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Promoting Health Equity Through Preventing or Mitigating the Effects of Gentrification: A Theoretical and Methodological Guide

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Abstract

Public health researchers are increasingly questioning the consequences of gentrification for population health and health equity, as witnessed in the rapid increase in public health publications on the health (equity) effects of gentrification. Despite methodological challenges, and mixed results from existing quantitative research, qualitative evidence to date points to the role of gentrification processes in exacerbating health inequities. Here we discuss past methodological and theoretical challenges in integrating the study of gentrification with public health research. We suggest taking an interdisciplinary approach, considering the conceptualization of gentrification in measurement techniques and conceiving this process as a direct exposure or as a part of broader neighborhood changes. Finally, we discuss existing

policy approaches to mitigating and preventing gentrification and how these could be evaluated for effectiveness and as public health promotion and specifically as interventions to promote health equity.

INTRODUCTION

From its origin in 1964, with Ruth Glass's now classic study of London's working-class neighborhood transformations into higher-income enclaves from which original residents were displaced (55), gentrification has gained huge interest from urban policy and planning, academic disciplines, media, and activism. Many urban residents themselves know how to recognize gentrification, from the introduction of trendy barber shops, organic food stores, $5 barista-made lattes, and yoga studios to iconic parks and, of course, large-scale luxury real estate development and condo conversion in previously underinvested yet affordable areas. Yet, moving from a broader understanding of this process of unequal urban (re)development toward formalizing indicators of gentrification and using these measures to investigate the impact of gentrification on health and health equity requires a few key steps: engaging with key literature across the social sciences; innovating measurements, methods, and design; incorporating policy and planning perspectives (33); and thus producing a more critical, interdisciplinary, and socially engaged public health scholarship. Here we provide an overview of key conceptual challenges, discuss the progress to date in studying gentrification from a public health perspective, and finally suggest future directions for research and for the development and evaluation of policies to prevent the negative health (equity) effects of gentrification processes.

GENTRIFICATION VERSUS OTHER URBAN PROCESSES

Gentrification is often grouped together with urban "renewal," "regeneration," or "revitalization" (91, 117), urban development processes all presented globally as means to "improve" neighborhoods or address so-called "blight" or "decay." European scholars tend to use the term regeneration, while the US literature refers to renewal or revitalization. As a group, these terms all involve physical and financial investments, policies, and programs crafted to respond to underinvestment, concentrated poverty, building and land abandonment, and related social and health problems (104, 118), including cardiovascular diseases, diabetes, and obesity; substance use; and stress and depression. Yet, gentrification is a direct consequence of new public and private investment in neighborhoods and also leads to further resources and amenities being brought into the area after new, wealthier residents start to arrive (83).

Gentrification generally refers to commercial, demographic, and real estate price changes due to local, national, or global investments geared toward higher-income and white residents (24, 31, 80, 81). Social change indicative of gentrification tends to be measured using publicly available data (56, 59, 134), at the census tract or neighborhood level. Gentrification is found to take place when researchers identify increases in median income, percentage of residents with a university education, white residents, and housing prices/values, along with decreases in non-university-educated residents, nonwhite residents, and lower-priced homes (15, 52). These factors combined with sociocultural and physical displacement of long-term traditional residents are the core difference between gentrification and other urban development processes. Scholars have identified a variety of drivers to explain how gentrification processes start. These drivers include an influx of artists (27), commercial revitalization (125), migration of white professionals (67, 126), physical proximity of the neighborhood to affluent areas and economic amenities (86), decreased crime rates

(16, 98), a gap between existing and potential ground rent (120, 121) including "green gaps" (that is, the perceived benefits and accrued values generated by land cleanup and green interventions) (7), urban renewal and public housing demolition policies (79, 130), and global competition for resources and the so-called "knowledge economy" (82, 133).

In response to a long-time scholarly neglect in explaining how racial conflict shapes gentrification (23), the gentrification literature has recently paid more attention to the racial dimension of gentrification and the central role played by racial capitalism in shaping urban space (103), extracting financial value from previously marginalized neighborhoods (107), especially those with a legacy of segregation, discrimination, and stigmatization. In the United States, cities such as Detroit, Michigan, are at the center of such contemporary urban struggles through new land and property devaluation and acquisition dynamics by white investors and developers, especially since the 2007 financial crisis (108). Racial capitalism, as an economic system through which racial difference defines opportunities for value and profit accumulation (105), is able to use gentrification in order to reproduce difference and exclusion as well as segregation dynamics (73) through a process known as racial ordering. This ordering maintains or exacerbates racial hierarchies through unequal resource distribution and through the discursive characterization of inferiority geared toward racialized groups whose neighborhoods are seeing redevelopment and reinvestment (23).

