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I, Rebecca C Gafvert, hereby submit this original work as part of the requirements for the degree of Master of Community Planning in Community Planning.

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Mapping the Path of Gentrification: An Analysis of Gentrification Susceptibility in Cincinnati, Ohio

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Mapping the Path of Gentrification
An Analysis of Gentrification Susceptibility in Cincinnati Ohio

A thesis submitted to the Graduate School of the University of Cincinnati in partial fulfillment of the requirements for the degree of Master of Community Planning in the School of Planning of the College of Design, Architecture, Art, and Planning

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The contemporary debate about gentrification reveals a changing understanding of the process and its effects in communities. Current research and accounts in the media reflect the recognition that though gentrification has long been associated with harmful impacts, the process can potentially lead to positive change. However the benefits of gentrification can only be enjoyed if the process is recognized, understood, and anticipated. Because the process largely occurs in the context of the real estate market - which is affected by policy and planning - professionals and public servants in these sectors can have an impact on the progression of gentrification. Policy makers, planners, and community stakeholders often intervene in communities facing gentrification to prevent displacement, dissipate tension, and ensure that the benefits of gentrification are equitably distributed. This research aimed to examine the causes of gentrification in the City of Cincinnati and identify areas where gentrification could occur. Through a combination of content analysis, expert surveys, and GIS mapping, it revealed that there are specific areas in the City that may be susceptible to gentrification. Experts from the public, private, and nonprofit fields of planning, housing, real estate, community and economic development were surveyed to develop a list of gentrification causes specific to Cincinnati. Borrowing from the methods of site suitability analysis, these causes were then used as inputs in an overlay analysis to measure susceptibility to gentrification throughout Cincinnati. The result is not a predictive model, but a picture of where gentrification is likely to occur in the future, if conditions remain favorable. The research was intended to model a methodology that could be refined with additional cases and used as a tool for communities.
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I also owe thanks to the over 100 professionals and community members in Cincinnati who contributed to this project with open minds and without cynicism. I hope that they extracted from this experience a fraction of the enlightenment that it brought to me.
Through scholars, policy makers, planners, community activists, and journalists continue to argue the causes, effects, and therefore the very definition of gentrification, there is no stalemate in gentrification research. The discussion has continued in academia and popular culture because gentrification has continued to occur in neighborhoods. The debate reflects a changing understanding of gentrification, which provides hope for communities that feel harmed by the process. Residents may be vulnerable to negative effects like displacement, but there is recognition that the process also has the potential for positive change in a neighborhood. This recognition has led to work on the part of community leaders and policy makers to design interventions to manage the effects of gentrification. However, these interventions will only be effective if the process is recognized, understood, and anticipated. As policy makers, planners, and community stakeholders attempt to intervene in communities to manage the effects of gentrification, research must be used to create a tool to anticipate those areas that are most susceptible to the process. This type of research would afford planners and stakeholders a better chance of effectively intervening to prevent displacement, dissipate tension, and ensure that the benefits of gentrification are equitably distributed. This research aims to identify factors that cause gentrification and map them, in order to develop a tool to measure and visualize susceptibility to gentrification within neighborhoods.
Because gentrification involves complex interdependent processes that vary depending on the context of a specific urban area, the City of Cincinnati was used as the unit of analysis in a single case study design. The following questions served to guide the collection and analysis of data for the case study, document the process as it progressed, and increase the reliability of the research (Yin 2009, 80). The case study questions directed data collection in terms of the information to be gathered, why it should be gathered, and from what sources (86). In addition, the questions were designed to be applied to any other case in order to facilitate replication of the research. The process for answering each of these questions is developed in detail in the Methodology and Findings and Analysis Sections of this report. Questions one through four guided the data collection phase of the Methodology, while five and six were addressed in the mapping phase.

CASE STUDY QUESTIONS

1. What is the definition of gentrification, specifically in the context of the City of Cincinnati? What factors have been identified in the literature as contributing to the process of gentrification or preventing it?

2. What factors contribute to and prevent gentrification in Cincinnati communities, and what is the relative importance of each?

3. What data can be used to spatially represent the identified factors?

4. When combined according to a weighted linear combination method, what is the composite, weighted level of susceptibility to gentrification for all areas within the City of Cincinnati?
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5. How is susceptibility to gentrification spatially distributed throughout the city?

6. What conclusions can be drawn about the susceptibility of Cincinnati communities to gentrification and the geographic patterns of the process?
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3.1 Introduction and Definition

Gentrification is a term for a process that has been defined variously according to those who experience it, plan around it, and study it. Unfortunately for gentrification scholars and researchers, as Nelson explains, it is considered by some “an awkward term for a controversial – and arguably atypical – process” (1988, 14). Because of the debate over its definition and the inherently value-laden derivation of the word, it has been used to describe a range of processes that have varying impacts on communities. These processes range in character from the migration of the middle class to the declining inner city to racially-defined housing succession (Nelson 1988, 14). Depending on interpretation, these different processes can be viewed as simple market mechanics or more deliberate demographic change.

As a result, the body of literature about gentrification does not present a common definition for the process. To some scholars, it is investment by the private sector in urban neighborhoods that leads to the in-migration of households of a higher socioeconomic status than indigenous residents. To some the process must include displacement of those original residents in order to be classified as gentrification. Others also include more qualitative impacts as requirements. Kennedy and Leonard describe gentrification as residential displacement that alters “the essential character and flavor of that neighborhood.” They explain that the change associated with gentrification is often accompanied by racial transition as the original lower-income minority households are displaced by higher-income white households (2001, 2). Despite the debate over the qualitative impacts, most descriptions of gentrification involve a combination of interdependent processes of social and...
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economic change (Wyly and Hammel 1998, 303).

3.2 History of Gentrification in Academia

The problem of defining gentrification is due to the origin of the term. The process was first used by scholars in the 1960s and 70s to describe the transformation of inner cities due to urban renewal policies and programs. Urban renewal targeted inner cities that had experienced disinvestment in the wake of suburban flight in the mid-20th century (Hill 2005, 6). The term “gentrification” was coined in 1964 by Ruth Glass, an English sociologist who was describing the influx of the “gentry” class into lower-income London neighborhoods. Glass observed that the in-migration of new residents resulted in the decrease of rental housing in those neighborhoods, creating economic strain for the indigenous residents (Hill 2005, 6). The word was created to explain a series of adverse impacts on residents and was therefore imbued with a negative connotation from its inception.

The concept of gentrification became increasingly relevant in the United States in the late 1970s when scholars began to document what became known as the “back to the city” movement (Lees et al 2008, 43). Though this reversal of white flight was still eclipsed by the dominant trend of suburbanization, it was seen as a possible reversal of the steady decline that inner cities were experiencing. As the trend accelerated in the 1980s and the popular media focused on the failure of urban renewal, there was a boom in academic literature focused on gentrification. Scholars recognized that the process represented a challenge to traditional theories of the spatial evolution of residential structure and urban social change. Despite this revelation, early gentrification scholars struggled to move beyond descriptive
accounts of the phenomenon prevalent in the media and left causal explanations to inference (44). The ongoing debate over the definition of gentrification made it difficult to empirically measure, and as a result the term was adopted as a label for various effects that were observed but not objectively analyzed in neighborhoods (Vigdor 2002, 135).

While the popular media continued to document gentrification as a class conflict-ridden process, researchers struggled to reconcile the phenomenon with neoclassical theories. Developed by the Chicago School of Sociology, neoclassical models explained urban growth in America as a quantifiable process driven by demand for space, the cost of transportation, and the resulting nature of the housing market. As households with the financial means sought space farther away from the city, lower-income households were increasingly isolated through this process of “filtering” (Lees et al 2008, 45). While these ideas explained suburbanization, gentrification undermined the one-way nature of housing succession through filtering (Hamnett 1991, 173). The trend of suburban families choosing to live in the inner city directly contradicted the models of rational choice and urban growth. In addition, the process conflicted with zoning and transportation policies at the time that were modeled on neoclassical theory (Lees et al 2008, 46).

As the trend persisted and the field progressed, new research focused on gentrification as a process of metropolitan change driven by economic restructuring and the resulting changes in consumer choice (Hamnett 1991, 174). As the dominance of the industrial sector gave way to an information economy, urban areas were transformed to accommodate a new professional class. However, critics raised the possibility that these theoretical adjustments
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created models that were more descriptive than explanatory (Lees et al 2008, 47). As a reaction, scholars began to shift focus to the actors in the process. Research began to examine gentrifiers as a social class that impacted the housing market due to their specific patterns of consumption (92).

As researchers developed new ways to quantify and explain gentrification, critics argued that theories focused on the gentrifiers and the market ignored the residents in gentrifying neighborhoods who were actually affected by the process (Butler 1997, 38). Scholars pointed out that this omission was potentially dangerous if policy was crafted according to descriptive theories based on class power (Lees et al 2008, 49). This led to a wave of research in the late 1990s focused on measuring displacement caused by gentrification and the balance between consequences and benefits of the process (Atkinson 2000, 149). The new focus formed what the Citizens Housing and Planning Council of New York calls the “second wave” of gentrification research (CHPC 2010).

Even after decades of research, as recently as 2009, McKinnish, Walsh, and White characterized the state of gentrification research as lacking empirical evidence, especially in terms of impact on low-income and minority residents (180). However, there are concepts that remain constant throughout the academic history of gentrification. Despite the wave of research focused on shifts in production and the behavior of the gentrifying class, neoclassical theories continue to dominate urban theory and policy, and debate generally surrounds discussions of the qualitative impacts of gentrification (Lees et al 2008, 48). Most definitions of gentrification include a socioeconomic and land use change to middle and upper income
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residential use. In addition, the dominant theme from all of these definitions is the reversal of trends of decline and filtering-down in neighborhoods, specifically in housing (Nelson 1988, 14). Both of these characteristics are quantifiable and have been measured in neighborhoods in multiple published studies.

3.3 Theories of Gentrification

This debate has resulted in various theories about the causes of the gentrification phenomenon. Though most scholars and observers agree that gentrification involves both economic and social components, it is this very duality that makes it a difficult process to explain. Some scholars find the connection between the two causes to be epistemologically untenable. Other critics of gentrification research claim that the process is limited to a historical context, specifically the 1980s, and that research since then is actually focused on different phenomena. Though changing economic conditions may lead to lulls in the incidence of gentrification, new economic contexts create opportunities for gentrification in different geographic locations. Others claim that researchers selectively identify gentrification without examining it in the full context of socioeconomic change, development and redevelopment, and the housing market of a community as a whole (Wyly and Hammel 1998, 304). However, theories of gentrification have evolved from simple supply and demand arguments to hybrids of economic and social systems that account for changes in urban development.

The dominant theoretical approaches to gentrification can be divided into supply-
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side and demand-side arguments, both involving the dynamics of the housing market and the cycles of investment and decline in neighborhoods. Scholars originally turned to the established theory of filtering in the housing market to explain neighborhood deterioration through devaluation of real estate. Orthodox economic theory explains that filtering occurs as market forces pull upwardly-mobile households to larger houses in the suburbs, leaving lower-income households in the inner city (Varady 1986, 6). Though this theory explains American suburbanization, gentrification represents an opposite process (Smith 1982, 141). It contradicts Alonso’s theory that space and low densities are preferable to accessibility. It also challenges the “stage theories” of residential change that present middle-class suburbanization as the end stage of the post-industrial city (Hamnett 1991, 173).

Instead, the dominant theories about the causes of gentrification evolved to include more nuanced dynamics of production and consumption. As Butler explains, the process requires the presence of attractive urban space to be gentrified as well as a population of gentrifiers, who are distinct from other members of the middle class (1997, 35). Butler builds on the work of Marcuse, who explains gentrification and the resulting displacement as results of the same longer-term trend – the restructuring of the social and economic mechanisms of production (39). This change in the American economy resulted in socioeconomic changes in the populations of cities as well as changes in the urban form and land market. The two prevailing schools of thought use each of these results as the driving force of gentrification (40).

Smith compares the results of the restructuring of the American economy to the
dynamic between pioneers and the frontier. According to this concept, the decline of American inner cities and the retreat of the white middle class to the suburbs gave rise to the idea of the urban wilderness – a place where the problems of poverty and crime are concentrated (Smith 1986, 16). Though the frontier carries a sense of danger, it is also imbued with a sense of romance and adventure. In this sense, gentrifiers can be likened to homesteaders, evidenced by the use of the term “urban pioneer” in both the media and scholarly research. Though this metaphor reflects the revanchist, paternalistic side of gentrification, it succeeds in setting the context for the two basic theories of gentrification – the supply-side and the demand-side. Respectively, these theories are based on the existence of gentrifiable communities (the gentrification frontier) and a specific type of consumer who is drawn to such communities (the urban pioneer or gentrifier).

### 3.3.1 Supply-Side Theories

Neil Smith is the most prominent proponent of the supply-side, or production-side theory of gentrification (Butler 1997, 41). His argument is based on the concept of land rent from urban economics originally formulated by Von Thünen. Land rent theory is based on the idea that competition for urban space is based on accessibility between a piece of land and the central business district (CBD). The rent, or value, of land is determined by this demand and decreases in a ring shape around the CBD. However, this theory limits the cause of land rent change to positive externalities, which does not explain the peaks in rent that result from gentrified neighborhoods or the valleys that result from neighborhoods in decline (Diappi
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and Bolchi 2008, 7).

To explain these inconsistencies, Smith argues that production dominates in relation to consumption and that gentrification is the result of the pull that the housing market exerts on capital. As the middle class abandons the inner cities for the suburbs, the resulting devalorization of land creates a “rent gap” between land in the urban centers and land in the suburbs (Butler 1997, 41). The creation of the rent gap is reflected in the life cycle of buildings, when construction and maintenance lead to disrepair. At this point, depending on the surrounding market, a theoretical gap forms between the current rent of the building and the potential or perceived rent that could be achieved with revitalization (Diappi and Bolchi 2008, 8).

When this gap becomes significant enough, capital is lured back to the inner cities where the return on investment has become attractive again to suburban residents (Butler 1997, 41). Orthodox economic theory explains that the pull of capital exerted by land rents operates in a context of geographic equilibrium, where demand for space is the dominant force. Unlike the neoclassical model, Smith’s theory assumes that capital operates in a context of land rents that are affected by previous investment in the built environment (Smith 1982, 147). It is this modification of neoclassical theory that makes gentrification possible.

Hammel expands on Smith’s theory with a distinction between capitalized rent and potential rent based on their determinants. He argues that capitalized rent is not based solely on current land use but also on the socioeconomic context at the neighborhood level. He defines potential rent according to the classic conic curve and on the metropolitan
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scale, since it depends on spatial proximity and the size of the urban area (Diappi and Bolchi 2008, 9). Diappi and Bolchi emphasize the importance of both of these levels of analysis in determining whether gentrification will occur (10). Wyly and Hammel explain that the likelihood of an area to gentrify can depend on other factors that affect the supply side, such as the larger context of the housing market and public and private interventions (1998, 307). When all of these factors converge, gentrification can be triggered by a wave of commercial development, individual residential “pioneers,” or public investment (Lees et al 2008, 54).

3.3.2 Demand-side Theories

David Ley argues the opposite – that the driving force for gentrification lies in the consumption patterns created by the restructuring of the economy (Butler 1997, 40). The consumption side of the debate is rooted in urban geography and sociology and focused on cultural and socio-economic drivers of urban change (Diappi and Bolchi 2008, 7). According to Ley’s theory, the decline of the manufacturing sector and the rise of the service or tertiary and quaternary sectors have created a class of gentrifiers who demand amenities and a lifestyle offered by the inner cities. Wyly and Hammel also argue that demand is a major factor that creates the context for gentrification. Despite the fact that individual cities are dominated by certain sectors of the new economy, the restructuring of the economy and the resulting general downtown development trends played a role in most cities that have experienced gentrification (1998, 306).

