Racial Inequality between Gentrifiers: How the Race of Gentrifiers Affects Retail Development in Gentrifying Neighborhoods

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Abstract

Research often links gentrification to racial inequality. Nevertheless, scholars know surprisingly little about whether the racial composition of gentrifiers moderates the consequences of gentrification. Few quantitative studies compare the effects of gentrification across different racial groups, and those that do tend to limit their outcome of interest to housing. This paper represents perhaps the first ever large-scale assessment of the ways in which gentrifiers' racial composition is associated with local retail development. Using data on retailers in over 500 U.S. cities between 2000 and 2010, the paper shows that retail development was significantly slower in neighborhoods gentrified by Blacks rather than Whites. Put differently, White gentrifiers gained a disproportionate amount of the retail development associated with gentrification. Scholars must acknowledge that the consequences of gentrification vary depending on the racial composition of gentrifiers, which is likely one reason why the field struggles to appropriately operationalize and measure gentrification.

Introduction

Gentrification, or "the transformation of a working-class or vacant area of the central city into middle-class residential and/or commercial use" (Lees, Slater, and Wyly 2013:xv),[1] has accelerated in the 21st Century, triggering an explosion in social science research on the topic (Ellen and Ding 2016). Scholarship has evolved to conclude that the demographic composition of gentrifiers moderates how gentrification affects urban inequality. For example, the gender, sexuality, wealth, and age of gentrifiers can alter the degree to which existing residents are displaced, community institutions persist, and economic development takes off in neighborhoods (Bondi 1999; Brown-Saracino 2010; Moos 2014; Sibalis 2004). Studies have also become sophisticated enough to demonstrate that gentrification can come in waves. The middle class might gentrify a working-class neighborhood, for instance, but the upper class may ultimately gentrify the neighborhood again, displacing the middle-class residents (Lees 2003). Despite how far the literature has come, scholars lament how little is known about the effects of gentrifiers' racial composition on neighborhood change (Hwang and Sampson 2014; Owens and Candipan 2018; Sutton 2018), a stark contrast to popular discourse about gentrification, which can fixate on racial inequality (Coscarelli 2014; John 2014). Most gentrifying neighborhoods do not experience racial turnover (Ellen and O'Regan 2008; McKinnish, Walsh, and White 2010), but intra-racial relations can be as consequential for gentrification as can inter-racial relations. Some middle-class African Americans who gentrify working-class

African-American neighborhoods, for instance, view their presence in these neighborhoods as “part of a racial uplift project” (Pattillo 2008:301).

To complicate matters further, the majority of existing research on gentrification and race analyzes either White or Black gentrifiers in the United States (Lees 2016). Literature on White gentrifiers tends to emphasize how an influx of middle-class Whites into a neighborhood may change the neighborhood’s culture or create inter-class and racial tensions within the local community (Brown-Saracino 2010; Deener 2007; Sullivan and Shaw 2011; Zukin 2010). Literature on Black gentrifiers, on the other hand, tends to debate how an influx of middle-class Blacks into a neighborhood can enhance social justice efforts or produce inter-class tensions within Black communities (Hyra 2008; Moore 2009; Pattillo 2008; Taylor 2002). Many studies investigate one group—either White or Black gentrifiers—and only mention the other. Such an approach is limited in scope. To empirically determine how differently the gentrification process unfolds depending on the race of gentrifiers, comparative research designs are necessary. Comparative research designs are growing in the literature on gentrification and race, but most existing studies only focus on housing attainment as their primary outcome of interest (Goetz 2011; McKinnish, Walsh, and White 2010; Owens and Candipan 2018; Sutton 2018; Timberlake and Johns-Wolfe 2017; cf. Gibbons and Barton 2016). The emphasis on housing attainment is merited given that gentrification is defined by spatial mobility

patterns. Nevertheless, the study of housing attainment leaves many cultural and economic consequences of gentrification unexamined.

This paper extends the literature on gentrification and race by asking, *How is the racial composition of gentrifiers associated with retail development in gentrifying neighborhoods?* Neighborhoods with vibrant retail corridors are associated with greater social capital (Klinenberg 2018), better health and well-being (Diez Roux and Mair 2010), a stronger sense of place (Silver, Clark, and Yanez 2010), and more job opportunities (Schuetz, Kolko, and Melzer 2012). In other words, retailers help define the cultural and economic characteristics of local neighborhoods. Furthermore, retailers are central to multiple theories of gentrification. Supply-side perspectives believe that capitalists use economic development—including retail growth—to transform neighborhoods into enclaves for the wealthy (Hackworth and Smith 2001). Demand-side perspectives, moreover, believe that the kinds of retailers that show up in gentrifying neighborhoods reflect the consumer preferences of gentrifiers (Bridge and Dowling 2001). Although empirical research on retail change in gentrifying neighborhoods is growing (Glaeser, Kim, and Luca 2018; Meltzer and Capperis 2017; Meltzer and Ghorbani 2017; Zukin et al. 2009), only a handful of studies address the connections between race and retail development. This research, furthermore, tends to be comprised of select case studies that focus on the most rapidly gentrifying communities (Deener 2007; Sullivan and Shaw 2011; Zukin 2010). The omission of race from the literature on gentrification-led commercial

development is notable considering the many racial minority neighborhoods that either lack a sizeable retail sector or contain different types of retailers than racial majority neighborhoods (Helling and Sawicki 2003; Kwate and Loh 2016; Meltzer and Schuetz 2012).

This paper represents perhaps the first ever large-scale assessment of the ways in which gentrifiers' racial composition moderates gentrification-led retail development. In the paper, I use U.S. Census data and ReferenceUSA business directory listings from 2000 and 2010 in over 500 U.S. cities to show that retail development is slower in neighborhoods gentrified by Blacks rather than Whites. Neighborhoods gentrified by Whites differed little from neighborhoods that did not gentrify in terms of overall retail growth. The growth of gentrification-oriented retailers such as art galleries, bars, and coffee shops, however, was consistently faster in neighborhoods gentrified by Whites. In contrast, both overall and gentrification-oriented retail development in neighborhoods gentrified by Blacks was little different from—and in some cases slower than—retail development in neighborhoods that did not gentrify.

These results join others that disentangle race from class effects in order to demonstrate two facts. First, race is essential to understanding the consequences of gentrification, particularly in U.S. cities (Mele 2017; Owens and Candipan 2018; Sutton 2018). Second, as with studies that use a racial economy perspective to study cities (Anderson and Sternberg 2013; Wilson 2009), this paper highlights how race and racism are central features of urban development

in the United States, even after accounting for the rise of a Black middle class that is gentrifying urban neighborhoods. Gentrifiers are not a homogenous group, and there can be racial inequality between gentrifiers, at least in terms of retail development. Therefore, scholars should move past racial inequality between gentrifiers and existing residents to investigate forms of racial inequality that affect gentrifiers themselves. Researchers should also analyze contexts other than housing—such as retailing—in order to assess the full suite of mechanisms linking gentrification to social stratification. Finally, this paper's findings provide a caution to policy makers who claim that attracting the Black middle class to poor Black neighborhoods will stimulate commercial development and create job opportunities (Boyd 2005). Retail development due to Black-led gentrification is unlikely to dramatically transform the conditions faced by blighted urban Black communities.

Gentrification and Race

For the remainder of the paper, I will refer to an influx of Black gentrifiers into a neighborhood as *Black Gentrification* and an influx of White gentrifiers as *White Gentrification*. As mentioned earlier, much literature that discusses how race shapes the gentrification process comes from U.S.-focused studies (Lees 2016). In the United States, however, racial inequality did not play a role in gentrification until the 1970s. "At least through the 1970s," writes Sharon Zukin, "white-collar workers were affected by gentrification more than blue-collar

workers, with whites displaced more frequently than members of other races" (1987:135). Starting in the 1970s, rents became so cheap in the disinvested core of many U.S. cities that developers began revitalizing and rehabilitating urban neighborhoods cheaply, a process that accelerated in the 1980s and became state-sponsored by the 1990s (Hackworth and Smith 2001). Thus sparked a trend in which White gentrifiers moved from racially homogenous neighborhoods to poor non-White neighborhoods, displacing some minority residents. Many accounts of urban renewal in the United States began to presume that gentrification was synonymous with the White takeover of poor minority neighborhoods, particularly African-American ones (Lees 2000; 2016). Gentrification does not always involve an influx of wealthy Whites into non-White communities, however. Middle-class Whites can gentrify working-class White neighborhoods (Brown-Saracino 2010), and in instances where White Gentrification does result in racial turnover, neighborhoods were much more likely to start out heavily Hispanic or Asian rather than Black (Hwang 2016; Hwang and Sampson 2014). White gentrifiers' avoidance of Black neighborhoods fits a well-established pattern in the United States in which Whites are less likely to tolerate having Blacks as neighbors than other racial groups (Charles 2006).

White gentrifiers' avoidance of poor Black neighborhoods does not mean that Black neighborhoods are immune to gentrification. A growing number of middle-class Blacks are gentrifying working-class Black neighborhoods (Hyra 2008; Moore 2009; Pattillo 2008; Taylor 2002). The arrival of the Black middle

class in poor Black neighborhoods counters a trend in which the Black middle class left these areas in the mid-to-late 20th Century (Wilson 1996). Since then, there has been a hearty debate over whether or not re-introducing the Black middle class into poor Black neighborhoods would strengthen community institutions and revitalize the economy (Boyd 2005; Pattillo 2005). This debate has spilled over into scholarship on Black Gentrification, which has yet to conclude whether the arrival of Black gentrifiers in poor Black neighborhoods improves the well-being of longtime residents (Hyra 2008; Moore 2009; Pattillo 2008; Taylor 2002).

In short, White and Black Gentrification often involve different sets of neighborhoods. Each type of gentrification has consequently stimulated different sets of debates and created two somewhat distinct bodies of research. When White Gentrification scholars discuss Blacks, they often treat Blacks as victims rather than perpetrators of gentrification (Freeman 2006:51-57; Lees 2000). When Black Gentrification scholars discuss Whites, they often mention how different Black gentrifiers are from White gentrifiers without using comparative research designs that establish how consequential that difference really is (Boyd 2005; Moore 2009; Pattillo 2008). There exist studies that use rigorous comparative designs to evaluate the differences between White and Black gentrifiers, but most of these studies are restricted to one dimension of gentrification: housing attainment (Goetz 2011; McKinnish, Walsh, and White 2010; Owens and Candipan 2018; Sutton 2018; Timberlake and Johns-Wolfe

2017). The few studies that analyze other dimensions, such as changes in self-rated health (Gibbons and Barton 2016), tend to rely on select case studies of rapidly gentrifying communities rather than large-scale research. The remainder of this paper is devoted to a comparative analysis of retail development under conditions of White and Black Gentrification in over 500 U.S. cities, revealing how neighborhood growth can take on a different character depending on the race of gentrifiers.

