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Bridging the Housing and Health Policy Divide: Lessons in Community Development from Memphis and Baltimore

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Abstract

Governments and nonprofits routinely partner to launch place-based initiatives in distressed neighborhoods with the goal of stabilizing real estate markets, reclaiming vacant properties, abating public nuisances, and reducing crime. Public health impacts and outcomes are rarely the major policy drivers in the design and implementation of these neighborhood scale initiatives. In this article, we examine recent Health Impact Assessments in Baltimore, Maryland and Memphis, Tennessee to show how public health concepts, principles, and practices can be infused into existing and new programs and policies, and how public health programs can help to improve population health by addressing the upstream social determinants of health. We provide a portfolio of ideas and practices to bridge this classic divide of housing and health policy.

Keywords

Public Health; Neighborhood Revitalization; Housing; Community Development

1. Introduction

Where we live is a key social determinant of our health. The condition of our homes and neighborhoods can negatively affect our respiratory health (Mudarri and Fisk 2007, Rau, Chew, and Garfinkel 2002; Sharfstein et al. 2001, Krieger et al. 2000; Shaw 2004), cognition and neurodevelopment (Coulton et al. 2016; Bashir 2002; Sharfstein et al. 2001; Shaw 2004), behavioral health (Bashir 2002; Burdette, Hill, and Hale 2011), physical fitness (Chambers and Rosenbaum 2013, Bell et al. 2013), mental stress (Shonkoff, Boyce, and McEwen 2009), and physical safety (Cohen et al. 2003).

However, policies and programs targeted at improving the conditions, markets, and occupancy of housing and neighborhoods do not typically focus on health. Similarly, public health interventions often focus on mitigating disease complications through the provision of health care services after an illness or injury has occurred rather than preventing disease by addressing upstream factors such as housing or neighborhood conditions. Public health and housing/neighborhood development systems could greatly improve population health if they better coordinated with one another to address these social determinants of health.

In this paper, we discuss how public health concepts, principles, and practices can be infused into housing and community and economic development policies, programs, and projects, and how both fields can better work together to address the social determinants of health within neighborhoods. We look at case studies from Baltimore, Maryland and Memphis, Tennessee to illustrate recent attempts at bridging these gaps through the health impact assessment (HIA) process. These case studies illustrate the different phases of HIA since they are at different stages – one is complete and the other is in progress. Finally, we offer insights and practices that can be used to bridge the policy divide separating housing, community and economic development, and health.

2 Health, Housing, and Neighborhoods

Housing and neighborhood conditions in areas of concentrated poverty that lack opportunity can adversely affect both the physical and mental health of residents (Building Healthy Places 2015; Turner and Gourevitch 2017). Substandard housing can lead to asthma, lead poisoning, behavioral and learning problems, and physical injury (Muddarri and Fisk 2007; Rau, Chew, and Garfinkel 2002; Bashir 2002; Coulton, Fischer, et al. 2016; US Department of Health and Human Services 2009; de Leon and Schilling 2017). In addition, research shows that vacant or blighted housing is associated with 15% higher rates of violent crime (Cui 2010), and that, in some cases, targeted demolition can decrease the amount of crime in an area (Stacy 2017). Limited access to supermarkets and healthy food options and a high concentration of fast-food and convenience stores can negatively impact the neighborhood nutrition environment and may be associated with increased obesity risk and poor diet among residents of some neighborhoods (Bell et al. 2013).

Research that controls for individual-level health drivers highlights the importance of neighborhood-level approaches to improving the health and well-being of residents. For example, one study finds an independent association of neighborhood characteristics with

birth outcomes, specifically risk of low birthweight and prematurity, while controlling for individual factors (O'Campo et al. 1997). Work by Diez Roux and colleagues (2001) demonstrates an association between living in economically distressed neighborhoods and increased incidence of coronary artery diseases independent of individual-level income, education, and employment (Roux et al. 2001). Analysis of the Moving to Opportunity for Fair Housing demonstration project, a randomized controlled trial testing the effect of housing vouchers on economic outcomes, finds that heads of households who remain in concentrated poverty have higher rates of diabetes and extreme obesity compared to those who move to low poverty neighborhoods (Ludwig et al 2011). Together, this research highlights how inextricably linked neighborhood quality and health outcomes are, and the importance of neighborhood-level approaches to improving the health and well-being of residents.

Today, neighborhood revitalization practitioners recognize that residents living in areas of concentrated poverty face unique challenges due to their surrounding residential environments. Motivated by these challenges, place-based strategies for neighborhood revitalization aim to connect residents within a neighborhood to external resources, integrate different efforts and organizations across one neighborhood to work together and more effectively serve their residents, and advocate for city, state, and federal policy changes to create better outcomes for residents (Turner et al. 2014). Most large-scale place-based policy interventions focus on addressing housing challenges, minimizing barriers to economic mobility, building human capital, and preventing crime (Tach and Wimer 2017).