Both Smith and Ley agree that gentrification is the result of uneven development and
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a new process of production, but Ley argues that the new process of production has created a class of consumers with specific needs who provide the demand for gentrification. Ley contends that this demand is the dominant cause of gentrification (Butler 1997, 40). Hamnett expands on Ley’s theory, arguing that “professionalization,” or the movement towards business service, technology, and creative industries in some cities created a geographically concentrated population of potential gentrifiers (Lees et al 2008, 93). Their agency and drive to gentrify is the result of this concentration of professional and managerial employment in the central cities and the growing costs of transportation which make commuting to the city from the suburbs less attractive (Beauregard 1986, 42). In fact, Legates and Hartman find that gentrifiers typically move from other locations within the city and rarely from the suburbs (1986, 180).

In addition to these economic forces that keep gentrifiers away from the suburbs, their reproductive and consumer tendencies make them more amenable to living in inner city neighborhoods (Beauregard 1986, 43). They are usually white, young adults in small households of singles or couples without children. Predictably, these households tend to be headed by someone in a professional or managerial position, with an income in the middle to upper range, high above the area median (Legates and Hartman 1986, 184). For this demographic, the city offers a lifestyle and proximity to work that the suburbs do not.

Bourdieu and Zukin echo the argument that gentrifiers are pulled to the city because of class-based characteristics, but they posit that cultural motivation is more important for gentrifiers than material capital. They argue that the gentrifying class is driven by values that
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favor a pro-urban lifestyle but that this social agenda is not always commodified (Bridge 2001, 206). Instead, the common agenda may take the form of political leanings. In a study of gentrified cities in Canada, Ley found that gentrifiers were demographically similar and tended to identify with liberal politics. He argues that the counterculture of the 1960s and the cultural homogeneity of suburbanization combined to motivate the class of gentrifiers (Lees et al 2008, 97).

3.3.3 Hybrid Theories and Other Contributing Factors

As Hamnett argues, both the existence of a significant rent gap and the existence of a group of gentrifiers may or may not result in gentrification (1991, 173). Each theory explains causes that are necessary but not sufficient to cause gentrification. Hybrid theories developed as scholars attempted to use the supply- and demand-side arguments to describe the unique context gentrification in specific cities and neighborhoods. These theories combine existing theoretical approaches with empirical data from case studies. When examining cases of gentrification, scholars found factors external to the market that created the context for the necessary rent-gap and demographic changes to occur. For example, geographically targeted policies have been identified as contributing to the supply-side of the process by encouraging investment in areas experiencing disinvestment. In his critique of existing theories of gentrification, Smith states that “a list of factors do not make an explanation” (1982, 141). However, Smith also acknowledges that there are indeed other factors that contribute to the process. Current gentrification theories attempt to reconcile the pull of production and
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consumption as well as other observed trends.

As mentioned previously, hybrid theories evolved from individual cases studies of gentrification. As cases of gentrified neighborhoods were researched, scholars developed lists of factors that contributed to the process in each case. As these lists evolved, explanations for gentrification evolved beyond the economic theories of Smith and Ley, citing correlations between gentrification and other characteristics in the built environment as well as geographically-targeted policies and regulations. Though case studies should not be relied on to produce generalizable theories, scholars found that cases had many factors in common. Each of these factors may ultimately contribute to the supply- or demand-side of the gentrification equation, but they help to make explanations tangible.

Freeman’s case study of the Clinton Hill neighborhood in Brooklyn is a good example of these hybrid explanations. His analysis at first seems to support consumption as a driving force. Freeman explains how change only occurred in Clinton Hill due to the sheer determination of the gentrifying class. Early gentrifiers of the neighborhood had to finance renovations with personal credit and proactively lobby banks to increase lending in the neighborhood (2006, 40). However, Freeman’s work departs from the straightforward theories of production and consumption by examining in detail the more qualitative causes of gentrification that have not yet been established by quantitative research. He examines the characteristics of the “hood” that attract gentrifiers and explains how the process occurs step-by-step from the ground level through a combination of market, consumer, and political forces.
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These quantifiable factors can be characterized as economic trends, demographic trends, physical characteristics of the built environment, and geographically targeted policies and regulations. Though these lists of causal factors seem to stray from theory development, most of the factors contribute to pressures on either supply or demand, reinforcing existing theories on both sides. For example, on the supply side, tax credits and abatements aimed at housing rehabilitation directly increase the rent gap and make properties more attractive to homeowners (Beauregard 1986, 51). On the demand side, in a less direct way, job growth in professional or “white collar” sectors attract demographic groups of potential gentrifiers (Kennedy and Leonard 2001, 10). Table 1 in the Methodology section of this report contains a comprehensive list of factors identified in the literature as contributing to the process of gentrification – whether to cause or prevent the process – as well as a (non-exhaustive) list of citations for each factor. The factors are also discussed in detail in the Methodology section.

Hybrid theories have also been developed to explain atypical cases of gentrification, such as hyper-gentrification and black gentrification. In a study that contradicts much of the previous literature about the gentrifying class, Boyd examines the phenomenon of gentrification of majority black neighborhoods by higher-income black gentrifiers. Though the demographic profile of the gentrifying class is different, black gentrification reflects the same supply- and demand-side causes. The difference lies in the consumption patterns of the gentrifiers and their values. According to Boyd, black gentrifiers view a dominantly black neighborhood like Harlem as a respite from neighborhoods suffering from racism and discrimination, and invest in them as a way to support the black community (2008, 754).
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Boyd argues that race plays a key role in gentrification, beginning with the process of racial ordering, or the hierarchical organization of racial groups due to social, economic, and political segregationist processes. Racial ordering contributes to the deterioration of inner city, mostly black neighborhoods, simultaneously preparing these neighborhoods for gentrification and preventing blacks from facilitating gentrification. These conditions combine to create an atmosphere ripe for economic development but also highly politicized (Boyd 2008, 755). As white gentrifiers move into these neighborhoods, blacks interpret the change as revanchist and form community organizations as a reaction. Anticipating gentrification and displacement, these groups engage in “defensive development.” Though well-intentioned, Boyd argues that this process often leads to the rise of a group of black elites in the neighborhood, marginalizing other blacks in the racial order and ignoring or exacerbating the problems of affordable housing and poverty (756).

Boyd’s description of black gentrification serves as a reminder that socio-economic change operates in a feedback loop, responding to conditions in a community. It is important to strive to identify the common causes of gentrification, but any social phenomenon will present exceptions to theoretical development. In the end, Neil Smith acknowledges that there are both supply- and demand-side factors that contribute to gentrification. He argues that consumer preference does not dictate whether or not gentrification occurs, but rather the cultural and demographic nature and economic pace of the process, once supply-side characteristics are in place (1986, 31). In this way, gentrification becomes a specific type of process that occurs as a natural part of the evolution of the capitalist economy. At the same
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time, the process will reflect specific characteristics depending on the community in which it occurs.

3.4 Measuring the Effects of Gentrification

Whatever the theoretical causes that are argued, the positive and negative effects of gentrification have been well documented, though not always in scientific terms. In fact, it is this overabundance of evidence of a process with varying definitions that has frustrated academics who seek to empirically define and explain it. Because this research focuses on the causes and not the effects of the process, the effects will not be examined in great detail. However, it is important to examine the effects in order to understand the need for interventions in neighborhoods that may experience gentrification.

As previously mentioned, measurement of gentrification necessarily depends on its definition. Despite variations on the definition, the primary theme of increased investment in a previously low-wealth environment can be examined in quantitative terms (Hill 2005, 3).

In a 1988 study of ten cities, Nelson used as an indicator of gentrification an above-average increase (270%) in median incomes in census tracts that were lower-income during the previous census (118). In order to show gentrification, she required that this rise in income also be accompanied by an increase in the “city selection rate” – in other words, the rate at which movers to or within metropolitan areas move to cities rather than suburbs (Nelson 1988. 74). Nelson used data specifically for the non-black movers to measure the “attractive” power of these cities, since the black population was historically concentrated in cities and...
their mobility was restrained (75).

The socioeconomic characteristics of new residents are also measured to determine if gentrification has occurred. Characteristics of gentrifiers often include higher educational attainment, which is considered a more stable measure of class than income (Freeman 2006, 31). In areas where income increased significantly, Nelson also measured whether or not income increased in census tracts that were not considered to be gentrifying. This created a measure of how evenly distributed the impacts of gentrification were (1988, 126). When this distribution was compared to the city’s overall change in income, it indicated whether the entire city experienced revitalization or if gentrification simply shifted areas of poverty (127).

Wyly and Hammel quantified gentrification in terms of perceptible investment in housing stock in neighborhoods that were characterized as poor based on household income below the citywide median in 1960 (1998, 308). Their analysis of several cities that experienced gentrification revealed several other indicators. Gentrified neighborhoods displayed increases in income, rent, home values, education levels, and professional occupation (312). However, these case studies are largely contingent on the contexts of individual cities and the analysis ignores the dynamic of commercial and retail redevelopment. In order to correct these problems, they used their case studies to determine a set of gentrification indicators based on a stepwise discriminant analysis (315).

This method used standard socioeconomic, housing, and population indicators available at the census tract level. Their measurements avoided city-specific conditions or inconsistencies in neighborhood boundaries while accounting for a definition of
gentrification that included class-based change (Wyly and Hammel 1998, 316). The stepwise
discriminant methodology measured how the variable interacted and compared them in
terms of their impacts in different cities (317). Their research revealed that gentrification
processes in four cities produced neighborhoods that were significantly similar to one
another and also significantly different from other urban neighborhoods. This analysis can
be interpreted as a distinct, empirical manifestation of the social and economic changes that
define gentrification (323).

3.4.1 Displacement

The displacement of residents as the result of gentrification is often measured as
an indirect type of impact (Hill 2005, 9). Neighborhood succession occurs naturally in the
housing market as the result of upward mobility and is often associated with racial or
demographic change. However, these changes do not provoke the public outcry that is
usually triggered by displacement attributed to gentrification. This is due to the fact that
displacement associated with gentrification is the result of rising housing costs and the
filtering down that occurs when residents can no longer afford to pay. In the context of
gentrification, this filtering occurs because the restructuring of the economy creates two
opposite forces that are experienced by separate demographic groups. Specifically in the
CBD, the influx of professional employees creates the demand for office space as well as
higher-income housing. At the same time, blue-collar workers are pushed out of the CBD as
employees and eventually priced out of the surrounding residential areas. (Marcuse 1986,
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This type of displacement is referred to as “secondary displacement” (Freeman and Braconi 2002, 1).

Secondary displacement has been measured as a shift in the poor population of gentrifying census tracts compared to the city as a whole (Nelson 1988, 129). Using this measure, Nelson found that cities with the most gentrification experienced above-average decreases in the poor population in gentrifying tracts and increases in the poor population in non-gentrifying lower-income tracts. However, these shifts were still lower than the overall average population losses, where there was evidence of an overall “thinning out” of the poor population (129). These results were echoed in a study by Atkinson, which found that members of the professional class in gentrifying areas caused above-average displacement. This displacement disproportionately affected working-class, inactive, and elderly groups of the population (2000, 162).

Some critics argue that more displacement occurs as a result of abandonment of housing stock than as a result of gentrification, which can actually work against displacement by decreasing vacancy and increasing demand for well-maintained properties (Nelson 1988, 128). In addition, empirical evidence of racial displacement is more difficult to find than that of income-based displacement. McKinnish et al argue that when gentrification occurs in predominantly black neighborhoods, the resulting housing market is attractive to middle-class black households (2010, 181). Displacement, though often connected to gentrification in the popular media, has not yet been accepted as a direct indicator by the academic community (Freeman and Braconi 2002, 1).
3.4.2 Positive Impacts

Gentrified neighborhoods have been characterized by residential investment as well as indirect reinvestment is spurred by the initial investment of gentrifiers. Residential investment may prompt an influx of major retailers and service providers in a neighborhood (Hill 2005, 10). In fact, Freeman measured the amount of retail activity in Harlem to indicate the arrival of the “gentry class” (2006, 31). In addition, higher property values can lead to increased private lending and tax revenues for local governments (Hill 2005, 8).

Despite the fact that gentrification is indicated by some level of increased investment, the reinvestment associated with gentrification does not necessarily lead to revitalization within a neighborhood. Gentrification has been defined as distinct from neighborhood upgrading, which involves improvements in communities that result from the efforts of existing residents (Varady 1986, 1). As Nelson argues, even if revitalization or upgrading occurs in specific neighborhoods as a result of gentrification, data indicates that gentrification does not reverse decline of entire cities (1988, 24). In this sense, the process represents a shift of investment within a city, or the displacement of disinvestment.

Gentrification can also result in the deconcentration of poverty and indirectly, a decrease in levels of crime (Hill 2005, 8). However, these results are usually touted by those promoting gentrification and not the original residents. Though gentrification involves the deconcentration of poverty and the mixing of socioeconomic classes in a specific geographic area, it is not often associated with socioeconomic or racial integration. Instead, literature has focused more on the conflict that can occur between the new and old populations.
(Butler 1997, 39 and Kennedy and Leonard July 2001, 3). Racial discrimination has long been described in qualitative accounts of the results of gentrification. Wyly and Hammel statistically documented racial discrimination in gentrified neighborhoods in the form of discriminatory lending (2004, 1237). Racial and socioeconomic conflict can also result in challenges to local leadership as gentrifiers vie for more power (Hill 2005, 9). Gentrification involves economic and social changes that are inherently confrontational in urban contexts.

3.5 Modeling and Predicting Gentrification

Modeling has been used to predict where and how gentrification will occur, according to inputs developed in gentrification theory. Gentrification has been modeled according to both supply- or demand-side theories, as well as combinations of the two. Though gentrified neighborhoods are affected by the overall housing market in a city, the net effects of gentrification are concentrated in the gentrified area and often have little measurable impact on the housing market in the larger city or metropolitan area, which is usually more influenced by the dynamics of suburbanization (Wyly and Hammel 1998, 312). For this reason, most models of gentrification focus on the neighborhood level, or other geographically-defined communities within the city. Most models are adapted to the specific contexts of the cities to which they are applied, and universally applicable models are nonexistent in the literature.

On the supply side, gentrification has been modeled as a bottom-up process in which the aggregate spatial characteristics are the result of two factors: the interaction between
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economic agents in the system and the changing value of buildings in the market based on
space and neighboring property values (Diappi and Bolchi 2008, 7). However, this model
ignores the influence of demand from the gentrifying class, and the impacts of the labor
market on gentrification (17). An early study by Melchert and Naroff examined the likelihood
of gentrification according to characteristics in neighborhoods that fit the consumption
demands of gentrifiers. This demand-side approach used a combination of inputs including
neighborhood amenities, quality of housing stock, social composition, as well as the potential
of the housing market in the area in terms of income and average rent or home value (1987,
668). Though this model examines the supply of housing, it does so only in terms of how the
social class of gentrifiers will react to such conditions.

A model developed by Torrens and Nara used a hybrid of supply and demand factors
to best approximate the reality of gentrification as a complex adaptive system (2007, 338).
This model incorporates both the decision-making processes of gentrifiers and the contexts
of gentrifiable communities, but the authors note that it fails to take into account all of
the dynamics that operate in reality. Because of the limits of modeling human agents, it
is more practical to predict gentrification based on the interaction of factors present in
a neighborhood. Chapple’s study of the Bay Area statistically analyzed past trends and
predicted where gentrification would occur in the future. Though this study was specific to a
geographic context, it was able to definitively identify factors that contributed to the process
as well as predict the likelihood of displacement (2009, 3).