White Gentrification and Retail Change

Both qualitative and quantitative evidence demonstrate that a specific set of retailers, including art galleries, boutiques, coffee shops, upscale restaurants, and bars, are more likely to grow in areas gentrified by Whites (Sullivan and Shaw 2011; Zukin et al. 2009; Zukin, Kasinitz, and Chen 2015). These gentrification-oriented retailers have the power to change neighborhoods by attracting new clientele to the neighborhood and positioning themselves as anchors for future economic development (Benediktsson, Lamberta, and Larsen 2016). Moreover, the establishment of gentrification-oriented retailers is associated with the early stages of gentrification, acting as a signal to more risk-averse retailers that they too can turn a profit in such neighborhoods (Zukin et al. 2009). Some studies go beyond commercial development and link White Gentrification to the closure of existing retail shops. Although some evidence shows that retail closure due to gentrification is negligible (Meltzer and Capperis

2017), a contrasting literature paints the rise of gentrification-oriented retailers and the decline of existing retailers in stark terms (Sullivan and Shaw 2011; Zukin et al. 2009; Zukin, Kasinitz, and Chen 2015). An evocative study of the Mission District, a Latino neighborhood in San Francisco that was gentrified largely by Whites, captures this common narrative.

> One of the first signs of displacement is gentrified consumption, the hallmarks of which are businesses—expensive restaurants, antique stores, upscale bars and lounges, boutiques, specialty food stores, cafes—that are deliberately built to attract wealthier populations to the area. Their arrival signals that older businesses—liquor stores, check cashing store-fronts, furniture rental businesses, pawn shops—which cater to the poor and working-class populations, will be replaced, eventually forcing this community to travel outside of their neighborhood to get their needs met (Mirabal 2009:18).

White Gentrification stimulates commercial development, but the closure of existing retailers may temper overall gains in neighborhood retailers. Therefore, White Gentrification likely results in negligible growth in overall retailers but exceptional growth in gentrification-oriented retailers.

Hypothesis 1: *Compared to neighborhoods that did not gentrify, neighborhoods experiencing White Gentrification are associated with a similar increase in overall retailers.*

Hypothesis 2: *Compared to neighborhoods that did not gentrify, neighborhoods experiencing White Gentrification are associated with a larger increase in gentrification-oriented retailers—including art galleries, boutiques, coffee shops, upscale restaurants, and bars.*

Black Gentrification and Retail Change

In the latter half of the 20th Century, metropolitan regions deindustrialized and suburbanized, concentrating lower-class Blacks into disadvantaged urban neighborhoods. When Blacks could afford to move out of such areas, they often did so, sapping many Black communities of their purchasing power and economic strength (Small and McDermott 2006; Wilson 1996). As a result, numerous Black neighborhoods today lack vibrant retail corridors (Meltzer and Schuetz 2012). When retail corridors are present, they tend to be smaller than those in White neighborhoods and more likely to contain retailers such as fast food restaurants and liquor stores (Kwate and Loh 2016). An influx of Black gentrifiers may revitalize these areas, bringing in retailers that create jobs and sell high-quality goods to the community. Policy makers and community advocates sometimes believe this to be the case, including the residents of Chicago's Douglas/Grand Boulevard neighborhood, who advertised their community to prospective middle-class Black homeowners (Boyd 2005).

Nevertheless, for three reasons, it is unlikely that Black Gentrification stimulates as much business development as White Gentrification does. The first reason comes from the social orientation of many middle-class Blacks. In comparison to White gentrifiers, Black gentrifiers tend to be more attentive to how their consumption choices affect longtime residents and retailers. For example, some Black gentrifiers deliberately patronize existing local businesses in order to support working-class residents (Freeman 2006:57). Some scholars

even claim that Black gentrifiers have a social justice agenda, stressing racial solidarity over class divisions when interacting with the existing population (Moore 2009). The social justice initiatives spearheaded by middle-class Blacks occasionally generate inter-class tensions that undermine the effectiveness of attempts to empower working-class community members (Boyd 2005; Hyra 2008; Pattillo 2008). Regardless, as an African American earns a larger income, their support for Black-owned businesses tends to increase (Dawson 2003), and Black Gentrification is likely to result in the slower development of new retailers and the maintenance of existing retailers.

The second reason to expect lower rates of commercial development in neighborhoods experiencing Black Gentrification is the precariousness of Black middle-class status. Undoubtedly, Black gentrifiers are “class pioneers in a low-income neighborhood” (Pattillo 2008:83). Growth in the number of upwardly mobile African Americans has been essential to the emergence of Black Gentrification (Byrne 2002-2003:409; Hyra 2008:159). Middle-class Black households, however, tend to hold less wealth than middle-class White households (Oliver and Shapiro 2006) and be more heavily comprised of never-married singles who rely on one sole income (Marsh et al. 2007). Many middle-class Black neighborhoods are also situated near places of concentrated poverty, which can influence the quality of amenities that are available to local residents (Adelman 2004; Sharkey 2014). Retailers are one such amenity, and any retail

dynamics associated with Black Gentrification may be unable to overcome the economic vulnerability of many members of the Black middle class.

Beyond the consumer preferences of Black gentrifiers and the economic constraints they may face, retailers engage in racial discrimination, the third reason to expect lower rates of business development in neighborhoods undergoing Black Gentrification. Even after accounting for a comprehensive set of factors such as residents' average income and the credit worthiness of local firms, banks are less likely to approve loans for businesses in Black neighborhoods. These neighborhoods consequently experience less commercial investment than non-Black neighborhoods (Immergluck 1999; 2002). The lower rates of investment in Black neighborhoods are also attributable to the racial logics of algorithms used by commercial developers to assess where to build next, which equate Black neighborhoods with lower profitability (Golumbia 2009). Indeed, some Black neighborhoods have more rail access and comparable amounts of available retail space per building than White neighborhoods, yet retail activity remains lower in Black neighborhoods (Meltzer and Schuetz 2012). Local governments try to incentivize economic development in African-American neighborhoods but struggle to convince developers that incoming businesses will turn a profit in these areas (Anderson and Sternberg 2013). Even in high-income Black neighborhoods, access to numerous types of retailers is lower than in other neighborhoods (Helling and Sawicki 2003). In short, many retailers avoid

expanding into Black neighborhoods, which results in slower rates of retail development in those areas.

Given the combined characteristics of Black gentrifiers and retailers, it is unlikely that neighborhoods experiencing Black Gentrification undergo faster retail growth than neighborhoods that do not gentrify. In some cases, Black Gentrification may even be associated with slower retail growth than non-gentrifying neighborhoods.

> ***Hypothesis 3:*** *Compared to neighborhoods that did not gentrify, neighborhoods experiencing Black Gentrification are associated with a similar increase in overall retailers.*
>
> ***Hypothesis 4:*** *Compared to neighborhoods that did not gentrify, neighborhoods experiencing Black Gentrification are associated with a similar increase in gentrification-oriented retailers.*

Data

There are two sources of data for this paper. The first is a combination of the 2000 Decennial Census and 2006-2010 American Community Survey 5-year estimates. The 2000s were a period of rapid gentrification in the U.S., by some measures double the pace of the 1990s (Maciag 2015). Furthermore, despite any declines in brick-and-mortar retail during this time period, larger U.S. cities saw strong retail growth, unlike small towns and suburban areas (Couture and Handbury 2016; Grabar 2017). I treat Census tracts as a proxy for

neighborhoods, matching 2000 and 2010 Census tract boundaries using the Neighborhood Change Database. Because my focus is urban gentrification, I limit the analysis to principal cities identified by the U.S. Census Bureau in 2010. I also limit the analysis to tracts that had at least one retailer in either 2000 or 2010 and a minimum of 1,000 residents in 2000. Cities must have also contained at least 25,000 residents in 2000. Gentrification is sometimes only associated with large cities (Hartley 2013), but when data are restricted to cities that had at least 500,000 people, results are virtually identical. I use the 25,000-resident threshold in reported results to maximize the sample size and capture variation in the conditions of gentrification. Scholars criticize the gentrification literature for its bias toward larger cities (Lees 2006), and many small cities implement policies that aim to replicate the gentrification dynamics occurring in densely populated urban neighborhoods (Waitt and Gibson 2009). Consequently, my final data set includes 22,672 Census tracts in 548 cities.

The second data source is business listings in 2000 and 2010 from ReferenceUSA, a commercially available directory that include firms' names, addresses, Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes, sales volume, and longitude and latitude coordinates. Researchers have extensively used ReferenceUSA data to study retailers (Bader et al. 2010; Fleischhacker et al. 2013), including to study gentrification (Papachristos et al. 2011). Some scholars criticize the accuracy of business directories such as ReferenceUSA (Powell et al. 2011), but accuracy is

much better in large cities than in rural areas (Longacre et al. 2011). More importantly, few comparable data sets exist that contain the exact locations of retailers across the entire United States. Appendix 1 has a list of all SIC and NAICS codes used in this analysis as well as an explanation of how I operationalized upscale restaurants. The total number of retailers analyzed was 197,934 in 2000 and 291,711 in 2010.

Operationalizing White and Black Gentrification

To measure gentrification, I adapt an operationalization used by Ding, Hwang, and Divringi (2016), which is closely modeled on Freeman (2005). In the first step, I identify all neighborhoods that were *Gentrifiable*, which include all Census tracts in which the median household income was less than the citywide median income in 2000.[2] I treat all neighborhoods that did not fit this criterion as *Not Gentrifiable*. *Gentrified* neighborhoods include those that satisfied two criteria. First, to be considered gentrified, a tract must have had an increase between 2000 and 2010 in either median household income or the proportion of the population that was college-educated.[3] That increase, moreover, must have been at least 1.5 times larger than the citywide increase in the same characteristic. Second, the tract must have had an increase in either median home value or median rent that was at least 1.5 times larger than the citywide increase in the same characteristic. This operationalization captures circumstances in which gentrification was propelled by either pioneering wealthy

homesteaders or highly educated bohemians with little income. I use the 1.5 threshold to ensure that the set of gentrified neighborhoods does not include tracts whose growth was effectively the same as the surrounding city, only slight larger. Reported results are very similar to findings that omit the 1.5 threshold requirement. I use robustness checks to expand on this point later on in the paper. Finally, if a neighborhood did not experience gentrification, I consider it *Not Gentrified*.

In the next step, I classify gentrified neighborhoods based on the race of likely gentrifiers who moved in. Under ideal conditions, I could isolate the specific racial identification of wealthier and/or highly educated people moving into a gentrifying neighborhood. Using publicly available Census and American Community Survey data, it is impossible to conduct such an analysis. Publicly available data only reveal what percentage of residents moved into the neighborhood in the last year, and the data do not reveal newcomers' races. Therefore, in my primary analysis, I use an operationalization of racial gentrification adapted from Timberlake and Johns-Wolfe (2017), who relied on publicly available data to analyze the racial trajectories of gentrifying neighborhoods. More specifically, I assume any gentrified neighborhood that was majority Black at the end of the study period underwent *Black Gentrification*, and any gentrified neighborhood that was majority White at the end of the study period underwent *White Gentrification*. Gentrified neighborhoods that experienced neither White nor Black Gentrification underwent *Other*

Gentrification. There were 1,608 neighborhoods that experienced White Gentrification, 953 neighborhoods that experienced Black Gentrification, and 1,314 neighborhoods that experienced Other Gentrification.

