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Permalink

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Journal

Housing Policy Debate, 29(3)

ISSN

1051-1482

Authors

Dubbin, Leslie
Neufeld, Susan
Kersten, Ellen
et al.

Publication Date

2019-05-04

DOI

10.1080/10511482.2018.1530273

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To cite this article: Leslie Dubbin, Susan Neufeld, Ellen Kersten & Irene H. Yen (2019) Health Effects After Renovation (HEAR) Study: Community-Engaged Inquiry Into the Health and Social Impacts of the Rental Assistance Demonstration Program Implementation in San Francisco, *Housing Policy Debate*, 29:3, 432-439, DOI: [10.1080/10511482.2018.1530273](https://doi.org/10.1080/10511482.2018.1530273)

To link to this article: <https://doi.org/10.1080/10511482.2018.1530273>



Published online: 01 Feb 2019.



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Health Effects After Renovation (HEAR) Study: Community-Engaged Inquiry Into the Health and Social Impacts of the Rental Assistance Demonstration Program Implementation in San Francisco

Leslie Dubbin ^a, Susan Neufeld^b, Ellen Kersten^a and Irene H. Yen^c

^aDepartment of Social and Behavioral Sciences, University of California, San Francisco, USA; ^bBRIDGE Housing Corporation, San Francisco, CA, USA; ^cSchool of Social Sciences, Humanities, & Arts, University of California, Merced, USA

ABSTRACT

In this article, we share our mixed-methods community-engaged approach to study the association between public housing renovation funded through the Rental Assistance Demonstration (RAD) program and the health status and outcomes of the residents living in RAD developments. RAD addresses the nationwide backlog of deferred maintenance at public housing properties. Using address-based queries of electronic health records from 2006–2019, this study will measure the healthcare utilization and clinical health status of residents living in RAD sites pre and post renovation and compare them with nonpublic housing residents living in proximity to RAD developments over the same time period. Applying the principles of community-engaged research, we use in-depth interviews to explore the lived experience of renovation and its impacts on residents' health and how policymakers and housing developers factor considerations of resident health into their decisions around renovation and redevelopment. Using a prospective, mixed-methods approach that captures both clinical and experiential data will bring into clearer focus the actual health burdens that public housing residents bear, and the health benefits that investment in public housing renovation may bring.

ARTICLE HISTORY

Received 26 January 2018
Accepted 26 September 2018

KEYWORDS

public housing; renovation; community-based participatory research; health; community development

Our Interdisciplinary Research Leaders (IRL) team is studying the health and social effects of public housing renovation at seven locations in San Francisco. Our multifaceted approach takes into consideration historical context, policy design, and policy decisions, as we explore residents' lived experiences, their clinical health status, and their health care utilization. The renovations are financed primarily through the Rental Assistance Demonstration Program (RAD), which was launched in 2011 by the U.S. Department of Housing and Urban Development (HUD). The initiative was specifically designed to address the physical deterioration of public housing units and the failure of adequate federal funding to meet the capital needs of public housing developments (Schwartz, 2017). The main goal of RAD is to enable public housing agencies to access new sources of funding to finance critical capital rehabilitation needs as expeditiously as possible.

Our IRL team came together out of our collective interest in the intersection among neighborhood, housing, and health connections and our diverse backgrounds in social epidemiology, nursing, sociology, spatial analysis, and affordable housing development. Dr. Dubbin is a registered nurse by training, has a doctorate in health policy and has developed expertise in qualitative research and ethnography. Her research focuses on the reproduction of racial inequalities in health,

particularly in African Americans with coronary heart disease, and place and health connections. Dr. Yen is an epidemiologist, studies place and health (for older adults, general population, and youth; for asthma and obesity) and the influence of racial/ethnic and socioeconomic inequities on health. Ms. Neufeld is the Vice President for Evaluation and Resident Program Design at BRIDGE Housing Corporation, one of the housing developers for the RAD program in San Francisco. Ms. Neufeld oversees programs and community development efforts at over 80 affordable housing properties, including nine public housing developments. Previously, BRIDGE Housing Corporation co-created a trauma-informed community building framework, which recognizes and employs strategies to address how historic and pervasive trauma challenges community building. This effort launched the creation of ABC's Community Development Initiative, which seeks to link research and data to ABC's strategies for housing and retail development, neighborhood investments, and programs and services.

Dr. Kersten is another key member of our project. She has expertise in investigating the built environment using spatial data analysis, with a particular focus on analyzing data from electronic health records. Collectively, we share an interest in what constitutes effective community development, and how community development policy implementation can impact key health indicators.