Despite the theoretical potential of modeling, the debate surrounding gentrification
theory and the complex nature of the phenomenon prevents these models from being useful or generalizable. Instead of modeling, researchers have moved toward lists of factors discussed previously that can be applied to specific contexts. Many of these models use statistical analysis of past trends, such as regression analysis or step-wise discriminant analysis to retrospectively isolate factors that were present in neighborhoods before they were gentrified. These factors are then analyzed in non-gentrified neighborhoods to predict whether or not gentrification will occur in the future.

3.6 Conclusion

Gentrification was first defined based on observations in neighborhoods and the resulting political controversy about the impacts observed. Today, research about the process is still conducted within a highly charged atmosphere and little has been accomplished to establish a common theoretical basis for the process (Butler 1997, 39). The gentrification experience is highly local and specific to the community context. Both theory development about the causes of gentrification as well as empirical quantification of its effects have been affected by numerous case studies that prove exceptions to established rules and introduce new factors. Despite the confusion, the process is better understood today than it has ever been.

Gentrification involves demographic trends that reshape cities and economic changes that can revitalize neighborhoods that have declined despite public intervention. At the same time, claims of social injustice cannot be ignored because of a lack of quantitative evidence.
3. Literature Review

As researchers come closer to understanding the causes and effects of the process, public and private interventions should be crafted to best ensure that the benefits of gentrification are evenly distributed and the negative consequences are mitigated. Boyd’s portrayal of black gentrification perfectly illustrates the fact that even well-intentioned interventions can backfire if the process is not fully understood. Efforts to predict the susceptibility of neighborhoods to gentrification based on a combination of social and economic factors can help policy makers and planners design effective interventions and responses for vulnerable communities.
4. Methodology

4.1 Introduction

Because gentrification involves complex interdependent processes that vary depending on the context of a specific urban area, any tool designed to predict patterns of gentrification must be tailored to this specific context. The few studies from the literature that attempt to model or predict gentrification follow the case study model (Chapple 2009, Heidkamp and Lucas 2006, Kennedy and Leonard 2001). In order to create a tool to measure the susceptibility of neighborhoods to gentrification, the City of Cincinnati was used as the unit of analysis in a single-case study design. Map 1 provides a basemap of the study area. The case of Cincinnati was studied to illustrate a methodology and a tool that could be applied to other cities. As more cases studies are contributed to the field, broader theory development about gentrification susceptibility is possible through analytic generalization (Yin 2009, 39).

In order to answer the case study questions, multiple sources of qualitative and quantitative evidence were examined. The evidence was collected in the order in which the case study questions were presented, and each successive component depended on previous evidence. The sources included published studies on the topic, surveys of community experts, and geographical evidence in the form of quantitative demographic, economic, political, land use, and real estate data. The variety of sources reinforced the conclusions that were drawn at the end of the process through data triangulation (Yin 2009, 116). The method included a modified form of content analysis, a structured questionnaire, and a GIS-based overlay analysis. The final analysis was not intended to predict where gentrification will
4. Methodology

occur in Cincinnati. Rather, it was intended to identify areas of the city that are susceptible to gentrification if the conditions remain favorable for the process. In this way, the methodology for the research resembles the method and purpose of a site suitability analysis, not a model or projection of future trends.

Source: Cincinnati Area GIS (CAGIS) 2006
4. Methodology

4.2 Definition and List of Factors that Cause and Prevent Gentrification

The first phase of data collection consisted of a review of existing literature to establish 1) a definition of gentrification for the purposes of the research; and 2) a comprehensive list of factors believed to cause or prevent gentrification. Sources for this review included peer-reviewed academic literature and professional reports focused on gentrification and specifically the causes of gentrification.

4.2.1 Definition

For the purposes of this research, gentrification is defined as a process characterized by private investment in declining inner-city neighborhoods accompanied by the immigration of households of a higher socioeconomic status than indigenous residents and a resulting increase in property values. Because this research focuses on the causes of gentrification and not the primary or secondary effects of the process, this definition does not include more controversial indicators of gentrification that have been debated in the literature. Specifically, displacement of original residents is not included as an inexorable part of the gentrification process. These possible effects are important to the larger discussion and scholarly research about gentrification, but do not affect the scope of this research.

4.2.2 Theoretical Basis for Factors

Though Neil Smith strongly argues that production is the primary force in the gentrification cycle, he still admits that reality points to the influence of various factors on the
4. Methodology

process of gentrification. However, he argues that it is not enough to merely list factors that seem to cause gentrification. In attempting to understand the relative impacts of each factor and the way in which forces of production and consumption interact, scholars come closer to explaining, rather than describing the phenomenon (1986, 21).

Beauregard echoes this view, arguing that the supply- and demand-side theories serve to explain the necessary conditions for gentrification, but not all of the sufficient conditions. When forces of both supply and demand are examined, gentrification is seen as a combination of physical, economic, demographic, and political processes that can each occur independent of the others. They can each be identified as occurring in varying degrees and at different scales, resulting processes that fall anywhere along a spectrum from gentrification and revitalization to further abandonment (Hamnett and Randolph 1986, 121). For example, the decline of an inner-city neighborhood can lead to many types of transformation, ranging from complete abandonment of the neighborhood to super-gentrification, which succeeds gentrification in some neighborhoods where housing prices have risen beyond the means of the middle- and upper-middle class (1986, 39).

In reality, a specific combination of all of these processes is required in order to create a context in which gentrification will occur. The supply- and demand-side theoretical approaches to gentrification are not only complementary, but inseparable for a complete explanation of the phenomenon (Hamnett 1991, 175). When hybrid theories are used to explain gentrification, a list of factors can be developed that explain the process from both the supply and demand sides.
This research builds on studies that combine supply- and demand-side explanations by using a list of factors that have been identified in academic literature, scholarly research, and reports about gentrification. These sources include theoretical discussions as well as various types of statistical factor analysis. For example, Smith discusses causes of gentrification from the perspective of rational economic theory, while studies by Chapple and Heidkamp and Lucas use regression analyses of variables to isolate possible causes.

The list of factors was intended to be thorough, but not exhaustive, and to include factors that have been identified and confirmed in multiple studies. Though the factors account for both supply and demand side theories, they were organized into four types – features of the physical and built environment, demographic factors, economic factors, and geographically targeted policies and regulations. Because of the changing nature of gentrification research, the debate surrounding the theoretical causes, as well as the comprehensive nature of the list, some of the factors are contradictory or not compatible. Some of these problems were resolved in the next phase of data collection in which the factors were examined in the context of Cincinnati.

4.2.3 Factors That Cause and Prevent Gentrification

In order to create a list of factors that cause and prevent gentrification, a more exhaustive search was conducted, expanding on the original literature review. All factors discovered in the studies were first listed along with their corresponding sources. As additional studies mentioned the same factors, these studies were cited. Factors that seemed
4. Methodology

specific to the context of individual cities or factors that applied to international cities were not included. Factors that described specific or detailed phenomena or characteristics were included in more general descriptions when possible. In addition, only factors that were mentioned in more than one study were included in the final list, unless factors were identified through statistical analysis. A total of 34 factors were identified from the literature. The list of factors is comprehensive and thorough, but not truly exhaustive. In addition, some factors may not apply to the context of Cincinnati, but these will be addressed in the survey and mapping phases of the methodology. Table 1 lists all of the factors along with their correlations to gentrification (positive meaning causing gentrification or negative meaning preventing gentrification), limited citations, and brief explanations of how they cause or prevent gentrification. They are also described in the paragraphs following the table.
# 4. Methodology

## TABLE 1 | Factors That Cause or Prevent Gentrification

<table>
<thead>
<tr>
<th>Factor</th>
<th>Correlation</th>
<th>Citations</th>
<th>How does this influence gentrification?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHYSICAL AND BUILT ENVIRONMENT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Concentration of rental units</td>
<td>+</td>
<td>&quot;Chapple 2009, 6 Diappi and Bolchi 2006, 8&quot;</td>
</tr>
<tr>
<td>3</td>
<td>Concentration of multi-unit buildings</td>
<td>+</td>
<td>Chapple 2009, 6</td>
</tr>
<tr>
<td>5</td>
<td>Proximity to the waterfront</td>
<td>+</td>
<td>Heidkamp and Lucas 2006, 102</td>
</tr>
<tr>
<td>6</td>
<td>Proximity to a university or college</td>
<td>+</td>
<td>Galster and Peacock 1986, 325</td>
</tr>
<tr>
<td>7</td>
<td>Concentration of public housing units programmed for mixed income housing (i.e. HOPE VI developments)</td>
<td>+/-</td>
<td>&quot;Chapple 2009, 6 Diappi and Bolchi 2006, 10 Kennedy and Leonard 2001, 13&quot;</td>
</tr>
<tr>
<td>8</td>
<td>Concentration of public housing units</td>
<td>+/-</td>
<td>Helms 2000, 492</td>
</tr>
<tr>
<td>9</td>
<td>&quot;Proximity to public/ non-profit recreational facilities&quot;</td>
<td>-</td>
<td>Chapple 2009, 6</td>
</tr>
<tr>
<td>10</td>
<td>Proximity to planned public transportation system (i.e. streetcar, light rail)</td>
<td>+</td>
<td>Chapple 2009, 2</td>
</tr>
<tr>
<td><strong>DEMOGRAPHIC</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Heterogeneous racial composition</td>
<td>+</td>
<td>Aka 2010, 4</td>
</tr>
<tr>
<td>13</td>
<td>Concentration of black or other minority population</td>
<td>+</td>
<td>&quot;Boyd 2008, 755 Helms 2000, 493 Beauregard 1986, 49&quot;</td>
</tr>
</tbody>
</table>
## 4. Methodology

<table>
<thead>
<tr>
<th>TABLE 1</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Factor</strong></td>
<td><strong>Correlation</strong></td>
</tr>
<tr>
<td>Concentration of international population</td>
<td>+</td>
</tr>
<tr>
<td>Concentration of non-Hispanic white population</td>
<td>-</td>
</tr>
<tr>
<td>Concentration of households with three or more cars</td>
<td>-</td>
</tr>
<tr>
<td>Concentration of seniors</td>
<td>-</td>
</tr>
</tbody>
</table>

**ECONOMIC**

| 18 | Concentration of private development in a low value residential area | + | Diappi and Bolchi 2006, 11 | Developers increase PR at a larger scale based on the larger urban real estate market. This encourages gentrification by homeowners and landlords, who usually only analyze local markets. |
| 20 | Concentration of foreclosures | + | Chapple 2009, 21 | Decreases property values – lower CR. |
| 21 | Concentration of vacancies | + | Helms 2000, 492 | Decreases property values – lower CR. |
| 22 | Low Median household income | + | "Heidkamp and Lucas 2006, 102 Galster and Peacock 1986, 325" | Proxy for low CR. |
| 23 | Diversity of income level | + | Chapple 2009, 6 | Potential gentrifiers value this as a community asset. |
| 24 | Concentration of renters paying >35% of income in rent | + | Chapple 2009, 6 | Overburdened renters may leave, creating an opening for potential gentrifiers. |
| 25 | Concentration of owners paying >35% of income for housing | - | Chapple 2009, 6 | Proxy for high income level. |
| 27 | Proximity to an area with increasing job growth, especially “white collar jobs” | + | "Aka 2010, 4 Heidkamp and Lucas 2006, 102 Kennedy and Leonard 2001, 10" | Represents proximity to the types of jobs typically held by gentrifiers. |
| 28 | Proximity to already gentrified areas or areas where no disinvestment has occurred | + | "Galster and Peacock 1986, 326 Heidkamp and Lucas 2006, 102 Hurst, Guerrieri, and Hartley 2009, 40" | Increases PR. |
## 4. Methodology

### TABLE 1 | Factors That Cause or Prevent Gentrification

<table>
<thead>
<tr>
<th>Factor</th>
<th>Correlation</th>
<th>Citations</th>
<th>How does this influence gentrification?</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLICY AND REGULATORY</td>
<td></td>
<td></td>
<td>--------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>29 Presence of warehouse structures within or adjacent to an area zone</td>
<td>+</td>
<td>Zukin 2008, 732</td>
<td>Represents potential for residential conversion with high PR.</td>
</tr>
<tr>
<td>residential</td>
<td></td>
<td></td>
<td>--------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>30 Location within a (non-industrial) TIF district</td>
<td>+</td>
<td>&quot;Weber et al 2006, 24 Kennedy and Leonard 2001, 14&quot;</td>
<td>Encourages private investment and increases PR.</td>
</tr>
<tr>
<td>31 Proximity to a NBD accepted into the Neighborhood Business District</td>
<td>+</td>
<td>&quot;Aka 2010, 3 Kennedy and Leonard 2001, 14&quot;</td>
<td>Encourages private investment and increases PR.</td>
</tr>
<tr>
<td>Improvement Program or within a neighborhood eligible for Neighborhood</td>
<td></td>
<td></td>
<td>--------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Stabilization Program funding</td>
<td></td>
<td></td>
<td>--------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>32 Proximity to brownfield redevelopment or SPUR district programmed</td>
<td>+</td>
<td>&quot;Essoka 2010, 11 Kennedy and Leonard 2001, 14&quot;</td>
<td>Encourages private investment and increases PR.</td>
</tr>
<tr>
<td>33 Location in a Historic District</td>
<td>+</td>
<td>&quot;Galster and Peacock 1986, 325 Zukin 2008, 732 Freeman 2006, 41&quot;</td>
<td>Buildings cannot be torn down but are desirable for rehabilitation. In addition, &quot;the monopoly value of aesthetic coherence keeps property values high&quot; and serve to codify the preferences of this type of consumer into policy (Zukin 2008, 743). This designation also signifies that there is a critical mass of gentrifiers and creates a pool of available subsidies for renovation.</td>
</tr>
<tr>
<td>34 Location in a neighborhood where there is an active Community</td>
<td>+</td>
<td>&quot;Boyd 2008, 769 Hill 2005, 5&quot;</td>
<td>Encourages private investment and increases PR.</td>
</tr>
<tr>
<td>Development Corporation (CDC)</td>
<td></td>
<td></td>
<td>--------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
4. Methodology

Features of the Physical and Built Environment. These factors include characteristics of the built environment that tend to raise or lower property values or otherwise facilitate or prevent gentrification. These are typically seen as assets or liabilities in communities as they affect real estate and ultimately increase or decrease the potential rent.

Demographic Factors. Because this research focuses on the neighborhoods where gentrification may occur, the demographic factors referenced here refer to the demographics of the population in the neighborhood to be gentrified, not the demographics of the population of gentrifiers. Demographic factors do not indicate that the presence of a certain demographic population causes gentrification, but that the population tends to live in neighborhoods that gentrify. In this sense, the relationship between demographic factors and the process of gentrification is often correlational, not causal.

However, some demographic characteristics may also represent qualities that are attractive to potential gentrifiers. For example, Helms argues that the presence of a significant minority population contributes to the overall diversity of a neighborhood, which the gentrifying class values over the homogeneity of the suburbs (2000, 493). Zukin argues that a foreign-born population has the same effect (2008, 736). At the same time, the socioeconomic and political position of these populations may also make them more vulnerable to displacement.
4. Methodology

**Economic Factors.** These factors are all proxies for high or low capitalized or potential rent as well as a few proxies for demographic or cultural characteristics that attract the gentrifying class.

**Geographically targeted policies and regulations.** This set of factors is comprised of government sponsored programs, projects, policies, regulations, or investment tools. All are geographically targeted, and some specifically target neighborhoods that have experienced disinvestment. They increase potential rent by directly encouraging investment.