Through both settler colonial and postcolonial lenses [i.e., those explaining the racial and colonial structures behind gentrification (5, 72)], urban geographers and sociologists are demonstrating the complexities of how racialized hierarchies affect everyday relations in gentrification, most recently in health outcomes (6, 94). For instance, in cities Black and Brown residents have been shown to experience the imposed commercial choices, esthetics, and norms of white settlers (22, 125) who devalue and selectively appropriate racialized aspects of neighborhood culture and history. In Washington, DC, for example, the rebuilding and reimagining of the H Street NE (Northeast) corridor involved the branding of a depoliticized Black "coolness" in this multicultural neighborhood. After decades of racialized disinvestment, Blackness is now being appropriated by investors and new residents who are accruing the benefits of new commodities, revamped cultural venues, and new condos (109). Put differently, research shows that gentrification, and commercial-led gentrification in particular, tends to have deep sociocultural ramifications for communities of color because gentrification, through the common process of rent seeking, involves the selective revaluation and appropriation of features that can be attractive to gentrification as "cool" or "vibrant" and thus have been shown to commodify racialized spaces (101, 125).

The early stages of gentrification, which may begin with students or artists, for example (27), moving into affordable neighborhoods to benefit from lower commercial or residential rental prices, pave the way for more advanced gentrification processes later on, including those that involve large-scale real estate development and more extreme demographic changes occurring over time, in what is sometimes referred to as hypergentrification (78). While early-stage gentrification can seemingly bring a new array of benefits to a neighborhood—including lower crime and new green space—more advanced stages of gentrification tend to create a new wave of social ills and health impacts (75, 96, 111, 132). Several studies also demonstrate that as neighborhoods begin to gentrify, they experience an increase in punitive policing strategies such as order-maintenance citations and proactive arrests, potentially catering to the demands of new residents from the "creative class" (19, 39, 76). As gentrification becomes a more consolidated process, the health impacts of new urban amenities tend to be positive mostly for the gentrifiers, but less so for gentrified residents (38).

Despite long-standing debates about the global and local variations of gentrification (70, 81) and about the production-side versus consumption-side explanations for the causes of gentrification (83), scholars tend to agree that structural forces (production) as defined by Smith (120)

and cultural dynamics (consumption) as proposed by Ley (85) are interdependent and coexist in gentrification (30, 60, 83). Of major importance for studying the potential health impacts of gentrification is whether and how gentrification contributes to displacement; most studies concur about the strong relationship between the two types of gentrification causes (production side and consumption side). Displacement is found to occur through multiple forms of violence, including the destruction of networks and resources vulnerable residents have access to, appropriation of existing or new amenities by gentrifiers, and housing loss and evictions (47, 48, 89, 93). Fear of displacement—with all the anxiety, stress, and uncertainty linked to fighting for one's home and searching for a new home (21)—is different from experienced displacement—with all the uprooting and adaptation it has triggered—and thus likely has different—although also acute—health impacts.

From a research standpoint, the health outcomes of gentrification are difficult to measure once residents are forced to move out because it tends to be difficult to track and identify displaced residents and, thus, difficult to monitor their health over time (6, 37). Displacement can also be experienced in multiple ways (6, 89): for example, direct physical displacement caused by homes being demolished and replaced by mixed or upper-income developments, as has been the case throughout urban renewal projects in the United States; financial displacement due to rising rents, home sale prices, and property taxes that price out existing residents; and sociocultural displacement causing residents to feel a sense of social erasure, a loss of sense of community and place attachment, and a sense of discomfort as their neighborhood changes.

Gentrification–Health Pathways

As far as we know, only four studies have previously formally and purposefully explored the potential pathways between gentrification and health (6, 13, 51, 109), summarized in **Figure 1**. We present a comprehensive framework that visualizes the relationships between the main hypothesized pathways linking gentrification and health: (*a*) increased real estate speculation and housing costs leading to displacement; (*b*) sociocultural, legal, symbolic, and emotional erasure and displacement; and (*c*) the transformation of the physical environment and changes to amenity accessibility. These different pathways may have varying roles for different health outcomes and for the patterns of health and health inequity among residents of gentrifying neighborhoods, providing many directions for future research.

