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Title

Gentrification, Displacement, and the Role of Public Investment

Permalink

<https://escholarship.org/uc/item/0mh6f3tr>

Journal

Journal of Planning Literature, 33(1)

ISSN

0885-4122 1552-6593

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Publication Date

2018-02-01

DOI

10.1177/0885412217716439

Peer reviewed

Gentrification, Displacement, and the Role of Public Investment

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Published in Journal of Planning Literature, 2018, Vol 33(1): 31-44

Abstract

Scholarly interest in the relationship between public investments and residential displacement dates back to the 1970s and the aftermath of displacement related to urban renewal. A new wave of scholarship examines the relationship of gentrification and displacement to public investment in transit infrastructure. Scholarship has generally conflated gentrification and displacement; however this review argues for a clearer analytical distinction between the two. Although the displacement discussion in the U.S. began with the role of the public sector and now has returned to the same focus, it will be necessary to overcome methodological shortcomings to arrive at more definitive conclusions about the relationship.

Introduction

In the United States, the ever-changing economies, demographics, and physical forms of metropolitan areas have fostered opportunity for some and hardship for others. These differential experiences “land” in place, and specifically in neighborhoods. Scholars have devoted volumes to analyzing neighborhood decline, subsequent revitalization, and gentrification as a result of government, market, and individual interventions. Today, with increasing attention to millennial and baby boomer migration to central city neighborhoods, popular and scholarly conversations about gentrification have returned to the fore.

The definitions and impacts of gentrification have been debated for at least fifty years. Central to these debates are the differential impacts on incumbent and new residents, and questions of who bears the burden and who reaps the benefits of change. Consistently activists, residents, and community groups identify displacement as a pressing concern. Anxieties about residential, cultural, and job displacement reflect the lived experiences of neighborhood change and the social memory of displacements past. These changes stem not just from individual action and market forces, but also government intervention. The public sector makes investments to stimulate and respond to renewed interest in urban living; these investments put government at risk of becoming an agent of gentrification and displacement. However, the extent to which public investments catalyze residential displacement is not well defined or quantified in the social science research.

In this article, we review the body of research on residential displacement related to gentrification and public investment. Public investment encompasses a wide array of direct activities (e.g., urban redevelopment, open space revitalization, construction of infrastructure) and indirect policy actions (e.g., land assembly, subsidies, zoning). In this article we narrow the focus to investments in transportation infrastructure, specifically rail transit. In recent years, public spending in transit has grown, while other public spending has stagnated.¹ By tracing

attempts to define and measure residential displacement, we highlight significant methodological limitations including data availability and the timing of displacement, which potentially mask the impacts of public investments on communities.

Given renewed public investment in the urban core, and in particular the great popularity of transit-oriented development as a municipal smart growth strategy, the time is ripe to review the concepts and literature to inform policy and practice surrounding gentrification, residential displacement, and the role of public transportation investments. This literature review brings together extensive bodies of scholarship that have sought to examine these issues. First, we review definitions and approaches to studying gentrification and residential displacement. We argue that residential displacement is often a key characteristic of gentrification, yet is also analytically distinct. Second, we examine the range of studies that have tried to measure the magnitude of gentrification and residential displacement. Then, we examine the role of public investments in transportation infrastructure on neighborhood change. We conclude with a series of questions to guide future research.

Defining Residential Gentrification

The first documented use of the term “gentrification” (Glass 1964) describes the influx of a “gentry” to lower income neighborhoods in London during the 1950s and 60s. Osman (2011) documents even earlier instances of class-based movement into inner city areas, specifically the history of “brownstoning” in Brooklyn in the 1940s. Yet, Glass’ effort generally benchmarks the start of gentrification as a field of study. Since her identification of the phenomenon, scholars have attempted to define the complex process of gentrification, studying it through a range of methodological approaches and with little unanimity.

Depending on the time and place, gentrification has been seen as a tool, goal, outcome, or unintended consequence of revitalization processes in declining urban neighborhoods, which are defined by their physical deterioration, concentrations of poverty, and racial segregation of people of color. Scholars have sought nuanced descriptions and explanations of gentrification, identifying the spatial, physical, demographic, and economic dimensions of this kind of neighborhood change.

Gentrification is tied to historical patterns of residential segregation; segregated neighborhoods experience the “double insult – a ‘one-two’ knockout” of neglect and white flight in the 1950s through 1970s followed by the forces of gentrifying revitalization since the 1980s (Powell and Spencer 2002, 437). Government and policy have played a key role in creating these patterns by directing public and private capital in ways that advantage some and disadvantage other neighborhoods (Rose 1984; Harvey 2001; Smith 1982). This link to neighborhood disinvestment and subsequent decline suggests that gentrification occurs in lower-income inner city neighborhoods (Lees, Slater, and Wyly 2008; Hamnett 1991; Lees 2000). However, others also identify gentrification in middle- or higher-income urban neighborhoods (Lees 2003), suburban neighborhoods (Charles 2011) and rural areas (Oberg and Nelson 2010; Phillips 2004; Ghose 2004). Regardless of specific geographic location, gentrification occurs in places with relatively affordable housing stock, and often results in physical renovation of deteriorated housing and infrastructure (Hamnett 1984; Lees, Slater, and Wyly 2008).

Smith (1996) emphasizes a nexus of actors that facilitate the gentrification process – developers, builders, mortgage lenders, government agencies, and real estate agents. Government – at the local, state, and federal levels – sets the conditions for and catalyzes gentrification processes through public subsidy and policy. Government working in conjunction with private actors makes up the larger political economy that aims to accumulate capital through land use management and city development, echoing the idea of the city as a “growth machine” (Logan and Molotch 1987; Smith 1996).