4.3 Ranking Factors that Contribute to Gentrification in Cincinnati: Expert Surveys

Not only is there disagreement in the literature about the causes of gentrification, there is even disagreement about that disagreement. Some in the field assert that there is consensus about the causes of gentrification while others claim that consensus will never be achieved. Because of the debate, a comprehensive list of factors would not have sufficed on its own to predict gentrification for the purposes of this research. In addition, though the list may have been comprehensive in terms of past research, it would not have necessarily reflected the context of the study area. Cincinnati presents a specific context for gentrification and therefore the second phase of data collection focused on refining the list of factors according to the opinions of experts in Cincinnati.
4. Methodology

4.3.1 Respondent Recruitment

An initial list of potential survey respondents was developed, with the goal of receiving completed surveys from between 20 and 30 respondents across a variety of fields. The minimum acceptable response rate was two respondents from each of the five industries, or about 10 participants, and a maximum of about 40 participants. The maximum was set based on a realistic assessment of the level of participation that would be possible, but the goal was to solicit participation from as many subjects as possible, while maintaining some balance among the types of participants and the level of expertise among the participants.

Participants in the study were professionals from for-profit, nonprofit and public sectors, in the real estate, community development, economic development, housing, and planning fields in the Greater Cincinnati Area. Participants were identified from an initial list of contacts, and this list was expanded with connections made through the original participants. Perception is crucial to the process of gentrification, and this fact was not ignored in conducting research. All efforts were made to include as wide a variety of respondents as possible. During the survey phase, contacts were made with specific types of potential respondents in order to achieve a balance between respondent types. The sample was not intended to be statistically unbiased in any way, but instead contacts were constantly solicited and the respondent types were monitored while the survey was open to strive for equal representation.

Potential respondents were contacted via email to solicit participation. The recruitment email included a referral when possible, an introduction to the principle...
investigator and the research, and a link to the online survey which is discussed in the following section. The email also solicited recommendations for participants and indicated that any referrals should have been sent directly to the principal investigator. When new potential respondents were recommended by other respondents, the initial respondents were asked to provide contact information for the new respondents in order to ensure that all potential respondents were tracked, though their responses were not connected to their identifying information. Appendix 1 contains a sample recruitment email. Once they followed the link to the online survey tool, respondents indicated consent by reading a consent information sheet and proceeding to the survey. The consent information sheet replaced a traditional signed consent form for the research, according to Institutional Review Board protocol.

4.3.2 Survey

The survey was created using the Surveymonkey.com online survey tool. Following the information sheet previously discussed, the survey included a brief problem statement, the purpose of the research, and the definition of gentrification for the purposes of the survey. Respondents were then asked to choose from a list the sector and professional field that best described their employment, and were given the option to provide text explanations for either. Survey instructions explained that respondents would be presented a list of factors. They were instructed to rank the factors in terms of importance for causing or preventing gentrification in Cincinnati. The factors were then presented in sections based on the types
4. Methodology

of factors previously described (Physical and Built Environment, Demographic, Economic, and Policy and Regulatory). Each factor was to be ranked on a scale of -5 to 5, with -5 being very important to preventing gentrification, 0 being neutral, and 5 being very important contributors to the process of gentrification.

This scale was created to allow respondents to first decide whether each factor had a positive or negative correlation with gentrification. This choice was intended to resolve some of the conflicting perspectives about some factors in the literature. In addition, the 0 to 5 scale on both the positive and negative sides was chosen to create some level of agreement among subjects’ rankings by eliminating insignificant distinctions between rankings that could result if a larger scale was used. Respondents were also able to add any additional factors and corresponding rankings or to leave open-ended comments at the end of each section.

Appendix 2 provides a static version of the online survey tool.

Recruitment emails were sent out from February 2, 2011 until February 28, 2011. The online survey was kept active until May 20, 2011, at which point it was deactivated through the SurveyMonkey website. Though the survey was technically still active, no survey responses were collected after March 1, 2011. After the collection phase was completed, the data was aggregated and median rankings were calculated for each factor. The median rankings were used to create a weighted list of factors that were used in the mapping phase of data analysis. Both of these phases are described in detail in the Findings and Analysis Section.
4. Methodology

4.3.3 Survey Limitations

This method of rating factors is not as refined as the Delphi method, but the survey tool was intended to tailor the factors that were collected from the literature review to the case of Cincinnati. This phase of the methodology ultimately contributed to data triangulation by providing the same information collected from the literature from a separate source (Yin 2009, 116). However, this phase of the research also created uncertainty for the rest of the process, as it dictated the data collection needs and depended on the rate of survey completion by the respondents.

4.4 Collection of Data Sets to Spatially Represent Factors

Along with data triangulation, the surveys were used to determine the data sets needed for measuring gentrification susceptibility in Cincinnati as well as the relative correlational values and weights assigned to each factor. Factors that were consistently ranked neutral in the surveys were not included in collection of data sets or map analysis. For factors that were not ranked neutral, data sets were collected to represent the factor or a feature that was included in the factors. Data sources included Cincinnati Area Geographical Information Systems (CAGIS), American Community Survey (ACS) data, the City of Cincinnati, the Cincinnati Metropolitan Housing Authority (CMHA), and the Cincinnati Chamber of Commerce. Data sets represented information collected at various times, from 2000–2010. The data sets are described in more detail in the mapping phase and in Table 3 in the Findings and Analysis section.
4. Methodology

4.4.4 Data Collection Limitations

The most obvious problem with using multiple data sets from various sources is that the data sets contain information collected at different times, at different scales, and with varying levels of accuracy. In addition, much of this information will be available from the 2010 Census when it is released after the completion of this research.

4.5 Mapping the Path of Gentrification: Overlay Analysis

4.5.1 Background of Overlay Analysis

Once the datasets were collected, they were manipulated in an ArcGIS map document to create individual layers for each factor. The layers were then analyzed using an overlay tool. Composite or overlay mapping has its roots in the ecological inventory method developed by Ian McHarg. In the 1960s, McHarg developed the process as a way to determine land use suitability that was sensitive to environmental impacts. He created individual maps on transparent paper that represented natural and human-made characteristics. The characteristics were classified according to suitability, which was indicated by a scale of light to dark color values. When the individual maps were combined as overlays, this technique produced a composite image of land that was suitable for development with the least environmental harm. Overlay mapping was adapted by early computer mapping technology, which was able to automate the process and advance the field with complex statistical and spatial components (Collins, Steiner and Rushman 2001, 612).

Any site suitability analysis, simple or complex, depends on the selection of the
4. Methodology

Information layers and the criteria used to determine how the layers are combined (Lober 1995, 3). These layering criteria can take many forms, depending on the analysis. McHarg’s early model used a simple exclusionary rule that combined layers containing excluded areas and left only suitable areas. Building on this concept, a weighted or discretionary decision rule, also called weighted linear combination (WLC) can also be used to combine information layers with varying weights, resulting in aggregate scores for each area (4).

This technique has been criticized in land use suitability analysis because it often applies map algebra to layers of data without regard for the assumptions that underlie that algebra. However, when the relationship between data layers is explicitly defined by a stakeholder or decision maker, the method is more useful (Malczewski 2004, 33). Multicriteria evaluation (MCE) or multicriteria decision analysis (MCDA) was developed to incorporate the preferences of decision-makers into land use suitability analysis (Collins, Steiner and Rushman 2001, 614). This approach has also been combined with techniques like the Delphi approach to determine different weights for suitability factors (Collins, Steiner and Rushman 2001, 614).

Because overlay mapping involves the combination of various types of data to reveal a composite image of conditions, this technique naturally lends itself to the combination of factors that influence the process of gentrification. Past studies of gentrification that have geospatially examined a combination of factors have all used a unit of analysis based on census geographies. The major difference between the overlay method used in this research and others that have measured susceptibility to gentrification is that a map overlay analysis is inherently more sensitive to geography. Proximity to factors can be quantified precisely,
4. Methodology

according to the most appropriate unit of measurement. When census tracts, block groups, or blocks are used in analysis, values are assigned for the entire geography based on the presence, absence, or concentration of a certain factor in that area. In this process, distinctions in proximity and distance are lost. For example, Chapple’s 2009 study of the Bay Area is one of few that attempts to spatially represent factors that contribute to gentrification. Instead of considering proximity to public parks, for example, Chapple maps parks per distance unit within a given census tract. Although this allows all data to be generalized to the same unit of analysis, measuring proximity and combining data with overlay rules allows for greater variation.

Because a site suitability analysis is used to combine spatial data, each with its own unit of analysis, there was no need for a common geographical unit of analysis for all of the data layers. Instead, the data sets, which were originally represented as vector data, were converted to raster data, which required a common cell size. To be clear, in the terms of a case study design, the City of Cincinnati is referred to as the “unit of analysis” of this research. Any nested unit is referred to as a sub-unit of analysis. For this research, some data layers were available with a given sub-unit of analysis, such as a census tract or parcel, which was then converted to another sub-unit of analysis – the raster cell size. This process is discussed in detail in the next section.

4.5.2 GIS Methodology

The first data layer was created to determine areas in the City of Cincinnati where
gentrification had already occurred, or disinvestment had not occurred and therefore
genrification was not possible. These areas were then applied as a simple exclusionary layer
in the overlay phase. In their study of gentrification in Philadelphia, Galster and Peacock
used a series of four conditions that had to be met in order for a census tract to be eligible
for gentrification. These included single-family home value falling below the corresponding
area median, median income falling below 80 percent of the corresponding area median,
percentage college-educated falling below the corresponding area median, and percentage
of white residents falling below 90 percent of the population of the tract (1986, 323). However,
for the comparatively small study area of Cincinnati, only income was used to determine
genrification eligibility. Heidkamp and Lucas defined ineligible areas as census tracts in
which median household income fell at or above the city median (2006, 107). The inverse
of this selection resulted in a data layer of areas that would be “eligible” for gentrification, if
the right conditions were met. This research borrowed from both of these methods, defining
“gentrifiable” tracts as those in which the median income fell below 80 percent of the
Cincinnati area median income (AMI).

Gentrifiable areas in Cincinnati were identified using 2005-2009 American Community
Survey (ACS) 5-Year Estimates data for estimated median household income in the past
12 months (in 2009 inflation-adjusted dollars) by census tract. This data was joined to the
shapefile of Hamilton County census tracts from CAGIS. Median household income for the
City of Cincinnati was determined from the same source to be $33,855. New fields were
created to calculate the percent for each census tract of median household income for
4. Methodology

Cincinnati, and a new layer was created using those tracts that fell below 80 percent of AMI.

**Factors Not Included in Mapping Analysis**

Some layers that were included in the expert surveys were not used in the mapping analysis. Some were not included because they were consistently ranked neutral while others were excluded because of the difficulty of spatial representation. Factors that were not included in the mapping analysis are listed and explained in Table 2 in the Findings and Analysis section of this report.

The remaining 17 data layers were then mapped as “suitability factors” to be combined according to the discretionary method. First, data sets were created for each of the included factors. For factors based on distance, proximity was measured according to a pedestrian shed of 0.25 miles or 1,320 feet, which is the distance of about a five-minute walk. Though pedestrian sheds are usually manipulated to reflect the network of thoroughfares on the ground, for the purposes of this research, distance was used without any connection to a network. Though many features were not directly related to pedestrian activities, the quarter-mile distance was intended to reflect a significant scope of spatial influence for each feature and was used to create multiple buffers of a constant distance. A few other factors used American Community Survey Data, which were joined to shapefiles of census tracts. Geographically-defined policy data was represented over the entire study area to separate those policy areas from the rest of the City.

Table 3 in the Findings and Analysis section describes in detail the input data for each
factor and the data manipulation or tool used to create each layer. The resulting factor layers were then prepared for the overlay tool, which required that they be converted to raster data. Raster data layers represent detail according to the cell size, which in this case determines feature spatial accuracy for the data. A cell size of 30 was used as a standard cell size used for analysis at the city level. Because the overlay tool also requires integers and a uniform scale of values, the raster layers were reclassified if necessary to a discrete scale of 0 to 5 or 0 to -5, depending on the value of the correlation.

The raster data layers were then combined according to a weighted linear combination method, using the weights from the survey analysis. Each data layer was assigned a weight which expressed its relative influence on the outcome. When combined, the cell values for each data layer were multiplied by the weight and added to the values for the other layers to produce a composite cell value. For reasons described in detail in the Findings and Analysis section, the two negatively-weighted factors were not used in the weighted overlay. The 15 positively-weighted factors were combined in the overlay analysis and each resulting cell value represented that cell’s susceptibility to gentrification. A second overlay tool using a weighted sum combination method was used to incorporate the negatively weighted factors. When imposed on the entire study area, these two composite images represented an index of gentrification susceptibility for the City of Cincinnati.

4.5.3 GIS Methodology Limitations

As Malczewski points out, site suitability results can vary greatly depending on
the decision rule used to combine the information. Despite this problem of reliability, the weighted linear combination approach has been widely adopted. In addition, Malczewski argues that the method is strengthened by incorporating “soft” data into the “hard” information layers using the GIS tool (2004, 8). In the case of this research, the combination of the “hard” data sets was refined by the the weights determined by the expert surveys - the “soft” data.

Despite this strength of the method, the weighted list of factors may not fully define the relationships between the variables. Though the final analysis included a combination of all of the factors based on their assigned significance, each factor in this type of analysis is considered independent from the others in influence. This may not reflect the interdependence that exists between two factors in reality. For example, it is possible that a concentration of vacancies only leads to gentrification when those vacant buildings include historic architecture. However, the methodology in this research only allowed each factor to be considered independently. Further statistical analysis of these factors must be done to define these relationships to incorporate them into a more refined mapping methodology.
5. Findings and Analysis

5.1 Surveys

Once the expert surveys were completed, totals were calculated for each question and response. For each factor, the mean and median rankings were calculated and the two measures were compared. For the purposes of deriving a weight to represent the significance of each factor, the median was chosen because it more accurately represented the variance in responses and yielded a whole number (or increment of 0.5) that was more meaningful than an average. Because the scale included both positive and negative values, the mean rankings often obscured the variation in responses. Where there were rankings with both the positive and negative values, the mean yielded a ranking close to zero, which distorted the true spread of the rankings. In this way, the median yielded a set of weights with more variance, which allowed for greater differentiation in the mapping analysis.

5.1.1 Respondent Characteristics

Recruitment emails were sent to about 100 potential respondents individually and to about 120 potential respondents via an email distribution list, or listserv, with slight overlap. Sixty-five respondents began the survey, with varying response rates. At least 51 respondents answered all of the questions. Figure 1 shows the distribution of respondents by professional sector. Of the 65 respondents who provided personal information, 12.3 percent worked in the public sector, 29.2 percent worked in the private sector, and 61.5 percent worked in the non-profit sector. Though not an equal distribution, these numbers seem to reflect the distribution of the types of professionals whose work relates to gentrification and associated effects.
5. Findings and Analysis

**Figure 2** shows the distribution of respondents by industry. Thirty-eight percent of respondents classified their work as community development. The next most frequently named industries were housing and real estate, accounting for 26 percent and 22 percent of respondents respectively. Nine percent of respondents reported working in urban planning, and five percent chose economic development to describe their work. Because respondents were able to choose more than one response to describe their professions, many may have selected community development as a broad, catch-all category. In addition, these distributions of sector and industry roughly reflect the distribution of all potential respondents who were emailed.
5. Findings and Analysis

Figure 3 offers a comparison of these two variables. A cross tabulation of respondent professional sectors and industries revealed that there were some distinct patterns between these two variables. Eighty percent of respondents who indicated they worked in the non-profit sector reported that they worked in either housing or community development. About 60 percent of all respondents who worked in the private sector also worked in real estate. Those who worked in the public sector were more evenly distributed among the professions than the other sectors, but more indicated that they worked in community development than in any other profession.
5. Findings and Analysis

5.1.2 Physical Factors

Figure 4 shows median rankings for all of the physical factors. Of the physical factors, proximity to parks or open space and proximity to the waterfront yielded the greatest positive median ranking, both with rankings of three. Both proximity to parks or open space and proximity to the waterfront are well-supported in the literature as characteristics that directly increase property values. The rankings for concentration of historic housing evened out to a median of two, but they were heavily concentrated between two and five. Rankings for proximity to universities or colleges, rail transit, and other planned public transportation closely mirrored the rankings for concentration of historic housing.
Interestingly, concentration of public housing units and mixed-income public housing yielded the greatest negative median ranking. These two factors were the only two for which the literature presented contradictory explanations. Public housing projects were identified in multiple sources as having both negative and positive effects on the process of gentrification. The fact that experts in Cincinnati came to some level of agreement about the negative correlation between public housing and gentrification suggests that the influence of public housing on gentrification is substantiated and understood, but perhaps context-specific. In Cincinnati, the lowered capitalized rent that public housing creates may be overwhelmed by the stigma connected to public housing, which mitigates any other factors that could raise potential rent. In other words, in Cincinnati, public housing may prevent gentrification in neighborhoods where it would otherwise would be likely to occur.