Relationship Between Gentrification and Health: Findings to Date

While the literature on the health effects of gentrification is growing, the relationship between gentrification and health—and the health of historically marginalized residents in particular—remains poorly understood, owing, in part, to analytic challenges that are inherent to studying a highly spatially and socially patterned neighborhood-level phenomenon that lacks a singular shared definition, operates over variable geographic and temporal scales, and displaces affected residents to new areas, complicating the collection of longitudinal data on residents' lives, living conditions, and health. As a result and in response to this core methodological challenge, the literature on gentrification and health uses a wide range of definitions and measures of gentrification, uses repeated cross-sectional designs that fail to track displaced residents, studies the relationship among highly selected (i.e., not representative) samples, lacks theoretical justification for outcome and covariate selection, or covers time or geographic scales of questionable theoretical relevance (49, 129), all of which makes it challenging to combine insights across studies to definitively say how and how much gentrification matters for the health of historically marginalized residents across different time periods.

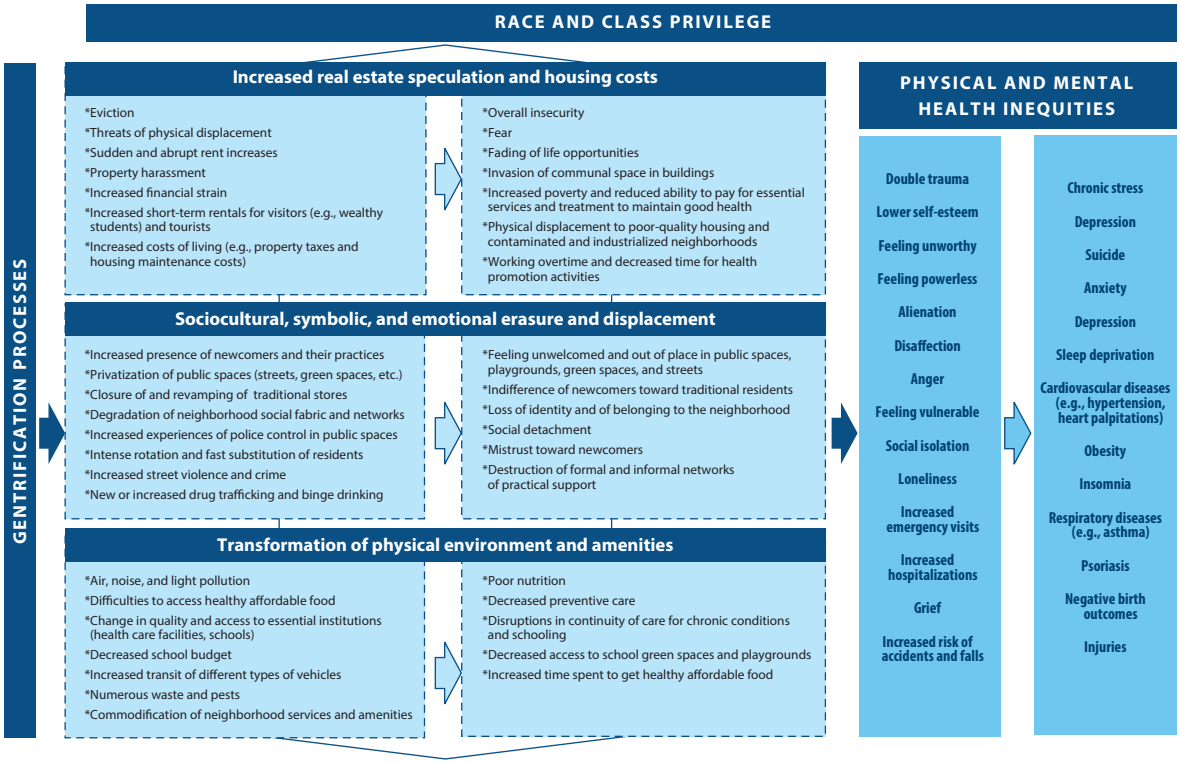

Figure 1

Potential pathways through which gentrification can affect physical and mental health inequities. Figure based on information from Anguelovski et al. 2020 (13), Anguelovski et al. 2021 (6), Sánchez-Ledesma et al. 2020 (109), and Formoso et al. 2010 (51).

