economic standing will be the same in its impact on the segregation of black owners, relative to whites, and black renters.

Mortgage Lending and Segregation by Housing Tenure

While the ecological perspective has been a useful framework in characterizing the changes in segregation in metropolitan America, it largely ignores the institutional or structural actors that also might be responsible for such change. No doubt such factors are discussed in the context of

historical factors that shape metropolitan areas (see for example Farley and Frey 1994), but little research explicitly examines the effect of such actors or their behavior on changes in segregation (Bond and Williams 2007). Nowhere is this more relevant than to the study of changes in residential segregation by housing tenure.

The period from the mid-1990s through the mid-2000s witnessed record increases in mortgage lending to homebuyers. According to our tabulations of the HMDA data, between 1995 and 2005, the number of conventional loans made to homebuyers increased by 116 percent from 2.6 million to 5.5 million. However, following the collapse of the financial services industry in 2007, the loan volume dropped dramatically, from a peak of 5.5 million conventional loans to homebuyers in 2005 to 2.0 million in 2010.

How have these lending patterns and the institutions behind such lending affected the segregation of black owners from whites relative to that of black renters from whites? On the one hand, such lending could have reduced segregation for both black owners and renters from whites. The wide availability of credit during this period (until after 2007) could have increased the range of possible neighborhoods to which blacks have had access, particularly neighborhoods inhabited by whites. If areas with increased credit have produced mobility among people purchasing homes, then mobility among renters is also likely to have occurred, potentially lowering black-renter/white segregation. Whether the decline in black-owner/white segregation outpaced the decline in black-renter/white segregation, however, is unclear. Bond and Williams (2007) find that segregation decreased between whites and blacks, overall, from 1990 and 2000 in metropolitan areas where: 1) larger shares of loans were made to all homebuyer by traditional lenders; 2) increases in all types of loans and specifically, traditional loans to black homebuyers occurred; and 3) increases in conventional loans to black homebuyers exceeded increases to white homebuyers.

On the other hand, the lending patterns in the 2000s could have raised the segregation of black owners from whites, and perhaps made black owners more segregated from whites than black renters. As Williams et al. (2005) point out, although the gap in lending between whites and minorities declined during the 1990s, a new inequality emerged in the types of loans being acquired by

minorities, relative to whites. Lenders specializing in subprime and manufactured housing loans infiltrated the lending market and have disproportionately served traditionally underserved markets. Lenders making such loans have been engaged in predatory and abusive practices and have escaped effective regulation because of banking deregulation (Squires 2004). According to Williams and colleagues (2005), 43 percent of the increase in conventional loans made to black homebuyers between 1993 and 2000 was due to loans made by subprime lenders, but for all homebuyers, 23.3 percent of the increase was attributable to subprime lenders.

How have such lenders impacted residential segregation? Subprime loans are more likely to be made in minority neighborhoods than loans by traditional lenders. Williams et al. (2005) find that in 2000, 29 percent of subprime loans were made in minority neighborhoods (defined where the racial composition is at least 30 percent nonwhite) compared to 14 percent of loans made by traditional lenders. For blacks, however, 58 percent of all subprime loans in 2000 were made in minority neighborhoods compared to 45 percent of loans made by traditional lenders (Williams 2011). Thus, in metropolitan areas with higher levels of subprime lending in the 2000s, there could be increases in black-owner/white segregation, in absolute terms, and relative to the changes in black-renter/white segregation.

However, it could be the case that areas with a higher share of conventional lending during this period could also experience increases in black-owner/white segregation. As shown just above, there are still elements of the "old" inequality that have crept into mortgage lending to blacks. In 2000, 45 percent of loans made to blacks by traditional lenders were made in minority neighborhoods (Williams 2011). For whites, such lending is more likely to be found in largely white neighborhoods. Friedman and Squires (2005) find that in 2000, on average, 40 percent of whites purchased homes with all conventional loans in predominantly white neighborhoods compared to 12 percent of blacks. On average, 42 percent of blacks acquired conventional loans to purchase homes in predominantly minority neighborhoods (defined where the racial composition is 50 percent white or less), relative to 9 percent of whites. Thus, regardless of lender type it is clear that there is a racial pattern to where

black and white homebuyers are purchasing homes and is likely to have had an impact on the segregation of black homeowners from whites.

With respect to renters, perhaps the housing boom led to lower rates of segregation. Given the transition to homeownership of many blacks during the first part of the 2000s, it could be the case that black renters had a greater number of vacated, rental markets to which to move. According to the Joint Center for Housing Studies (2011), in the mid-2000s, rental vacancy rates consistently exceeded 9.5 percent up from about 8 percent in the 1990s and 6 percent in the 1980s.

Whether the period of loan retrenchment or "housing bust" in the latter part of the 2000s had an impact on the segregation of black owners and renters from whites remains to be seen. Perhaps the significant decline of the volume of mortgage loans increased black-owner/white segregation by decreasing the opportunities available to black owners for housing. At the same time, given that a large share of the housing-boom lending made to blacks was done by subprime lenders, perhaps the bust caused black owners to have more access to whiter neighborhoods, potentially lowering segregation.

With respect to renters, it is possible that the change in lending between the boom and bust periods decreased segregation between black renters and whites. Many formerly owner-occupied homes that could not be sold during this transition period became rental units, pushing up the rental vacancy rate and perhaps providing black renters more access to whiter neighborhoods (Joint Center for Housing Studies 2011). In addition, the fact that many foreclosures took place in the latter half of the 2000s could have also reduced the black-renter/white segregation rates. The transition back to becoming a renter for blacks who experienced foreclosures might have had an integrating effect.

In summary, we expect to find that ecological factors will play an important role in affecting trends in black-owner to white segregation, black-renter to white segregation, and a relative comparison of the two types of segregation, particularly the region in which the metropolitan area is located, the functional specialization of the area, demographic characteristics of the metropolitan population, and the housing construction activity in the area. However, we also expect that the active decisions of financial institutions to make loans to white and black homebuyers in some

neighborhoods but not others will also directly impact the changes in access that black homeowners and renters have to whites in metropolitan America. In addition, the dramatic shift in lending between the boom and the bust periods could have also affected percentage changes in the segregation of black owners and renters from whites.