The gentrification process also requires in-movers, who scholars generally describe as those with higher incomes and/or educational attainment levels than incumbent residents (Hamnett 1991). To attract in-movers, neighborhoods need to offer job or recreational opportunities and low or appreciating housing prices (Lees, Slater, and Wyly 2008); stabilized negative social conditions (Ellen, Horn, and Reed 2016); and some lifestyle or aesthetic appeal (Brown-Saracino 2009). Some gentrifiers express a lifestyle preference for gritty, authentically “urban” experiences (Ley 1996; Zukin 1982) even acting as agents to preserve some nostalgic, authentic character of a place (Brown-Saracino 2009). Some also identify political positions for class or racial and ethnic integration as a motivation (Brown-Saracino 2009; Ley 1996).

The motivations of gentrifiers, driven by a combination of cultural preferences, political orientations, and economic needs, vary. Some scholars argue that gentrification occurs in “waves,” in which the first in-movers – often referred to as “pioneers” – are lower-income people with higher levels of educational attainment, such as artists. Their housing location choices are often driven by affordability considerations, as well as aesthetic preferences and higher tolerance or desire for racial, ethnic, and/or class diversity (Lees, Slater, and Wyly 2008). The driving economic needs of first-wave gentrifiers thus are closely tied to land values, housing location, and individuals’ position within the labor market (Hamnett 2003). Second- and third-wave gentrifiers may be higher income professionals, who arrive after the first wave has helped stabilize and sanitize the neighborhood.

Regardless of their motivations, in-movers’ presence can improve the physical environment. These physical upgrades are a result of both individual actions as well as state-sponsored investments in housing and infrastructure, and improved services and maintenance (Davidson and Lees 2005; Bridge, Butler, and Lees 2012; Lipman 2008; Freeman 2006). Cost of living in the neighborhood increases, and this may contribute to displacement (Hamnett 1984).

Gentrification is a particular kind of neighborhood revitalization, distinct because of its possible displacement effects. Under an alternative kind of revitalization – incumbent upgrading – the rise of neighborhood consciousness and advocacy to improve local conditions catalyzes existing residents to make improvements (Clay 1979). Incumbent residents stay and reap the benefits of neighborhood improvements, whereas in gentrification they can be displaced as the social and economic environment of neighborhoods shift, and the public sector does not take action to protect long-term residents.

Gentrification scholarship has focused on inter-racial or –ethnic dynamics of neighborhood change, particularly where White in-movers arrive in neighborhoods with predominantly residents of color. Recent studies on the prevalence of White in-movement are mixed, however. Some studies find trends of greater White in-migration into poor, non-White neighborhoods (Crowder and South 2005; McKinnish, Walsh, and Kirk White 2010), resulting in shifting racial

compositions in gentrifying neighborhoods and assumed displacement of non-White incumbent residents. Other research, however, suggests few differences by race among households moving into and out of gentrifying and non-gentrifying neighborhoods (Ellen and O'Regan 2011) and that concentrations of African American residents may actually deter gentrification (Hwang and Sampson 2014).

Some scholars further complicate the understanding of these demographic shifts. Using qualitative methods, these studies look at cases of Black in-movers into predominantly low-income Black neighborhoods (Boyd 2005; Moore 2009; Pattillo 2008). These studies tie neighborhood-specific processes to larger structural issues of residential segregation and exclusion. They argue that Black in-movers feel more comfortable relocating to predominantly Black neighborhoods because of a history of housing discrimination in predominantly White neighborhoods and the suburbs. Further, Black gentrifiers may see their relocation in inner cities as a project of "racial uplift" for their lower income Black counterparts (Boyd 2005).

Measuring and Predicting Residential Gentrification

The complexity in defining and documenting gentrification qualitatively has yielded similarly complicated efforts at quantitatively measuring and predicting gentrification. While researchers who use qualitative methods focus on the nuances of how gentrification unfolds over time, most quantitative analyses treat gentrification as an outcome, rather than a process. Despite the fact that scholars have focused on the role of government, policy, and public investment in spurring gentrification since the 1970s, attempts to predict gentrification have largely failed to incorporate any measures of public sector action.

A number of efforts aim to assess the past and current extent of gentrification, and also to develop a set of predictive models for where gentrification may occur in the future. Scholars incorporate a diversity of metrics based on what data is available. Some combine indicators to capture the multiple dimensions of the phenomenon, using data on income, race, educational attainment, housing values, rent, and various proxies for investment or disinvestment. Others use simple metrics of relative income growth for ease of analysis and comparison. Many studies quantify gentrification by census tract, based on changes over time that exceed either absolute thresholds or benchmarked to changes at the metropolitan or regional level.

In one of the earliest quantifications of neighborhood gentrification, Bradway et al. (1982) look at New Orleans census tracts that were "eligible" to be gentrified based on the renovation potential of the housing stock (i.e., age and median value). Analyzing property transaction data, they estimate the amount of neighborhood renovation as a proxy for gentrification and conduct a regression analysis to determine which of a set of 19 independent locational, social, and housing stock variables significantly predicted renovation. Locational variables are the only proxy for public investment (in the form of parks and public housing). Educational attainment, owner occupancy, and high percentage of multi-unit buildings significantly predict renovation, whereas the presence of public housing negatively predicts it.

Galster and Peacock (1986) ask if the operational definition of gentrification impacted the extent, location, and causal factors associated with the phenomenon. The authors identify a census tract's eligibility to gentrify based on its aggregate socioeconomic status in 1970 (i.e., income, home value, educational attainment and percent White). They analyze socioeconomic and real

estate change from 1970 to 1980 in Philadelphia, PA for: a) proportion Black, b) proportion college-educated, c) household incomes, and d) property values. The only potential measures of public investment are proxies for proximity to parks and universities. Varying the stringency of each of the four gentrification indicators, their sensitivity analysis indicates a wide variation in the number and location of gentrified tracts, finding that as few as six percent and as many as 82 percent of eligible tracts have gentrified during the time period. They test 12 predictive characteristics on each of these definitions, finding little relationship and wide variability.