In recent years, several review articles have taken on the challenge of summarizing this literature, all of which concluded that collected evidence on the health effects of gentrification is currently still recent and weak but also that effects, when documented, are highly heterogeneous. However, much of this literature focuses on the health of all residents, including gentrifiers, and thus does not often start from the life changes experienced by vulnerable residents nor does it prioritize health equity considerations. For example, Smith et al. (119) screened the titles and abstracts of ~6,000 studies for potential inclusion in a systematic review on US population-based studies investigating the health effects of gentrification published as of July 2018. Their search yielded only six peer-reviewed, US-based studies that were eligible for inclusion based on relevance and the use of health and gentrification measures to estimate a quantitative measure of association between the two. Results from the review suggested that while overall associations between gentrification and health were largely null, gentrification was associated with worse health among Black populations in particular (119). A second review study also examined studies on gentrification and health published between 2000 and 2018, concluding, based on 22 empirical studies, that the literature is characterized by a mix of positive, negative, and null associations (111). In 2020, a third review of 36 eligible studies, including 12 published after the cutoff dates of the first two, found similar results, highlighting that gentrification appears not to have a uniform effect across different population groups; those in more marginalized groups such as the elderly and Black residents are affected more than younger, white residents (20). Several other reviews examine the health effects of neighborhood changes theorized to accompany gentrification, for example,

urban development more generally (90), transportation infrastructure changes (74), changes in the food environment, or disruption to social networks (64), without direct analyses of gentrification itself.

Since the publication of these reviews, additional published studies have suggested that the relationship between gentrification and health, when examined through quantitative data measuring associations, is negligible after controlling for potential confounders and is highly contingent on other factors when documented at all. For example, Barton et al. (17) show crude associations between gentrification and worse self-rated physical and mental health, but these associations disappear after adjustment for neighborhood collective resources and other neighborhood measures. Schnake-Mahl et al. (110) use a quasi-experimental design to examine the effects of gentrification on body-mass index, psychological distress, and self-rated health among a sample of Hurricane Katrina survivors and also find null effects for all three outcomes. Agbai (2) uses longitudinal data from Los Angeles to examine associations between residence in a gentrifying neighborhood and self-reported health and found that longer residence in a gentrifying neighborhood is actually associated with better self-reported health, without variation by race/ethnicity. A lack of longitudinal follow-up data in this case means that it is unclear whether these results may be due to selection bias regarding who leaves and who stays. However, Henson et al. (61) find that gentrification is associated with more asthma-related visits to the emergency department.

While these and other primarily quantitative studies about the costs that gentrification imposes on health create a confusing evidence base, qualitative work paints a more nuanced but clearer picture of gentrification as a process that causes stress, exclusion, lower social cohesion, loss of control, and other psychosocial stressors on vulnerable groups (21, 63). This discrepancy points to the need for mixed-methods research to be applied to improving our understanding of how and when gentrification may be linked to health and health equity.

Types of Gentrification and Their Unique Implications for Health

In addition to a broad focus on gentrification as a form of unequal and extractive urban development (83), scholars have also distilled different types of gentrification (37), each of them with both common and unique implications for social and health outcomes. For instance, commercial gentrification is implicated by the replacement of traditional stores and businesses with trendy and exclusive boutiques (3, 112). A subset of commercial gentrification is food gentrification. Here new expensive organic stores and supermarkets open up and often replace more affordable options, creating "food mirages" (4, 124) for working-class residents now faced with new food options but with increasing difficulty to pay for that food (and housing) and, therefore, to make healthy nutrition choices (6, 131). Tourism gentrification—and at times related student gentrification—also concerns the loss of food and other store options in favor of new tourism (and student) venues, although in the case of tourism/student gentrification, access to housing, public services, and safe public spaces also becomes compromised for traditional residents (12, 31, 43, 57, 88, 96, 109, 113). Commercial changes also take place in health care gentrification, whereby health care as an essential service and public good is increasingly transformed into a luxury elite amenity for wealthy residents and those with private insurance through the siting of facilities according to payer mix rather than need; transformations in health care systems themselves then lead to the closing of hospitals that do not make a profit and to changes in the types of care provided (6, 35, 37). These factors in turn affect historically marginalized residents' access to quality health care, especially for those most at risk for chronic disease, for whom providing needed care is not profitable.

Greenways, parks, plazas, gardens, or climate infrastructure can also be the object of gentrification through environmental gentrification (8, 9, 40, 53, 58, 84). Here researchers focus on the role of the improvement or creation of new environmental amenities in driving gentrification

processes. This dynamic is itself broken into transit or bike gentrification (42, 50, 122), through new transit and bike infrastructure and their related transit-oriented development; green gentrification (9, 10, 14, 36, 58), when referring to green infrastructure per se; and climate gentrification, when concerning the role played by climate mitigation or adaptation infrastructure in gentrification (11, 71, 114, 115). The relationship between new green spaces and gentrification may also vary by time, type of green space, or contextual aspects of the specific city (8, 127). Environmental gentrification poses unique health impacts (36) on historically marginalized residents, including increased loss of place attachment and social cohesion, loss of relational well-being, chronic stress, and mental health burdens (6). These impacts are created by what researchers identify as "disruptive green landscapes" (102, 128), whereby the social impacts such as exclusion resulting from gentrification lead residents not to engage with or benefit from new or improved green spaces in their neighborhoods. As environmental gentrification often occurs in areas with histories of environmental degradation, cleanup of environmental hazards and new green amenities occurring along with gentrification may lead instead to compounded environmental health risks (34). Rather than being environmental resources for neighborhood residents, as traditionally conceptualized, the health benefits of new green amenities seem thus to accrue only for higher-income and more educated groups (38).