Data and Methods

Measuring Residential Segregation

Data from the short-form files of the 2000 and 2010 decennial census files (SF1) are used for the calculation of residential segregation measures by housing tenure in each year and between the time points. With respect to the latter, we calculate the proportional change in segregation following the convention of others [i.e., $(D_{2010} - D_{2000})/D_{2000}$], which forms our main dependent variable (see Logan et al. 2004). We calculate segregation estimates for metropolitan areas per the definitions used to collect the 2010 decennial census (i.e., 2009 core-based statistical area definitions (CBSAs)). Census tracts are the building blocks upon which our measures of residential segregation are constructed, again consistent with previous segregation research (e.g., Iceland et al. 2002; Massey and Denton 1993). We "retrofit" the tract-level data from the 2000 decennial census into the most recent metropolitan area definitions to provide consistency in the metropolitan areas for which segregation measures are calculated over time.

We use the index of dissimilarity to characterize inequalities in the residential distribution of blacks by housing tenure from whites. The index of dissimilarity measures the evenness of two groups over a geographic unit of interest, in this case census tracts. Dissimilarity scores are calculated for metropolitan areas with at least 1,000 black homeowners, black renters, and whites largely because segregation indices are less reliable for areas with smaller minority populations than in areas with larger populations (Iceland et al. 2002). In total we focus on 268 metropolitan areas meeting those criteria.

Although not without limitations, the index of dissimilarity is the most commonly used measure of residential segregation found in the literature. It ranges from 0, indicating no segregation, to 1,

indicating complete segregation. It may be interpreted as the proportion of either group that would have to move in order to achieve a fully integrated residential distribution. In general, dissimilarity indices that are over .60 are considered to indicate "high" levels of segregation; indices between .30 and .60 indicate "moderate" segregation; and less than .30 indicate "low" segregation (Massey and Denton 1993). The index of dissimilarity is one of several measures of segregation that may be calculated to characterize the residential separation of minority groups from whites. We focus on this index or the "D-score" because of its widespread use in the literature and ease of interpretation.

Our analysis of segregation of owners and renters relies upon data on the total population in occupied housing units by housing tenure. The race and ethnicity of the population in these units is based exclusively upon the race and ethnicity of the householder, and the tables that we use from the 2000 and 2010 census only include data for householders that reported being a member of one racial and ethnic group. These are limitations of our research, as using such data excludes householders that identify as multiracial and ignores the fact that racial and ethnic intermarriage exists and that individuals in such households may not identify as the same race or ethnicity of the householder. While residential segregation among blacks is lower among those married to a white partner than to those married to a partner within their own race and ethnicity (Holloway, Ellis, Wright, and Hudson 2005), intermarriage rates are quite low among blacks (Qian and Lichter 2007).

Ecological variables

Data for our explanatory variables under the ecological model are drawn from Census 2000 and the 2006-2010 American Community Survey (ACS). Since 2000, with the implementation of the ACS, only short-form questionnaires are administered in the 2010 and subsequent decennial censuses, thereby necessitating the use of the ACS for our explanatory variables.

Region. Region is defined by the location of the CBSA. The main, census-defined regions are used – Northeast (the reference group), Midwest, South, and West.

Functional specialization. Following Logan et al. (2004), we define the functional specialization or economic base of the metropolitan area based upon the nature of the economy

within each CBSA in 2000.[1] We classify areas as falling into one of the following categories: 1) retirement community (the percentage of the population aged 65 and over was at least one standard deviation above the national mean); 2) manufacturing (the percentage of employed workers in manufacturing was at least one standard deviation above the national mean); 3) government (the percentage of employed persons who worked for the local, state, or federal government was at least one standard deviation above the national mean; 4) military (the percentage of workers employed by the armed forces was at least one standard deviation above the national mean); and 5) falls in none of the others.

Demographic characteristics. Several explanatory variables are used to characterize the population and changes in the population within metropolitan areas, which as discussed above could explain changes in residential segregation. The log of the total population size in 2000 is used to control for differences in segregation that might relate to the size of the metropolitan area (Farley and Frey 1994; Logan et al. 2004). We use two measures to capture relative population growth: 1) the growth in the black population (i.e., the difference between the number of blacks in 2010 and 2000 divided by 2000) minus the growth in the white population; and 2) the growth in the other-race population minus the growth in the black population. In addition, we measure the difference in the percentages of foreign-born population (i.e., 2010-2000).

Housing-related characteristics. Change in the housing stock within metropolitan areas is measured using the percentage of housing in 2010 built between 2000 and 2010. To gauge the potential "openness" of the housing market for minorities, we measure the change in percentage of the population living in suburbs (i.e., 2010 – 2000). The suburban population is defined as the total population in the CBSA minus the total population in the principal cities located in each CBSA. This definition is consistent with what others are currently using (e.g., the Department of Housing and Urban Development's State of the Cities Data Systems).

[1] There is little difference in the functional specialization of metropolitan areas if you use the 2000 decennial census data as we do here or the 2006-2010 ACS data. Measures from both years are highly correlated.

Change in relative income status of groups. We include one explanatory variable to gauge the changes in the relative economic status of blacks and whites. The ratio of black median household income to white median household income is compared over time as a percentage of the value of the ratio in 2000 (i.e., (income ratio in 2010 – income ratio in 2000) / income ratio in 2000).

Mortgage Lending Data and Measures

Since 1990, the Home Mortgage Disclosure Act (HMDA) has required most lenders in metropolitan areas to provide information on each home loan application they have received. This information includes the name of the lender, whether the loan was approved, the type of loan, the census tract of the property for which the loan application was completed, and demographic information about the applicant(s) such as race, income, and gender. These data include geographic identifiers that can be merged with data from the decennial census and the ACS. We draw on HMDA data from 2000 to 2010.

Because we are primarily concerned with the effects of new homeowners on residential patterns, we restrict our analysis of loan data to approved loans for the new purchase of owner-occupied housing in metropolitan areas. For each year, we examine the number of such loans originated, in total, and to whites and blacks. We also extract the number of these loans, overall, and to whites and blacks, that was conventional. In order to put the HMDA data in geographic boundaries that are compatible with our census data, we aggregate the loan data to the county level and merge it with the CBSA-defined metropolitan areas defined in 2009 CBSA boundaries, which are used in the 2006-2010 ACS and the 2010 Census.