Melchert and Naroff (1987) use block-level census data to construct a predictive model of gentrification in Boston, MA. In their construction of a gentrification index, the authors rely heavily on Clay's (1979) definition. They look at central city locations and combined 41 variables that characterize the block's amenities (e.g., parks), social composition (e.g., percent White), economic status (e.g., median income) and housing conditions (e.g., percent of units without plumbing). The only indicator of public investment is open space. The authors identify four phases of gentrification, defined by the gentrifiers and the percent of the housing stock gentrified. Yet, when modeling the phenomenon, they characterize gentrification as a dichotomous variable, having either happened or not. Ultimately ending up with six predictive variables, they determine that the "gentry" in Boston preferred: an older housing stock; proximity to open space of six to ten acres; to live near downtown, though not too close; and neighborhoods with depressed housing values.

Freeman (2005) defines gentrifying neighborhoods as being: (1) central city neighborhoods (2) initially populated by low-income households, that had (3) experienced disinvestment (i.e., mostly older housing stock), which subsequently experienced (4) an influx of the relatively affluent (i.e., increased educational attainment), and (5) an increase in private investment (i.e., housing price appreciation). He includes no public investment variable. Freeman finds that 31 percent of eligible tracts in the United States gentrified in the 1990s. Updating this data for Governing Magazine's analysis of the Country's 50 largest metropolitan areas, Maciag (2015) finds that nearly 20 percent of eligible neighborhoods gentrified since 2000. Yet some cities had much higher rates of gentrification with over 50 percent of eligible tracts in Minneapolis, Seattle, Washington, DC and Portland gentrifying between 2000 and 2013.

Finally, in his analysis of neighborhood socioeconomic change between 1990 and 2010, Landis (2015) attempts to come up with consistent indicators across 70 metropolitan areas. He defines gentrifying tracts as those with low median incomes in 1990 that grew by more than two deciles over the time period. Using this income-only definition, he found that 21 percent of eligible tracts gentrified in the 1990s and 2000s. Tracts with higher proportions of White residents, college-educated residents, and pre-WWII housing were more likely to have gentrified. Yet his predictive model only predicts four percent of gentrifying tracts. Despite incorporating variables measuring public policy related to growth management, the study does not include any measures of public investment.

Defining Residential Displacement

Displacement is a central concern of gentrification. However, we argue that it is also a distinct phenomenon that can occur even in the absence of gentrification.

Scholarly interest in defining, measuring, and predicting residential displacement dates to the mid-20th century, when the federal Urban Renewal program, local redevelopment efforts, and interstate highway construction forcibly displaced communities of color and low-income communities in urban neighborhoods en masse. Following these policy efforts, urban activists were particularly sensitive to the risks of and the role of government in facilitating displacement (Hartman 1981).

However, in the 1970s, the nature of displacement was no longer solely driven by forced removal through public action. Instead, a growing “back to the city” trend perceived to be largely driven by private actions and individual preferences (albeit with significant yet perhaps more subtle influences from the public sector) began to dominate public concern about neighborhood change and residential displacement (Clay 1979). Today’s landscape of downtown revitalization and migration of both millennials and retiring Baby Boomers to central cities (Ehrenhalt 2012) has renewed interest not only in private actions and individual preferences, but also in the role that government and public investments may spur residential displacement.

In 1978, the U.S. Department of Housing and Urban Development (HUD) sponsored the first of a series of reports on revitalization and displacement called “Urban Displacement: A Reconnaissance” (Grier and Grier 1978). In this report, the authors list 25 factors that might lead to the involuntary movement of people from their place of residence. These factors imply a diverse set of actors: building-owners who initiate condominium conversion or rent increases; local government conducting proactive code enforcement and planning decisions; and banks engaging in redlining practices, to name a few. In an effort to provide a definition of displacement that encompasses these various drivers, Grier and Grier (1978, 8) propose the following, which numerous researchers and agencies have adopted subsequently:

“Displacement occurs when any household is forced to move from its residence by conditions which affect the dwelling or immediate surroundings, and which:

- 1) are beyond the household’s reasonable ability to control or prevent;
- 2) occur despite the household’s having met all previously-imposed conditions of occupancy; and
- 3) make continued occupancy by that household impossible, hazardous or unaffordable.”

Although they use the term “forced” in their definition of displacement, Grier and Grier do not equate “forced” with involuntary displacement. In fact, they describe the fact that many who are displaced are subject to a variety of actions or inactions that can be explicit or implicit. They (1978, 3) conclude:

“For most residents to move under such conditions is about as ‘voluntary’ as is swerving one’s car to avoid an accident. By the time the landlord issues notices of eviction, or the code inspector posts the structure as uninhabitable, few occupants may be left. Therefore, we cannot define displacement simply in terms of legal or administrative actions – or even draw a clear-cut line between ‘voluntary’ and ‘involuntary’ movement.”

Newman and Owen (1982) concur that the distinction between voluntary and involuntary moves is false: “low-income households who experience extremely large rent increases may technically ‘choose’ to move, but the likelihood that they had any real alternative is very small” (p.137).