Though the ranking for public housing produced in this research contradicts the work of some scholars, it is supported by others. Similarly, most of the rankings of physical factors reflect connections identified in gentrification studies. The exception are the concentration of rental units and multi-unit buildings, both of which yielded a median ranking of zero. For both of these factors, less than one third of the rankings were zero and the remaining rankings were almost evenly distributed. This high level of rater disagreement suggests either respondents were confused or they had many discordant theories about the connection between these factors and gentrification.

Multi-unit and rental buildings are well supported in the literature as facilitating gentrification by making it easier for developers to acquire and convert buildings to market-
5. Findings and Analysis

rate condominiums. This conversion is a well-documented first sign of gentrification. A higher percentage of respondents who reported working in real estate than any of the other professional fields ranked both of these factors as positively contributing to gentrification. This finding suggests that the connection between rental and multi-unit buildings and gentrification may be intuitively understood by those who work directly with real property, but not by all respondents.

5.1.3 Demographic Factors

All of the demographic factors yielded a median ranking of zero. Unlike other factors that were ranked zero but displayed a high degree of variance, most of demographic factors yielded about half of their rankings as zero. In other words, the median was stronger for demographic factors than it was for other types of factors with a median ranking of zero. For example, factors such as the concentration of foreclosures displayed a high degree of variation in responses with both positive and negative values, indicating a low rate of inter-rater reliability. This would suggest that the scale was not optimally constructed for and/or applied to this specific factor. However, because the demographic factors displayed a high degree of inter-rater reliability while at the same time consistently yielding zero rankings, the zero rankings are more likely due to a high level of agreement among respondents than to poor survey construction.

Two factors served as the exceptions to this consensus of neutrality for demographic factors: concentration of non-family households and concentration of households with
three or more cars. These factors yielded mean rankings closer to one and negative one, respectively. Though these rankings are not definitive in absolute value, they at least confirm the positive and negative correlations assigned to them in the literature. However, the neutral rankings for the remainder of the demographic factors contradict findings reported in past research.

The definitive zero ranking for demographic factors may be explained by the fact that these factors are not directly connected to gentrification through causation or prevention. As they are cited in the literature, many demographic trends are linked to gentrification through correlation. In addition, many of them serve as proxies for other indicators more directly connected to gentrification. For example, the concentration of households with three or more cars is a proxy for a high median income, indicating that an area is either already gentrified or has historically been characterized by high-income households. In this case, high median income is not a factor that actually prevents the process of gentrification in an otherwise susceptible neighborhood, but an indication that the neighborhood in question cannot be gentrified at all.

This subtlety was not captured in the survey design. Because the connection of the demographic factors to gentrification is less explicit, it may not have been obvious to most survey respondents. This indicates a limitation of the survey in that it relied on the respondents to create the logical linkages to the gentrification process. At the same time, the mixing of factors that are linked to gentrification through both causation and correlation may not be valid for the purposes of a survey that mentions causation alone. For these reasons, the
demographic factors were not included in the mapping phase of analysis, which is explained in Section 5.2.

5.1.4 Economic Factors

**Figure 5** shows the median rankings for the economic factors. Of the economic factors, concentration of private investment in a low-value residential area, proximity to an area of increasing white-collar job growth, and proximity to already gentrified or historically high-income area yielded the greatest positive median rankings. These factors are directly tied to high potential rent, an intuitive connection that is reflected in the high inter-rater
5. Findings and Analysis

reliability. Proximity to the central business district (CBD) yielded the next highest median ranking, though it was not as strong as the first three. Though this may be the result of only a few different responses, it could also be due to the fact that historically in Cincinnati, neighborhoods adjacent to the CBD have not gentrified.

Four economic factors - concentration of foreclosures, low median household income, concentration of renters paying more than 35 percent of income in rent and owners paying more than 35 percent of income for housing – yielded a median ranking of zero. The rankings for concentration of foreclosures revealed high disagreement among respondents. This may reflect uncertainty about the impact that the recent foreclosure crisis will have on markets. On the other hand, low median household income yielded a strong zero median ranking, suggesting that respondents viewed this factor as neither contributing to nor mitigating gentrification. Though low median household income is a proxy for low capitalized rent, it really only represents the areas where gentrification has the possibility of occurring, but alone does not increase the probability of gentrification.

Diversity of income level yielded a median ranking of one. This is an interesting finding considering that it was listed on the survey immediately after low income, which was ranked zero. This would indicate that respondents recognized that an area with low property value but diversity among residents is more likely to gentrify than one characterized by low income alone. However, a ranking of one is by no means definitive in terms of the effect of income diversity on gentrification.

Concentration of vacancies and low dwelling value or gross rent also both yielded
median rankings of one. These factors both revealed high inter-rater disagreement, with responses at all ranking values on the scale. Both of these factors are directly connected to gentrification. Vacancies provide a supply of buildings with low capitalized rent that are easily acquired by developers or gentrifiers. Low dwelling value is the direct manifestation of low capitalized rent. Despite these relatively straightforward connections, the disagreement among respondents suggests that the impacts of these factors may depend on the level at which each is found in a community. In other words, beyond a certain perceived threshold, low dwelling value and vacancies may actually prevent gentrification by deterring investment.

5.1.5 Policy Factors

Finally, Figure 6 shows median rankings for the policy factors. Location in an historic district ranked the highest of all the policy factors, with a median ranking of three. This confirms findings in the literature and suggests that most respondents interpreted such a designation as contributing to property values in a community. As will be discussed later, this could also be due to the strong presence of the Over-the-Rhine Historic District in Cincinnati. Location in a Tax Increment Financing (TIF) district, the presence of a neighborhood business district (NBD) eligible for the City’s NBD Improvement Program or the Neighborhood Stabilization Program (NSP), and the presence of a Community Development Corporation (CDC) all yielded median rankings of one. All three of these factors revealed relatively high rates of inter-rater agreement, again suggesting that the connection between these factors
and gentrification is understood, if not perceived to be a strong one.

The remaining policy factors – proximity to brownfield or Strategic Program for Urban Redevelopment (SPUR) areas and the presence of warehouse structures in or near a residentially zoned area – yielded median rankings of zero, with about one third of the rankings at zero and the other two thirds widely distributed. Both of these factors are connected to gentrification in ways that may not be immediately apparent to respondents. Brownfields are typically seen as hard-to-develop sites, and the SPUR program may not be widely known. Residential zoning near an area with warehouse structures is a factor that
5. Findings and Analysis

contributes to gentrification by creating the opportunity for conversion to residential units with high potential rent. In theory, it is similar in impact to the concentration of rental and multi-unit buildings, but in this case it is the policy – the residential zoning – that creates the incentive more so than the nature of the property (Zukin 2008, 732).

5.1.6 Survey Findings and Analysis Conclusion

In general, the results of the expert surveys revealed that there was a high degree of inter-rater disagreement. There were no factors that received rankings with an absolute value above three, and there was not enough variation between mean rankings to yield weights from this statistic. Despite this weakness, the median rankings created significant differences in weights and revealed that respondents did seem to differentiate between the factors in terms of importance. Though the demographic factors proved to be incompatible with this type of survey, this finding was considered in the mapping phase and ultimately contributed to the validity of that phase. In this way, the surveys were successful in refining the comprehensive list of factors to include only those relevant for the case.

II. Mapping

As previously explained, the expert surveys were intended to result in a refined list of factors with rankings for each that would be used as weights in a map overlay analysis. Because of this, the list of factors that were eventually mapped was intentionally shorter than the original list collected from the literature. In the mapping phase of the research, factors
were eliminated based on the results of the surveys or the difficulties of accurately, spatially representing those factors. **Table 2** lists the 17 factors that were not included in the mapping analysis phase of the research as well as the reason that each was excluded.

**TABLE 2 | Factors Not Included in Mapping Analysis**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Reason for Exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHYSICAL AND BUILT ENVIRONMENT</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Concentration of rental units</td>
</tr>
<tr>
<td>2</td>
<td>Concentration of multi-unit buildings</td>
</tr>
<tr>
<td><strong>DEMOGRAPHIC</strong></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Concentration of non-family households</td>
</tr>
<tr>
<td>4</td>
<td>Heterogeneous racial composition</td>
</tr>
<tr>
<td>5</td>
<td>Concentration of black or other minority population</td>
</tr>
<tr>
<td>6</td>
<td>Concentration of international population</td>
</tr>
<tr>
<td>7</td>
<td>Concentration of non-Hispanic white population</td>
</tr>
<tr>
<td>8</td>
<td>Concentration of households with three or more cars</td>
</tr>
<tr>
<td>9</td>
<td>Concentration of seniors</td>
</tr>
<tr>
<td><strong>ECONOMIC</strong></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Concentration of private development in a low value residential area</td>
</tr>
<tr>
<td>11</td>
<td>Concentration of foreclosures</td>
</tr>
<tr>
<td>12</td>
<td>Low Median household income</td>
</tr>
<tr>
<td>13</td>
<td>Diversity of income level</td>
</tr>
<tr>
<td>14</td>
<td>Concentration of renters paying &gt;35% of income in rent</td>
</tr>
<tr>
<td>15</td>
<td>Concentration of owners paying &gt;35% of income for housing</td>
</tr>
<tr>
<td><strong>POLICY AND REGULATORY</strong></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Presence of warehouse structures within or adjacent to an area zone residential</td>
</tr>
<tr>
<td>17</td>
<td>Proximity to brownfield redevelopment or SPUR district programmed for light industrial, park, or office use.</td>
</tr>
</tbody>
</table>
5. Findings and Analysis

For each of the remaining 17 factors, data was collected that could be geographically represented. In most cases, this input data has to be manipulated in some way to symbolize the intent of the original factor. Table 3 lists the factors included in the mapping analysis, describes the data that was used as input for each factor, and the GIS tool or manipulation of that data that was used to create a single feature class or layer for that factor. Some factors had to be slightly altered from their original wording and/or intent depending on data availability. For example, concentration of historic buildings was modified to become historic housing in order to collect accurate data.
## 5. Findings and Analysis

### TABLE 3 | Factors Included in Mapping Analysis and GIS Manipulation

<table>
<thead>
<tr>
<th>Factor</th>
<th>Primary Input Data Layer or source</th>
<th>GIS Manipulation of Layer</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHYSICAL FACTORS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Concentration of historic buildings (built before World War II)</td>
<td>2005-2009 American Community Survey (ACS) 5-Year Estimates data for year structure built by census tract</td>
<td>1. The shapefile for census tracts was joined to ACS data for year structure built.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. A new field was calculated using the “HOUSING UNITS: Total (Estimate)” and “HOUSING UNITS: Built 1939 or earlier” fields to represent the percentage of all structures that were built in 1939 or earlier.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. The average percentage of historic structures was calculated for the City of Cincinnati (28%) and the layer was symbolized according to natural breaks with six categories.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. The layer was converted to raster data with a cell size of 30, based on the distance as value, and reclassified to a scale of 0 to 5.</td>
</tr>
<tr>
<td>2</td>
<td>Proximity to parks or open space</td>
<td>parks layer (CAGIS)</td>
<td>1. Multiple ring buffers were created using the parks layer as the input with buffer units in miles with distances every quarter of a mile from 0 to 1.25 miles. The resulting layer of buffers was clipped to Cincinnati borders.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. The layer was converted to raster data with a cell size of 30, based on the distance as value, and reclassified to a scale of 0 to 5.</td>
</tr>
<tr>
<td>3</td>
<td>Proximity to the waterfront</td>
<td>river layer (CAGIS)</td>
<td>1. The river layer was edited by creating a new layer from the River layer, and then cutting sections of the polygon that represented tributaries to the Ohio River and portions of the Ohio River that extended beyond the City of Cincinnati borders.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Multiple ring buffers were created using the river layer from step 1 as the input with buffer units in miles with distances every quarter of a mile from 0 to 1.25 miles, with the final increment at 10 miles. The resulting layer of buffers was clipped to Cincinnati borders.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. The layer was converted to raster data with a cell size of 30, based on the distance as value, and reclassified to a scale of 0 to 5.</td>
</tr>
<tr>
<td>4</td>
<td>Proximity to a university or college</td>
<td>New layer, Google Maps</td>
<td>1. Polygons were drawn based on land use class codes and university and college footprints visible in Google Maps.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Multiple ring buffers were created using the university layer from step 1 as the input with buffer units in miles with distances every quarter of a mile from 0 to 1.25 miles, with the final increment at 10 miles. The resulting layer of buffers was clipped to Cincinnati borders.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. The layer was converted to raster data with a cell size of 30, based on the distance as value, and reclassified to a scale of 0 to 5.</td>
</tr>
</tbody>
</table>
### 5. Findings and Analysis

**TABLE 3 | Factors Included in Mapping Analysis and GIS Manipulation**

<table>
<thead>
<tr>
<th></th>
<th>Factor Description</th>
<th>Data Source</th>
<th>Steps</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Concentration of public housing units programmed for mixed income housing (i.e. HOPE VI developments)</td>
<td>HUD Data</td>
<td>1. A new layer was created with a polygon drawn for the City West site footprint.</td>
<td>-2.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Multiple ring buffers were created using the City West layer from step 1 as the input with buffer units in miles with distances every quarter of a mile from 0 to 1.25 miles, with the final increment at 10 miles. The resulting layer of buffers was clipped to Cincinnati borders.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. The layer was converted to raster data with a cell size of 30, based on the distance as value, and reclassified to a scale of -5 to 0.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Concentration of public housing units</td>
<td>“CMHA data for public housing as of April 2011, 2005-2009 American Community Survey (ACS) 5-Year Estimates data for year structure built by census tract”</td>
<td>1. CMHA data of all public housing units were used to calculate the total amount of public housing units per census tract.</td>
<td>-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. The shapefile for Census tracts was joined to CMHA data for public housing and to ACS data for total housing units per census tract from year structure built layer.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. A new field was calculated to represent the amount of public housing units per census tract as a percent of the total housing units per tract.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. The average amount of public housing units per total housing units for the City of Cincinnati was calculated to be about 2%. The percent public housing layer was symbolized according to whether a tract was above or below this percentage.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. The layer was converted to raster data with a cell size of 30, based on the distance as value and reclassified so that 0-2 and Null = 0 and 2-57=-5.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Proximity to public/nonprofit recreational facilities</td>
<td>cintirec and cinti_rec_pools layers (CAGIS)</td>
<td>1. The layers for Cincinnati Recreation Centers and Cincinnati Recreation Center Pools were combined into one layer using the append tool.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Multiple ring buffers were created using the university layer from step 1 as the input with buffer units in miles with distances every quarter of a mile from 0 to 1.25 miles, with the final increment at 10 miles. The resulting layer of buffers was clipped to Cincinnati borders.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. The layer was converted to raster data with a cell size of 30, based on the distance as value, and reclassified to a scale of 0 to 5.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Proximity to planned public transportation system (i.e. streetcar, light rail)</td>
<td>City of Cincinnati streetcar map</td>
<td>1. A polyline feature class was created based on the most modified planned streetcar route for Cincinnati.</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Multiple ring buffers were created using the streetcar layer from step 1 as the input with buffer units in miles with distances every quarter of a mile from 0 to 1.25 miles, with the final increment at 10 miles. The resulting layer of buffers was clipped to Cincinnati borders.</td>
<td></td>
</tr>
</tbody>
</table>
## 5. Findings and Analysis