This operationalization of racial gentrification has the advantage of comprehensively identifying gentrified neighborhoods that were predominantly Black or White. Nevertheless, according to this operationalization, a large number of Black Gentrified neighborhoods may have gained in White population share and lost in Black population share. For example, a neighborhood that underwent Black Gentrification may have shifted from being 99 percent Black in 2000 to 51 percent Black in 2010. Therefore, in a series of robustness checks that I discuss later, I reproduce the analyses using other operationalizations of White and Black Gentrification, all of which uphold the main results.

Methods and Variables

An influx of gentrifiers may stimulate retail development, or retail development may stimulate an influx of gentrifiers. Therefore, rather than make strong causal claims, I aim to determine how retail development is stratified according to the racial trajectory of a gentrifying neighborhood. There are three dependent variables in the analysis, each of which captures a different dimension of how gentrification and retail change may be associated: the *Likelihood of Overall Retail Opening in a Neighborhood*, the *Likelihood of Gentrification-Oriented Retail Opening in a Neighborhood*, and *Net Change in the Number of*

Retailers in a neighborhood. Retail opening indicates whether the total number of retailers of a given type increased in a neighborhood between 2000 and 2010. I analyze the net change in number of retailers because the opening and closure of similar stores may have offset one another. I could have used firms as my unit of analysis instead of neighborhoods, relying on dependent variables such as the likelihood that an individual firm moved into a neighborhood. Such dynamics, however, would not directly address neighborhood-level retail development. Independent variables include dummies indicating if a neighborhood underwent *White*, *Black*, or *Other Gentrification*. The baseline case consists of neighborhoods that were *Not Gentrified*.

To test the likelihood that a neighborhood experienced the opening of a given retailer type, I rely on cross-sectional, multi-level logistic regressions in which I combine neighborhood-level and city-level characteristics. The equations for the likelihood of retail opening take the general form below.

$$\log\left(\frac{p_{ij}}{1-p_{ij}}\right) = \beta_{0j} + \beta_{1j}W_{ij} + \beta_{2j}B_{ij} + \beta_{3j}T_{ij} + \sum_{q=4}^{Q}\beta_{qj}\boldsymbol{X}_{ij} \quad (1)$$

$$\beta_{0j} = \gamma_{00} + \sum_{r=1}^{R}\gamma_{0r}\boldsymbol{X}_{j} + u_{0j} \quad (2)$$

p is the probability that neighborhood *i* in city *j* experienced an increase in its number of retailers of a given type. β_{0j} is the average likelihood of retail opening across all neighborhoods. *W*, *B*, and *T* respectively stand for whether or not a neighborhood experienced *White*, *Black*, or *Other Gentrification*. Level-1 controls

$\boldsymbol{X}_{ij}$ include initial conditions in 2000 such as a neighborhood's *White* and *Black Population Shares* (i.e. percent White and percent Black), *College-Educated Population Share* (i.e. percent with at least a Bachelor's degree), *Median Household Value*, and *Median Rent*. I also include *Young Adult Population Share* (i.e. percent of population between 18 and 34 years old) because young adults often propel the gentrification process (Moos 2014). Other Level-1 controls pertain to where retail growth may occur. Retailers are attracted to shopping corridors that contain a large *Number of Existing Retailers* as well as locations characterized by high *Population Density* and high *Average Sales* among existing businesses (Turhan, Akalin, and Zehir 2013). I log these three latter variables, as some neighborhoods have exceptionally high values of each quantity.[4]

Variations in retail opening across cities are estimated by Equation (2). γ_{00} is the grand mean likelihood of retail opening, γ_{0r} is the unique contribution of each of the r Level-2 control variables, and u_{0j} is a random error term. Level-2 controls include the *Black Population Share of the City*, the *Unemployment Rate of the City*, and the *Population Size of the City* (logged). Blacker cities promote more economic development in African-American neighborhoods (Bates 1997), high-unemployment cities have slower economic growth (Glaeser, Scheinkman, and Shleifer 1995), and larger cities experience more gentrification (Hartley 2013). I assume all Level-1 variables are fixed and centered around their grand means. I do not center binary variables, however, as centering them obscures

the interpretation of the results. When binary variables are grand-mean centered, results are similar to reported results.

To test how net change in a neighborhood's retailer count between 2000 and 2010 was associated with gentrification, I use multi-level random-effects negative binomial regressions. Specifically, I link the negative binomial distribution to the model below.

$$(Y_{2010} - Y_{2000})_{ij} = \beta_{0j} + \beta_{1j}W_{ij} + \beta_{2j}B_{ij} + \beta_{3j}T_{ij} + \sum_{q=4}^{Q}\beta_{qj}(\boldsymbol{X_{2010}} - \boldsymbol{X_{2000}})_{ij} \quad (3)$$

$$\beta_{0j} = \gamma_{00} + \sum_{r=1}^{R}\gamma_{0r}(\boldsymbol{X_{2010}} - \boldsymbol{X_{2000}})_{j} + u_{qj} \quad (4)$$

where *Y* is the number of retailers of a given type in neighborhood *i* in city *j*, and *W*, *B*, and *T* again respectively stand for whether or not a neighborhood experienced *White*, *Black*, or *Other Gentrification*. Level-1 control variables *q* include changes between 2000 and 2010 in the *Young Adult Population Share*, *Population Density* (logged), *Average Sales* (logged), and *Total Number of Retailers* (logged).[5] Level-2 control variables *r* include *Black Population Share of the City*, *Unemployment Rate of the City*, and *Population Size of the City* (logged). I model White, Black, and Other Gentrification as random effects and all other variables as change scores. The use of random effects introduces the possibility of omitted variable bias, in which neighborhoods no longer serve as their own controls. Nevertheless, the purpose of conducting the negative

binomial regressions is to ensure that any findings from the logistic regressions are not due to retail growth and decline offsetting one another in neighborhoods.

There is potential that gentrification may be correlated with the existence of retailers at baseline, so I move the baseline dependent variable to the right-hand side of Equation (3), following the suggestion of Allison (1990). The equation now becomes

$$(Y_{2010})_{ij} = \beta_{0j} + \delta_j(Y_{2000})_{ij} + \beta_{1j}W_{ij} + \beta_{2j}B_{ij} + \beta_{3j}T_{ij} + \sum_{q=4}^{Q}\beta_{qj}(\boldsymbol{X_{2010}} - \boldsymbol{X_{2000}})_{ij} \quad (5)$$

δ is a new regressor that accounts for any associations between gentrification and number of retailers at baseline.[6]

There are a large number of regressors in the equations above, and some may be highly correlated with one another. Appendix 2 includes a correlation matrix for all independent variables in the analysis. No correlation between gentrification variables and control variables are notably high, and VIF scores were consistently under four for all variables in each regression. Taking variables with VIF scores close to four out of regression analyses, moreover, does little to change the statistical significance or directions of associations between the dependent and independent variables. In addition, while it would have been ideal to conduct spatial regressions, hybrid models that incorporate spatial dependencies into multilevel regressions can result in unstable estimates and a failure to converge, particularly for count data (Xu 2014:267). While I do not

explicitly model spatial dependencies across neighborhoods, I conduct robustness checks that take space into account, which I discuss later in the paper.

What Do Gentrifying Neighborhoods Look Like?

Table 1 contains summary statistics of the demographic features of neighborhoods by gentrification type. The top portion of the table includes initial conditions in 2000, and the bottom portion contains measures of change between 2000 and 2010. Not Gentrifiable neighborhoods started out wealthier and more educated than other neighborhood types, which makes sense given that, by definition, Not Gentrifiable neighborhoods had median household incomes as high or higher than their surrounding cities in 2000. Also by definition, Not Gentrified neighborhoods had slower increases in income and education than Gentrified neighborhoods.

[Table 1]

Distinct patterns emerge when one breaks out Gentrified neighborhoods by racial trajectory. Neighborhoods that experienced White and Black Gentrification respectively started out with large racial majorities. Nonetheless, both neighborhood types experienced a modest decrease in White population share and a modest increase in Black population share between 2000 and 2010. These values uphold two prior findings. First, White neighborhoods have become more racially diverse since 2000 but remain highly White (Frey 2016). Second,

White gentrifiers rarely move into highly Black neighborhoods (Hwang and Sampson 2014). Table 1, more importantly, suggests that Black Gentrification is in part driven by inequality between middle-class Whites' and Blacks' wealth. Educational gains were more essential to Black Gentrification than income gains: On average, Black Gentrified neighborhoods actually lost $445 in income. At first glance, an income decline in gentrifying neighborhoods may appear counter-intuitive, but these findings support the larger suggestion of existing literature that Black Gentrification occurs in Black, often impoverished, neighborhoods that do not gain wealth at the same pace as other gentrifying neighborhoods (Boyd 2005; Pattillo 2005). During the same period, working-age African Americans across the United States lost an average of $1,640 in income and increased their college education rate by only 2.8 percent,[7] meaning that the average Black Gentrified neighborhood performed better than other segments of the African-American population in the 2000s. Even so, the lack of income growth in neighborhoods that underwent Black Gentrification likely played a role in retail trends between 2000 and 2010.

Table 2 contains information on retail development across different types of Gentrifiable neighborhoods, adding depth to the demographic trends above. The table includes the average increase in the number of retailers by type as well as the percent of retailers in 2000 that remained open in 2010. Overall and across every retailer type, the number of businesses increased, no matter the racial trajectory of the neighborhood. Retail growth occurred despite a substantial

number of business closures, suggesting that retail openings and closures did not offset one another. Retail growth under conditions of White Gentrification and Other Gentrification typically outpaced retail growth in Not Gentrified neighborhoods. For instance, the rate of growth of art galleries and coffee shops in White Gentrified neighborhoods was roughly two times the rate in Not Gentrified neighborhoods. Black Gentrification provided a contrast to these trends. Although Black Gentrified neighborhoods gained retailers overall, retail counts grew at a comparable to slower pace as counts in Not Gentrified areas. Put another way, neighborhoods that went through White and Black Gentrification evinced evidence of unequal retail development. Factors other than the racial trajectory of these neighborhoods may explain this finding, however. Regression analysis will help clarify how gentrification, race, and retail change were associated with one another.