In an effort to categorize the causes of displacement, Grier and Grier (1978) distinguish between disinvestment displacement, reinvestment displacement, and displacement caused by enhanced housing market competition. Disinvestment displacement occurs when the value of a property does not justify investing in its maintenance, thereby resulting in decay and abandonment. Reinvestment displacement refers to the case where investments in a neighborhood result in increased rents to a point where it is profitable to sell or raise the rent forcing tenants to leave. The authors were careful to note that “unrelated as they seem, these two conditions of displacement may be successive stages in the cycle of neighborhood change” (Grier and Grier 1978, 3). For example, disinvestment displacement may make way for new in-movers to purchase inexpensive housing, resulting in reinvestment and subsequent displacement. Finally, they argue that enhanced housing market competition, reflecting broad shifts in the national and regional housing market, may have an even larger impact than disinvestment or reinvestment forces.

The distinctions in these three types of displacement pressures (disinvestment, reinvestment and enhanced market competition) resurface when Marcuse analyzed displacement in New York City (1986, 1985). Marcuse argues that when looking at the relationship between gentrification and displacement, one must first consider the disinvestment of urban neighborhoods and subsequent displacement, which creates “vacant” land ripe for investment through gentrification. From this perspective, gentrification can happen long after displacement occurs. Therefore, most gentrification-induced displacement studies significantly underestimate the magnitude of the problem by only looking at “last resident displacement.” Instead, he argues that “chains” of displacement must be considered. He further distinguishes between displacement due to physical reasons (e.g., water is turned off, evictions, rehabilitation, etc.) versus those due to economic causes (e.g., rising rent). In addition, Marcuse introduces the concept of “exclusionary displacement” to encompass situations when a household is not permitted to move into a neighborhood based on conditions that are beyond their control (e.g., price increases).

Marcuse also suggests that displacement affects many more than those physically displaced at any moment:

“When a family sees its neighborhood changing dramatically, when all their friends are leaving, when stores are going out of business and new stores for other clientele are taking their places (or none are replacing them), when changes in public facilities, transportation patterns, support services, are all clearly making the area less livable, then the pressure for displacement is already severe” (Marcuse 1986, 57).

Davidson (2009) expands on this idea; for him, the over-emphasis on spatial dislocation in displacement literature ignores the social meaning and practices attached to the lived experiences of neighborhoods and place. Thus, “it is impossible to draw the conclusion of displacement purely from the identification movement of people between locations. People can be displaced—unable to (re)construct place—without spatial dislocation” (2009, 228).

Finally, with their focus on evictions, Desmond and Shollenberger (2015) remind researchers that forced displacement is endemic to poor communities and not confined to gentrifying neighborhoods. The authors focus on forced displacement through both formal evictions processed through the court system and informal evictions, which are often “less expensive and more efficient than formal evictions” (Desmond and Shollenberger 2015, 1754). In their analysis of survey data on the reasons for people’s moves in Milwaukee, they clarify the overly simplified dichotomy of involuntary/voluntary moves by reclassifying some seemingly voluntary reasons as responsive to outside forces. They define these responsive moves as “motivated by housing or neighborhood conditions. These include rent hikes, a deterioration in housing quality, escalating violence in the neighborhood, domestic violence” (Desmond and Shollenberger 2015, 1758). When taking into account the magnitude and impacts of forced and responsive displacement in poor Black neighborhoods, Desmond argues that “eviction is to women what incarceration is to men: a typical but severely consequential occurrence contributing to the reproduction of urban poverty” (Desmond 2012, 88).

Based on this review of the literature, we categorize the various catalysts for displacement from housing units and neighborhoods (see Table 1). We identify forced and responsive causes and further differentiate between direct-physical, indirect-economic, and exclusionary causes.

Table 1 Categories of Displacement

	Forced	Responsive
Direct or Physical Causes	<ul style="list-style-type: none"> • Formal eviction • Informal eviction (e.g., landlord harassment) • Landlord foreclosure • Eminent domain • Natural disaster • Building condemnation 	<ul style="list-style-type: none"> • Deterioration in housing quality • Neighborhood violence or disinvestment • Removing parking, utilities, etc.
Indirect or Economic Causes	<ul style="list-style-type: none"> • Foreclosure • Condo conversion 	<ul style="list-style-type: none"> • Rent increase • Increased taxes • Loss of social networks or cultural significance of a place
Exclusionary Causes	<ul style="list-style-type: none"> • Section 8 discrimination • Zoning policies (restriction on density, unit size, etc.) • NIMBY resistance to development 	<ul style="list-style-type: none"> • Unaffordable housing • Cultural dissonance • Lack of social networks

As illustrated, the reasons for displacement may or may not result from gentrification. While displacement may be a defining characteristic and outcome of gentrification, this categorization clarifies how displacement can occur in the absence of gentrification, and that scholarship requires advanced tools to define and measure these analytically distinct phenomena.

Measuring Residential Displacement

Measuring residential displacement is challenging, akin to “measuring the invisible” as the population under question has moved away from the place of study (Atkinson 2000). Scholars use a variety of qualitative and quantitative methods to answer questions across scales that address who and how many people are displaced, what causes displacement, and what are some consequences of displacement. These studies stem from an interest in neighborhood investment and disinvestment by both the private and public sectors.

Newman and Owen (1982) is perhaps one of the first comprehensive analyses of displacement. They use longitudinal data from the Panel Study on Income Dynamics to estimate the scale, nature, and impacts of displacement. They categorize moves as displacement-related when people move because of the conditions of the house or neighborhood, eminent domain, and eviction by the landlord because of sale or reoccupation. While they include public action as a cause for displacement (i.e., eminent domain) they do not explicitly look at the impacts of public investment. Newman and Owens find that the average annual rate of displacement between 1970 and 1977 was roughly five percent of all families that moved.