NEW DIRECTIONS FOR RESEARCH ON THE HEALTH EFFECTS OF GENTRIFICATION

In addition to the need to further clarify how and when gentrification affects health and health equity, and those challenges in current research mentioned above (i.e., a lack of longitudinal studies, nonrepresentative samples, a lack of theoretically justified outcomes and covariates, and the challenge of selecting a relevant geographical scale), there are several directions in which research on the health effects of gentrification can be advanced. We highlight three such aspects below: future directions in exposure assessment, evaluation of the effects of different types of gentrification, and movement toward interdisciplinary approaches.

Exposure Assessment

In nearly all studies exploring the associations between gentrification and health, exposure to gentrification generally implies the existence of gentrification processes near one's residence, although no standardized method of measuring gentrification, or exposure to it, exists (20, 92, 111, 129). In quantitative research, such as those methods most used by public health researchers, the method commonly used to assess the existence of gentrification has been the use of census data to measure various aspects of demographic and socioeconomic changes, although variations in the variables and details of methods used to calculate gentrification also lead to variation in exposure assessment (92).

A common gentrification indicator used in health studies is a composite score that includes all or some of the following dimensions, often benchmarking neighborhood-level change to the average change across the city being studied: changes in household income, percentage of underprivileged races/ethnicities, population level of education, population occupation, rental prices, population age distribution, building age, and/or urbanized area over a period of 3–20 years at the census tract or neighborhood level (38, 54, 65, 68, 69, 87); no gold standard exists, however, regarding which variables and how many variables should be included. Indicators can also vary by country or even city, depending on which groups are locally deemed as most vulnerable. For example, in one study from Barcelona, Spain, researchers included a variable with local relevance on the percentage of residents over age 65 who live alone (10). Different demographic and real

estate indicators may be available at different geographical units and at different regularity in different cities and countries, so gentrification exposure assessment is highly dependent on the availability of secondary data. However, as research on gentrification and health increases, having comparable gentrification indicators is increasingly important (20, 111), even if using the same exact measures across different places and types of gentrification may not be advisable (33). Accordingly, researchers may want to develop highly customized indicators to evaluate with high internal validity the associations between gentrification and health in specific cities, while also using more general indicators that can be comparable across contexts; this approach therefore would also increase the external validity of studies on the relationships between gentrification and health.

Moreover, determining the appropriate time period to be studied is an important challenge for researchers because different periods may be pertinent for specific health outcomes and populations. For example, anxiety and insomnia may appear during early stages of gentrification, whereas studying the effect of gentrification on birth outcomes and cardiovascular diseases may be relevant only after months or years of exposure to gentrification. Complicating these decisions are the practical decisions that one must make owing to the availability of data, particularly when relying on secondary data such as census data often used to measure gentrification quantitatively; these data are available only for certain years and cannot track changes more regularly and over short time increments. Similarly, the question of which geographic indicators best approximate a neighborhood is complicated both conceptually and practically, owing to the lack of availability of data attached to finite geographic indicators, especially in the case of health data that must be kept secure and confidential. The use of residential administrative boundaries may not represent actual experiences and exposure to gentrification. Administrative boundaries do not correspond to residents' experiences of their neighborhoods, and residential location may not correspond with where people spend most of their time. Future studies should shed light on whether associations with health are sensitive to the use of different gentrification indicators, neighborhood definitions, and different time periods, balancing the need to produce results that are both valid and generalizable.

In addition to using secondary data to estimate levels of gentrification by neighborhood quantitatively, researchers have begun to develop and validate survey questions to measure subjective gentrification, which they estimate may be more strongly associated with health outcomes than are objective measures because the former express the actual experiences and perceptions of residents (44, 62). Although these indicators can detect differences in perceptions and experiences within neighborhoods, collecting such data requires substantial resources and time from researchers, and thus they are less likely to allow researchers to collect representative data across multiple neighborhoods or cities. Moreover, so far, these questions have been validated only in isolated neighborhoods or cities. Looking forward, researchers should work toward refining subjective gentrification indicators and testing their validity across diverse settings. Future research can also compare how such indicators may reveal associations between gentrification and health (equity) that are different from or similar to those measured in past studies using indexes created using secondary data.