[Table 2]

Regression Results

The regressions in Table 3 show how change in both overall and gentrification-oriented retailers was associated with racial gentrification. The coefficients of White, Black, and Other Gentrification reveal how retail development in gentrified neighborhoods compared to retail development in Not Gentrified neighborhoods, the baseline case. The first two regressions demonstrate that, overall, White Gentrification did not yield exceptional retail

growth, and Black Gentrified neighborhoods could not escape the slower rate of commercial development found in many Black neighborhoods (Immergluck 2002; Meltzer and Schuetz 2012). Although White Gentrification's association with net change in retailer counts was statistically significant, when converted to predicted probabilities and holding other values at their means, net change in retailer counts in White Gentrified neighborhoods was only one percent larger than in Not Gentrified neighborhoods. Put another way, Hypothesis 1 is upheld, and White Gentrification did not lead to considerably faster retail growth overall. In contrast to the finding for White Gentrification, predicted probabilities revealed slower retail development under conditions of Black Gentrification. Holding all other values at their means, openings were four percent slower, and net change in retailer counts was five percent smaller in neighborhoods that experienced Black Gentrification rather than no gentrification. These predicted probabilities uphold Hypothesis 3, which stated that Black Gentrification would yield retail development that was no faster than Not Gentrified neighborhoods.

[Table 3]

The entire retailing category includes firms rarely associated with gentrification, such as sporting goods stores, heating oil dealers, and optical shops. Therefore, the moderate rate of overall commercial development in White Gentrified neighborhoods should be unsurprising. Factors such as population density, population size, and the number of existing retailers played a larger role in determining retail dynamics. Business owners tend to be highly sensitive to

these factors when deciding where to open retail firms (Turhan, Akalin, and Zehir 2013). At the same time, the slower retail development in Black Gentrified neighborhoods follows a pattern of lower retail availability in Black communities (Helling and Sawicki 2003).

The remaining regressions in Table 3 show that the growth of gentrification-oriented retailers was substantially different between White and Black Gentrified neighborhoods. Across every type of gentrification-oriented retailer, White Gentrification was associated with greater retail gains than Not Gentrified neighborhoods. Black Gentrification, on the other hand, was in some cases associated with slower retail development than neighborhoods that did not gentrify, which is consistent with the findings for overall retailers. The gap between White and Black Gentrified neighborhoods was considerable when I converted associations to predicted probabilities. Holding other values at their means, the differences between the predicted probabilities of White and Black Gentrification in these regressions ranged from two percent for boutiques to 35 percent for coffee shops. The findings suggest that gentrification-oriented retail growth was strongly associated with White Gentrification but not Black Gentrification, which upholds Hypotheses 2 and 4 and provides evidence of racial differences in gentrification-led retail development.

Table 3 uses Not Gentrified neighborhoods as the baseline case and does not directly compare retail development under conditions of White and Black Gentrification. In Table 4, I redo the regressions restricting the data set to only

Black and White Gentrified neighborhoods. The coefficients for White Gentrification in Table 4, in other words, represent the difference in the likelihood of retail opening and net change in retailer counts between White and Black Gentrified neighborhoods. Even with this data restriction, results are consistent with those in Table 3, demonstrating the faster pace of retail growth in White rather than Black Gentrified neighborhoods.

[Table 4]

Are the Findings Robust to Alternative Operationalizations of White and Black Gentrification?

Thus far, findings show that the race of gentrifiers is associated with the growth rate of retailers in gentrifying neighborhoods. Nevertheless, as discussed earlier, I operationalized White and Black Gentrification according to whether gentrifying neighborhoods were majority White or Black. It may be more appropriate to operationalize racial gentrification by looking at changes in the racial composition of a neighborhood over time. Therefore, in Table 5, I redo the regressions using an operationalization borrowed from Gibbons and Barton (2016), who define Black Gentrification as any gentrified neighborhood in which the Black share of the population increased. White Gentrification now includes any gentrified neighborhood in which the White share of the population increased and the Black share of the population decreased. As with the original definition, I assume that neighborhoods experiencing neither White nor Black Gentrification

underwent Other Gentrification. This new operationalization of racial gentrification can identify those gentrifying neighborhoods where Whites or Blacks became more predominant, but it may misclassify certain neighborhoods. According to this new operationalization, for example, a gentrified neighborhood in which the Black share of the population increased by one percent and the White share increased by 25 percent would qualify as having underwent Black Gentrification. Nonetheless, if results using this new operationalization are similar to previous findings, then it strengthens the overarching narrative revealed by the data that there was unequal retail development between White and Black Gentrified neighborhoods.

[Table 5]

The top portion of Table 5 shows findings for the primary independent variables in regressions that reproduce Table 3. As before, Not Gentrified represents the baseline case for a neighborhood. The bottom portion of the table reproduces Table 4, in which data are restricted to neighborhoods that underwent White or Black Gentrification. Black Gentrification remains the baseline case. Full regressions, including control variables, are available in Appendix 3. Using this alternative operationalization of racial gentrification, the findings for Black Gentrified neighborhoods change slightly. In Table 5, overall retail growth was not statistically significantly different between Black Gentrified and Not Gentrified neighborhoods. In fact, overall retail development was not statistically significantly different from Not Gentrified neighborhoods no matter the

racial trajectory of the gentrifying neighborhood. Several types of gentrification-oriented retailers, furthermore, were more likely to grow in Black Gentrified rather than Not Gentrified neighborhoods. That growth, however, was still slower than in White Gentrified neighborhoods. The regressions in the bottom portion of Table 5 reinforce this point. In the majority of regressions that directly compare White and Black Gentrified neighborhoods, gentrification-oriented retail development was statistically faster in White rather than Black Gentrified neighborhoods, and the difference in predicted probabilities between White and Black Gentrification was within the range found in Table 4. For net change in art gallery counts, moreover, the effect size of 0.16 approached statistical significance (p=0.08). In summary, the new operationalization of racial gentrification upholds the main results.

In addition to the robustness checks in Table 5, I conducted other robustness checks that are reported in Appendix 4. In the first analysis, I re-ran regressions using U.S. Census region fixed effects rather than city-level regressors because certain types of gentrification may be more common in some regions. For example, many Southern cities have experienced a rapid influx of middle-class Blacks (Frey 2004). In the second analysis, to account for the possibility that gentrification is associated with retail development in neighboring Census tracts, I examined retail change in areas that included 0.5-mile buffers around focal neighborhoods. Even if the buffer size is changed to 0.25 miles, results are similar to those in Appendix 4. Finally, the third analysis replicates the analysis using Ding, Hwang, and Divringi's (2016) original operationalization of

gentrification, which omits the requirement that growth in income, education, home value, or rent must have been 1.5 times the citywide average. No matter the specification, results uphold the main conclusions of the paper and provide strong evidence of unequal retail development across racial lines.

Discussion and Conclusion

Research has established that gentrification can have important social, economic, and cultural consequences (Brown-Saracino 2010; Deener 2007; Freeman 2006; Hyra 2008; Meltzer and Ghorbani 2017; Pattillo 2008; Sullivan and Shaw 2011; Zukin 2010; Zukin et al. 2009). Nevertheless, the field has yet to understand how race shapes the gentrification process (Hwang and Sampson 2014; Lees 2016; Mele 2017). Little research uses a comparative research design to test the association between gentrifiers' racial composition and neighborhood-level outcomes, especially beyond the limited domain of housing attainment (Goetz 2011; McKinnish, Walsh, and White 2010; Owens and Candipan 2018; Sutton 2018; Timberlake and Johns-Wolfe 2017; cf. Gibbons and Barton 2016). In this paper, I used data on retailers in over 500 U.S. cities between 2000 and 2010 to show that the race of gentrifiers has diverging effects on local retail development, which can profoundly transform neighborhoods and communities. Overall retail growth was little different between neighborhoods gentrified by Whites and neighborhoods that did not gentrify, but the growth of gentrification-oriented retailers such as boutiques and coffee shops was

consistently faster in neighborhoods gentrified by Whites. In contrast, both overall and gentrification-oriented retail development in neighborhoods gentrified by Blacks was little different from—and in some cases slower than—retail development in neighborhoods that did not gentrify. This finding yields lessons for scholars of race, social stratification, and urban studies.

Whether due to the racism of retailers, the limits of middle-class Black wealth, or the consumer preferences of Black gentrifiers, the unequal retail development between White and Black Gentrified areas underscores how race is a fundamental feature of urban development in the United States (Anderson and Sternberg 2013; Mele 2017; Wilson 2009). Scholars highlight the effects of racial segregation on urban development (Krysan and Crowder 2017) and the consequences of racial inequality between gentrifiers and longtime residents (Freeman 2005). Scholarship needs to more forcefully indicate that there is racial inequality between gentrifiers (Owens and Candipan 2018; Sutton 2018). Theoretically, scholars can draw from racial economy theory, which formalizes how racism is embedded in the political and economic decision-making that causes some places to become economically developed and others to remain impoverished and underdeveloped (Wilson 2007, 2009). As Ruth Wilson Gilmore states, “Geographers should develop a research agenda that centers on race as a condition of existence and as a category of analysis” (2002:22), a lesson that applies urgently to gentrification studies. Methodologically, scholars can solve some of the difficulties of measuring and operationalizing gentrification (Brown-

Saracino 2017; Hamnett 1991) by recognizing two things. First, there is more than one kind of gentrification, and second, the consequences of gentrification vary depending on the racial composition of gentrifiers.

This study also provides a counterweight to a growing body of literature that analyzes gentrification through the lens of housing policy and housing attainment. Retailers influence the social structure, cultural identity, and economic vitality of neighborhoods (Jacobs 1961; Light and Gold 2000; Schuetz, Kolko, and Meltzer 2012; Silver, Clark, and Yanez 2010). Studies of retail development in gentrifying neighborhoods are growing (Deener 2007; Sullivan and Shaw 2011; Zukin et al. 2009), but few take advantage of large-scale data sources such as ReferenceUSA in order to identify the mechanisms linking gentrification-led retail development to social stratification (Meltzer and Capperis 2017; Papachristos et al. 2011).

These conclusions hold despite limitations of the analysis. First, Black Gentrification is difficult to operationalize in part because the Black middle class is difficult to operationalize (Lacy 2012). Different segments of the Black middle class may experience different forms of retail development in their neighborhoods. This paper is a first step toward demonstrating differences in amenities across White and Black Gentrified areas, and future analyses should address these nuances. Second, this study occurred during the same decade as the subprime lending crisis and the Great Recession. Both events wiped out much African-American wealth (Pfeffer, Danziger, and Schoeni 2013), which may

have influenced the lack of retail development in neighborhoods that underwent Black Gentrification. Nevertheless, the Great Recession was less likely to affect gentrified neighborhoods, and evidence shows that recessions do not stop gentrification in major urban areas (Lees 2009). Third, SIC and NAICS codes may mask heterogeneity within retail types. For instance, an expensive, name-brand boutique in a White gentrifying neighborhood may signify a different kind of retail growth than an African clothing boutique in a Black gentrifying neighborhood.[8] The SIC and NAICS codes used in this study may even mask cultural differences between White and Black Gentrified neighborhoods. Proprietary surveys and qualitative approaches can add more fine-grained detail to the study of retail categories in gentrifying areas. Fourth, because gentrification is difficult to measure, it is difficult to identify the kind of person a gentrifier is. Gentrifiers may be bohemian hipsters, colonizing members of the "creative class" (Florida 2014), or many other kinds of people (Rose 1984). Black and White gentrifiers could even differ in terms of the monetary facets of their move. In short, gentrifiers come in different varieties (Schlichtman, Patch, and Hill 2017), and only some may patronize local retailers. Incorporating Ecological Momentary Assessment data to capture where, when, and how gentrifiers spend their time can enhance future studies of gentrification by revealing which types of gentrifiers spend time in various retailers (Browning and Soller 2014).[9] Finally, some scholars have implied that Black Gentrification is merely a stage of neighborhood change that precedes White Gentrification. Fort Greene, Brooklyn,

for example, went from being a poor Black community to a middle-class Black community to a middle-class White community. Even under such trajectories, gentrification-oriented retail development likely accelerates when Whites enter a neighborhood, upholding the larger findings of the paper. In the case of Fort Greene, Whites' interest in the neighborhood encouraged the local government to get involved and provide incentives for economic development. Prior to the influx of White gentrifiers, economic development was more of a bottom-up process driven by locally generated capital (Chronopoulos 2016).