In measuring various forms of displacement in New York City in the 1970s, Marcuse examines disinvestment-related displacement from abandonment by looking at Census data on the loss of units (Marcuse 1986). He argues that the actual loss underestimates the displacement from abandonment, due to the spillover effects from vacant property on neighborhood livability conditions. In addition to abandonment, he quantifies displacement from rehabilitation of multifamily units, the loss of single-room occupancy units, changes in rent, condominium conversions, and landlord harassment. Despite potential duplication between the various categories, he estimates a range of 40,000 and 100,000 annual displacement-related household moves in the 1970s, roughly eight to 21 percent of the estimated 476,011 total moves in New York City in 1979.

In a series of quantitative and qualitative analyses for New York City, Newman and Wyly classify displacement as households that move for reasons of housing expense, landlord harassment, and displacement by private action (i.e. condo conversion). Looking at unique survey data from the New York City Housing and Vacancy Survey, they find that between six and ten percent of all moves in New York City from 1989 to 2002 were due to displacement. They argue that this number could be a significant under-estimate due to the inability of survey data to capture “doubling up,” homelessness, or moves out of the region. Furthermore, they find that neighborhood context mattered; for instance, more than 15 percent of all renters moving into the Williamsburg/Greenpoint neighborhood in Brooklyn were displaced from their previous homes, whereas less than four percent of arrivals in the Flatlands/Canarsie section of Brooklyn were displaced. In a subsequent analysis, Wyly, et al. (2010) again look at New York housing survey data, and when comparing their results to local eviction data, estimate that the survey misses twelve out of thirteen displacees. They also find that poor households were nearly twice as likely to be displaced as non-poor households.

Finally, in their survey of renters in Milwaukee, WI, Desmond and Shollenberger (2015) find that more than one in eight Milwaukee renters experienced at least one forced move (formal or informal eviction, landlord foreclosure, or building condemnation) over a two-year time period. The rates differed by race/ethnicity; they found that eight percent of White renters, 15 percent of Black renters, and 29 percent of Hispanic renters experienced forced moves. Nearly half of all

forced moves were informal evictions. Formal evictions, on the other hand, were less common, constituting less than one-quarter of forced moves. Out of all moves in the previous year, they find that roughly 11 percent were due to displacement. In contrast, the American Housing Survey (AHS) of 2009, estimates between two and five percent of moves were due to displacement. Desmond and Shollenberger (2015) argue that the AHS under-estimates displacement due to open-ended questions that do not adequately capture informal evictions.

Together these studies demonstrate the complexity of adequately quantifying the scale of the displacement phenomenon. Nevertheless, researchers find that roughly between five and 10 percent of moves are due to reasons beyond a household's control, which can vary substantially between neighborhoods and socioeconomic groups.

Gentrification-induced Residential Displacement

The vast majority of research on displacement has focused on displacement as an outcome of neighborhood revitalization, upgrading, and/or gentrification. Both the methods and the definitions of gentrification and displacement in these studies range as widely as those identified above. Here we review this set of studies, with an aim to understand their differences and inability to conclusively establish the relationship between gentrification and displacement.

Early on, researchers focus on surveying people who moved into and out of revitalizing neighborhoods, examining neighborhoods experiencing increased private and/or public investment. In a 1981 survey of current and former residents (NIAS 1981) of the rapidly revitalizing Hayes Valley neighborhood of San Francisco, researchers find that from 1975-1979, one out of four movers (both out- and intra-movers) from their sample were displaced. Displacees were more likely to be African American, less educated, poor, renters, elderly, and living alone in comparison to in-movers and stayers. Researchers also find that displacees moved out for a variety of reasons including investment-related causes (e.g., rising rent), but also disinvestment-related reasons (e.g., poor housing quality), calling into question both the direction and timing of the relationships between neighborhood revitalization, disinvestment, and displacement. In a related study, Schill, et al. (1983) surveyed out-movers from nine revitalizing neighborhoods in five cities. They find that 23 percent of out-movers from 1978-80 were displaced. Overcrowding, frequency of previous moves, unemployment, and marital status predicted displacement. Despite the high rates of displacement, the authors acknowledge the potential for under-sampling of the most vulnerable and more transient households.

In London, Atkinson (2000) defines gentrification by increases in professionalization in the city's boroughs without regard to private or public investment. Using synthetic cohorts of census data, he finds clear links between the rise in gentrification and displacement of vulnerable groups in London. Analyzing similarly large areas for Boston, Vgdor, et al. (2002), ask if low-status households were more likely to exit housing units in gentrifying areas relative to other parts of the Boston metropolitan area. Combining data from the American Housing Survey with aggregate data from the Census, they ran a regression of residential stability on location in gentrified zones (defined by demographic characteristics of the residents, not private or public investment flows). They find that housing turnover was greater in gentrifying zones; however, low educational attainment appears to predict housing stability rather than turnover, when interacting with location in a gentrified zone.

Freeman and Braconi (2004) use New York City survey data to compare exit rates of poor households in gentrifying sub-boroughs to the exit rates of the poor in non-gentrifying low-income neighborhoods from 1991-1999. They find that poor households residing in gentrifying neighborhoods were less likely to move than poor households residing elsewhere. However, people moving into gentrifying neighborhoods were of a higher socio-economic status than those leaving, indicating possible exclusionary displacement. They do not analyze the effects of public investment. Newman and Wyly (2006) argue that the “gentrified” neighborhoods of New York in Freeman and Braconi’s study had already seen the displacement of poor households in decades earlier and that the non-gentrifying poor neighborhood control groups included residents of some of the poorest areas of the city with respective high turnover rates, creating an artificially high standard to use as a control.