Subprime lending was another prominent feature of the housing market during the 2000s. We capture the extent of subprime lending, overall, and by race by utilizing the interest rate information provided by HMDA starting in 2004. We rely on a definition of subprime based on an interest rate that was 3% or more above that for a comparable U.S. Treasury security for that year (Avery, Brevoort, and Canner 2007), which has also been utilized in prior research (e.g. Been, Ellen, and Mador 2009; Rugh and Massey 2010). We created metropolitan area counts of subprime loans, in total, and each to whites and blacks for each year.

We construct two sets of variables to characterize lending in the 2000s, consistent with the approach used by Bond and Williams (2007). First, to capture how lender type might be affecting residential segregation by housing tenure, we calculate the percent of loans during this period that were conventional and subprime for loans originated, overall, and to whites and blacks.[2] To examine whether the timing of lending relates to trends in residential segregation, we create a second set of measures examining the proportional changes in the volume of lending during the peak loan period (2003-2005) compared to the period of loan retrenchment (2007-2009). We use variables to capture whether the timing of overall, conventional, and subprime lending during the peak relative to the bust had a differential impact on the proportional changes in the segregation of black homeowners and renters from whites.[3] The following three sets of measures are calculated:

1) proportional change in lending to all homebuyers = [(# of loans to total between 2007 – 2009 - # loans to total between 2003 – 2005) / # of loans to total between 2003 – 2005] (repeat for whites, blacks)

2) proportional change in conventional lending to all homebuyers = [(# of conventional loans to total between 2007 – 2009 - # of conventional loans to total between 2003 – 2005) / # of conventional loans to total between 2003 – 2005] (repeat for whites, blacks)

3) proportional change in subprime lending to all homebuyers = [(# of subprime loans to total between 2007 – 2009 - # of subprime loans to total between 2004 – 2005) / # of subprime loans to total between 2004 – 2005] (repeat for whites, blacks)

Analytical Strategy

Our analysis proceeds as follows. First we present an analysis of residential segregation by housing tenure in 2000 and 2010. More specifically, we report average dissimilarity scores between all whites and each with black owners and renters in both years. For comparison purposes, we

[2] For conventional loans, we examined the percent of loans, overall and to whites and blacks that were conventional between 2000 and 2010. For subprime loans, we rely on data from 2004-2010. Prior to 2004, a different method was used to calculate subprime loans (Avery at al. 2007).

[3] Peak subprime lending was defined as 2004-2005 since the rate spread indicator used to define subprime lending was not available in 2003.

present the segregation scores for Hispanic and Asian renters and owners, relative to all whites. In addition, for each minority group, we present the average ratio of segregation between minority owners and whites relative to minority renters and whites. Then we report the 10 CBSAs each with the largest and smallest ratios. Second, we present a descriptive analysis of our explanatory variables of interest, particularly highlighting the overall means of our mortgage lending and changes in mortgage-lending variables. Finally, we report the results of three sets of multiple regression analyses examining: 1) proportional changes in dissimilarity scores between black owners and whites; 2) proportional changes in dissimilarity scores between black renters and whites; and 3) changes in the ratio of segregation between black owners and whites, relative to black renters and whites. We examine the "base" model, which focuses only on the effects of the ecological variables on changes in segregation. Then we examine each of the mortgage-lending variables.

Findings

Table 1 presents the mean dissimilarity scores for racial and ethnic minority owners and renters, relative to whites in 2000 and 2010. The focus on this paper is mainly on the segregation of black owners and renters from whites, but we examine the segregation of these groups in relation to Hispanic and Asian owners and renters for the purposes of comparison. The scores are weighted by the size of the relevant minority group. Consistent with the declines observed in overall segregation of minority populations from whites, the results in Table 1 reveal the same declining patterns for blacks and Hispanics, regardless of housing tenure (column 3). The virtually nonexistent declines in segregation between Asians and whites by housing tenure also mirror the overall pattern for all Asians (column 3).

However, the patterns in housing tenure segregation reveal an inequality that is not observed in examining segregation, overall, between minorities and whites. The results in Table 1 reveal that although across all three, minority groups homeowners are less segregated than renters from whites, the levels of segregation among owners and renters are considerably lower among Hispanics and Asians than for blacks. In 2000, the segregation of black owners from whites (.66) is .14 units greater

than that for Hispanic owners (.51) and .20 units higher than that of Asian owners (.46). These disparities continue to be large in 2010, although there were some declines in the gaps largely due to the declines in black-owner/white segregation (see column 3).

With respect to renter segregation, the gaps in black-renter/white segregation are a bit lower from the segregation of Hispanic and Asian renters. In 2000, black-renter/white segregation (.70) was .09 units larger than Hispanic-renter/white segregation (.61) and .13 units higher than Asian-renter/white segregation (.57). Again, the pattern of these disparities remains relatively consistent in 2010, although there were some declines attributable to the declines in black-renter/white segregation between 2000 and 2010.

Another way to examine the relative segregation across minority groups is to examine the ratio of minority-owner segregation from whites relative to minority-renter segregation from whites as we do in columns 4 through 6. In general, it is expected that segregation between minority owners and whites will be less than that between minority renters and whites, given that homeownership allows minorities to "convert socioeconomic and assimilation progress into residential gain by 'purchasing' residence in places with greater advantages and amenities than are typically found in central-city ethnic enclaves" (Alba and Logan 1992: 1318). Columns 4 through 6 of Table 1 reveal that the relative advantage of homeownership is smaller for blacks than Hispanics or Asians. In 2000, the average ratio of black owner to black renter segregation from whites is .94, indicating that on average the two scores are nearly the same. For Hispanics and Asians, the average ratios in 2000 are lower at .84 and .80 respectively. While segregation declined for almost all groups (except Asian owners, see column 3), it is notable that the average relative ratio of segregation between owners and renters declined by only .01 for blacks and increased by .01 and .02 for Hispanics and Asians, respectively.

Table 2 takes as a starting point the ratio results for blacks, the group that we focus on exclusively in subsequent analyses presented in this paper. It reports the 10 CBSAs with the highest owner-to-renter segregation ratios and the 10 areas with the lowest ratios. Just as background, out of the 268 CBSAs for which black segregation scores are computed, 13 percent have ratios of black-owner/white segregation to black-renter/white segregation that are at or above 1.00, indicating that

black-owner segregation from whites *exceeds* black-renter segregation, in contrast to the expectations generated under the spatial assimilation model, one of the main models explaining variation in cross-sectional analyses of residential segregation (Alba and Logan 1992, 1993; Charles 2003; Massey 1985). So as to capture the CBSAs in these groupings that might have more name recognition, we restricted our sorting of the data to create Table 2 to be based CBSAs whose total population is at or above 500,000.