To conclude, while there are some politicians and community boosters who argue that an influx of Black gentrifiers into poor Black communities can stimulate economic revitalization (Boyd 2005), the findings in this paper call such claims into question. Compared to middle-class White neighborhoods, middle-class Black neighborhoods typically have fewer amenities and a more vulnerable economic infrastructure (Adelman 2004; Taplin-Kaguru 2018). Residents of middle-class Black neighborhoods also need to travel further to purchase basic goods (Helling and Sawicki 2003). The results from this paper give reason to extend these statements to gentrified neighborhoods. Scholars have encouraged local governments to use tax incentives and other policy levers to promote commercial development in Black neighborhoods (Immergluck 1999), and such policies may be more effective than gentrification at generating meaningful economic growth in impoverished African-American communities. In the least,

policy makers should exercise caution when using gentrification as a cure for concentrated poverty, particularly in poor Black neighborhoods.

Notes

1. The definition of gentrification is contested (Brown-Saracino 2017). Gentrification comes in a variety of forms, ranging from urban to rural, supply-driven to demand-driven, and beyond (Lees, Slater, and Wyly 2013). In this paper, I intentionally use a broad definition that explicitly touches on the commercial reinvention of neighborhoods.

2. Citywide median income data come from Census-defined places, whose borders may have changed between 2000 and 2010. Given the number of cities I analyze, however, any bias due to place boundary changes is likely minimal.

3. I inflate all monetary values in the paper to 2010 dollars.

4. Control variables initially included Median Household Income as well, but this variable is highly collinear with Median Rent. Even when the income variable is included in the analysis, however, the associations between the independent and dependent variables remain unchanged.

5. I only include *Total Number of Retailers* as a control variable in regressions for gentrification-oriented retailers.

6. There are other reasons to avoid the use of change scores as dependent variables. For example, there is often regression to the mean between Y_{t+1} and Y_t, which may lead to spurious results (Markus 1980).

7. I took these income and education values from Integrated Public Use Microdata Series samples of the 2000 Decennial Census and the 2006-10 American Community Survey (Ruggles et al. 2019).

8. I thank an anonymous reviewer for pointing this out.

9. The study of how and where gentrifiers spend their time would also improve upon speculative moral claims about whether gentrifiers are at fault for the adverse consequences of gentrification.

10. For an elaborated explanation of SIC and NAICS codes, see http://www.census.gov/eos/www/naics/faqs/faqs.html.

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Table 1. Neighborhood Summary Statistics

Variables	Not Gentrifiable	Gentrifiable			
		Not Gentrified	White Gentrification	Black Gentrification	Other Gentrification
Demographics, 2000					
% White	68.65	40.09	74.69	12.27	30.18
	(26.01)	(30.71)	(15.63)	(13.93)	(19.07)
% Black	12.87	26.83	11.10	81.43	17.70
	(21.05)	(30.74)	(12.99)	(15.89)	(18.02)
Median Household Income	$67,876	$37,929	$40,311	$27,521	$37,589
	($23,722)	($13,529)	($14,658)	($8,769)	($14,110)
% College Educated	34.30	17.46	26.19	9.54	14.13
	(18.71)	(14.48)	(17.49)	(6.89)	(12.33)
% 18-34 Yr. Olds	27.34	32.45	36.59	27.24	33.21
	(8.62)	(10.95)	(16.09)	(6.48)	(8.75)
Median Household Value	$228,643	$154,469	$153,020	$81,108	$141,794
	($185,363)	($123,976)	($119,630)	($59,137)	($129,867)
Median Rent	$969	$738	$718	$565	$726
	($345)	($220)	($214)	($152)	($243)
Population Density[1,2]	1.53	2.64	1.73	1.94	2.51
	(0.00 - 74.86)	(0.00 - 83.74)	(0.02 - 47.74)	(0.02 - 50.40)	(0.00 - 55.74)
City-Level % Black	19.91	19.58	15.05	40.92	19.22
	(17.11)	(16.68)	(14.36)	(18.54)	(15.37)
City-Level Unemployment Rate	7.58	7.85	6.34	9.33	7.78
	(2.83)	(2.78)	(2.42)	(2.94)	(2.87)
City-Level Population[1]	285,701	373,597	265,339	451,108	478,600
	(35,852 - 7,971,950)	(35,852 - 7,971,950)	(35,852 - 7,971,950)	(40,517 - 7,971,950)	(37,103 - 7,971,950)
Δ Demographics, 2000-2010					
Δ % White	-7.86	-5.84	-3.44	-0.08	-4.14
	(8.53)	(8.37)	(10.27)	(7.84)	(11.53)
Δ % Black	2.09	0.16	0.54	2.63	1.22
	(6.15)	(6.47)	(7.13)	(9.23)	(7.89)
Δ Median Household Income	-$3,109	-$2,935	$1,786	-$445	$1,972
	($12,606)	($7,771)	($10,641)	($7,469)	($9,805)
Δ % College Educated	3.13	1.99	6.48	4.05	5.78
	(7.22)	(6.35)	(8.53)	(7.42)	(9.14)
Δ % 18-34 Yr. Olds	0.00	0.30	1.34	1.76	0.38
	(4.60)	(4.60)	(6.63)	(4.51)	(5.67)
Δ Median Household Value	$77,418	$70,670	$67,373	$53,654	$106,351
	($134,455)	($125,243)	($128,041)	($113,202)	($166,376)
Δ Median Rent	$82	$77	$126	$163	$161
	($241)	($133)	($179)	($137)	($168)
Δ Population Density	0.12	0.03	0.06	-0.03	0.03
	(0.98)	(1.76)	(1.17)	(0.98)	(1.52)
Δ City-Level % Black	0.38	0.00	1.32	1.29	-0.03
	(2.63)	(2.61)	(2.53)	(3.52)	(2.47)
Δ City-Level Unemployment Rate	2.04	1.67	2.57	3.42	1.98
	(2.41)	(2.22)	(2.31)	(3.37)	(2.45)
Δ City-Level Population	48,543	52,793	27,829	9,618	68,188
	(110,542)	(102,540)	(61,301)	(138,235)	(136,936)
# of Neighborhoods	11,326	7,471	1,608	953	1,314

All values are means and standard deviations unless otherwise specified.

1. I log these values in regressions, so I present medians and ranges here.

2. *Population Density* refers to Number of Residents (in 1,000s) per Square Mile.

Table 2. Retailer Summary Statistics

	Not Gentrified				White Gentrification				Black Gentrification				Other Gentrification			
	N_{2000}	N_{2010}	Avg. Change per Tract	% Remaining	N_{2000}	N_{2010}	Avg. Change per Tract	% Remaining	N_{2000}	N_{2010}	Avg. Change per Tract	% Remaining	N_{2000}	N_{2010}	Avg. Change per Tract	% Remaining
Art Galleries	1,384	2,049	0.09	19	784	1,110	0.20	22	63	97	0.04	17	308	554	0.19	18
Boutiques	369	890	0.07	11	95	288	0.12	13	24	91	0.07	13	64	199	0.10	14
Coffee Shops	1,027	3,295	0.30	19	498	1,446	0.59	17	23	107	0.09	17	165	556	0.30	18
Restaurants	35,278	49,809	1.94	33	10,288	15,118	3.00	31	2,065	3,044	1.03	29	6,779	10,400	2.76	32
Bars	5,463	6,574	0.15	32	2,235	2,991	0.47	36	554	627	0.08	30	1,248	1,652	0.31	29
All Retailers	197,934	291,711	12.55	29	53,388	78,038	15.33	29	13,986	19,736	6.03	29	36,319	55,714	14.76	28

This table includes the total number of retailers in Gentrifiable neighborhoods by type and year. *Avg. Change per Tract* is the difference between 2010 and 2000 retailer counts divided by the number of neighborhoods of a given type. For example, the calculation for art galleries in Not Gentrified neighborhoods is (2,049 - 1,384) / 7,471 = 0.09. *% Remaining* refers to the number of retailers in 2000 that remained open in 2010.

Table 3. Regressions of Overall and Gentrification-Oriented Retail Change on Key Variables