Other studies have looked nationally to try to identify the factors resulting in displacement, capitalizing on different datasets. Freeman (2005) analyzes the Panel Study on Income Dynamics data and compares displacement in poor gentrifying census tracts (defined by both demographic shifts and private investment) to poor census tracts that did not gentrify. He finds that rental inflation was a significant predictor of mobility, and displacement was higher in gentrifying as opposed to non-gentrifying tracts. Although positive and statistically significant, Freeman dismisses the relationship between gentrification and displacement as small. The analysis does not include independent variables measuring public investment.

McKinnish et al. (2010) analyze the confidential national Census Long Form data from 1990-2000 to understand who moves into and out of gentrifying neighborhoods (defined by demographic characteristics). The authors find that migrants into gentrifying tracts were more likely to be higher income, college educated, younger, and less likely to have children and be immigrants when compared to non-gentrifying low-income tracts. They also find statistically significant higher exit rates of low-education Black and Latino residents from gentrifying neighborhoods.

Finally, Ellen and O’Regan (2011) use the American Housing Survey to compare characteristics of households that moved into or out of gentrifying neighborhoods (defined by median household income gains). They find that neighborhood income gains did not predict 2-year household exit rates, even among vulnerable groups. Neither McKinnish et al. nor Ellen and O’Regan explore the role of private or public investment in their analyses.

Using a unique individual-level dataset on credit scores, Ding, et al. (2015) largely confirm Ellen and O’Regan’s (2011) study, finding that low-credit score residents of gentrifying neighborhoods (defined by home values) were no more likely to move out than similar residents of non-gentrifying neighborhoods. They were, however, more likely to move to lower-income neighborhoods. When differentiating between different stages of gentrification, the authors find that low-score residents were slightly more likely to move out of neighborhoods that had been gentrifying for an extended period of time (i.e., two decades or more). In addition, they find that in-movers to the gentrifying neighborhoods were more likely to be of higher income levels, suggesting that exclusionary displacement is occurring. This study only captures moves by residents with a credit score, and thus may be missing displacement for the lowest-income residents and many renters. In a subsequent study of Philadelphia, Chizeck (2016) finds that

gentrifying neighborhoods lost low-cost housing at five times the rates of non-gentrifying neighborhoods.

Finally, in analyzing evictions cases in Los Angeles in the 1990s, Sims (2016) finds that gentrification explains only one of the four “displacement geographies,” while the other three are non-gentrifying or pre-gentrifying contexts related to capital accumulation facilitated by public and private institutions. Sims argues that abnormally high rates and concentrations of evictions can thus represent restructuring housing and labor markets, and possibly even the strategic action of landlords, rather than simply the individual behavior of tenants.

Although varied in their approaches and results, one consistent finding across these studies is that in-movers to gentrifying neighborhoods are wealthier, Whiter, and of higher educational attainment than incumbent residents, and out-movers are more likely to be renters, poorer and people of color than in-movers (see Table 2). The research also consistently shows that rent appreciation predicts displacement.

However, the studies are not consistent in their findings that gentrification induces displacement. Why the discrepancy? One possible explanation for the unexpected residential stability is that the normal neighborhood turnover process slows in neighborhoods that are gaining new amenities (along with new residents); residents try harder to stay in the neighborhood, even if it means paying more rent or doubling up (Chapple 2014; Freeman 2006). Yet, these higher rent burdens are unlikely to be sustainable over the long term, resulting in displacement in a longer-term framework than is typically measured.

Other reasons for the inconclusive evidence on the links between gentrification and displacement include definitional and methodological shortcomings of the research. For instance, quantitative analyses have systematically failed to characterize the various stages of gentrification that a neighborhood may be experiencing, choosing instead to categorize gentrification as a static outcome. This dichotomy also leaves out the potential for gentrification-related displacement to precede gentrification, especially when property owners attempt to vacate units in anticipation of rising rents and neighborhood change. Furthermore, the vast majority of studies narrowly defines displacement under what Marcuse would classify as physical or economic displacement, but ignores or dismisses exclusionary displacement as simply succession and replacement. How we define the phenomenon matters for how we interpret the results.

Another key limitation is the lack of a consistent and clearly identified comparison group. While some argue for the comparison of poor gentrifying neighborhoods to non-gentrifying poor neighborhoods (i.e., Freeman 2005), others believe displacement rates should be compared to more stable neighborhoods (i.e., Newman and Wyly 2006). These comparison groups are important because they not only provide a context against which to evaluate results, but also reveal belief systems about our understanding of how neighborhoods should function.

Finally, and perhaps due to the inherent difficulty of quantification, we found no quantitative studies that attempt to analyze the scale of what Davidson (2009) might call “non-spatial displacement,” namely the loss of social meaning, cultural practices, and social networks associated with gentrifying neighborhoods. Notably, we also found little or no attempt to identify the role of public investment in gentrification or displacement.

Table 2 Quantitative Studies on the Relationship between Gentrification and Displacement