Panel A of Table 2 reveals that El Paso, Texas contains the highest ratio in 2010 (1.11), but columns 4 and 5 reveal that the absolute levels of black owner and renter segregation are low in El Paso (i.e., .39 and .35, respectively). More alarming is the fact that large, more cosmopolitan metropolitan areas like Chicago and Los Angeles are in this top ten list and therefore among the 13 percent of all CBSAs in the full analytical sample with higher black-owner/white segregation. Less surprising is that Midwestern, metropolitan areas known for their high levels of segregation have made it on to this list, including Detroit, Cleveland, and Milwaukee. With respect to all of these places, it is clear that black homeowners are not converting their socioeconomic gains into residential attainment near whites any more than black renters.

Panel B of Table 2 reports the 10 CBSAs with the lowest ratios of black-owner/white segregation relative to black-renter/white segregation. In 2010, the lowest ratio, .48, is in Portland, Maine. Interestingly, most of these areas have segregation rates for owners and renters that fall in the "moderate" range of segregation (Massey and Denton 1993). Those that don't fall in this range have high levels of segregation between black renters and whites, as in the case for Portland, Poughkeepsie, Allentown, Albany, and Worcester. All but two of these CBSAs fall in the Northeastern region of the country.

Comparing the data in Table 2 from 2000 and 2010 reveals an interesting pattern. Column 3 of Panel A reveals that most of the areas with relatively high black-owner segregation had an even greater disadvantage for black owners relative to black renters in 2010. However, column 3 in Panel B shows that in those areas where black owners were relatively advantaged, the advantage grew over time as the ratios declined between 2000 and 2010.

These descriptive analyses of segregation by housing tenure raise the issue of what explains the variation in the relative segregation of black owners and renters from whites, especially the variation over time. Are ecological factors important? Are the types of lenders important? What about the boom then bust periods in lending during the 2000s?

Before turning to the results of our multivariate analyses to explicitly address these questions, we first discuss the results of descriptive analyses of the variables used to gauge the ecological and lending characteristics of CBSAs. Table 3 presents the means and standard deviations for our explanatory variables. Restricting the universe of CBSAs to those that have at least 1,000 each of black homeowners and renters and whites, our analytical sample is comprised of 268 CBSAs. The region variables in Table 3 reveal that the CBSAs are disproportionately located in the South (i.e., 49 percent). With respect to functional specialization, about 6 percent of the metros/micros are classified as areas with economies that specialize in retirement or manufacturing, 11 percent specialize in employment in government, and 9 percent in employment in the armed forces.

Not surprisingly, the data in Table 3 show that, on average, the CBSAs experienced minority population growth as well as growth in the housing market between 2000 and 2010. On average, the relative growth of the black population exceeded that of the white population by about .14 units or was 14 percentage points higher. Similarly, the relative growth of the other-race population exceeded that of the black population by .58 units or 58 percentage points. With respect to change in the percent of the population that is foreign born, on average, there was a 1.38 percentage point change. The average percent of housing units in 2010 that were built in the 2000s was nearly 14 percent, and there was a slight increase of nearly 1 percentage point, on average, in the percent living in suburbs in CBSAs. There was a slight decline, however, in the economic status of blacks, relative to whites, between 2000 and 2010.

Turning to the lending characteristics in Table 3, we find that, on average, across all CBSAs, the proportion of all loans for owner-occupied housing made to homebuyers between 2000 and 2010 that were conventional loans was .78. On average, whites are somewhat more likely to have conventional loans than blacks, with the average proportion of conventional loans to whites being .78

compared to .66 for blacks. Subprime lending has been much more prevalent among new black homeowners than whites, with the average proportion of subprime loans across CBSAs to whites being .09 and for blacks, .27.

Yet, despite these disparities, it is clear that the number of all loans to all groups has dropped considerably between the boom and bust periods. The average proportional decline in all loans to all homebuyers between the boom and bust periods was .35. Interestingly, looking at the average proportional change in overall, conventional, and subprime loans reveals that the declines were greater for black homebuyers as compared to whites. For example, between the boom and bust periods, there was an average proportional decline in loans to whites of about .48 but for blacks the decline was .60.

Table 4 presents the first set of our multivariate analyses. Here, we focus on three different dependent variables each regressed on the ecological variables as well as the segregation in 2000. The outcomes in each of these "base" models, respectively, are: 1) proportional changes in dissimilarity scores between black owners and whites (negative values are indicative of declines in segregation between 2000 and 2010); 2) proportional changes in dissimilarity scores between black renters and whites (negative values are indicative of declines in segregation); and 3) changes in the ratio of segregation between black owners and whites, relative to black renters and whites. With respect to the latter measures, positive values for this measure indicate that black owners became more segregated, relative to black renters, between 2000 and 2010. Negative values, on the other hand, suggest the opposite- that there was an increase in the advantage of owning relative to renting for blacks from 2000 to 2010.

Column 1 of Table 4 reports the results for the proportional changes in dissimilarity scores between black owners and whites. CBSAs in the West are significantly more likely than those in the Northeast to experience proportional declines (i.e., difference of a decline of .04 units) in such segregation, controlling for other relevant factors. With respect to functional specialization, metropolitan areas with larger shares of employment in the armed forces experience declines in black-owner/white segregation that are .03 units larger than in areas without any functional

specialization. Controlling for relevant ecological factors, metropolitan areas with greater growth in the black population relative to the white population and with higher levels of segregation in 2000 also experienced proportional declines in segregation between black owners and whites. On the other hand, there were proportional increases in the segregation between black owners and all whites in larger metropolitan areas.

Column 2 of Table 4 reports the results for the proportional changes in dissimilarity scores between black renters and whites. As was the case for the results in column 1, metropolitan areas in the West (as compared to the Northeast) and those with higher levels of residential segregation in 2000 experience proportional declines in segregation between black renters and whites between 2000 and 2010. However, there are differences in the determinants of the variation in black-renter/white segregation as compared to black-owner/white segregation. Proportional declines in the segregation of black renters, relative to whites, are larger in the Midwest (compared to the Northeast) and in retirement areas or metropolitan areas with greater shares of the population aged 65 years and older. In addition, areas that have experienced more new construction during the past 10 years experienced proportional declines in segregation between black renters and all whites. On the other hand, there were proportional increases in the segregation between black renters and all whites in places with higher levels of government employment.