	Overall Retailers		Gentrification-Oriented Retailers									
			Art Galleries		Boutiques		Coffee Shops		Upscale Restaurants		Bars	
	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts
Fixed Effects												
Gentrification Status (Base: Not Gentrified)												
White Gentrification	-0.06	0.04**	0.38***	0.46***	0.29**	0.48***	0.34***	0.43***	0.15*	0.08***	0.15*	0.20***
	(0.09)	(0.01)	(0.09)	(0.07)	(0.11)	(0.09)	(0.08)	(0.05)	(0.07)	(0.02)	(0.07)	(0.04)
Black Gentrification	-0.28**	-0.21***	-0.16	-0.44***	0.06	0.05	0.09	-0.73***	-0.19*	-0.27***	0.08	-0.18**
	(0.10)	(0.02)	(0.17)	(0.12)	(0.16)	(0.13)	(0.14)	(0.11)	(0.09)	(0.03)	(0.11)	(0.06)
Other Gentrification	0.15	0.04*	0.43***	0.28***	0.24*	0.28***	0.18*	0.02	0.17*	0.05*	0.32***	0.14***
	(0.09)	(0.02)	(0.10)	(0.08)	(0.11)	(0.10)	(0.09)	(0.06)	(0.07)	(0.02)	(0.08)	(0.04)
Initial Conditions, Year 2000												
# of Retailers of the Same Type		0.81***		1.07***		0.40***		0.54***		0.81***		0.75***
		(0.01)		(0.03)		(0.02)		(0.02)		(0.01)		(0.01)
% White	-0.08		0.04		-0.09		0.10		-0.19***		0.20***	
	(0.05)		(0.06)		(0.07)		(0.05)		(0.04)		(0.05)	
% Black	-0.06		0.08		0.19**		-0.01		-0.11**		-0.07	
	(0.05)		(0.07)		(0.07)		(0.06)		(0.04)		(0.05)	
% College Educated	0.07		0.40***		0.36***		0.40***		0.12***		0.02	
	(0.05)		(0.05)		(0.06)		(0.04)		(0.04)		(0.04)	
% 18 to 34 Yrs Old	0.06		-0.05		-0.07		0.20***		0.10***		0.12***	
	(0.04)		(0.04)		(0.04)		(0.03)		(0.03)		(0.03)	
Med. HH Value	0.06		0.09*		0.05		0.06		-0.01		0.01	
	(0.04)		(0.04)		(0.04)		(0.04)		(0.03)		(0.03)	
Med. Rent	0.04		-0.23***		-0.08		0.01		-0.02		-0.27***	
	(0.04)		(0.05)		(0.05)		(0.04)		(0.03)		(0.04)	
log(Pop. Density)	-0.22***		0.07		0.15**		-0.11*		0.03		0.01	
	(0.04)		(0.05)		(0.06)		(0.04)		(0.03)		(0.04)	
log(Avg. Sales)	0.05		-0.21***		-0.27***		0.04		-0.07**		-0.07*	
	(0.03)		(0.04)		(0.05)		(0.03)		(0.02)		(0.03)	
log(# of Retailers)	0.10***		0.75***		0.94***		0.86***		0.38***		0.59***	
	(0.02)		(0.04)		(0.04)		(0.03)		(0.02)		(0.03)	
City-Level % Black	-0.01		0.00		0.00		-0.02***		0.00		0.01	
	(0.00)		(0.00)		(0.00)		(0.00)		(0.00)		(0.00)	
City-Level Unemployment Rate	0.03		-0.02		0.01		0.09***		-0.01		-0.01	
	(0.01)		(0.02)		(0.02)		(0.02)		(0.01)		(0.02)	
log(City-Level Population)	0.05		0.04		-0.02		0.11*		0.00		0.06	
	(0.04)		(0.04)		(0.04)		(0.05)		(0.03)		(0.04)	
Change Variables												
Δ % 18 to 34 Yrs Old		0.00		0.11***		0.06*		0.08***		0.02**		0.07***
		(0.01)		(0.02)		(0.03)		(0.02)		(0.01)		(0.01)
Δ log(Pop. Density)		0.03***		0.00		0.06		0.11***		0.02*		-0.01
		(0.01)		(0.03)		(0.03)		(0.02)		(0.01)		(0.01)
Δ log(Avg. Sales)		0.00		0.02		0.03		0.02		0.01		0.00
		(0.01)		(0.03)		(0.03)		(0.02)		(0.01)		(0.01)
Δ City-Level % Black		0.01*		-0.04**		-0.02		-0.04**		0.00		0.02*
		(0.00)		(0.01)		(0.02)		(0.01)		(0.00)		(0.01)
Δ City-Level Unemployment Rate		-0.01		0.01		-0.04		0.01		-0.02**		-0.02*
		(0.00)		(0.02)		(0.02)		(0.01)		(0.00)		(0.01)
Δ log(City-Level Population)		0.67***		0.84**		1.29***		1.56***		0.70***		0.35*
		(0.07)		(0.30)		(0.37)		(0.27)		(0.09)		(0.18)
Δ log(# of Retailers)				0.16***		0.11***		0.02		0.08***		-0.02
				(0.03)		(0.03)		(0.02)		(0.01)		(0.02)
Intercept	0.75	3.33***	-4.63***	-1.84***	-4.90***	-2.42***	-5.49***	-1.21***	-0.43	1.58***	-3.76***	-0.40***
	(0.52)	(0.01)	(0.56)	(0.06)	(0.56)	(0.08)	(0.58)	(0.06)	(0.41)	(0.02)	(0.46)	(0.04)
Random Effect												
City-Level Variance	0.20	0.01	0.16	0.10	0.11	0.20	0.33	0.22	0.13	0.02	0.14	0.08

*p<0.05, **p<0.01, ***p<0.001

Table 4. Regressions of Overall and Gentrification-Oriented Retail Change on Key Variables, Limited to Black and White Gentrification Only

	Overall Retailers		Gentrification-Oriented Retailers									
			Art Galleries		Boutiques		Coffee Shops		Upscale Restaurants		Bars	
	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts
Fixed Effects												
Gentrification Status (Base: Not Gentrified)												
White Gentrification	0.68*	0.26***	1.71***	1.01***	0.30**	0.31*	1.34***	1.40***	1.16***	0.41***	0.68*	0.46***
	(0.28)	(0.02)	(0.36)	(0.13)	(0.09)	(0.15)	(0.32)	(0.12)	(0.24)	(0.04)	(0.28)	(0.07)
Initial Conditions, Year 2000												
# of Retailers of the Same Type		0.77*** (0.02)		0.87*** (0.05)		0.40*** (0.05)		0.37*** (0.02)		0.72*** (0.02)		0.64*** (0.02)
% White	-0.29		-0.30		0.11		-0.22		-0.55***		0.10	
	(0.21)		(0.20)		(0.25)		(0.18)		(0.17)		(0.17)	
% Black	-0.05		0.15		0.39		0.11		-0.04		0.12	
	(0.22)		(0.24)		(0.27)		(0.22)		(0.18)		(0.20)	
% College Educated	0.05		0.24**		0.28**		0.30***		0.16*		0.00	
	(0.09)		(0.08)		(0.10)		(0.08)		(0.07)		(0.07)	
% 18 to 34 Yrs Old	0.08		0.07		0.02		0.24***		0.08		0.15**	
	(0.06)		(0.06)		(0.07)		(0.06)		(0.05)		(0.05)	
Med. HH Value	0.17		0.14		0.22*		0.00		-0.02		0.02	
	(0.10)		(0.08)		(0.09)		(0.08)		(0.07)		(0.08)	
Med. Rent	0.01		-0.32***		-0.17		0.01		-0.02		-0.27***	
	(0.08)		(0.09)		(0.10)		(0.08)		(0.06)		(0.08)	
log(Pop. Density)	-0.25**		0.02		0.13		-0.16		0.04		0.00	
	(0.08)		(0.09)		(0.11)		(0.08)		(0.06)		(0.08)	
log(Avg. Sales)	0.11		-0.29***		-0.20*		0.01		-0.06		-0.10	
	(0.06)		(0.08)		(0.09)		(0.06)		(0.04)		(0.05)	
log(# of Retailers)	0.02		0.67***		1.02***		0.79***		0.42***		0.67***	
	(0.05)		(0.07)		(0.08)		(0.06)		(0.04)		(0.05)	
City-Level % Black	0.00		0.00		0.01		-0.02***		-0.01		0.00	
	(0.01)		(0.01)		(0.01)		(0.01)		(0.01)		(0.01)	
City-Level	-0.01		-0.03		-0.07		0.09*		0.01		0.02	
Unemployment Rate	(0.03)		(0.04)		(0.04)		(0.04)		(0.03)		(0.03)	
log(City-Level	0.11		0.15*		0.13		0.24**		0.14**		0.17**	
Population)	(0.06)		(0.06)		(0.07)		(0.08)		(0.05)		(0.06)	
Change Variables												
Δ % 18 to 34 Yrs Old		0.04***		0.05		0.08		0.07*		0.04**		0.10***
		(0.01)		(0.03)		(0.05)		(0.03)		(0.01)		(0.02)
Δ log(Pop. Density)		0.07***		0.09		0.18**		0.18***		0.08***		0.05
		(0.01)		(0.05)		(0.06)		(0.04)		(0.02)		(0.03)
Δ log(Avg. Sales)		-0.01		-0.01		-0.05		-0.05		0.00		-0.01
		(0.01)		(0.05)		(0.06)		(0.04)		(0.02)		(0.03)
Δ City-Level % Black		0.01		-0.05*		0.01		-0.04*		0.00		0.00
		(0.01)		(0.02)		(0.03)		(0.02)		(0.01)		(0.01)
Δ City-Level		0.00		-0.04		-0.02		-0.01		-0.01		-0.01
Unemployment Rate		(0.01)		(0.02)		(0.03)		(0.02)		(0.01)		(0.01)
Δ log(City-Level		0.50***		0.02		1.33*		1.31**		0.32		-0.21
Population)		(0.14)		(0.48)		(0.64)		(0.44)		(0.20)		(0.31)
Δ log(# of Retailers)				0.17***		0.07		0.00		0.05*		-0.02
				(0.05)		(0.07)		(0.04)		(0.02)		(0.03)
Intercept	-0.19	3.09***	-6.51***	-2.11***	-6.79***	-2.30***	-7.37***	-2.05***	-2.90***	1.26***	-5.74***	-0.59***
	(0.92)	(0.03)	(0.93)	(0.13)	(1.04)	(0.18)	(1.00)	(0.13)	(0.71)	(0.05)	(0.86)	(0.08)
Random Effect												
City-Level Variance	0.24	0.01	0.01	0.01	0.01	0.01	0.30	0.13	0.11	0.03	0.18	0.06

*p<0.05, **p<0.01, ***p<0.001

Table 5. Regressions of Gentrification-Oriented Retail Change on Key Variables Using an Alternative Operationalization of White and Black Gentrification

	Overall Retailers		Gentrification-Oriented Retailers									
			Art Galleries		Boutiques		Coffee Shops		Upscale Restaurants		Bars	
	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts
Regressions Across All Gentrifiable Neighborhoods												
White Gentrification	0.07	-0.03	0.72***	0.48***	0.33**	0.57***	0.73***	0.32***	0.29***	0.00	0.49***	0.17***
	(0.09)	(0.02)	(0.11)	(0.08)	(0.12)	(0.10)	(0.09)	(0.07)	(0.08)	(0.02)	(0.08)	(0.05)
Black Gentrification	-0.16	0.00	0.17*	0.26***	0.19	0.22*	0.13	0.17**	-0.10	0.01	0.12	0.11**
	(0.11)	(0.01)	(0.09)	(0.06)	(0.10)	(0.09)	(0.07)	(0.05)	(0.06)	(0.02)	(0.06)	(0.04)
Other Gentrification	0.10	0.01	0.15	-0.05	0.17	0.22	-0.02	-0.05	0.26**	0.02	0.04	0.02
	(0.11)	(0.02)	(0.13)	(0.10)	(0.14)	(0.12)	(0.11)	(0.08)	(0.08)	(0.03)	(0.10)	(0.05)
Regressions Restricted to Neighborhoods That Underwent White or Black Gentrification Only												
White Gentrification	0.21	-0.07	0.57***	0.16	0.32*	0.46***	0.56***	0.07	0.52***	-0.04	0.37**	0.00
	(0.13)	(0.05)	(0.14)	(0.09)	(0.16)	(0.12)	(0.13)	(0.08)	(0.11)	(0.03)	(0.11)	(0.06)

*p<0.05, **p<0.01, ***p<0.001. This table represents a portion of the regression results limited to key independent variables. The top portion reproduces the regressions from Table 3, and the bottom portion reproduces the regressions from Table 4. For the full regression tables, consult Appendix 3.