Through the IRL fellowship, our diverse expertise and unique insights into research methodology and community engagement are being leveraged to investigate housing and health connections. In this article, we share our approach for equitably involving a range of public housing renovation stakeholders in the research process. By investigating the unique experiences and perspectives of public housing residents as well as housing developers, policymakers, and housing site managers, we expect to measure not only the impact of housing renovation on resident health but also the dynamics of the policy process through which decisions around public housing renovation and community health are made.

In this article, we describe the methods and processes through which we will examine the public housing landscape in San Francisco, California, our IRL project research objectives and questions, and the methodologies we will use to elevate the relevance of our forthcoming results for housing and community development policy and practice. We highlight our team's local knowledge and the impact of our roles on our approach.

Background

It is well documented that living in substandard housing conditions is associated with an increased prevalence of a wide variety of health conditions (Shaw, 2004) including infectious diseases (Hargreaves et al., 2011; Howard, 1993; Krieger & Higgins, 2002; Mood, 1993), exacerbation of chronic illnesses (Dales, Zwanenburg, Burnett, & Franklin, 1991; Kersten, LeWinn, Gottlieb, Jutte, & Adler, 2014; Krieger & Higgins, 2002; Marsh, 1982; Peat, Dickerson, & Li, 1998; Platt, Martin, Hunt, & Lewis, 1989; Rosenstreich et al., 1997), injuries (American Academy of Pediatrics, 2001; Krieger & Higgins, 2002; Tinetti, Speechley, & Ginter, 1988), and mental health disorders (Dunn & Hayes, 2000; Hopton & Hunt, 1996; Krieger & Higgins, 2002) and is therefore a predictor of poor health (Coley, Leventhal, Lynch, & Kull, 2013; Kersten et al., 2014; Leventhal & Newman, 2010).

Public housing, administered by HUD, is the nation's oldest housing program for low-income renters, yet persistent structural underfunding from the federal government and local housing authorities has left many public housing units in unsafe and deplorable conditions (Goetz, 2013). The most recent assessment of public housing's capital needs demonstrated a \$25 billion backlog of deferred maintenance and nearly \$3.4 billion in new capital needs every year (Reid, 2017; Schwartz, 2017). Public housing in San Francisco is no different, with most developments requiring extensive capital improvements such as asbestos and black mold removal, repairs for roofs, sewer, plumbing, and drainage systems, rodent and pest abatement, provision of adequate heat, and attention to safety concerns such as outdoor lighting and broken sidewalks.

In November 2011, Congress authorized the RAD program as a way to meet the large backlog and growing needs of the nation's public housing stock. Under RAD, public housing developments are now eligible for Low Income Housing Tax Credits and other forms of private-sector funding as a means of attracting equity investment for low-income properties (Schwartz, 2014, 2017). To receive the funds, the development must convert to project-based Section 8 contracts. In San Francisco, the public housing authority applies for a subsidy known as a Housing Assistance Payment or HAP contract, in exchange for HUD subsidizing tenant rents. Under this project-based rental assistance (PBRA) Section 8 program, private owners enter into multiyear rental assistance agreements with HUD to provide and manage affordable housing units. Throughout the United States, according to Reid (2017), most owners are for-profit entities, but nonprofits (and some public housing agencies) own a significant share of Section 8 PBRA properties. The RAD conversion is considered closed once the HAP contract and financial documents have been executed, at which point the project is no longer public housing but rather Section 8 assisted housing (Reid, 2017). The new owner of the building (in San Francisco, an affordable housing developer) is now responsible for all rehabilitation work necessary as well as long-term property and asset management (i.e., debt payments, tenant work requests, collecting rent, etc.). Once the conversion is completed, the development is then eligible for mortgage financing, tax credits, and other funding streams that can be used to cover the necessary rehabilitation costs.

Over the last 5 years, San Francisco has become one of the first and only cities to convert all publicly owned housing—29 buildings representing 3,500 distinct units—to PBRA Section 8 contracts. Of these, 22 buildings house seniors and the disabled; the remainder are reserved for families. Another unique nuance to San Francisco is that most of its public housing is dispersed across all 11 political districts. In nine of these districts, there is at least one public housing development where community-engaged affordable housing organizations were already in place. Having been embedded in specific neighborhoods for many years, these organizations were perfectly situated to implement RAD (Epstein, 2017). The total cost of RAD in San Francisco is expected to exceed \$700 million for the needed repairs and upgrades. The City and County of San Francisco is putting up \$100 million of general fund money, and the rest of the funding is expected to come from a mix of HUD and private loans secured for/by the developers. Since the implementation of RAD, San Francisco has transferred about \$2 billion worth of real estate to private (mostly nonprofit) housing developers and management companies (Epstein, 2017). With such a huge civic and financial investment, it is critically important to investigate the health impacts of RAD, which is receiving very little scholarly attention even as the program has “eclipsed HOPE VI as the largest program to reposition public housing” (Reid, 2017, p. 6; see also Schwartz, 2017).