Column 3 of Table 4 reports the results of regression models of changes in the ratio of segregation between black owners and whites, relative to black renters and whites. Unlike the models in columns 1 and 2, region is unimportant in predicting changes in the ratio of relative black-owner/black-renter segregation from whites. Retirement areas and larger metropolitan areas saw average increases in the ratio of black-owner/white to black-renter/white segregation, thereby witnessing *declines* in the relative advantage of owning. Places in which there was greater growth in the black population relative to the white population and where black owners were more segregated from all whites in 2000, on average, experienced increases in the advantage of owning relative to renting (b=-.12 and b=-.14 respectively).

It is clear that ecological variables and existing levels of residential segregation are important in explaining changes in the residential segregation of black owners and renters from whites and the relative segregation of both. Also important is that the determinants of the changes in segregation by housing tenure between blacks and whites are different. The question to which we now turn is whether the lending environment in the 2000s had an impact on changes in residential segregation by housing tenure between blacks and whites.

Table 5 reports the unstandardized coefficients of lending characteristics on proportional changes in segregation by housing tenure between 2000 and 2010. Lending variables are added to the base models reported in Table 4 for each of the three dependent variables. In total, 15 regression models were executed for each of the three dependent variables. We use two sets of measures to characterize lending in the 2000s. The first set gauges how types of loans might be affecting residential segregation by housing tenure (i.e., Panels A and B). The second set examines whether changes in lending patterns between the boom and the bust periods relates to segregation by housing tenure (i.e., Panels C, D, and E).

Focusing on loan-type variables, we find that while the volume of subprime loans does not appear to be associated with any of our three outcomes of interest (i.e., Panel B, columns 1-3), the volume of conventional loans is significantly related to two of the three outcomes. More specifically, column 1 of Panel A reveals that metropolitan areas with greater proportions of conventional lending, overall, and to whites during the 2000s is associated with greater proportional increases in segregation between black owners and whites, controlling for ecological characteristics and segregation between black owners and whites in 2000. A one-unit increase in the proportion of conventional loans made overall and to whites in the 2000s results in a .156 and .172 unit increase, respectively in the segregation of black owners from whites between 2000 and 2010. Column 3 of Panel A reveals that greater shares of conventional lending, overall, and to whites during the 2000s is also associated with increases in the relative ratio of black-owner/white segregation to black-renter/white segregation, controlling for relevant factors. Thus, in metropolitan areas with high levels of conventional lending in the 2000s, black owners became *more* segregated from whites relative to

black renters. Column 2 of Panel A in Table 5 reveals that the volume loans by loan type is not associated with black-renter/white segregation.

How have the changes in lending, overall and by loan type, affected changes in the segregation of whites from black owners and renters? Panels C, D, and E in Table 5 reveals that the changes in lending appear to have affected changes in the segregation of black owners and particularly black renters, relative to whites. With respect to the former, column 1 reveals that decreases in subprime lending to whites between the boom and the bust period are associated with proportional decreases in black-owner/white segregation between 2000 and 2010 (i.e., B=0.061), controlling for ecological variables and segregation between black owners and renters in 2000. With respect to proportional changes in black-renter/white segregation, column 2 reveals that metropolitan areas with declines in conventional lending and subprime lending, overall, and to whites had average proportional declines in black-renter/white segregation during this period, controlling for relevant factors.

Changes in the volume of lending between the boom and bust periods are also important for understanding shifts in the relative advantage of owning compared to renting for blacks during the 2000s (column 3). Metropolitan areas with proportional decreases in the total volume of loans to all homebuyers between the boom and the bust periods had average proportional increases in the ratio of black-owner/white segregation to black-renter/white segregation from 2000 to 2010. Thus, in places with declines in the volume of overall mortgage lending, black owners became relatively more segregated from whites compared to black renters.

Discussion

The primary goals of this study were to document the trends in residential segregation between whites and blacks by housing tenure during the 2000 to 2010 period and to examine the impact that mortgage-loan type and changes in loan volume, overall, and by loan type had on such segregation, relative to ecological variables traditionally employed in the segregation literature. The analyses focused on answering several main questions: 1) Did the trends in the segregation of black

owners and renters mirror the segregation of all blacks, given the housing "boom" and "bust" that occurred during the 2000? 2) How did the trends in segregation between blacks, by housing tenure, and whites relate to those for other minority groups relative to whites? 3) What are the associations between ecological variables and changes in segregation by housing tenure? 4) Did the mortgage lending in the 2000s reduce segregation of black owners from whites relative to that of black renters? and 5) How did the significant decline in lending between the boom and the bust periods affect the segregation of blacks by housing tenure?

With respect to answering the first two questions, the analyses here revealed that declines in segregation between 2000 and 2010 were evident for blacks and Hispanics, regardless of housing tenure, and for Asians little decline was evident. Thus the trends in all groups mirrored those evident in analyses of segregation between minority groups and whites, not disaggregated by housing tenure. However, the patterns in housing-tenure segregation reveal an inequality that is not observed in examining the segregation, overall, between minorities and whites. Although across all minority groups, homeowners are less segregated than renters from whites, the levels of segregation among owners and renters are considerably lower among Hispanics and Asians than for blacks and this pattern changed little over time. In 2010, the average ratio of black owner to black renter segregation from whites was .93, indicating that on average the two scores are nearly the same. For Hispanics and Asians, the average ratios in 2010 were lower at .85 and .82 respectively. These patterns changed little from 2000.

Our multivariate analyses revealed that ecological variables are important in explaining proportional declines in black-owner/white segregation, black-renter/white segregation, and in changes in the ratio of black-owner/white segregation to black-renter/white segregation. Consistent with previous research, region, functional specialization, demographic characteristics, and housing market characteristics are all important in these models. One difference from previous research was the finding that there are differences in the impact of these variables depending upon whether changes in black-owner/white segregation are being considered or changes in black-renter/white segregation.