While neighborhood revitalization efforts impact the health and well-being of residents, most of them do not explicitly include a focus on health in their design. In fact, many community development practitioners and policymakers do not pay attention to how their work intersects with health (Wernham 2011; RWJF 2014). Some suggest that this separation between neighborhood revitalization and health sectors has helped foster a series of uncoordinated attempts to address the intersection of health and neighborhood revitalization (Corburn 2011; Rose and Ky-Nam Miller 2016). Scholars point to siloed sectors as the underlying reason for disconnected efforts -- different professional vocabularies, technical expertise, funding streams, and policy tools -- which make it difficult for health and community development experts to partner on neighborhood revitalization strategies and coordinate them with population health improvement efforts (Sally et al. 2017).

Nonetheless, cross-sector strategies and practices that focus on the intersection of health and community development are one promising method for combining public health and community development priorities and addressing health in neighborhood revitalization work. One method for creating these cross-sector programs that has grown in popularity in recent years is Health Impact Assessments (HIAs) -- a process that involves stakeholder engagement, literature review, quantitative assessment, and the application of public health expertise to identify non-health sector policies or programs. For example, an HIA might assess the health impacts of a city zoning strategy by evaluating the implications that proposed uses of space will have on air quality in residential neighborhoods and the well-being of urban residents. Table 1 illustrates the six general phases of an HIA.

HIAs have been used to examine a wide variety of proposed housing policy and housing development projects (Dannenberg et al. 2008), as well as a number of other place-based strategies. This process focuses on identifying the potential health consequences of non-health sector policies. As such, it lends itself to engaging directly with stakeholders and policy makers outside of health care. Because equity is a central consideration in HIAs, this process also brings diverse voices and perspectives to the table including local residents likely to be affected by the policies or programs under consideration and local grass roots and community-based organizations in addition to civic and business leaders and local government officials. HIAs have become an important tool for local communities and health departments to engage in policy processes and programmatic efforts that address social determinants of health and thus HIAs can be instrumental in bridging sectoral divides and shaping how proposed policies and strategies are implemented to better support the health and well-being of a target population (Suther and Sandel 2013; Wernham 2011).

While there is still much more work to be done, the use of HIAs to connect health considerations and neighborhood revitalization work signals the potential for sustained engagement at the intersection of health, planning, and community development. The drivers of such collaborative approaches may also improve the effectiveness of health care services and treatments for low-income patients, particularly as it relates to access to stable, affordable, safe housing in healthy neighborhoods (Sandel and Desmond 2017).

3 Case Studies

To illustrate ways in which housing and neighborhood policies can incorporate public health principles and practices into their design and implementation, we describe two recent projects. The first is an ongoing project called *Strategic Housing Code Enforcement and Public Health: A Health Impact Assessment in Memphis, TN*, led by Interdisciplinary Research Leaders (IRL) Steve Barlow, Joseph Schilling, and Christina Stacy. For this project, the research team is applying the HIA framework to identify ways in which city and county housing code enforcement in Memphis can more strategically address the health of residents of substandard housing via multiple pathways including increased prioritization of service requests with serious health impacts, proactive sweeps of targeted areas, and enhanced coordination between city and county offices.

The second case study, *Zoning for a Healthy Baltimore*, is co-led by IRL mentor Dr. Rachel Thornton in partnership with the Baltimore City Health Department and in cooperation with the Baltimore City Planning Department. *Zoning for a Healthy Baltimore* employed an HIA framework to inform Baltimore's comprehensive zoning code rewrite process, known as *TransForm Baltimore*. The HIA, which was completed in 2010, ultimately influenced the final version of *TransForm Baltimore*, which was ratified in 2016 by the Baltimore City Council. *Zoning for a Healthy Baltimore* focused on the potential health implications of the City's comprehensive zoning code rewrite and the proposed zoning code. This HIA led to direct policy change – namely a set of zoning provisions within *TransForm Baltimore* that addressed alcohol outlet location and density in a way that was consistent with the law.

Strategic Housing Code Enforcement and Public Health: A Health Impact Assessment in Memphis, Tennessee

Memphis, a city of approximately 652,000 people, experienced a decline in population of 6.4% between 2000 and 2010 (US Census 2010) and faces a low population density, having expanded 35 percent in land area between 1970 and 2010 but growing only 4 percent in population during this time (Schilling 2016). The city also faces high rates of poverty, with 32% of families in Memphis in poverty and more than half of all children in its County facing economic difficulties (Urban Child Institute 2013). A 2010 Gallup poll showed that 26% of Memphis residents could not afford to purchase food over the course of a year (Tennessee Farm Bureau Federation 2014) and according to an Affordable Housing Gap Analysis in 2016, Memphis has a deficit of 32,821 affordable and available units for individuals with incomes that are 50% of the area median income (Aurand et al. 2017).