What We Know and Don't Know About Public Housing and Health

Previous research has shown that public housing residents have some of the worst health outcomes of any population in the United States, yet the etiology of those outcomes has yet to be determined. For example, Howell, Harris, and Popkin (2005) found that the quality of public housing was worse than that of other poor people not living in public housing or those living in other types of assisted-living developments. Although they did find associations between public housing and self-reported ill health and asthma, they could not show that public housing quality caused poor health outcomes. Ruel, Oakley, Wilson, and Maddox (2010) found public housing residents to be in extremely poor health compared with the general population, but that most public housing residents had poor health prior to entering public housing. Their study found little association between housing conditions and tenure in public housing with the odds of developing a chronic health condition, suggesting that public housing may actually function as more of a safety net rather than a cause of poor health.

Other studies underscore the centrality of housing quality rather than housing type (i.e., owned, privately rented, or subsidized) as a predictor of children's cognitive, emotional, and behavioral

functioning (Coley et al., 2013; Leventhal & Newman, 2010). In their totality, these studies found few benefits or burdens to subsidized housing in its effects on children's health and social well-being. Structural housing problems are the most consistent links with children's and adolescents' emotional and behavioral functioning as well as cognitive skills.

A more recent study suggests that continued redevelopment of public housing may be a means to both improving the health of high-risk children from low-income neighborhoods and reducing health care costs. Kersten et al. (2014) examined the association between public housing type and recurrent pediatric emergency and urgent care visits in San Francisco. They found that children living in nonredeveloped public housing were 39% more likely to have one or more repeated visits within 1 year of an initial visit for acute health care services (unrelated to the initial visit) when compared with children who lived public housing redeveloped under the HOPE VI program. These results suggest that public housing quality may be associated with child health and that investments in improving public housing physical infrastructure may both foster better health among children and reduce spending for acute health services. However, this study was retrospective and did not track the same children over time. It is therefore not possible to determine whether the HOPE VI housing redevelopment per se was responsible for the observed health care utilization differences, or whether a substantially different population of children opted to move back to HOPE VI sites after being displaced during the renovation process.

To inform the large-scale public housing redevelopment process happening in San Francisco, a health impact assessment (HIA) was conducted in 2009 to inform decision-making through the systematic consideration of health (UC Berkeley Health Impact Group, 2009). The goal of the assessment was to explore both the positive and negative impacts of previous public housing redevelopments in the city. However, this HIA only included sites that had been redeveloped under HOPE VI. Whereas the report provided a comprehensive list of recommendations to improve the health of HOPE VI residents, this assessment did not include perspectives from policymakers or developers about how health of residents might impact decisions regarding public housing redevelopment and renovation, specifically.

Our research approach addresses many of the limitations of prior public housing and health research by using a prospective design to measure the health status of the same residents before and after renovation and by strategically including the perspectives of developers and policymakers. We integrate quantitative and qualitative research methods to investigate the health and social effects of public housing renovation through the RAD program in seven properties managed by the BRIDGE Housing Corporation. Our research questions are:

- What are the types and prevalence of health conditions and rates of health care utilization of RAD site residents before and after renovation?
- How does resident health influence decisions of developers, policymakers, and property site managers that pertain to renovations, refurbishing, and redevelopment of public housing?
- What are the impacts of the RAD transition on perceived health and social well-being of residents?

Methods

To answer these questions, we are employing the following mixed-methods approach.

Analysis of quantitative health care utilization data. In San Francisco today, there are approximately 9,700 individuals living in some form of publicly subsidized housing. Approximately 3,800 individuals live in 19 RAD buildings across the city. BRIDGE Housing Corporation currently manages seven RAD buildings representing approximately 970 individuals who are named on the lease. Recognizing that historically there are approximately 2.5 residents for every on-lease resident, we are using address-based queries of electronic health records (EHRs) to measure health care utilization and health conditions of RAD residents before and after renovation. In contrast to survey-

based measures of health status that sample from tenant lists of on-lease residents, our use of clinical data enables this study to objectively measure health care visits and diagnoses of all residents with an address at our target sites within the context of the type and scope of renovation being undertaken at each site. We have obtained health care utilization data for 2006–2016 from the San Francisco Health Network and the University of California Medical Center, and we will analyze 2017–2018 data as they become available. Preliminary analysis of data from the California Office of Statewide Health Planning and Development indicates that these two health systems treat the majority of publicly insured patients in San Francisco.