**TABLE 3 | Factors Included in Mapping Analysis and GIS Manipulation**

<table>
<thead>
<tr>
<th>ECONOMIC FACTORS</th>
<th>Low dwelling value, gross rent, or mean monthly rent</th>
<th>2005-2009 American Community Survey (ACS) 5-Year Estimates data for value for owner-occupied housing units, gross rent, and total housing units by census tract</th>
<th>3. The layer was converted to raster data with a cell size of 30, based on the distance as value, and reclassified to a scale of 0 to 5.</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Concentration of vacancies</td>
<td>2005-2009 American Community Survey (ACS) 5-Year Estimates data for vacant housing units and total housing units by census tract</td>
<td>1. ACS data for “Vacant housing units: other vacant” were downloaded, and combined with total housing units. The “other vacant” category was chosen because it excluded units that were rented but not occupied, for sale, sold but not occupied, for seasonal, recreational, or occasional use, or for migrant workers. A new field was calculated to represent the percent of total housing units in each tract that were vacant.</td>
</tr>
<tr>
<td>10</td>
<td>Proximity to CBD</td>
<td>cc_neighbndy layer (CAGIS)</td>
<td>1. A polygon layer was created through selection of the CBD in the Neighborhoods layer.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Multiple ring buffers were created using the streetcar layer from step 1 as the input with buffer units in miles with distances every quarter of a mile from 0 to 1.25 miles, with the final increment at 10 miles. The resulting layer of buffers was clipped to Cincinnati borders.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. The layer was converted to raster data with a cell size of 30, based on the distance as value, and reclassified to a scale of 0 to 5.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Average percent vacant for the City = 6.62%.</td>
</tr>
<tr>
<td>12</td>
<td>Proximity to an area with increasing job growth, especially “white collar jobs”</td>
<td>Cincinnati Chamber of Commerce &quot;growth companies&quot;</td>
<td>1. The Cincinnati USA growth companies data was summarized by counts of growth companies per neighborhood.</td>
</tr>
</tbody>
</table>

1. ACS data for “Gross Rent” and “Value for Owner-Occupied housing units” were downloaded and compared. New fields were calculated to determine how the median for both values for each tract compared to the City median (rent=$578, own=$129,200). A percent of overall housing unit was calculated for each tract by weighting the percents for owner-occupied and renter-occupied by the total amounts of each type of unit in each tract. |

2. The resulting data was joined to the shapefile for census tracts and clipped to Cincinnati boundaries. It was classified into six categories according to manual breaks, with five categories below 100%, in increments of 10%. |

3. The layer was converted to raster data with a cell size of 30, based on the percent of median as value, and reclassified to a scale of 0 to 5. |
### TABLE 3 | Factors Included in Mapping Analysis and GIS Manipulation

<p>| | | |</p>
<table>
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<tr>
<td>2.</td>
<td>A polygon layer was created by joining this data to the neighborhood layer and classifying the data by unique count values, yielding five categories. Null values were converted to 0.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>The layer was converted to raster data with a cell size of 30, based on the count as value, and reclassified to a scale of 0 to 5, with 0=0, 1 and 2=1, 4=2, and 19=5, based on the distribution.</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Proximity to already gentrified areas or areas where no disinvestment has occurred.</td>
<td>2005-2009 American Community Survey (ACS) 5-Year Estimates data for estimated median household income in the past 12 months (in 2009 inflation-adjusted dollars) by census tract.</td>
</tr>
<tr>
<td></td>
<td>1.</td>
<td>Census tracts were selected from the income layer created to identify gentrifiable areas where median income was equal to or greater than the median for the City of Cincinnati ($33,855).</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>Multiple ring buffers were created using the river layer from step 1 as the input with buffer units in miles with distances every tenth of a mile from 0 to 1.25 miles, with the final increment at 10 miles. The resulting layer of buffers was clipped to Cincinnati borders.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>The layer was converted to raster data with a cell size of 30, based on the distance as value, and reclassified to a scale of 0 to 5.</td>
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**POLICY FACTORS**

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<tbody>
<tr>
<td>14</td>
<td>Location within a (non-industrial) TIF district</td>
<td>tif layer (CAGIS)</td>
</tr>
<tr>
<td></td>
<td>1.</td>
<td>The tif layer was added and a new layer was created to represent TIF districts and all areas in the City that are not in TIF districts using the cintbnd layer and the Union tool. The resulting layer was exported, overlapping polygons were removed, and it was clipped to Cincinnati boundaries.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>The layer from 1 was converted to raster data with a cell size of 30 based on the “FID_tif” field. This raster layer was then reclassified to result in a layer in which 5=TIF District and 0=Not TIF District.</td>
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<tbody>
<tr>
<td>15</td>
<td>Proximity to a NBD accepted into the Neighborhood Business District Improvement Program or within a neighborhood eligible for Neighborhood Stabilization Program funding</td>
<td>“City of Cincinnati Neighborhood Stabilization Downpayment Program: Program Guide and Procedures (Appendix H) cinc_neighborhoods layer (CAGIS)”</td>
</tr>
<tr>
<td></td>
<td>1.</td>
<td>Neighborhoods eligible for NSP funding were selected from the cinc_neighborhoods layer and exported.</td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>A new layer was created to represent NSP eligible neighborhoods and all other Cincinnati neighborhoods using the cintbnd layer and the Union tool. The resulting layer was exported and clipped to Cincinnati boundaries.</td>
</tr>
<tr>
<td></td>
<td>3.</td>
<td>The layer from 2 was converted to raster data with a cell size of 30 based on the “FID_nspeligible” field. This raster layer was then reclassified to result in a layer in which 5=NSP eligible and 0=NSP ineligible.</td>
</tr>
</tbody>
</table>

Note: Neighborhood Business Districts (NBDs) were not included because all NBDs in the city were eligible for funding.
### 5. Findings and Analysis

**TABLE 3 | Factors Included in Mapping Analysis and GIS Manipulation**

<p>| | | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Location in a Historic District</strong></td>
<td>“CAGIS City of Cincinnati”</td>
<td>1. A layer was created by selecting polygons from the historic layer that were classified as “district” in the type field.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. A new layer was created to represent Historic districts and all areas in the City that are not in Historic districts using the cintbnd layer and the Union tool. The resulting layer was exported and clipped to Cincinnati boundaries.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. The layer from 2 was converted to raster data with a cell size of 30 based on the “FID_historicdistricts” field. This raster layer was then reclassified to result in a layer in which 5=Historic District and 0=Not Historic District.</td>
</tr>
<tr>
<td><strong>Location in a neighborhood where there is an active Community Development Corporation (CDC)</strong></td>
<td>Community Development Corporations Association of Greater Cincinnati (SEE APPENDIX WHAT)</td>
<td>1. A layer was created by selecting neighborhoods from the cinc_neighborhoods layer that are covered by the scope of a CDC, as identified by membership with the CDCA of Greater Cincinnati.</td>
</tr>
<tr>
<td></td>
<td>UC Community Development</td>
<td>2. A new layer was created to represent neighborhoods with CDCs and neighborhoods without CDCs using the cintbnd layer and the Union tool. The resulting layer was exported and clipped to Cincinnati boundaries.</td>
</tr>
<tr>
<td></td>
<td>cinc_neighborhoods layer (CAGIS)</td>
<td>3. The layer from 2 was converted to raster data with a cell size of 30 based on the “FID_cdcneighborhoods” field. This raster layer was then reclassified to result in a layer in which 5=Neighborhood with a CDC and 0=Neighborhood without a CDC.</td>
</tr>
</tbody>
</table>
5.2.2 Gentrifiable Areas

Map 2 shows the gentrifiable areas in Cincinnati that were identified based on the $33,855 median household income for the City. Appendix 3 contains a table listing gentrifiable census tracts, average household income for those tracts as a percent of Cincinnati AMI, and corresponding neighborhoods. Gentrifiable areas in Cincinnati are clearly concentrated in the center and the west of the City, with exceptions in the neighborhoods of

Source: Cincinnati Area GIS (CAGIS) 2006
5. Findings and Analysis

Linwood in the east, Winton Hills in the north, and Roselawn and adjacent parts of Bond Hill in the northeast. Portions of Mount Auburn, West End, and East Price Hill are the only areas above the City AMI that break up the otherwise contiguous gentrifiable areas in the central and western parts of the City. These tracts closely mirror those characterized by Maloney and Auffrey as falling into socio-economic status (SES) categories I and II. Though Maloney and Auffrey used Census 2000 data to determine the social areas, they mention that SES I, or “inner city” neighborhoods, have remained stable since 1970 (2004, 16). SES II neighborhoods are adjacent to SES I neighborhoods and residents of SES II neighborhoods in 2000 were found to have largely come from SES I neighborhoods.

Once gentrifiable areas were identified, each factor was first mapped and analyzed throughout the entire city. In order to fully analyze each data layer, the layers were not clipped to the boundaries of the gentrifiable areas until the overlay portion of the analysis. The following sections examine how each of the factors are distributed throughout the city.

Appendix 4 contains a map for each of the 17 factors.

5.2.3 Physical Factors

Historic residential architecture is concentrated close to the Central Business District, along the waterfront, and on more the east side of the City than on the west side (see Appendix 4, Map 1). The most concentrated collections of historic houses are found in parts of Over-the-Rhine, Mt. Auburn, Walnut Hills, Lower Price Hills, East Price Hill, and South Fairmont. There is also a concentration of historic houses in the southern part of Northside,
5. Findings and Analysis

but this part of the neighborhood does not qualify as gentrifiable. Anecdotal evidence suggests that parts of Northside are undergoing gentrification or are already gentrified, perhaps due largely to the neighborhood’s architectural assets.

Many of the gentrifiable neighborhoods on the west side of the City contain the least amount of historic residential architecture. At the same time, almost all of the census tracts with the highest concentrations of residential historic architecture are gentrifiable. Because of these dichotomous concentrations, as well as the strong ranking that this factor received in the expert surveys, historic architecture is a significant factor in determining susceptibility to gentrification in Cincinnati.

Though distance from parks and open space is widely reported in the literature and confirmed by the expert surveys as having a positive impact on the progress of gentrification, the scope of the impact of parks and open space in Cincinnati was difficult to spatially represent. This is due largely to the prevalence of parks and open space in the City. In addition, the parks layer provided in the CAGIS data errs on the side of inclusion, perhaps over-stating the prevalence of parks. The layer of quarter mile buffers covers a large majority of the City, indicating that most of the City is impacted by parks and open space. Map 2 in Appendix 4 shows distance from parks and open space in Cincinnati.

In future research, it may be more useful to assign a different strength of influence to parks based on their size, or to limit the features in this layer to the 25 Cincinnati Parks in the City. Alternatively, it may be even more accurate to use some measurement of the scope of the impact of parks on property values to determine the geographic influence they have.
5. Findings and Analysis

For example, parks may have a stronger influence on property value if they are visible from a specific property.

Distance from the waterfront was more easily visualized (see Appendix 4, Map 3). Interestingly, though the waterfront is another factor widely cited in the literature and supported by the survey results, Cincinnati neighborhoods adjacent to the waterfront do not seem to have uniformly benefited from this proximity. In fact, almost half of the area bordering the waterfront is categorized as gentrifiable area. This half is conspicuously concentrated on the west side of the City, from the western portion of the CBD to portions of the Riverside neighborhood. This separation may be related to topography as well as historical development trends that resulted in a concentration of industrial activities on the west side of the City, starting at the river and moving north along the Mill Creek.

The areas in close proximity to universities in Cincinnati are almost all gentrifiable areas, with the exception of some parts of Clifton. These areas are located in the central part of the city, concentrated in the Uptown neighborhoods (see Appendix 4, Map 4). Though proximity to colleges and universities has been identified in the literature as contributing to the process of gentrification, again, the areas in Cincinnati closest to these assets have not benefited from this proximity. This may be related to the fact that both the University of Cincinnati (UC) and Cincinnati State are largely commuter schools, which may change the nature of their influence in terms of investment in the surrounding communities. The lack of investment may also reflect historical relationships between these institutions and the communities. The recent efforts of UC’s Office of Community Development have resulted
5. Findings and Analysis

in partnerships with local community urban redevelopment corporations for specific
development projects that may change this relationship in the future (University of Cincinnati,
2011).

Though the expert surveys would indicate that the concentration of public housing
units mitigate gentrification, this factor mirrors the same central pattern as the universities,
which were found to cause gentrification in the surveys. As seen in Map 5 in Appendix 4, the
concentration of public housing units per census tract geographically reflects the locations
of the universities with the addition of parts of the western side of Cincinnati. The census
tracts with the highest concentration of public housing correspond to large public housing
developments in West End, Winton Hills, South Cummins ville/Millvale, North Fairmount/
English Woods, West Price Hill, Avondale, Walnut Hills, and Evanston. With the exception of a
census tract in Walnut Hills, all of the tracts with higher than average percentages of public
housing are gentrifiable areas. This exceptional tract in Walnut Hills is characterized by a
percentage of public housing higher than the City average as well as a median household
income higher than both the City and County AMI. This finding suggests that the area has
either successfully sustained a mix of both public housing and high property values, and/or
the areas surrounding the public housing have gentrified despite of the proximity to public
housing.

City West is the only public housing development in the City of Cincinnati that is
programmed for HOPE VI mixed income housing (see Appendix 4, Map 6). Located in West
End, the development has not been successful in attracting middle income families with
children. Varady et al cite a perceived lack of safety and the poor reputation of the public school system as deterrents for these families (2005, 159). At the same time, the authors explain that the inner-city location of City West has been successful in attracting middle income families without children (163). If this trend is exploited and more efforts are made to draw this demographic to the development, City West could potentially become a cause, not a mitigating factor, for gentrification. As it is, this layer reveals areas where gentrification may be prevented in the neighborhoods adjacent to West End. Of the neighborhoods immediately adjacent to City West, Over-the-Rhine is most affected by this factor as Queensgate is not currently a residential neighborhood.

The layer displaying proximity to public recreation facilities has the same limitation as the layer for proximity to parks and open space. Cincinnati Recreation Center facilities are so prevalent that almost all areas of the City fall into the quarter mile buffers (see Appendix 4, Map 7). The notable exception is the large portion on the east side of the City that includes the gentrifiable area of Linwood. In future, this layer could be modified by differentiating the types of facilities and the different impacts they have on the surrounding community. For example, recreation centers with outdoor courts may be seen as more of a deterrent to gentrifiers, as they have a presence that is visible from the street.

The current, modified Cincinnati streetcar project is specifically targeted to the city’s urban core in the CBD and Over-the-Rhine. Though most of the CBD is not characterized as gentrifiable, the goal of the project is to draw visitors from the CBD to the neighborhood assets in Over-the-Rhine, stimulating development in a neighborhood characterized
5. Findings and Analysis

by property values that have been in decline and crime levels that have created a long-established stigma. The areas that would be most affected by the current route include Over-the-Rhine and Pendleton, and parts of West End, CUF, and Mount Auburn (see Appendix 4, Map 8).

5.2.4 Economic Factors

Dwelling value and gross rent are direct measures of capitalized rent. Though it is a proxy, low median income is often seen as a better measure of property value because of the problems of obtaining accurate property value data. This discrepancy is apparent in a comparison of these two datasets from the American Community Survey. While census tracts with the lowest dwelling value and gross rent are almost all gentrifiable areas (with the exception of parts of Northside), there are some notable tracts that are gentrifiable but also have relatively high average dwelling value or gross rent. These tracts are located in parts of Mount Airy, College Hill, University Heights, Corryville, West Price Hill, Roselawn, and Fairview/Clifton Heights (see Appendix 4, Map 9).