Evaluating the Health Effects of Different Types of Gentrification

As discussed above, gentrification research to date highlights the many drivers and respective types of gentrification. So far, few studies have conceptualized the type of gentrification—real estate, commercial, tourism, student, green—present when studying its health effects (for exceptions, see 32, 37, 94), despite that different types of gentrification may indicate different impacts on health and different pathways between gentrification and health (37). Thus, in cases where a specific driver or type of gentrification is identified, in designing a study to evaluate the health effects

of these processes, the specific type of gentrification should be considered, thus matching the narrative and trajectory of neighborhood changes occurring in the area studied.

For instance, in some cases, rather than considering gentrification a primary exposure, it might be more relevant to consider gentrification a moderating or mediating factor and plan analyses accordingly (33). Thus, if the hypothesized pathway includes a driver of gentrification (such as mass tourism, green space or climate mitigation infrastructure development, or a commercial landscape that provides health-promoting resources such as healthy foods but caters to a middle- or upper-class population rather than long-term residents), perhaps the question worth asking is whether the gentrification process resulting from these changes has changed who or how residents benefit from these driving changes and less so how gentrification directly affects health.

Because gentrification has been shown to lead to social exclusion (63) and often to lead to actual or threatened physical displacement (47, 48, 89, 93) affecting long-term, lower-income, and/or racialized minority residents, it is important to understand how exclusion resulting from gentrification may affect residents' access to important neighborhood resources (such as green and open space, healthy food, affordable health care, and others). Research designs must reflect this understanding but also ensure that the corresponding exposures are included in quantitative or qualitative analysis. Doing so may then reflect the intended impact of the study: to advance general knowledge and/or to have an impact on policy or inform the development of interventions and to determine what new knowledge or information could contribute most to debates around the effects of gentrification.

Towards an Interdisciplinary Approach

Emerging literature relating to the health effects of gentrification generally takes a public health approach, using epidemiological study designs and analytical methods to test whether living in a gentrifying neighborhood may affect one's health. As such, some investigators have argued for the need for a more standardized quantitative measure of gentrification itself (see above) in order to increase the generalizability of findings across cities using such methods. At the same time, others advocate for a more context-dependent definition and measurement of gentrification, which would allow for a more valid and fine-tuned analysis of a specific gentrification dynamic being studied, despite potentially decreasing generalizability (33). Methods used to understand gentrification from a more nuanced approach include surveys, interviews, observation, participatory methods such as photovoice or photo walks, as well as more ethnographic methods. Here we argue that both approaches are valid and should be recognized and used for their intrinsic value rather than delegitimized by either scholarly tradition. More recently, several authors have pointed to the potential pathways by which gentrification may affect health (6, 13, 109). These analyses have relied on a more interdisciplinary approach, including geography, sociology, and planning, that concerns the potential drivers and consequences of gentrification, which may in turn lead to better or worse health outcomes or to exacerbated health inequities.

Moving forward in our understanding of how gentrification impacts health, we must consider not just the rigor of the methods we use but also the appropriateness of the types of questions we ask. Here deductive reasoning—or the determination that if the premises argued are true then the conclusion is also true (29)—is often preferred in biomedical and public health research (for good reason, when research concerns analysis of physiological outcomes or exposures and when the goal of a study is to determine the cause or effect of an exposure or an intervention, with potentially deadly or life-saving implications). Despite that this logic predominates in medical and public health research, it may not be how many people process and understand public health information (41). On the other hand, inductive reasoning is employed in many social sciences, such as those disciplines that have pioneered the development, theorization, and conceptualization of

complex urban social processes such as gentrification. This approach uses the synthesis of a set of observations to develop a general principle or theory, therefore allowing for less certainty, but more nuances and a finer understanding of processes and impacts, than the deductive approach (29).

By extension, repeatedly asking whether gentrification affects health is potentially not helpful in the overall public health goal of achieving better and more equitable health outcomes for all. Based on what we know about gentrification from a legacy of sociological, urban geography, and urban planning scholars, we might instead ask, Whom does gentrification benefit, or harm, and how? Asking this question requires that we embrace a more inductive approach to asking questions rather than relying on deductive approaches, which lead to results that are sound but may not be useful for developing policies or programs that attempt to reduce the negative effects of gentrification on health or health equity. As discussed above, the complexities of gentrification processes have so far led to mixed quantitative epidemiological results regarding the health effects of these processes, whereas qualitative work clearly identifies more complex and refined gentrification–health pathways and how social and cultural exclusion resulting from gentrification may change which or how different populations experience their neighborhood environments and changes to them. Thus, taking an interdisciplinary approach to posing questions, and answering them, may ultimately drive forward our ability to address complex social issues such as gentrification from a public health perspective.