The health care utilization data include patient demographic characteristics (sex, age, race/ethnicity, primary payer) and clinical characteristics (hospital service/department, length of stay, diagnosis codes). Individual-level EHRs will be integrated across the two health systems using patient identifiers to capture total visit frequency and diagnoses for patients who seek care at both health systems. For the periods before and after renovation, we will compare the utilization patterns of the emergency room, urgent care, primary care, and in-patient visit frequencies and diagnoses of the RAD residents with age- and sex-matched residents on nonpublic housing locations in the same and adjacent census tracts. Our analysis of diagnosis codes will focus on conditions that have a plausible association with housing quality such as respiratory conditions (e.g., asthma, chronic obstructive pulmonary disease), mental health (e.g., depression, substance use, anxiety disorders), and other chronic illnesses (e.g., diabetes, obesity, and cardiovascular disease).

Qualitative methods exploring the lived experience of residents living through RAD conversion and how resident health influences the decisions of housing developers, policymakers, and site managers when renovating and refurbishing public housing developments. This study considers two different communities for participatory engagement: the residents who live in developments being converted under RAD and the developers and policymakers charged with ensuring habitable dwellings. We approach our qualitative portion of this study using two primary methods. First we employ in-depth interviews with residents to understand their lived experience of the RAD conversion and renovation, and with housing developers, policymakers, and site managers to explore how residents' health influences decisions that pertain to renovations and refurbishment. Residents are being recruited after consultation with the tenant association of each development. Flyers announcing the study are posted in public places heavily trafficked by building residents (i.e., laundry rooms, mail rooms, elevator areas, community rooms, etc.). We are posting flyers in English, Spanish, Chinese, and Russian. The flyers give information about the study and contact information for residents who are interested. All interviews are being conducted in the residents' home or a space in which they will feel comfortable. Interviews will be conducted in their preferred language. The primary interviews take approximately 1.5 hours.

Second, we use the docent method (Chang, 2017) as an opportunity for interested participants to lead the researcher on a tour of his/her neighborhood. The docent tour is a participant-led audiotaped and photographed walking interview through broad sites of interest to the participant. During the walking interview (which may be done during the first interview or, if the participant prefers, at a subsequent scheduled time), still photographs are taken by the researcher of sites of interest (buildings, streets, parts of the environment) that hold significance and importance to the participant. The docent method gives a more nuanced insight into how public housing residents navigate their social and physical space. The walking interview is concluded at a safe space determined by the participant to discuss the walk and the photos taken.

Recruitment of policymakers, housing developers, and site managers is done, by and large, through a snowball method of personal contacts of one of the principal investigators. Acknowledging the unique insights and perspectives they may have, we are also inviting these participants to participate in the docent tour of various properties and neighborhoods. All participants are given gift cards for each interview as way to thank them for their time. All interviews are digitally recorded and transcribed verbatim. Our qualitative data analysis follows the procedures and method of a postmodern constructivist approach to grounded theory (Charmaz, 2007).

Specifically, our procedures include conducting our data collection and analysis in an iterative fashion simultaneously, developing a cadre of codes that can be used to theorize across different participant experiences. We will explore the data noting the variation and similarities among the participants and the relationships among various codes. Through extensive memo writing, we will categorize our codes and then select individual narratives that best demonstrate how particular categories are operationalized (Dubbin, McLemore, & Shim, 2017).

We will underpin our qualitative analysis in the theoretical framework of neighborhood political ecology (Chitewere, Shim, Barker, & Yen, 2017) as a way to explore how present circumstances in public housing renovation schemes like RAD are constructed by their social, cultural, economic, and political histories and how those histories converge to help or hinder health. Our inclusion of policymakers and housing developers in this study is our attempt to reconnect the fields of urban planning and public health where “the separation of the fields has contributed to uncoordinated efforts to address the health of urban populations and a general failure to recognize the links between...the built environment and health disparities facing low-income populations and people of color” (Corburn, 2004, p. 541). Our questions to policymakers and housing developers will focus specifically around how the health of public housing residents informs decisions regarding public housing renovation and redevelopment.