The tracts with the highest concentrations of vacancies (35 percent or more) are found just north of the CBD in Over-the-Rhine (see Appendix 4, Map 10). All of these census tracts are also gentrifiable tracts. The next highest concentrations (16 percent-35 percent) are found in Lower Price Hill, North Fairmount/English Woods, Camp Washington, and parts of South Fairmount, West End, Mount Auburn, Walnut Hills, and Evanston. The lowest concentrations of vacancies are found adjacent to the outer City limits, as well as many areas in the eastern part
of the City and a few scattered central neighborhoods such as Clifton and parts of Evanston. These patterns reflect the general pattern of movement away from the city towards the suburbs.

The potential influence of the CBD on the process of gentrification represents the opposite of this pull of population to the periphery of the City. Proximity to the CBD represents the pull of the hub of employment, entertainment, retail, and culture that exists in a CBD. As seen in Appendix 4, Map 11, in Cincinnati this creates a concentration of gentrifiable areas in the southern-most central portion of the City. The growth companies factor is based on the idea that hubs of employment – especially for new, professional, “white collar” jobs – can exist outside of the central business district. In the case of Cincinnati, growth is still highest in the CBD. New growth companies are also located in the Uptown area, specifically in Corryville, University Heights, and Clifton, as well as the manufacturing district of Queensgate (see Appendix 4, Map 12).

The layer mapping distance from middle to high income, already gentrified areas or areas where disinvestment has not occurred isolates an area that runs north-south in the central west section of the City where gentrification would be less likely to occur (see Appendix 4, Map 13). The layer shows a portion of the city that is theoretically out of the range of influence of investment occurring in other parts of the city. Interestingly, this area roughly corresponds to the Mill Creek Valley, which also follows Interstate 75 through the City. This leaves portions of gentrifiable tracts closest to the CBD, the western parts of the farthest west tracts, as well as a few areas near Uptown and closer to the suburbs that are more likely
5. Findings and Analysis

to gentrify according to this factor alone. This layer may be more significant in isolating areas that are less likely to gentrify since there are other factors that have more of a mitigating effect on areas closer to the periphery of the City.

5.2.5 Policy Factors

Areas targeted for tax increment financing (TIF) represent areas where the City encourages development and capitalizes on the gains from that development in order to make up for shortfalls in infrastructure (see Appendix 4, Map 14). For this reason, TIF districts represent areas where property values are anticipated to rise with new development. The City of Cincinnati creates these geographically defined districts where new public and private investment is needed. It is logical then that most of the TIF districts correspond to gentrifiable areas in Cincinnati. The exceptions are TIF districts in parts of Oakley and Madisonville, the Center-Hill/Carthage SPUR District, parts of Walnut Hills, corridors in West Price Hill and Westwood, and the CBD, where census tracts are not gentrifiable. Many of these exceptions, such as the SPUR district in Carthage, represent projects targeted at specific areas that need investment and do not necessarily reflect need in the neighborhoods surrounding these districts. In addition, some of these districts may have been in place for longer and have already had an effect on development.

The Neighborhood Stabilization Program (NSP) is also designed to target areas in need of investment. However, the federal guidelines specify that the focus for the program is specifically “communities hardest hit by foreclosures and delinquencies” (City of Cincinnati
5. Findings and Analysis

2010, 2). Based on these criteria, the neighborhoods of Westwood, South Fairmount, Avondale, Northside, East and West Price Hill, Evanston, Madisonville, Bond Hill, and College Hill are eligible for NSP funding (see Appendix 4, Map 15). These neighborhoods correspond to the neighborhoods identified in a 2010 Working in Neighborhoods study as having the highest number of completed foreclosures (14).

Though they may be expected to correlate, these NSP eligible neighborhoods do not correspond to neighborhoods with the highest concentration of vacancies (see Appendix 4, Map 16). In fact, according to the ACS data from 2009, the NSP eligible neighborhoods have some of the lowest concentrations of vacancies. This may be caused by a few factors. First, vacancy data is difficult to verify and keep up-to-date. Second, foreclosures affect owner-occupied housing, whereas vacancies may be concentrated in areas where rentals and lower-income housing is concentrated. Along these same lines, the recent foreclosure crisis has disproportionately affected middle and high income households (Working in Neighborhoods 2010, 2). As mentioned previously, vacancies correspond to areas of low household income, separating them from the current wave of foreclosures.

Unlike TIF districts and NSP eligible areas, historic districts are not created with any sort of economic development goal. In this sense, the historic district layer is similar to the historic architecture layer. It represents the spatial distribution of physical characteristics. However, it also represents a set of policies and regulations that officially protect the value of buildings within a designated area. The largest historic district in Cincinnati is Over-the-Rhine. Other historic districts are clustered in neighborhoods surrounding OTR and in East Walnut
5. Findings and Analysis

Hills, Columbia-Tusculum, and Hyde Park in the east, as well as Northside and Sacred Heart Academy/Mount Storm in the central west (see Appendix 4, Map 16). Bond Hill is the only historic district in the north of the City. Community Development Corporations cover most of the central and west central parts of the city, as well as neighborhoods in the south west. Bond Hill is again the only exception in the north of the City (see Appendix 4, Map 17).

5.2.6 Areas Susceptible to Gentrification

After these 17 factors were mapped across the entire city, the fifteen positively weighted factors were combined using several composite mapping tools for comparison. The first tool used was the weighted overlay tool described in the Methodology section of this report. Weights were determined by adding all the rankings and then calculating a percentage weight for each. This conversion was necessary because the weighted overlay tool required weights on a scale of 0 to 100. Two different composites were created for comparison, using the weighted overlay and the weighted sum tools.
5. Findings and Analysis

Composite 1

MAP 3 | Composite 1: Weighted Overlay

Map 3 shows the resulting composite index of gentrification susceptibility in Cincinnati. The overlay resulted in four levels of susceptibility, with the two highest levels (three and four) covering the smallest area. Areas that were rated three and four were concentrated in the areas surrounding the Central Business District, primarily in the western
5. Findings and Analysis

portion of the CBD, Over-the-Rhine and Pendleton immediately to the north, and parts of Mount Auburn and Walnut Hills farther north and east, respectively.

Map 4 shows the areas rated three and four (light green and dark green) in terms of susceptibility to gentrification. Areas rated the most susceptible to gentrification were concentrated in Over-the-Rhine in three distinct locations. The blocks between Central
5. Findings and Analysis

Parkway to the south and west, Liberty to the north, and Sycamore to the east contain areas classified four in the south, and changing to three along the northern border. There is another area of high susceptibility located north of Liberty Street, in the eastern corner of Over-the-Rhine and part of Mount Auburn. These particular blocks are adjacent to the non-gentrifiable residential area known as Prospect Hill. On the surface, the physical characteristics and demographic trends surrounding the area reflect Freeman’s descriptions of the gentrification of Clinton Hill.

These parts of Over-the-Rhine have a history of circumstances that create the prime environment for a wave of gentrification, if a slow one. Characterized by disinvestment and population loss since 1960, the area is also rich with history and historic architecture (City of Cincinnati 2002, 22). After the riots of 2001, stakeholders in Over-the-Rhine recognized both the need for investment and the potential for drastic change in the neighborhood. In 2002 they published a comprehensive plan as a guide for protecting the neighborhood and its residents and at the same time encouraging revitalization. Though their report does not explicitly mention gentrification, they emphasize the importance of maintaining an adequate supply of affordable housing in the midst of continued reinvestment.

As the revitalization of OTR continues, the community’s non-profit housing developers … will become valuable in ensuring the continued availability of affordable housing … New development and rehabilitation of existing buildings in OTR brings with it a corresponding rise in property values and rents. The result may be the displacement of current residents who cannot afford the increased rent… Incentives and controls must be in place to ensure that revitalization of the neighborhood does not occur at the expense of current residents.

City of Cincinnati 2002, 41

If proximity to City West was included as a mitigating factor in the weighted overlay, this could affect the rating of parts of Over-the-Rhine (OTR) closest to this West
End development. In reality, however, the barrier between West End and OTR provided by Central Parkway may diffuse the influence that City West has on this area. Most of West End is characterized by low susceptibility, which would only be reinforced by including City West in the analysis. The addition of public housing to the analysis would have a similar effect, as West End also contains census tracts with high concentrations of public housing. In addition to the City West development, West End has the second highest amount of CMHA public housing units of all neighborhoods in the city, after Winton Hills.

The final area classified as highly susceptible was found in the area southeast of Pendleton known as Broadway Commons. Bounded by Interstates 71 and 471 to the east, Liberty Street to the north, Reading Road to the west, and Eggleston Avenue to the south, the area is currently occupied by a Greyhound bus station, various parking lots, and a few scattered businesses. There is no residential development in the area, but the vacant land and proximity to commercial and residential uses in OTR as well as to the CBD make it an ideal site for development. In fact, the site has historically been the focus of multiple large-scale development plans, including a stadium for the Cincinnati Reds baseball team and mixed-use urban development.

Currently, it is the planned site for a casino that was made possible after casino gambling was legalized in Ohio in 2009. Community organizations, corporations, and residents in the surrounding area have organized to create a vision of how the area will benefit from the investment. The progress of the casino development and the revitalization of neighboring Over-the-Rhine will determine whether or not this is an area that can be
5. Findings and Analysis

gentrified.

Large portions of Mount Auburn and to a lesser extent East Walnut Hills, as well as parts of the CBD and Queensgate were classified as a three. The latter two are excluded from the discussion of gentrification because they are not residential in nature, but they are important in reinforcing the strong pull of the CBD. Mount Auburn and East Walnut Hills are similar in built environment to Over-the-Rhine. Interestingly, these neighborhoods are separated from downtown portions of the City by topography, as there is a sharp incline separating the downtown neighborhoods from Uptown Cincinnati. This barrier may prove to slow the process of gentrification as it effectively accentuates distance from the CBD and related employment.
5. Findings and Analysis

Composite 2

MAP 5 | Composite 2: Weighted Sum

Map 5 shows a second composite analysis of the factors. This overlay was created with the weighted sum tool, using the rankings as the numeric weights. Because this tool allows for positive and negative rankings, all 17 of the factors were included in this analysis. This tool also computed floating point or non-discrete output values, allowing for greater variation in the resulting values. For the purposes of this analysis, the most significant difference between
5. Findings and Analysis

the weighted sum and the weighted overlay is that the weighted sum did not use relative percentages for weights. The result of this difference is that the weighted sum shows greater influence of the factors with the highest weights. In addition, the range of the resulting scale is based on the output values, and therefore has a greater range.

These differences are visible in the map. The results in Composite 2 do not contradict the results of Composite 1, but they allow for a greater amount of variation in the middle-range values of the scale. There are also more areas that are characterized as highly susceptible to gentrification. The uptown neighborhoods of Mount Auburn and Corryville are highly susceptible, as are Walnut Hills, parts of East Walnut Hills and Evanston, and Sedamsville. Areas in Camp Washington that border the higher income neighborhood of Clifton are also highly susceptible to gentrification. At the same time, this overlay shows more influence of the negative factors in census tract 2 in West End than Composite 1.

5.2.7 Comparison of Overlay Tools

Both of these methods successfully incorporate the weights of the factors into a final analysis, but the weighted sum allows for the inclusion of negative weights. This analysis is not limited to discrete values. The weighted sum results in a higher degree of variation, which seems to show more of the transition between areas of low and high susceptibility.

While the variation of the weighted sum creates a more interesting visualization of gentrification, the discrete values of the weighted overlay provide analytical strength. The weighted overlay creates a simple scale of four values and a useful map of susceptibility.
5. Findings and Analysis

values. Because it requires the output values to be discrete, the resulting layer is definitive and allows for straightforward analysis. While this simplicity may obscure some of the detail provided by multiple input layers, in the end, the weighted overlay is the most effective tool for this analysis.

5.2.8 Limitations and Recommendations for Future Research

The most significant limitation of this type of method is that the results are highly dependent on the data layers that are included. The results depend on the accuracy of the data sets, the unit of analysis the data sets use, and how well the data sets conceptually represent and quantify the factors. Each of these factors compound to either make the composite data highly reliable or highly questionable.

Though this method does not require that all data be aggregated to the same unit of analysis, there are other issues that arise from the combination of multiple data sets. The focus on proximity can be problematic. For the purposes of this research, a quarter mile increment was chosen for most factors that involved proximity. The quarter mile distance was chosen because it reflects a typical pedestrian shed. However, this distance can also be arbitrary and does not reflect the influence of walking or transportation networks or other barriers such as slopes and highways. Again, the inaccuracies created by using an invalid measure of proximity are compounded in the overlay process. This issue could be avoided by aggregating all of the data to the tract, block, or block group level and creating scores for each unit. However, as discussed in the Methodology section, this would negate the benefits of using an overlay
5. Findings and Analysis

analysis. In addition, census units of analysis have boundaries that are not geographically meaningful.

Along with the problem of proximity, “concentration” was not always measured consistently. The threshold for a high concentration and the scale used to measure the level of concentration in general varied depending on the data available, the nature of the factor, and its prevalence in the study area. Because the concept of concentration depends on perception, this inconsistency does not necessarily affect the accuracy of the findings. However, such levels could ideally be better defined in the expert surveys.

In addition to the issues related to the data sets, the weights used in the composite mapping analysis must be refined. As Collins, Steiner and Rushman mention, this step of the analysis can greatly improve the reliability and validity of an overlay analysis (2001, 614). Future research should focus on creating more effective expert participation to tailor the process to the context of the study area. Improved participation could also help to better define the factors in each study area and the interaction between them. However, this must be balanced with the original intent of the research, which was to create a tool that could combine a set of complex factors into a simple, meaningful output.
Despite decades of research attempting to establish empirical theories of gentrification, so much of the evidence of what drives the process still depends on context-specific interactions at the ground level. Perception of neighborhood conditions, interactions between individuals and groups with different cultures and socioeconomic backgrounds, and subtle changes in local markets can all influence whether and how gentrification occurs in a neighborhood. Well-intentioned policy can spur revitalization and redevelopment or gentrification, depending on all of these factors.

Because of these complex ground level processes, there is an inherent limitation in trying to examine gentrification from a distance. Though GIS analysis lends itself to the examination of all of these factors at once, some of the most important interactions between factors may be lost when viewed from a perspective of 30,000 feet. That said, ground level knowledge in the form of expert input could supplement the composition and combination of GIS data layers to move towards an understanding of gentrification.

This research attempted to do so by reaching out to experts in the field to refine the list of causes of gentrification. Input from a similar set of experts could be used to refine the data layers to reflect realities on the ground in specific neighborhoods. Though the survey results reflected some of the confusion about gentrification, they also provided direction and strengthened the overall methodology. The mapping tool provided two different version of gentrification susceptibility in Cincinnati, both of which could be adjusted with better data, survey rankings, and GIS manipulation. Despite these shortcomings, this research indicates that there are distinct areas in the City of Cincinnati that are susceptible to gentrification.

6. Conclusion
6. Conclusion

These areas correspond to those identified by the popular media and community stakeholders. In the case of Over-the-Rhine, these areas are experiencing the beginnings of reinvestment. In contrast, the case of Broadway Commons represents an area that has been ripe for gentrification for years, but investment has stalled. In both cases, residents and members of the business community have recognized the potential. These actors must work with planners to ensure that investment is targeted to benefit all involved, especially those who already live in these neighborhoods. Again, this tool does not predict where gentrification will occur. Future conditions will determine if areas of Over-the-Rhine, Pendleton, and Broadway Commons experience gentrification or revitalization. These conditions are highly sensitive to policy and regulations, and this tool is designed to provide guidance for those who would craft policy and intervene in communities to ensure that the process benefits the communities as a whole.
7. Sources


Cincinnati Area GIS (CAGIS).