Appendix 1. SIC and NAICS Classifications of Retailers

The table below shows how I operationalize the retail categories in this study. Retailer classifications are based on Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes, which federal governmental agencies use to categorize all businesses in the United States, Canada, and Mexico. NAICS formally replaced SIC in 1997, but SIC codes are often still used today. Businesses are assigned a NAICS code based on their primary business activity as listed on governmental surveys, census forms, and administrative records.[10] ReferenceUSA uses both SIC and NAICS codes, but some ReferenceUSA industry codes are more specific than traditional SIC and NAICS codes. For example, NAICS code 44812 refers to Women's Clothing Stores, but ReferenceUSA code 44812001 specifically refers to boutiques. ReferenceUSA does not distinguish between upscale restaurants and other restaurants, grouping them together in SIC codes including 581206, 581208, 581209, and 581222 as well as NAICS codes 722511, 72211, 722211, and 722513. To classify upscale restaurants, I distinguish them from fast food restaurants using a method adapted from Widener and Li (2014), who treat as fast food restaurants those retailers who appeared in Quick Service Restaurant Magazine's list of Top 50 U.S. Fast Food restaurants any year between 2000 and 2010. The full list of fast food restaurants includes 51 retailers noted below. I assume any restaurants that were not fast food restaurants were upscale restaurants. Scholars struggle to effectively classify different types of restaurants

using ReferenceUSA data (Powell et al. 2011), but this study's operationalization of upscale restaurants produces findings that are largely consistent with the findings for other gentrification-oriented retailers.

	Industry Classification	
	SIC Codes	NAICS Codes
All Retailers	52-59	44-45
Gentrification-Oriented Retailers		
Art Galleries	599969	45392
Boutiques	562105	44812001
Coffee Shops	549915	44529905,72251505
Upscale Restaurants	See Note Below	
Bars	5813	7224

I define upscale restaurants by distinguishing them from fast food restaurants using methods described in the text. The 51 fast food restaurants include A&W All-American Food, Arby's, Baskin-Robbins, Blimpie Subs & Salads, Bojangles' Famous Chicken, Burger King, Captain D's Seafood, Carl's Jr., Checkers Drive-in Restaurant, Chick-Fil-A, Chuck E. Cheese's, Church's Chicken, Cici's Pizza, Cold Stone Creamery, Culver's, Dairy Queen, Del Taco, Domino's Pizza, Dunkin' Donuts, Eat'n Park, El Pollo Loco, Godfather's Pizza, Hardee's, Hot Stuff Pizza, In-N-Out Burger, Jack in The Box, KFC, Krispy Kreme Doughnuts, Krystal, Little Caesars Pizza, Long John Silver's, McDonald's, Mrs. Winner's Chicken & Biscuit, Lee's Famous Recipe Chicken, Papa John's Pizza, Papa Murphy's Take 'n' Bake, Pizza Hut, Pizza Inn, Popeye's Chicken & Biscuits, Rally's Hamburgers, Round Table Pizza, Sbarro, Sonic Drive-in, Steak 'n Shake, Subway, Taco Bell, Taco John's, Tim Hortons, Wendy's, Whataburger, and White Castle.

Appendix 2. Correlation Matrix of Independent Variables

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]	[23]
[1] White Gentrification	1.00																						
[2] Black Gentrification	-0.12	1.00																					
[3] Other Gentrification	-0.15	-0.11	1.00																				
[4] % White, 2000	0.44	-0.29	-0.13	1.00																			
[5] % Black, 2000	-0.22	0.51	-0.12	-0.60	1.00																		
[6] Med HH Income, 2000	0.09	-0.22	0.01	0.34	-0.38	1.00																	
[7] % College Educated, 2000	0.23	-0.17	-0.09	0.48	-0.30	0.42	1.00																
[8] % 18 to 34 Yrs Old, 2000	0.14	-0.14	0.02	0.19	-0.24	-0.10	0.51	1.00															
[9] Med. HH Value, 2000	0.02	-0.16	-0.01	0.12	-0.27	0.49	0.47	0.09	1.00														
[10] Med. Rent, 2000	0.00	-0.21	0.01	0.18	-0.34	0.79	0.45	0.09	0.59	1.00													
[11] log(Pop. Density), 2000	-0.14	-0.06	0.01	-0.33	0.02	-0.09	0.02	0.08	0.29	0.18	1.00												
[12] log(Avg. Sales), 2000	0.08	-0.09	-0.02	0.32	-0.20	0.26	0.17	0.07	-0.01	0.13	-0.36	1.00											
[13] log(# of Retailers), 2000	0.06	-0.12	0.00	0.22	-0.24	0.05	0.07	0.03	0.05	0.03	-0.20	0.17	1.00										
[14] City-Level % Black, 2000	-0.13	0.35	-0.03	-0.42	0.69	-0.36	-0.20	-0.10	-0.24	-0.30	0.11	-0.19	-0.18	1.00									
[15] City-Level Unemp., 2000	-0.20	0.17	0.00	-0.52	0.39	-0.50	-0.33	-0.09	-0.14	-0.31	0.38	-0.37	-0.18	0.62	1.00								
[16] log(City-Level Pop. Size), 2000	-0.17	0.03	0.08	-0.48	0.15	-0.16	-0.16	-0.05	0.14	0.04	0.60	-0.32	-0.17	0.23	0.42	1.00							
[17] Δ % 18 to 34 Yrs Old	0.06	0.07	-0.01	-0.01	0.16	-0.17	-0.01	-0.11	-0.06	-0.13	0.02	-0.10	-0.03	0.15	0.17	0.03	1.00						
[18] Δ log(Pop. Density)	0.03	-0.16	0.04	0.15	-0.23	0.14	0.15	0.09	0.12	0.15	-0.16	0.07	0.06	-0.24	-0.16	-0.04	0.19	1.00					
[19] Δ log(Avg. Sales)	-0.03	0.00	0.02	-0.08	0.03	-0.05	0.00	0.02	0.03	0.00	0.06	-0.46	0.00	0.02	0.08	0.05	0.03	0.03	1.00				
[20] Δ log(# of Retailers)	-0.01	-0.02	0.03	-0.06	0.01	0.02	0.00	-0.01	0.02	0.05	0.04	-0.02	-0.44	-0.01	0.03	0.08	0.00	0.08	0.01	1.00			
[21] Δ City-Level % Black	0.15	0.11	-0.04	0.35	-0.07	0.07	0.03	-0.01	-0.22	-0.09	-0.40	0.25	0.10	-0.14	-0.38	-0.42	-0.09	-0.02	-0.10	-0.04	1.00		
[22] Δ City-Level Unemp. Rate	0.10	0.18	0.00	0.20	0.08	0.12	-0.05	-0.09	-0.14	-0.01	-0.32	0.18	0.03	0.14	-0.28	-0.36	-0.07	-0.12	-0.10	-0.08	0.46	1.00	
[23] Δ log(City-Level Pop. Size)	0.00	-0.21	0.01	0.19	-0.34	0.22	0.15	0.11	0.05	0.16	-0.26	0.17	0.14	-0.54	-0.46	-0.17	-0.09	0.31	0.00	0.07	0.08	-0.19	1.00

Although I do not use Median Household Income in 2000 in the regressions, I include it here for completeness.

Appendix 3. Full Results: Regressions of Gentrification-Oriented Retail Change on Key Variables Using an Alternative Operationalization of White and Black Gentrification

Two regression tables are below, both of which use Gibbons and Barton's (2016) operationalization of White and Black Gentrification rather than the operationalization found in the main results. The first table reproduces Table 3, and the second reproduces Table 4 of the main text.

	Overall Retailers		Gentrification-Oriented Retailers									
			Art Galleries		Boutiques		Coffee Shops		Upscale Restaurants		Bars	
	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts
Fixed Effects												
Gentrification Status (Base: Not Gentrified)												
White Gentrification	0.07	-0.03	0.72***	0.48***	0.33**	0.57***	0.73***	0.32***	0.29***	0.00	0.49***	0.17***
	(0.09)	(0.02)	(0.11)	(0.08)	(0.12)	(0.10)	(0.09)	(0.07)	(0.08)	(0.02)	(0.08)	(0.05)
Black Gentrification	-0.16	0.00	0.17*	0.26***	0.19	0.22*	0.13	0.17**	-0.10	0.01	0.12	0.11**
	(0.11)	(0.01)	(0.09)	(0.06)	(0.10)	(0.09)	(0.07)	(0.05)	(0.06)	(0.02)	(0.06)	(0.04)
Other Gentrification	0.10	0.01	0.15	-0.05	0.17	0.22	-0.02	-0.05	0.26**	0.02	0.04	0.02
	(0.11)	(0.02)	(0.13)	(0.10)	(0.14)	(0.12)	(0.11)	(0.08)	(0.08)	(0.03)	(0.10)	(0.05)
Initial Conditions, Year 2000												
# of Retailers of		0.81***		1.09***		0.40***		0.55***		0.83***		0.76***
the Same Type		(0.01)		(0.03)		(0.02)		(0.02)		(0.01)		(0.01)
% White	-0.09		0.05		-0.07		0.14**		-0.17***		0.19***	
	(0.05)		(0.06)		(0.06)		(0.05)		(0.04)		(0.05)	
% Black	-0.15***		-0.06		0.16*		-0.07*		-0.19***		-0.13**	
	(0.05)		(0.07)		(0.07)		(0.06)		(0.04)		(0.05)	
% College Educated	0.07		0.37***		0.35***		0.38***		0.11**		-0.01	
	(0.05)		(0.05)		(0.06)		(0.04)		(0.04)		(0.04)	
% 18 to 34 Yrs Old	0.06		-0.05		-0.07		0.20***		0.10***		0.12***	
	(0.04)		(0.04)		(0.04)		(0.03)		(0.03)		(0.03)	
Med. HH Value	0.05		0.09*		0.05		0.06		-0.01		0.01	
	(0.04)		(0.04)		(0.04)		(0.04)		(0.03)		(0.03)	
Med. Rent	0.04		-0.22***		-0.07		0.02		-0.02		-0.26***	
	(0.04)		(0.05)		(0.04)		(0.04)		(0.03)		(0.04)	
log(Pop. Density)	-0.22***		0.07		0.15*		-0.10*		0.03		0.01	
	(0.04)		(0.05)		(0.06)		(0.04)		(0.03)		(0.04)	
log(Avg. Sales)	0.05		-0.20***		-0.27***		0.05		-0.07**		-0.07*	
	(0.03)		(0.04)		(0.05)		(0.03)		(0.02)		(0.03)	
log(# of Retailers)	0.10***		0.75***		0.94***		0.86***		0.38***		0.58***	
	(0.02)		(0.04)		(0.04)		(0.03)		(0.02)		(0.03)	
City-Level % Black	0.00		0.00		0.00		0.09***		0.00		0.01**	
	(0.00)		(0.00)		(0.00)		(0.02)		(0.00)		(0.00)	
City-Level	0.03		-0.02		0.00		0.09***		-0.01		-0.01	
Unemployment Rate	(0.02)		(0.02)		(0.02)		(0.02)		(0.01)		(0.02)	
log(City-Level	0.04		0.04		-0.02		0.10*		-0.01		0.06	
Population)	(0.04)		(0.04)		(0.04)		(0.05)		(0.03)		(0.04)	
Change Variables												
Δ % 18 to 34 Yrs Old		0.00		0.09***		0.05		0.06***		0.02*		0.07***
		(0.01)		(0.02)		(0.03)		(0.02)		(0.01)		(0.01)
Δ log(Pop. Density)		0.03***		0.02		0.07*		0.12***		0.02**		-0.01
		(0.01)		(0.03)		(0.03)		(0.02)		(0.01)		(0.01)
Δ log(Avg. Sales)		0.00		0.02		0.02		0.02		0.00		-0.01
		(0.01)		(0.03)		(0.03)		(0.02)		(0.01)		(0.01)
Δ City-Level % Black		0.01		-0.04**		-0.01		-0.04**		0.00		0.02*
		(0.00)		(0.01)		(0.02)		(0.01)		(0.00)		(0.01)
Δ City-Level		-0.01*		0.00		-0.03		0.00		-0.02***		-0.02*
Unemployment Rate		(0.00)		(0.02)		(0.02)		(0.01)		(0.00)		(0.01)
Δ log(City-Level		0.72***		1.05***		1.36***		1.76***		0.76***		0.42*
Population)		(0.07)		(0.30)		(0.37)		(0.28)		(0.09)		(0.18)
Δ log(# of Retailers)				0.15***		0.11***		0.02		0.08***		-0.01
				(0.03)		(0.03)		(0.02)		(0.01)		(0.01)
Intercept	0.76	3.32***	-4.58***	-1.85***	-4.94***	-2.41***	-5.40***	-1.23***	-0.41	1.57***	-3.71***	-0.40***
	(0.53)	(0.01)	(0.55)	(0.06)	(0.56)	(0.08)	(0.58)	(0.06)	(0.41)	(0.02)	(0.46)	(0.04)
Random Effect												
City-Level Variance	0.21	0.01	0.16	0.11	0.11	0.19	0.32	0.26	0.13	0.02	0.14	0.08