POLICY IMPLICATIONS

Existing research highlights the potential of gentrification to contribute to the exacerbation of health inequities along various pathways. Thus, advancing and evaluating policy interventions that can ameliorate the effects of gentrification, or prevent gentrification from occurring in the first place, could help to improve health equity in neighborhoods and cities experiencing, or at risk for experiencing, gentrification.

Preventing Gentrification

Interventions addressing affordable housing and community development to prevent gentrification and displacement have focused largely on efforts that help with the preservation and production of affordable housing and the stabilization of neighborhoods (135). However, interventions that tackle the root causes of gentrification (including racial capitalism, the financialization of housing, economic and urban development policy that favors wealthy interests, and lack of political power among low-income and racialized populations) are also needed (66). Here we provide examples of each of these types of efforts.

The preservation and new construction of affordable and public housing in existing buildings in gentrified neighborhoods could help counteract displacement within a shorter time frame compared with housing production strategies (28). The feasibility of these interventions is often more within the reach and budget of municipalities. Interventions can include protection of unsubsidized affordable housing; housing rehabilitations; funding for public and social housing through tax levies, including development tax, transfer tax, tax on empty housing, and tax on tourism venues; and incentives such as density bonuses, inclusionary zoning, tax breaks, or improved financing conditions for the development of affordable homes (28, 95, 97). By identifying areas that have the potential to be gentrified, cities can either acquire vacant homes and rehabilitate them or provide resources, including funding to owners, to do so. Community land trusts, which offer collective ownership to ensure community stewardship of land, are a more extensive approach to preserving housing. Over time, community land trusts, as compared with conventional home

mortgages, help provide low- and middle-income owners with the opportunity to build equity and provide more protection against foreclosures (1, 32). However, much like other interventions, their success relies on various factors, including the combination of several measures, resources to manage them, arrangements for financing with owners, and the current housing market surrounding them (32). Nonetheless, they provide some protection against gentrification and promote the ability for low- and middle-income residents to remain in the neighborhood.

The production of new affordable housing not only increases the supply but also could help moderate housing costs by making housing more affordable to more residents. However, research has also shown that new production at the market rate could increase rent across the area, making it unaffordable for low-income households to move in (28). This strategy also does not protect the interests of already housed residents who are threatened with displacement due to rising rents, property taxes, home insurance prices (for low-income homeowners), and other costs of living. Therefore, a focus on the production and permanent protection of subsidized housing or housing intended for lower-income residents could promote income-diverse areas but provide only moderate protection against displacement among current residents. The production of protected housing can also help to house residents previously displaced by gentrification through a Right to Return program in their previous neighborhood (i.e., Portland).

Programs aimed at stabilizing neighborhoods, which help ensure that tenants can stay in their gentrified neighborhoods, are considered more direct forms of antidisplacement policies than the production and preservation of housing. Such programs include rent control policies and initiatives aimed at helping renters and owners at risk for eviction and foreclosure, respectively. Rent control policies that restrict the annual rent increases in certain buildings or areas are one of the more common interventions used in the United States and in many parts of Europe to stabilize rent (123). While these policies could help prevent displacement and stabilize neighborhoods, some studies have found that landlords can let these units deteriorate until tenants leave, allowing landlords to remove the unit so that it is no longer covered by rent control (45, 46). In some places, rent control or rent caps are put in place beyond the city limits, at the state or metropolitan level, such as in Oregon, United States, or Berlin, Germany, a strategy intended to prevent developers from locating their investments right next to their original location. Tenant right-to-counsel programs provide access to legal representation for renters facing eviction, while rental assistance programs can help prevent evictions by providing low-income renters facing economic difficulties with emergency funds to pay rent. For low-income owners, foreclosure assistance programs can offer financial support, payment plans, or counseling during economic hardships. In other cities, such as Cleveland, Ohio, local nonprofits and legal groups such as the Legal Aid Society of Cleveland and the Housing Justice Alliance have developed an eviction aversion initiative, an educational methodology for teaching landlords and tenants in order to build new relations between these two collectives, improve housing security, and reduce displacement.