Freeman, Lance, and Frank Braconi. Gentrification and Displacement. The Urban Prospect: Housing, Planning, and Economic Development in New York Vol. 8 no. 1 (January/February
Sources

2002).


Sources


Appendix 1 | Participant Recruitment Email

Hi _______ -

My name is Rebecca Gafvert, and I am a second year grad student at UC studying urban planning. ____________ gave me your contact information and mentioned that you might be able to help by participating in a survey that I am conducting for my thesis research study.

For research study I am creating a map-based tool to measure the susceptibility of neighborhoods to gentrification – a process that I have defined clearly for the purposes of this research. The first part of my research involves collecting expert opinions about factors that both cause and prevent gentrification in Cincinnati neighborhoods. My intended cohort of participants includes professionals in the fields of city planning, real estate development, housing, community and economic development, as well as active leaders in communities. I am asking participants to rank a list of factors according to how much they contribute to or prevent gentrification in Cincinnati neighborhoods. The list of factors is comprehensive and drawn from scholarly research on the subject of gentrification.

If you are willing to participate in the research, please access the survey here: https://www.surveymonkey.com/s/gentrification. All survey results will be anonymous, and the only identifying characteristic will be your professional field, so that I can ensure that I have included respondents from a wide range of backgrounds.

I would really appreciate your help. Please let me know if you have any questions or comments, or if you know of anyone else who would qualify to be a respondent.

Thanks for your time,

Rebecca Gafvert

Rebecca Gafvert
Second Year MCP Student
School of Planning, University of Cincinnati
T | 513.675.7783 E | rgafvert@gmail.com | LinkedIn
The Causes of Gentrification in Cincinnati Neighborhoods

1. Research Consent Information

Information Sheet for Research
University of Cincinnati
Department: School of Planning
Principal Investigator: Rebecca Gafvert
Faculty Advisor: Dr. Chris Auffrey

Title of Study: Mapping the Path of Gentrification: An Analysis of Gentrification Susceptibility in Cincinnati Ohio

Introduction:
You are being asked to take part in a research study. Please read this paper carefully and ask questions about anything that you do not understand.

Who is doing this research study?
The person in charge of this research study is Rebecca Gafvert of the University of Cincinnati (UC) School of Planning.

She is being guided in this research by Dr. Chris Auffrey.

What is the purpose of this research study?
The purpose of this research study is to create a map-based tool, based on the City of Cincinnati as a case study, to measure the susceptibility of neighborhoods to gentrification. For this research, gentrification is defined as private investment in declining inner-city neighborhoods along with the arrival of households of a higher socioeconomic status than previous residents, along with an increase in property values.

Who will be in this research study?
Up to 40 people will take part in this study. You may be in this study if you are a professional who works in the for-profit, nonprofit, or public sectors, in the fields of real estate development, community and economic development, housing, city planning, or a related field, within the City of Cincinnati or Hamilton County.

What will you be asked to do in this research study, and how long will it take?
You will be asked to complete an online survey. It will take about 10 minutes. You will be asked to draw on your professional and personal experience to rate a list of factors in terms of how important they are to causing or preventing gentrification in Cincinnati neighborhoods. The scale ranges from -5 (very important to preventing gentrification) to 0 (neutral) to 5 (very important to causing gentrification). You will also be asked to provide the sector and field(s) in which you work. You can stop and quit the survey at any time if you do not wish to continue. Your data will then be discarded and not stored or used further.

Are there any risks to being in this research study?
It is not expected that you will be exposed to any risk by being in this research study.

Are there any benefits from being in this research study?
You will probably not get any benefit from taking part in this study. But, being in this study may ultimately help community stakeholders such as yourself better understand what causes gentrification in Cincinnati.
Appendix 2 | SurveyMonkey Online Survey

The Causes of Gentrification in Cincinnati Neighborhoods

What will you get because of being in this research study?
You will not be paid (or given anything) to take part in this study.

Do you have choices about taking part in this research study?
If you do not want to take part in this research study you may ignore the email and the survey.

How will your research information be kept confidential?
Information about you will be kept private by not requiring respondents to supply their names and limiting access to the list of solicited respondents to the research team. Research data will be kept on a password-protected computer.

The survey responses will be kept on a computer for two years after the completion of the research. After that it will be deleted. The master list of solicited participants will be stored on a separate hard drive from the professional information provided in the survey. The data from this research study may be published; but you will not be identified by name.

Agents of the University of Cincinnati may inspect study records for audit or quality assurance purposes.

The researcher cannot promise that information sent by the internet or email will be private.

What are your legal rights in this research study?
Nothing in this consent form waives any legal rights you may have. This consent form also does not release the investigator, the institution, or its agents from liability for negligence.

What if you have questions about this research study?
If you have any questions or concerns about this research study, you should contact Rebecca Gafvert at 513.675.7783, or rgafvert@gmail.com.

Or, you may contact Dr. Chris Auffrey, at 513.556.4212 or , auffrec@ucmail.uc.edu.

The UC Institutional Review Board reviews all research projects that involve human participants to be sure the rights and welfare of participants are protected.

If you have questions about your rights as a participant or complaints about the study, you may contact the UC IRB at (513) 558-5259. Or, you may call the UC Research Compliance Hotline at (800) 889-1547, or write to the IRB, 300 University Hall, ML 0567, 51 Goodman Drive, Cincinnati, OH 45221-0567, or email the IRB office at irb@ucmail.uc.edu.

Do you HAVE to take part in this research study?
No one has to be in this research study. Refusing to take part will NOT cause any penalty or loss of benefits that you would otherwise have. You may start and then change your mind and stop at any time. To stop being in the study, you should tell Rebecca Gafvert at rgafvert@gmail.com.

BY TURNING IN YOUR COMPLETED SURVEY YOU INDICATE YOUR CONSENT FOR YOUR ANSWERS TO BE USED IN THIS RESEARCH STUDY.

PLEASE KEEP THIS INFORMATION SHEET FOR YOUR REFERENCE.
The Causes of Gentrification in Cincinnati Neighborhoods

2. Introduction to the Research

Though scholars, policymakers, planners, community activists, journalists and residents argue about the causes, effects, and even the definition of gentrification, the debate about gentrification continues. The discussion has continued because the process has continued. Gentrification is seen in neighborhoods by stakeholders from all sides of the issue.

The debate actually provides hope for communities who feel harmed by the process. Though residents may fear negative effects like displacement, there is recognition that gentrification can lead to positive change in communities. However, the effects can be managed only if the process is recognized, understood, and anticipated.

This research will develop a tool to measure and map the susceptibility of neighborhoods to gentrification.
The Causes of Gentrification in Cincinnati Neighborhoods

3. Definition of Gentrification

For this research, gentrification is defined as private investment in declining inner-city neighborhoods along with the arrival of households of a higher socioeconomic status than previous residents, along with an increase in property values.

There are many theories about the causes of gentrification, both from the supply side of the process (the property and land to be gentrified) and the demand side (the class of “gentrifiers”). This research will include both of these theories as well as other factors that have been identified in research.
## The Causes of Gentrification in Cincinnati Neighborhoods

### 4. Background Information

**1. First, in what sector do you work?**

- [ ] Public
- [ ] Private
- [ ] Non-profit
- Other (please describe)

**2. Which of these best describes your profession? You may select more than one response.**

- [ ] Real Estate
- [ ] Economic Development
- [ ] Community Development
- [ ] Housing
- [ ] Urban Planning
- Other (please describe)

By clicking “Next,” you agree to participate in this survey. All of your answers will be anonymous.
The Causes of Gentrification in Cincinnati Neighborhoods

5. Built Environment and Physical Features

1. The following factors have been identified in studies, reports, and academic literature as contributing to the process of gentrification. Some factors seem to cause gentrification and some seem to prevent it. The factors are organized by type. Think about their importance when considered together.

These factors focus on physical features - of the natural or built environment - that may cause or prevent gentrification.

Drawing on your professional and personal experience, please rate each of the following factors in terms of how important they are to causing or preventing gentrification in Cincinnati neighborhoods. In other words, do the following factors make a neighborhood more or less at risk for gentrification?

The scale ranges from -5 (very important to PREVENTING gentrification) to 0 (neutral) to 5 (very important to CAUSING gentrification).

<table>
<thead>
<tr>
<th>Factor</th>
<th>-5</th>
<th>-4</th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration of historic buildings (built before World War II)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Concentration of rental units</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td>Concentration of multi-unit buildings</td>
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<td></td>
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<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Proximity to parks or open space</td>
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<td></td>
<td></td>
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<tr>
<td>Proximity to the waterfront</td>
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<tr>
<td>Proximity to a university or college</td>
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<tr>
<td>Proximity to new rail transit stations</td>
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<td>0</td>
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</tr>
<tr>
<td>Concentration of public housing units programmed for mixed income housing (i.e. HOPE VI developments)</td>
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<td></td>
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<td>0</td>
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<td>Concentration of public housing units</td>
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<tr>
<td>Proximity to public or nonprofit recreational facilities</td>
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<tr>
<td>Proximity to planned public</td>
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</table>
### Appendix 2 | SurveyMonkey Online Survey

<table>
<thead>
<tr>
<th>The Causes of Gentrification in Cincinnati Neighborhoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>transportation system (i.e. streetcar, light rail)</td>
</tr>
</tbody>
</table>
The Causes of Gentrification in Cincinnati Neighborhoods

6. Demographics

1. These factors focus on demographic characteristics that may cause or prevent gentrification.

Drawing on your professional and personal experience, please rate each of the following factors in terms of how important they are to causing or preventing gentrification in Cincinnati neighborhoods. In other words, do the following factors make a neighborhood more or less at risk for gentrification?

The scale ranges from -5 (very important to PREVENTING gentrification) to 0 (neutral) to 5 (very important to CAUSING gentrification).

<table>
<thead>
<tr>
<th>Concentration of non-family households</th>
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<th>-2</th>
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<tr>
<td>Heterogeneous racial composition</td>
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<td>Concentration of black or other minority population</td>
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<td>Concentration of international population</td>
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<td>Concentration of non-Hispanic white population</td>
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<td>Concentration of households with three or more cars</td>
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<td>Concentration of seniors</td>
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</table>
The Causes of Gentrification in Cincinnati Neighborhoods

7. Economic Factors

1. These factors focus on economic trends that may cause or prevent gentrification.

Drawing on your professional and personal experience, please rate each of the following factors in terms of how important they are to causing or preventing gentrification in Cincinnati neighborhoods. In other words, do the following factors make a neighborhood more or less at risk for gentrification?

The scale ranges from -5 (very important to PREVENTING gentrification) to 0 (neutral) to 5 (very important to CAUSING gentrification).

<table>
<thead>
<tr>
<th>Factor</th>
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<tbody>
<tr>
<td>Concentration of private development in a low value residential area</td>
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<tr>
<td>Low dwelling value, gross rent, or mean monthly rent</td>
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<td>Concentration of foreclosures</td>
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<td>Concentration of vacancies</td>
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<tr>
<td>Low Median household income</td>
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<tr>
<td>Diversity of income level</td>
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<tr>
<td>Concentration of renters paying &gt;35% of income in rent</td>
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<tr>
<td>Concentration of owners paying &gt;35% of income for housing</td>
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<tr>
<td>Proximity to CBD</td>
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<tr>
<td>Proximity to an area with increasing job growth, especially “white collar jobs”</td>
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<tr>
<td>Proximity to pre-existing elite or gentrified areas</td>
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</tbody>
</table>
The Causes of Gentrification in Cincinnati Neighborhoods

8. Policies and Regulations

1. These factors focus on policies and regulations that may cause or prevent gentrification.

Drawing on your professional and personal experience, please rate each of the following factors in terms of how important they are to causing or preventing gentrification in Cincinnati neighborhoods. In other words, do the following factors make a neighborhood more or less at risk for gentrification?

The scale ranges from -5 (very important to PREVENTING gentrification) to 0 (neutral) to 5 (very important to CAUSING gentrification).

<table>
<thead>
<tr>
<th>Factor</th>
<th>-5</th>
<th>-4</th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of warehouse structures within or adjacent to an area zone residential</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
</tr>
<tr>
<td>Location within a (non-industrial) TIF district</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
</tr>
<tr>
<td>Proximity to a NBD accepted into the Neighborhood Business District Improvement Program or within a neighborhood eligible for Neighborhood Stabilization Program funding</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
</tr>
<tr>
<td>Proximity to brownfield redevelopment or SPUR district programmed for light industrial, park, or office use.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
</tr>
<tr>
<td>Location in a Historic District</td>
<td></td>
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<td></td>
<td></td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
</tr>
<tr>
<td>Location in a neighborhood where there is an active Community Development Corporation (CDC)</td>
<td></td>
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<td></td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
</tr>
</tbody>
</table>
The Causes of Gentrification in Cincinnati Neighborhoods

9. Thank You

Your answers will be very helpful for this research.

If you have any questions about the research, please contact Rebecca Gafvert at rgafvert@gmail.com.
### Gentrifiable Census Tracts and Neighborhoods

<table>
<thead>
<tr>
<th>Neighborhood</th>
<th>Median income as percent of AMI</th>
<th>Census Tract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avondale/North Avondale</td>
<td></td>
<td>53 34</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>48</td>
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<td>55</td>
<td>68</td>
</tr>
<tr>
<td></td>
<td>57</td>
<td>69</td>
</tr>
<tr>
<td>Bond Hill/Paddock Hills</td>
<td>79</td>
<td>63</td>
</tr>
<tr>
<td>Camp Washington</td>
<td>66</td>
<td>28</td>
</tr>
<tr>
<td>College Hill</td>
<td>78</td>
<td>84</td>
</tr>
<tr>
<td>Corryville</td>
<td>67</td>
<td>32</td>
</tr>
<tr>
<td></td>
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<td>33</td>
</tr>
<tr>
<td>East Price Hill</td>
<td>78</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>69</td>
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</tr>
<tr>
<td></td>
<td>70</td>
<td>95</td>
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<td>Evanston</td>
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</tr>
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<td></td>
<td>59</td>
<td>39</td>
</tr>
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<td>Evanston/East Walnut Hills</td>
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<td>41</td>
</tr>
<tr>
<td>Fairview/Clifton Heights</td>
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<td>25</td>
</tr>
<tr>
<td></td>
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<td>26</td>
</tr>
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<td>53</td>
<td>27</td>
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<td>Fay Apartments</td>
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<td>Linwood</td>
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<td>47.02</td>
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Appendix 4 | MAP 1: Concentration of historic architecture

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 2: Proximity to parks and open space

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 3: Proximity to the waterfront

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 4: Proximity to colleges and universities

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 5: Proximity to Public Housing Programmed for Mixed-Income

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 6: Concentration of Public Housing Units

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 7: Proximity to public recreation facilities

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 8: Proximity to proposed streetcar route

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 9: Low Dwelling Value or Gross Rent

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 10: Concentration of Vacancies

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 11: Proximity to the Central Business District

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 12: Proximity to an area with increasing job growth, especially “white collar jobs”

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 13: Proximity to already gentrified areas or areas where no disinvestment has occurred

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 14: Location in a (non-industrial) TIF District

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 15: Location in a Neighborhood Eligible for Neighborhood Stabilization Program Funding

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 16: Location in an Historic District

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 4 | MAP 17: Location in a Neighborhood with an Active Community Development Corporation

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 5 | MAP 1: Composite Map, Weighted Overlay

COMPOSITE 1 - Weighted Overlay (positive factors only)
- Red: 1 (low susceptibility)
- Orange: 2
- Green: 3
- Green: 4 (high susceptibility)

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.
Appendix 5 | MAP 2: Composite Map, Weighted Sum

Source: Cincinnati Area GIS (CAGIS) 2006, independent research 2011.