*p<0.05, **p<0.01, ***p<0.001

	Overall Retailers		Gentrification-Oriented Retailers									
			Art Galleries		Boutiques		Coffee Shops		Upscale Restaurants		Bars	
	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts
Fixed Effects												
Gentrification Status (Base: Not Gentrified)												
White Gentrification	0.21	-0.07	0.57***	0.16	0.31*	0.46***	0.56***	0.07	0.52***	-0.04	0.37**	0.00
	(0.13)	(0.05)	(0.14)	(0.09)	(0.16)	(0.12)	(0.13)	(0.08)	(0.11)	(0.03)	(0.11)	(0.06)
Initial Conditions, Year 2000												
# of Retailers of		0.71***		0.99***		0.39***		0.50***		0.73***		0.66***
the Same Type		(0.02)		(0.05)		(0.04)		(0.03)		(0.02)		(0.02)
% White	-0.28**		0.02		0.05		0.18		-0.19*		0.21*	
	(0.10)		(0.10)		(0.11)		(0.09)		(0.08)		(0.08)	
% Black	-0.31**		-0.25*		0.05		-0.06		-0.35***		-0.15	
	(0.10)		(0.11)		(0.13)		(0.11)		(0.08)		(0.08)	
% College Educated	0.11		0.34***		0.30**		0.37***		0.20**		-0.01	
	(0.08)		(0.08)		(0.09)		(0.07)		(0.06)		(0.07)	
% 18 to 34 Yrs Old	0.07		-0.02		0.00		0.19***		0.03		0.14**	
	(0.06)		(0.06)		(0.07)		(0.06)		(0.05)		(0.05)	
Med. HH Value	0.08		0.07		0.10		0.01		-0.14*		-0.02	
	(0.08)		(0.06)		(0.07)		(0.07)		(0.06)		(0.06)	
Med. Rent	-0.04		-0.24***		-0.07		0.00		-0.03		-0.25***	
	(0.07)		(0.08)		(0.09)		(0.07)		(0.06)		(0.07)	
log(Pop. Density)	-0.22**		0.03		0.00		-0.10		0.11*		0.04	
	(0.08)		(0.08)		(0.09)		(0.07)		(0.06)		(0.06)	
log(Avg. Sales)	0.04		-0.27***		-0.31***		-0.01		-0.04		-0.08	
	(0.06)		(0.07)		(0.09)		(0.06)		(0.05)		(0.05)	
log(# of Retailers)	0.08		0.81***		1.04***		0.89***		0.42***		0.69***	
	(0.04)		(0.06)		(0.07)		(0.06)		(0.04)		(0.05)	
City-Level % Black	0.00		0.00		0.00		-0.02**		-0.01		0.00	
	(0.01)		(0.01)		(0.01)		(0.01)		(0.01)		(0.01)	
City-Level	0.01		0.00		0.00		0.08*		0.00		0.02	
Unemployment Rate	(0.03)		(0.03)		(0.04)		(0.03)		(0.02)		(0.03)	
log(City-Level	0.07		0.10		0.08		0.17*		0.14**		0.17**	
Population)	(0.06)		(0.06)		(0.06)		(0.07)		(0.05)		(0.06)	
Change Variables												
Δ % 18 to 34 Yrs Old		0.00		0.08*		0.03		0.08**		0.03*		0.10***
		(0.02)		(0.03)		(0.04)		(0.03)		(0.01)		(0.02)
Δ log(Pop. Density)		0.07***		0.10*		0.18**		0.19***		0.06***		0.03
		(0.02)		(0.04)		(0.05)		(0.03)		(0.02)		(0.02)
Δ log(Avg. Sales)		0.00		0.00		-0.04		-0.04		-0.01		0.00
		(0.02)		(0.04)		(0.06)		(0.04)		(0.02)		(0.02)
Δ City-Level % Black		0.01		-0.05**		0.02		-0.03		0.00		-0.01
		(0.01)		(0.02)		(0.02)		(0.02)		(0.01)		(0.01)
Δ City-Level		0.01		-0.03		-0.05		-0.01		-0.02**		-0.01
Unemployment Rate		(0.01)		(0.02)		(0.03)		(0.02)		(0.01)		(0.01)
Δ log(City-Level		1.09***		0.90*		1.49**		1.84***		0.72***		-0.24
Population)		(0.23)		(0.44)		(0.57)		(0.43)		(0.18)		(0.27)
Δ log(# of Retailers)				0.12*		0.04		0.00		0.07***		-0.02
				(0.05)		(0.06)		(0.04)		(0.02)		(0.03)
Intercept	0.56	-0.23***	-5.73***	-1.45***	-6.45***	-2.20***	-6.18***	-1.08***	-2.53***	1.59***	-5.40***	-0.21***
	(0.84)	(0.06)	(0.74)	(0.08)	(0.86)	(0.11)	(0.88)	(0.08)	(0.65)	(0.03)	(0.77)	(0.05)
Random Effect												
City-Level Variance	0.26	0.03	0.01	0.01	0.01	0.01	0.32	0.15	0.14	0.02	0.21	0.02

*p<0.05, **p<0.01, ***p<0.001

Appendix 4. Robustness Checks That Include Region Fixed Effects, 0.5-Mile Buffers, and No 1.5 Threshold Requirement

	Overall Retailers		Gentrification-Oriented Retailers									
			Art Galleries		Boutiques		Coffee Shops		Upscale Restaurants		Bars	
	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts	Likelihood of Opening	Δ Retailer Counts
Region Fixed Effects												
White Gentrification	-0.01	0.47***	0.38***	0.47***	0.30**	0.50***	0.34***	0.51***	0.18**	0.10***	0.16*	0.20***
	(0.08)	(0.07)	(0.09)	(0.07)	(0.11)	(0.09)	(0.07)	(0.05)	(0.07)	(0.02)	(0.07)	(0.06)
Black Gentrification	-0.23*	-0.36***	-0.21	-0.43***	0.11	0.06	-0.09	-0.71***	-0.23**	-0.27***	0.05	-0.21***
	(0.10)	(0.12)	(0.17)	(0.12)	(0.16)	(0.13)	(0.14)	(0.11)	(0.08)	(0.03)	(0.10)	(0.06)
Other Gentrification	0.13	0.25**	0.43***	0.25**	0.25*	0.23*	0.24**	-0.04	0.16*	0.05*	0.32***	0.11**
	(0.09)	(0.08)	(0.10)	(0.08)	(0.12)	(0.10)	(0.09)	(0.06)	(0.07)	(0.02)	(0.08)	(0.04)
0.5-Mile Buffer												
White Gentrification	0.19	0.00	0.26***	0.47***	0.34***	0.17***	0.34***	0.33***	0.19	0.07***	0.17*	0.14***
	(0.17)	(0.01)	(0.08)	(0.07)	(0.04)	(0.02)	(0.07)	(0.03)	(0.14)	(0.01)	(0.08)	(0.02)
Black Gentrification	-0.32	-0.11***	0.26**	-0.43***	0.06	0.10	-0.09	-0.17***	-0.07	-0.16***	0.13	-0.06*
	(0.19)	(0.01)	(0.10)	(0.12)	(0.05)	(0.10)	(0.14)	(0.04)	(0.15)	(0.01)	(0.10)	(0.03)
Other Gentrification	-0.13	0.00	0.23**	0.25**	0.22*	0.15	0.24**	0.19***	0.10	0.02	0.26**	0.12***
	(0.20)	(0.01)	(0.08)	(0.08)	(0.04)	(0.09)	(0.09)	(0.03)	(0.17)	(0.02)	(0.08)	(0.02)
No 1.5 Threshold												
White Gentrification	0.14	0.07***	0.52***	0.65***	0.25**	0.57***	0.44***	0.57***	0.22***	0.13***	0.11	0.25***
	(0.08)	(0.01)	(0.08)	(0.06)	(0.09)	(0.07)	(0.07)	(0.04)	(0.06)	(0.02)	(0.06)	(0.03)
Black Gentrification	-0.19*	-0.15***	0.17	-0.07	0.13	0.09	0.52***	-0.36***	-0.13	-0.20***	0.07	-0.18***
	(0.09)	(0.02)	(0.14)	(0.10)	(0.14)	(0.12)	(0.13)	(0.09)	(0.08)	(0.03)	(0.10)	(0.05)
Other Gentrification	0.16	0.03*	0.49***	0.37***	0.25*	0.20*	0.37***	0.13*	0.18**	0.06*	0.32***	0.13***
	(0.08)	(0.01)	(0.09)	(0.07)	(0.10)	(0.08)	(0.07)	(0.05)	(0.06)	(0.02)	(0.07)	(0.04)

*p<0.05, **p<0.01, ***p<0.001

This table presents results from three different sets of regressions. The first uses Census region fixed effects instead of a regression model that includes neighborhoods nested in cities. The second analyzes retail growth in areas that include 0.5-mile buffers around focal neighborhoods. The third uses Ding, Hwang, and Divringi's (2016) original operationalization of gentrification, which omits the requirement that growth in income, education, home value, or rent must have been 1.5 times the citywide average. Within each set of regressions, I only present results for key independent variables. Full regression results are available upon request.