Our multivariate analyses also revealed the significance of lending characteristics in explaining changes in segregation by housing tenure. Metropolitan areas with greater proportions of conventional lending, overall, and to whites during the 2000s are more likely to have greater proportional increases in segregation between black owners and whites, and in such areas black owners became *more* segregated from whites relative to black renters. Changes in the volume of lending between the boom and the bust periods were also found to be important. Interestingly, most of the variables that were significant in this regard were in the analyses of proportional changes in black-renter/white segregation. We found that metropolitan areas with declines in conventional lending and subprime lending, overall, and to whites had average proportional declines in black-renter/white segregation between 2000 and 2010. Thus, the lending bust had an integrative effect on the settlement patterns of renters.

These findings have important implications for the study of black-white residential segregation. They suggest that housing-market dynamics and structural agents actively producing such dynamics are critical to furthering our understanding of the separation of blacks from whites in American society. It appears that while lending increased opportunities for blacks and whites to become homeowners, it did not necessarily integrate them. Rather, it exacerbated black-owner/white segregation. Increases in housing values in the early 2000s likely had an impact on the neighborhood choices of new homebuyers. That coupled with the fact that a disproportionate share of loans have been made to whites in predominantly white neighborhoods and blacks in predominantly minority neighborhoods likely increased the segregation between black homeowners and whites. Moreover, the fact that housing values declined significantly in many areas in the mid-to-late 2000s probably "trapped" these new homeowners in their homes, probably changing these increases in segregation very little. That is probably why changes in lending had little impact on the changes in segregation of black owners from whites.

At the same time, it appears that declines in volume of conventional loans between the boom and the bust period, overall, and to whites have facilitated the integration of black renters with whites. This finding likely reflects that there are now more renters in the housing market because loans are

harder to come by and the fact that rental-housing vacancies have increased during the bust period (Joint Center for Housing Studies 2011). Many foreclosures have taken place in the latter half of the 2000s, thereby causing many blacks to transition from homeownership status to renter status. This transition may have caused them to be more integrated with whites. In addition, there has been an expansion in the rental-housing stock in the bust period. Many formerly owner-occupied homes that could not be sold after the boom period likely became rental units, perhaps providing black renters with more access to whiter neighborhoods.

The findings here also suggest that in order to truly understand why black-white residential segregation has declined in the past few decades, we need to look at the patterns of segregation of important subgroups of blacks and whites over time. If renters are a driving force contributing to the decline in segregation, it raises an important contribution in that it contradicts tenets of theories that suggest that increases in socioeconomic status should reduce segregation. In addition, if renters are successfully integrating with whites at a greater rate than owners, then those success stories of integration need to be replicated.

This study should serve as a starting point rather than an ending one. Future studies should further explore the role of changes in lending on black-white segregation by housing tenure. In particular, more attention should be paid to the types of lenders making the loans and the impact that such lenders have on segregation. In addition, this study should be replicated to explore the link between lending characteristics and Hispanic-white and Asian-white segregation by housing tenure. Finally, future research should examine the association between lenders and lending characteristics and the transitions into and out of homeownership at the individual-level of analysis over time.

In conclusion, there is much more to be learned about the role of the mortgage-lending market in shaping racial and ethnic segregation by housing tenure in metropolitan America. The findings here suggest that homeownership for blacks may not be the panacea that it was once touted to be. Indeed, some scholars question whether homeownership has really benefitted minorities, particularly low-income minorities (Apgar 2004; Denton 2001). Ironically, whites and increasing shares of blacks and Hispanics attribute the socioeconomic divide between whites and minorities to individual-level

factors, like education and motivation (Hunt 2007). The findings in this study clearly point to the need for scholars, policy makers, and the public to focus less of their attention on individualistic factors causing segregation and more attention on the structural causes that maintain racial and ethnic stratification in American society like the mortgage-lending industry.

References

Adelman, Robert. 2004. “Neighborhood Opportunities, Race, and Class: The Black Middle Class and Residential Segregation.” *City and Community* 3(1):43-63.

Alba, R.D. and J.R. Logan. 1992. “Assimilation and Stratification in the Homeownership Patterns of Racial and Ethnic Groups.” *International Migration Review* 26(4):1314-41.

----------. 1993. “Minority Proximity to Whites in Suburbs: An Individual-Level Analysis of Segregation.” *American Journal of Sociology* 98:1388-1427.

Apgar, William C., Jr. 2004. “Rethinking Rental Housing: Expanding the Ability of Rental Housing to Serve as a Pathway to Economic and Social Opportunity.” Working paper W04-11. Cambridge, MA: Harvard University, Joint Center for Housing Studies.

Avery, R. B., K. P. Brevoort, et al. (2007). "Opportunities and issues in using HMDA data." Journal of Real Estate Research 29(4): 351-379.

Been, V, I Ellen, and J Madar. 2009. “The High Cost of Segregation: Exploring Racial Disparities in High Cost Lending.” Fordham Urban Law Journal 36:361–393.

Bond, C. and R. Williams. 2007. “Residential Segregation and the Transformation of Home Mortgage Lending.” *Social Forces* 86(2):671-698.

Charles, C. 2003. “Dynamics of Racial Residential Segregation.” *Annual Review of Sociology* 29:167-207.

Denton, N.A. 2001. “Housing as a Means of Asset Accumulation: A Good Strategy for the Poor?” Pp. 232-268 in *Assets for the Poor: The Benefits of Spreading Asset Ownership*, edited by T.M. Shapiro and E. Willf. New York, NY: Russell Sage Foundation.

Farley, R. and W.H. Frey. 1994. “Changes in the Segregation of Whites from Blacks During the 1980s: Small Steps Toward a More Integrated Society.” *American Sociological Review* 59:23-45.

Fischer, M.J. 2003. “The Relative Importance of Income and Race in Determining Residential Outcomes in U.S. Urban Areas, 1970-2000.” *Urban Affairs Review* 38: 669-696.

Fischer, M. J. 2008. "Shifting Geographies: Examining the Role of Suburbanization in Black's Declining Segregation." Urban Affairs Review 43(4): 475-496.

Fischer, M. J. and M. Tienda (2006). Redrawing Spatial Color Lines: Hispanic Metropolitan Dispersal, Segregation, and Economic Opportunity. Hispanics and the Future of America. M. Tienda and F. Mitchell. Washington, DC, National Academies Press: 100-137.

Friedman, S. and E. Rosenbaum. 2007. “Does Suburban Residence Mean Better Neighborhood Conditions for All Households? Assessing the Influence of Nativity Status and Race/Ethnicity.” *Social Science Research* 36(1):1-27.