Author	Year	Operationalization of Displacement	Operationalization of neighborhood ascent	Key Findings
NIAS	1981	Any non-voluntary reason for moving except lifecycle factors (i.e., divorce)	N/A	One out of four of the out- and intra-neighborhood movers were displaced. Displacees were more likely to be African American, less educated, poor, renters, elderly and living alone in comparison to in-movers and stayers.
Schill and Nathan	1983	Move outs because rent was increased, were evicted or landlord sold the house	N/A	23 percent of out-movers from 1978-80 were displaced. Crowding, frequency of previous moves, unemployment and marital status predicted displacement.
Atkinson	2000	Loss of vulnerable populations (e.g., working class, renters, and non-white).	Increases in the number of professionals and managers in the area	Larger outflow of working class than inflow into gentrifying areas.
Vigdor	2001	Any exit from a gentrifying zone over a 3-4 year period.	Increases in educational attainment and owner-occupied housing values	Housing turnover was greater in gentrifying zones. Low educational attainment predict housing stability rather than turnover when interacted with location in a gentrified zone.
Freeman & Braconi	2004	Exit rates of poor households	Growth in white populations, rent, educational attainment and median income in contrast to other NYC neighborhoods	Poor households residing in gentrifying neighborhoods were less likely to move than poor households residing elsewhere. People moving into gentrifying neighborhoods were of a higher socio-economic status than those leaving.
Freeman	2005	Moves for reasons including: downsize, price, eviction, got divorced, or joined the armed forces.	Disinvested (less new housing stock), low-income, central city tracts that experienced increased investment (housing price appreciation) and educational attainment	Rental inflation was a predictor of mobility, and displacement was higher in gentrifying as opposed to non-gentrifying tracts. Poverty rates declined and educational levels increased for in-movers into gentrifying. Moves originating in gentrifying neighborhoods were more likely to end outside of the neighborhood.
Ellen & O'Regan	2011	2-year household exit rate	Neighborhoods experiencing a five percent gain in income relative to the metropolitan area	Exit rates vary from 20-30 percent and do not differ significantly between gaining and non-gaining neighborhoods. Entrance of higher income homeowners and exit of low-income renters were an important source of income gains.
McKinnish, Walsh, & White	2010	Exit rates of vulnerable population groups	Low-income tracts in 1990 where the average household income had increased by over \$10,000 in 2000	Higher exit of low-education and retention of high-education households in gentrifying neighborhoods. In-movers into gentrifying tracts were more likely to be higher income, college educated, younger when compared to non-gentrifying low-income tracts.
Ding	2015	Exit rates for low credit score residents	Lower household income, growth in rent or home value and increase in share of college-educated residents	Low-income residents in gentrifying neighborhoods were not disproportionately likely to move out. When less advantaged residents do move, they are more likely to move to lower-income neighborhoods. In-movers to the gentrifying neighborhoods are likely to be of higher income levels.
Sims	2016	Eviction rates	Not quantified, eviction-hot spot neighborhoods were contextualized and analyzed through literature	Gentrification explained only one of the four displacement geographies, while the other three were non-gentrifying or pre-gentrifying contexts.

The Role of Publicly Financed Transit Infrastructure in Spurring Gentrification and Residential Displacement

The vast majority of research on the drivers of gentrification and displacement has focused on private actors and capital. However, the public sector can play an important role in neighborhood transformation through a number of avenues: investing in physical infrastructure, structuring land use decisions, and incentivizing business location, to name a few.

This review does not include the impacts of all urban public investment types, which can range from large-scale redevelopment projects to smaller scale streetscape interventions. Nor do we look at the impacts of land use decisions (e.g., zoning) or other government interventions (e.g., tax abatements) that can shape the urban environment. Although important, such relationships are currently understudied and therefore lack an existing evidence base for us to review.

Instead, we review the existing literature on one type of public investment that has received increased attention: publicly financed rail transit. Just as urban renewal spurred gentrification and displacement in earlier decades, new transit investments in built-up urban neighborhoods have the potential to shape neighborhood change. Studies of the relationship between rail transit and neighborhood change take two forms. One set of studies takes advantage of readily available data on housing sales, housing values, new development, or renovations to quantify real estate appreciation. Another group of studies describe the relationship between transit and various indicators of gentrifying neighborhoods.

Rail transit and real estate appreciation

Transit is a desirable neighborhood amenity because it can improve accessibility to jobs and other destinations. However, dis-amenity effects also exist from being “too close” to transit, including heightened noise, congestion, pollution, and traffic (Kilpatrick et al. 2007). Largely due to data availability, most empirical studies on the impact of transportation investments focus on changes in property values rather than land use, households, racial transition, or cultural meaning (Landis et al. 1995). Consensus across the literature suggests that the accessibility benefits of living near transit outweigh the potential nuisance effects, and that proximity to public transit often leads to higher home values and rents (Wardrip 2011).

Several literature reviews summarize research related to the home price premiums that come with proximity to transit. These premiums vary significantly. Cervero and Duncan (2004) find that the premium for home prices ranged from six to 45 percent. Diaz (1999) sets the range between three percent and 40 percent. Meanwhile, Hess and Almeida (2007) find a maximum premium of 32 percent, although noting that some studies found no effect, while others found negative effects.

In a review of existing research on the topic, Giuliano and Agarwal (2010, p.228) argue that, “the literature does not establish unambiguously whether or not rail transit investments get capitalized in property values.” They attribute inconsistent findings in part to differences in research methods and in the local conditions. They note that transit systems have an appreciable impact on accessibility only where road networks are insufficient for handling travel demands (i.e., where congestion is severe).

Overall, the impact of transit on home values can vary depending on a number of mediating factors such as housing tenure and type, the extent and reliability of the transit system, the strength of the housing market, and the nature of the surrounding development (Wardrip 2011). In an area with a strong housing market and a reliable transit system, the price premium may be much higher than the average. Additionally, effects may vary for different stations within a single market. For instance, transit stations may have little or no impact on housing prices in some neighborhoods but a significant impact in others (Wardrip 2011). Effects may also vary depending of the type of housing (single-family or multi-family) (Zhong and Li 2016). Some studies have also found that transit expansion plans may drive increases in property values before anything is built (Knaap, Ding, and Hopkins 2001). Research suggests that heavy rail systems have a greater impact on property values than light rail systems. This is likely due to heavy rail's greater frequency, speed, and scope of service as compared to most light rail networks (Brinckerhoff 2001; Landis et al. 1995).