Many examples of such policies and programs exist, but the effectiveness of these programs has rarely been evaluated owing largely to the complexities associated with data availability and the difficulties of measuring gentrification effects. Furthermore, most of the evidence from these evaluations has come from areas with a strong housing market such as San Francisco and New York, when the variability of the housing market between neighborhoods could play a significant role in the effectiveness of the program (18, 99, 100). However, combinations of these efforts can be effective against displacement. Such protections not only provide assistance to individuals, but also help reduce population turnover in neighborhoods, strategies that preserve stability and ultimately prevent cities from displacing low-wage workers needed for city function, including those working in essential professions such as retail, food and beverage services, construction, and building maintenance (106).

Evaluating the Health Impacts of Gentrification and Displacement-Prevention Policies and Programs

In addition to furthering research on how and when gentrification affects health, and designing interventions such as those described above that may either prevent gentrification and gentrification-related displacement or mitigate the social or health effects of gentrification processes, more research is also needed to evaluate the health impacts of these policies and programs. Along with seeking to understand whether such programs and policies work, evaluating their potential health benefits could be an important tool for advocacy and activism around the prevention of gentrification, in line with past strategies used by environmental justice activists more broadly (25, 26, 77, 116). Testing the potential health, or health equity, benefits of interventions meant to prevent or mitigate the effects of gentrification will require careful attention to both theoretical and methodological considerations. Researchers must decide which types of interventions to study, weighing the usefulness of evaluating common, but not comprehensive, interventions, against more intensive, but harder-to-fund, interventions. For example, researchers might want to test the ways in which building slightly more affordable housing blunts the effects of gentrification processes and therefore protects health so that they can show the importance of this standard housing production process. Researchers might want to study housing production victories won in the context of building housing justice movements, through direct action to protest racialized wealth extraction through real estate, or through power shifting to community actors with the logic that effect sizes associated with a more comprehensive response to gentrification would likely be larger.

Theoretical and content area expertise will also be required to determine which health outcomes would be most likely to respond to specific anti-gentrification interventions. For example, while largely quantitative papers show negligible or mixed associations between gentrification and health, qualitative data underscore the effects of gentrification in the form of stress, loss of control, damaged social cohesion, and other psychosocial outcomes. Evaluating interventions will require measuring health outcomes that are most affected by, or related to, the psychosocial processes described confidently in qualitative studies on gentrification and health. Methodologically, studies evaluating antidisplacement interventions with respect to health outcomes will need to grapple with identifying locally appropriate, available, recent, and interpretable measures of gentrification. They will also need to establish both geographic and temporal boundaries that make sense for the study of an inherently ever-evolving process. Finally, they will need to account for the health status of residents displaced by gentrification during the sampling phase of the project.

CONCLUSIONS

Over the past 15 years, interest in and discussion on the consequences of gentrification have reached the public health community and the community at large. This interest can be seen in the rapid increase in public health publications on the health effects of gentrification and in the increased discussions of gentrification in social and mass media as well as in local policy forums and municipal working groups. Despite methodological challenges, and mixed results from existing quantitative research, qualitative evidence to date points to the role of gentrification processes in exacerbating health inequities. To move public health research on this topic forward, we suggest taking an interdisciplinary approach, considering the conceptualization of gentrification in measurement techniques and conceiving this process as a direct exposure or as a part of broader neighborhood changes. Consideration should also be taken for the specific drivers of gentrification, in turn resulting in different types of gentrification and potentially different impacts on health or health equity. Finally, existing policy approaches to mitigating and preventing

gentrification should be evaluated for effectiveness and as public health promotion, and specifically as interventions to promote health equity.

SUMMARY POINTS

1. Although results of research examining the relationship between gentrification and the health of the population at large are mixed, a growing collection of quantitative and qualitative research shows that exposure to gentrification may be particularly detrimental to the health of historically marginalized groups.
2. External validity of studies on the relationship between gentrification and health may be improved by both (*a*) developing customized indicators to evaluate with high internal validity the associations between gentrification and health in specific cities, and (*b*) using more general indicators that can be comparable across contexts.
3. Future studies should shed light on whether associations with health are sensitive to the use of different gentrification indicators and neighborhood definitions and whether associations vary over different time periods, balancing the need to produce results that are both valid and generalizable.
4. Researchers should work toward refining subjective gentrification indicators and testing their validity across diverse settings. Future research can also compare how such indicators may reveal different or similar associations between gentrification and health (equity) as compared to those measured in past studies using indexes created using secondary data.
5. Taking an interdisciplinary approach to posing questions, and answering them, may ultimately drive forward our ability to address complex social issues such as gentrification from a public health perspective.

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