Friedman, S. and G.D. Squires. 2005. “Does the Community Reinvestment Act Help Minorities Access Traditionally Inaccessible Neighborhoods?” *Social Problems* 52(2):209-231.

Friedman, S., H. Tsao, and C. Chen. 2012. “Housing Tenure Differences in Residential Segregation.” Paper presented at the annual meeting of the Population Association of America, Dallas, TX, 2010. Revise and resubmit status.

Holloway, S.R., M. Ellis, R. Wright, and M. Hudson. 2005. “Partnering ‘Out’ and Fitting In: Residential Segregation and the Neighbourhood Contexts of Mixed-Race Households.” *Population, Space, and Place* 11:299-324.

Hunt, L.L, M.O. Hunt, and W.W. Falk. 2008. “Who is Headed South? U.S. Migration Trends in Black and White, 1970-2000.” *Social Forces* 87(1):95-119.

Hunt, M.O. 2007. “African American, Hispanic, and White Beliefs about Black/White Inequality, 1977-2004.” *American Sociological Review* 72(3):390-415.

Iceland, J., G. Sharp, and J.M. Timberlake. Forthcoming. “Sun Belt Rising: Regional Population Change and the Decline in Black Residential Segregation, 1970-2009.” *Demography*.

Iceland, J., D.H. Weinberg, and E. Steinmetz. 2002. U.S. Census Bureau, Series CENSR-3, *Racial and Ethnic Residential Segregation in the United States: 1980-2000*. Washington, DC: U.S. Government Printing Office.

Joint Center for Housing Studies of Harvard University. 2011. *America’s Rental Housing: Meeting Challenges, Building on Opportunities*. Cambridge, MA: Harvard University.

Kochhar, R., A. Gonzalez-Barrera, and D. Dockterman. 2009. “Through Boom and Bust: Minorities, Immigrants, and Homeownership.” Report for the Pew Hispanic Research Center, Washington, DC.

Logan, J.R., B.Stults, and R. Farley. 2004. “Segregation of Minorities in the Metropolis: Two Decades of Change.” *Demography* 41:1-22.

Massey, D.S. 1985. “Ethnic Residential Segregation: A Theoretical Synthesis and Empirical Review.” *Sociology and Social Research* 69:315-350.

Massey, D.S., G.A. Condran, and N.A. Denton. 1987. “The Effect of Residential Segregation on Black Social and Economic Well-Being.” *Social Forces* 66(1): 29-56.

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

Qian, Z. and D.T. Lichter. 2007. “Social Boundaries and Marital Assimilation: Interpreting Trends in Racial and Ethnic Intermarriage.” *American Sociological Review* 72:68-94.

Rugh, J S, and D S Massey. 2010. “Racial Segregation and the American Foreclosure Crisis.” American Sociological Review 75(5):629–651.

Singer, A. 2004. The Rise of New Immigrant Gateways. Washington, DC: Brookings Institution, Center on Urban and Metropolitan Policy. Living Cities Census Series.

Taeuber, K., and A. Taeuber. 1965. *Negroes in Cities: Residential Segregation and Neighborhood Change*. Chicago: Aldine.

Williams, R. 2011. Email message from the author containing special tabulations. July 5, 2011.

Williams, R., R. Nesiba, and E.D. McConnell. 2005. “The Changing Face of Inequality in Home Mortgage Lending.” *Social Problems* 52:181-208.

gregation of Owners and Renters by Race/Ethnicity, from Non-Hispanic Whites, 2000-2010

	D-scores		Ratio of Owner(D)/Renter (D)			
000	2010	Change	2000	2010	Change	N
(1)	(2)	(3)	(4)	(5)	(6)	(7)
.66	0.61	-0.05	0.94	0.93	-0.01	268
.70	0.66	-0.04				268
.51	0.49	-0.02	0.84	0.85	0.01	266
.61	0.58	-0.03				266
.46	0.46	0.00	0.80	0.82	0.02	183
.57	0.56	-0.01				183

sus (SF1)
se CBSAs with at least 1,000 persons in each minority group, by housing tenure status.
os of the d-scores are weighted by the size of the relevant minority group.

Table 2. Highest and Lowest Ratios of Black Owner to Renter Segregation from Whites in the Largest Metros, 2010

	Ratio of Owner(D)/Renter(D)			2010 Black D-Scores	
Metropoltian Areas	2010	2000	Change	Owner	Renter
	(1)	(2)	(3)	(4)	(5)
Panel A. Highest Ratios in 2010					
1. El Paso, TX	1.11	1.01	0.10	0.39	0.35
2. Dayton, OH	1.10	1.08	0.02	0.72	0.65
3. Detroit-Warren-Livonia, MI	1.07	1.01	0.06	0.80	0.74
4. San Diego-Carlsbad-San Marcos, CA	1.04	1.05	-0.01	0.56	0.54
5. Chicago-Joliet-Naperville, IL-IN-WI	1.03	1.02	0.01	0.79	0.76
6. Cleveland-Elyria-Mentor, OH	1.02	1.01	0.01	0.77	0.75
7. Modesto, CA	1.02	0.95	0.07	0.38	0.37
8. Milwaukee-Waukesha-West Allis, WI	1.02	1.00	0.02	0.84	0.82
9. Toledo, OH	1.01	1.06	-0.05	0.67	0.66
10. Los Angeles-Long Beach-Santa Ana, CA	1.01	1.02	-0.01	0.69	0.68
Panel B. Lowest Ratios in 2010					
1. Portland-South Portland-Biddeford, ME	0.48	0.58	-0.10	0.32	0.66
2. Boise City-Nampa, ID	0.57	0.75	-0.18	0.26	0.46
3. Poughkeepsie-Newburgh-Middletown, NY	0.60	0.56	0.04	0.39	0.66
4. Allentown-Bethlehem-Easton, PA-NJ	0.65	0.72	-0.07	0.42	0.64
5. Ogden-Clearfield, UT	0.71	0.72	-0.01	0.34	0.48
6. Salt Lake City, UT	0.71	0.72	-0.01	0.36	0.51
7. Albany-Schenectady-Troy, NY	0.72	0.74	-0.02	0.51	0.70
8. Worcester, MA	0.72	0.63	0.09	0.46	0.64
9. Oxnard-Thousand Oaks-Ventura, CA	0.75	0.72	0.03	0.39	0.51
10. Scranton-Wilkes-Barre, PA	0.76	0.82	-0.06	0.44	0.58

Source: 2000, 2010 Census (SF1)

Notes: Includes only those CBSAs with at least 1,000 persons in each minority group, by housing tenure status. D-scores and ratios of the d-scores are weighted by the size of the relevant minority group.