Rail transit, gentrification, and displacement

Although the vast majority of the literature focuses on the impacts of transit on real estate value, a number of scholars are beginning to investigate the relationship between transit investments and gentrification, with an implied relationship to residential displacement. Even as these new studies are able to identify a connection between transit investment or transit proximity and gentrification, results conflict due to methodological flaws and the failure to examine different forms of displacement (Rayle 2014). As Revington (2015) points out, even as this literature has begun to connect transit with neighborhood change, it often fails to operationalize gentrification fully. Viewed according to Smith (1982), a nexus of actors is coordinating transit investment to facilitate the movement of capital and capture the profits as the value is capitalized into land. New transit systems become ammunition for cities marketing themselves in the global competition for capital. Yet, most of the studies to date, have examine only one aspect of gentrification, such as home price increases.

Much of the research relating transit investments and gentrification stems from efforts to aid activists and governments to better understand, predict, and plan for neighborhood change. One of the earlier iterations of work predicting gentrification is a presentation by researchers from the Urban Institute (Turner and Snow 2001). Analyzing data for the Washington, D.C., area, they identify the five leading indicators as predictive of future gentrification (defined as sales prices that are above the District's average) of low-income areas, including good Metro access. In a Dukakis Center for Urban and Regional Policy report, Pollack et al. (2011) affirm that transit can be a catalyst for neighborhood renewal, noting that such accessibility improvements could potentially "price out" current residents because of rising property values and rents. They find increases in rents, household incomes, and vehicle ownership near transit in 12 U.S. cities. Similarly, Kahn (2007), looks at 14 U.S. cities with transit systems that expanded from 1970 to 1990 and find that nearby census tracts experienced disproportionate increases in property values and educational attainment. Focusing on changes in median household income, Barton and Gibbons (2015) show that nearby subway stops are a significant predictor for income growth, but are secondary to many other factors. Deka (2016) analyzes changes in home values, rent, and race/ethnicity near rail transit in New Jersey, finding significant positive impacts only on home values. A qualitative analysis of a new transit line in suburban Vancouver finds that the state

support of densifying neighborhoods near transit threatened the housing stability of disadvantaged residents (Jones and Ley 2016).

Other studies adopt more complex definitions of gentrification. In an analysis of two Swiss cities, R erat and Lees (2011) look specifically at “new build gentrifiers” who live in new developments near transit, finding that they disproportionately value the proximity and connectivity in their new neighborhoods. In a study for the Association of Bay Area Governments, Chapple (2009) adopted Freeman’s (2005) definition of gentrifying neighborhoods. She shows that a number of socio-economic, locational, and built environment variables, including proximity to rail transit, predicted gentrification.

Increasingly, researchers are not just looking at a neighborhood’s proximity to transit, but pinpointing the timing of the transit investment and analyzing subsequent neighborhood changes. Thus, using a survival analysis, Grube-Cavers and Patterson (2015) show that proximity to rail transit is positively and significantly related to the onset of gentrification in Toronto and Montreal, but not Vancouver, perhaps because gentrification in that city was already advanced.

Over time, gentrification is spreading away from downtowns. A recent study of Los Angeles and San Francisco analyzes gentrification and displacement separately, finding that transit-proximity plays a significant role, but depending on when it is implemented and its location within the metropolitan region (Chapple et al. 2016). This study is the first to analyze different dimensions of displacement, including the loss of low-income residents, the loss of affordable housing, and the exclusion of low-income in-movers, in relation to transit.

Conclusions: Towards a Research Agenda on Gentrification, Displacement, and Public Investment

Scholarly interest in the relationship between investment and displacement dates back to the 1970s, in the aftermath of urban renewal. More recently, a new wave of scholarship examines gentrification, primarily in strong market cities, and its relationship to public investment, particularly in transit. The results of these studies are mixed, due in part to methodological shortcomings.

Despite the U.S. context of growing income segregation, residential and commercial gentrification is occurring in lower-income neighborhoods, transforming the meaning of the neighborhood. Although researchers experience severe data and analytic challenges in measuring the extent of displacement, most studies agree that gentrification at a minimum leads to exclusionary displacement and may push out some renters as well, while others manage to stay. Though early research on neighborhood change tended to underemphasize the role of the state, more recent work has identified an impact of public investment, in the form of fixed-rail transit.

To better address the needs of policy makers, community activists and researchers alike, there is an urgent need to improve the body of research related to public investments, gentrification, and displacement. In some cases, these will require new datasets and methods, whereas others will involve more qualitative methods and consistent measures. Here we outline some questions to guide future research:

1. How do different types of public investments influence not only neighborhood change, but also residential and commercial displacement?
 - a. Does the type or quantity of investment matter?
 - b. What are the displacement impacts of different forms of public investment and action, not only fixed-rail transit but also streetscape improvements and rezoning, among others?
 - c. How does timing matter, from early planning phases to investment and implementation?
 - d. What is the impact of market rate versus subsidized housing production at the neighborhood and regional scale?
2. How do public investments impact commercial change, specifically related to small businesses, employment patterns, affordability of goods and services, and change in clientele? How does this relate to residential change?
3. What are the social, economic, and health impacts of gentrification and residential displacement?
4. What can planners and policymakers do to mitigate residential displacement? Which types of anti-displacement strategies are most effective?

As this article highlights, drawing the analytical distinction between gentrification and displacement is critical to advancing methodological and theoretical approaches. Until the methodological challenges and these additional research questions are addressed, empirical research on gentrification and displacement will only have limited application in policymaking and urban planning efforts to stabilize neighborhoods and prevent residential displacement.

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¹ Spending on mass transit and rail as a percentage of GDP increased from 0.13 in 1966 to 0.40 in 2014. During the same period, spending on highways decreased from 1.61% of GDP to 0.96 (CBO 2015).