Limitations

There are some noteworthy limitations of this study. First, the data we are collecting come from only seven housing communities undergoing renovation by a single developer. Therefore, the population under the treatment of renovation for which we have data is about 25% of the total currently underway in San Francisco. The scope of renovation and the complement of services provided by the various developers that may impact health and social experiences could be substantially different across these various sites. Second, the data from EHRs we are collecting do not include other large hospital systems such as Kaiser, Dignity, or Sutter Health. Our data also do not include long-term care support or visits to long-term care facilities or clinics run by private or nonprofit organizations. Therefore, our results will not be generalizable to the entire population of residents living in RAD developments. Third, we will not know the housing conditions of the nonpublic housing residents, the people we selected as a comparison group. Methodologically, it might make more sense to identify residents of projects being converted under RAD who do not return to RAD sites and utilize this population as the comparison group. However, in San Francisco, RAD projects are considered on-site rehabs. Residents are either relocated to an on-site unit (e.g., from an upstairs unit to a downstairs one) or relocated off site to a temporary unit while their home unit is being renovated. The use of these off-site locations is very short term (with rare exceptions) and there is no option to relocate to a new site outside of emergency transfers.

Implications

The transformation of public housing through RAD in San Francisco is unprecedented in its scope and scale and therefore provides a unique opportunity to explore both the sociological dynamics and the health impacts of large-scale public housing renovation. Using a prospective mixed-methods design that conjoins quantitative methodologies measuring changes in the prevalence of health conditions and health care utilization over time in the context of site-specific renovations, along with qualitative data that captures the experiences and perceptions of residents living through these renovations, this study will highlight the multidimensional nature of both the physical and social environments and the pathways through which health may be helped or hindered.

Our interdisciplinary team has allowed us to think about the realm of public housing renovation much more broadly. We conceive public housing renovation as a crucial element to what

Klinenberg (2018) calls “social infrastructure”: the complement of physical spaces that are safe, connect and support people in their daily living, and are amenable to social interaction and the development of vibrant social networks. To the best of our knowledge, this will be one of the first studies to quantitatively measure the impact of social infrastructure on health.

As the RAD program is implemented at public housing sites across the United States, there are extensive opportunities for researchers to measure how the program is affecting other diverse communities. RAD implementation will continue to require enormous financial investment by affordable housing developers and public agencies. Research on the health impacts of RAD is a first step in opening new avenues to explore the links between housing renovation and health care utilization (and costs), potentially validating the importance of public–private partnerships to address substandard housing stock. Improving the health of public housing residents by providing safe housing of decent quality may be a compelling economic return on investment that solidifies the case for allocating proper resources to continue to address and preserve public housing stock throughout the United States. On the other hand, it is equally important to document whether resident health is not improved or adversely affected by the RAD program. By designing this study to engage diverse stakeholders, we anticipate being able to translate and disseminate our results to elevate the importance of accounting for public health in housing policy development and program implementation. Through the community-engaged and mixed-methods approach of this study, we hope to add to the body of knowledge in two substantive ways: (a) discovering whether resident and developer health considerations square with what is learned from extracted clinical data, and (b) elucidating how developers make economic and political trade-offs with respect to things that might impact resident health. Taken together, the results of this study should have significant local, state, and federal policy implications.

Disclosure Statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the Robert Wood Johnson Foundation.

Notes on Contributors

Leslie Dubbin, PhD, MS, RN is an assistant professor of Health Policy in the School of Nursing, Department of Social and Behavioral Sciences at the University of California, San Francisco. Her program of research intersects race, place, and health outcomes.

Susan Neufeld serves as Vice President of Evaluation and Resident Program Design for BRIDGE Housing, a leading nonprofit developer of affordable housing. In her role, Ms. Neufeld oversees and evaluates the impact of over 350 social service programs that support seniors, families, and individuals with special needs.

Ellen Kersten is a Research Specialist at the University of California, San Francisco. She is an interdisciplinary population health researcher with expertise in spatial analysis and data integration across clinical and community settings. Her research focuses on how neighborhood, institutional, and structural factors contribute to health outcomes and disparities.

Irene H. Yen, PhD, MPH is a professor of Public Health in the School of Social Sciences, Humanities, & Arts, University of California, Merced and affiliated faculty in the Department of Social Behavioral Sciences, School of Nursing, University of California, San Francisco. She is a social epidemiologist, focusing her research on place, race, and class.

ORCID

Leslie Dubbin  <http://orcid.org/0000-0002-7044-5799>

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