Table 3. Descriptive Statistics of Ecological and Lending Characteristics of CBSAs, 2000-2010

Variable	Mean (1)	Standard Deviation (2)
Ecological Characteristics		
Region		
Northeast	0.12	0.33
Midwest	0.24	0.42
South	0.49	0.50
West	0.15	0.36
Functional Specialization		
Retirement (>65%)	0.06	0.24
Manufacturing (%)	0.06	0.24
Government Employment (%)	0.11	0.31
Military (%)	0.09	0.29
Demographic Characteristics		
Total Population (logged)	12.84	1.07
Black/White Pop Growth Rate	0.14	0.18
Other/Black Pop Growth Rate	0.58	0.45
Change in the Percent Foreign Born	1.38	1.03
Housing Market Characteristics		
Percent Units Built in 2000s	13.67	5.83
Change in Percent Suburban	0.78	2.98
Economic Status		
Growth in Black to White Income	-0.05	0.11
Lending Characersitics		
Total Conventional Loans (%)	0.78	0.09
White Conventional Loans (%)	0.78	0.09
Black Conventional Loans (%)	0.66	0.12
Total Subprime Loans (%)	0.12	0.15
White Subprime Loans (%)	0.09	0.12
Black Subprime Loan (%)	0.27	1.07
Proportional Changes in:		
Loan Volume, Overall (2003/05 to 2007/09)	-0.35	0.16
White Loan Volume (2003/05 to 2007/09)	-0.34	0.16
Black Loan Volume (2003/05 to 2007/09)	-0.40	0.17
Conventional Loan Volume, Overall (2003/05 to 2007/09)	-0.49	0.15
White Conventional Loan Volume (2003/05 to 2007/09)	-0.48	0.15
Black Conventional Loan Volume (2003/05 to 2007/09)	-0.60	0.13
Subprime Loan Volume, Overall (2004/05 to 2007/09)	-0.56	0.21
White Supbrime Loan Volume (2004/05 to 2007/09)	-0.51	0.23
Black Subprime Loan Volume (2004/05 to 2007/09)	-0.69	0.17

Table 4. Baseline Multiple Regression Models of Proportional Change in D-Scores, 2000-2010

	Proportional Changes in D-scores of:		
	Owners	Renters	Owners/Renters
Variable	(1)	(2)	(3)
Ecological Characteristics			
Region (ref. Northeast)			
	-0.0265	-0.0273*	-0.0062
Midwest	(0.0164)	(0.0128)	(0.0175)
	-0.0229	-0.0061	-0.0307
South	(0.0167)	(0.0134)	(0.0178)
	-0.0423*	-0.0531**	-0.0104
West	(0.0190)	(0.0158)	(0.0204)
Functional Specialization (ref. none)			
	0.0327	-0.0424**	0.0869**
Retirement (>65%)	(0.0183)	(0.0145)	(0.0195)
	-0.0102	0.0106	-0.0206
Manufacturing (%)	(0.0172)	(0.0136)	(0.0183)
	-0.0038	0.0277*	-0.0223
Government Employment (%)	(0.0138)	(0.0110)	(0.0148)
	-0.0312*	-0.0096	-0.0209
Military (%)	(0.0158)	(0.0126)	(0.0169)
Demographic Characteristics			
	0.0191**	0.0068	0.0156**
Total Population (logged)	(0.0050)	(0.0039)	(0.0054)
	-0.1362**	0.0275	-0.1209**
Black/White Pop Growth Rate	(0.0294)	(0.0226)	(0.0314)
	-0.0131	-0.0128	0.0081
Other/Black Pop Growth Rate	(0.0125)	(0.0099)	(0.0134)
Change in the Percent Foreign	0.0039	-0.0002	0.0042
Born	(0.0046)	(0.0037)	(0.0049)
Housing Market Characteristics			
	-0.0014	-0.0030**	0.0013
Percent Units Built in 2000s	(0.0010)	(0.0008)	(0.0011)
	-0.0011	0.0022	-0.0024
Change in Percent Suburban	(0.0014)	(0.0011)	(0.0015)
Economic Status			
	0.0000	-0.0392	0.0071
Growth in Black to White Income	(0.0395)	(0.0315)	(0.0423)
	-0.2397**	-0.2185**	-0.1422**
Index of Dissimilarity 2000	(0.0443)	(0.0425)	(0.0474)
	-0.1204*	0.0511	-0.1313*
Intercept	(0.0576)	(0.0461)	(0.0617)
Adjusted R-squared	0.18	0.27	0.20

**p<0.01; *p<0.05

Table 5. Unstandardized Coefficients for Lending Characteristics on Proportional Changes in D-Scores, 2000-2010

	Proportional Changes in D-scores of:		
	Owners	Renters	Owners/Renters
Variable	(1)	(2)	(3)
A. Proportion of Loans in 2000-2010 that are Conventional			
All Home Buyers	0.156 **	-0.020	0.189 **
White Home Buyers	0.172 **	-0.001	0.190 **
Black Home Buyers	0.050	-0.026	0.079
B. Proportion of Loans in 2004-2010 that are Subprime			
All Home Buyers	0.029	0.005	0.032
White Home Buyers	0.038	0.008	0.038
Black Home Buyers	0.004	0.001	0.004
C. Proportional Change in Lending to(2003/05 to 2007/09)			
All Home Buyers	0.003	0.042	-0.072 *
White Home Buyers	0.017	0.038	-0.048
Black Home Buyers	-0.042	-0.014	-0.050
D. Proportional Change in Conventional Lending (2003/05 to 2007/09)			
All Home Buyers	0.027	0.059 *	-0.062
White Home Buyers	0.038	0.056 *	-0.046
Black Home Buyers	-0.022	0.011	-0.055
E. Proportional Change in Subprime Lending (2004/05 to 2007/09)			
All Home Buyers	0.042	0.046 *	-0.020
White Home Buyers	0.061 *	0.053 *	-0.001
Black Home Buyers	0.016	-0.011	-0.019

**p<0.01; *p<0.05