Not only is there a lack of affordable housing in the city, but the housing that does exist is aging and much of it is in need of repair. When both factors are considered, nearly 40 percent of all occupied housing units in Memphis exhibit at least one of the Census Bureau's selected physical or financial condition of poor quality which include: lacking complete plumbing or kitchen facilities, containing more than 1 occupant per room or having a gross rent exceeding 30 percent of a household's income (ACS 2012–2016).

The health of Memphis residents is also a concern, with high rates of childhood asthma and chronic diseases concentrated in specific low-income neighborhoods. Childhood asthma affects over 10,000 children in Memphis and was the most common reason for hospitalization in 2015, which reflects national trends (Le Bonheur Children's Hospital nd.; Leyenaar et al. 2016). Among adults, 8.7% have asthma (compared to 6% nationally) and 14.9% have diabetes (compared to 9.8% nationwide). In Memphis, 21.1% of residents do not have health insurance coverage, compared to 16.5% nationwide (City Health Dashboard 2018; CDC 2018). Like childhood asthma rates, these health issues are not evenly distributed across the metro region, but rather are concentrated in lower-income neighborhoods (Memphis Property Hub 2017). The County Health Department's work on life expectancy highlights that zip codes with lower life expectancy also have a higher percentage of the population living below the poverty level (Ogari and Sweat 2016).

Recently, housing and public health stakeholders in Memphis have come together to address issues related to blight, code enforcement, and public health. In 2016, leaders from the nonprofit, public, and private sector collaborated to develop the nation's first blight elimination charter—a series of principles, goals and action steps that would enable stronger coordination across sectors, agencies, and community-based organizations working on these issues (Memphis Neighborhood Blight Elimination Charter 2016). Participants in this strategic planning process came together at the first community wide blight elimination summit in March 2016 to formally endorse the charter and launch the blight elimination steering team to steward the charter's recommendations into action (Lind and Schilling, 2016). Around the same time, Le Bonheur Children's Hospital brought together a broad coalition of local health care providers and housing and community development organizations and groups to launch a healthy homes working group that later became a green and healthy homes pilot city initiative. Collectively these efforts have enabled local

geographically and in terms of type of issue addressed), and how it might better address health and health equity by filling in some of these gaps.

Two challenges for the Memphis team were their lack of public health expertise and the fact that Urban Institute researchers did not live or work in Memphis. While one member had been a consultant/advisor to a HIA and was a previous Robert Wood Johnson Scholar through its Active Living Research initiative, and the other had expertise in housing economics and crime, no one on the team held an advanced degree in public health or had worked for a public health agency. To engage public health experts in the HIA process, the Memphis team worked with mentors from Johns Hopkins University and the University of Memphis' School of Public Health and hired one of three graduate research assistants from the University of Memphis' school of public health. Tapping into university expertise allowed the Memphis team to fill the void of public health knowledge. They also formed a local project advisory group (PAG) that included several members connected to public health and health care providers. The PAG also helped address the Urban Institute IRL researchers' lack of proximity. Rounding out the NPI project team to provide the Urban Institute researchers with staff on the ground were two other graduate research assistants, one from the University of Memphis law school who had represented the city before the Shelby County Environmental Court (a key focus of the HIA) and one from the University of Memphis School of Urban Affairs and Planning who had worked with several community development corporations in neighborhoods experiencing the challenges of vacant, blighted properties.

The Memphis HIA team has completed the screening, scoping, and assessment phases of the HIA and is beginning the reporting phase of the analysis. Important screening and scoping milestones include developing a community outreach and engagement plan, developing a logic model (figure 1), conducting a preliminary literature review, inventorying stakeholders and data sources, and convening a local project advisory group. Assessment milestones included undertaking a series of interviews and focus groups with local stakeholders including policymakers, philanthropic leaders, community health workers, health care organizations, nonprofits, and city employees, and collecting and analyzing a number of datasets, including code enforcement data from both the city and county, crime data, and health data. Thanks to the efforts of the law GRA, the team also collected one month's worth of Shelby County Environmental Court data (the County's centralized court for all violations of housing, health, fire, zoning and land subdivision ordinances) on court cases, by address. This dataset includes 1,095 cases, a comprehensive description of all cases that went through environmental court in this month. This analysis should be caveated with the consideration that we only had the ability to collect one month's data and trends could potentially vary substantially from month to month.

During the rest of the analysis stage, the team identified a range of relationships and gaps in services and collaboration between substandard housing, code enforcement, health, and crime, and used their quantitative and qualitative data to begin formulating important policy recommendations and insights. Through quantitative data analysis, the team was able to learn about the city code enforcement department's prioritizations and processes. Specifically, the team learned that the city code enforcement department primarily serves

requests outside of the home such as junk in the yard rather than structural issues within the home (only 16 percent of service requests in 2016 were related to the home structure) and they predominantly address issues in single-family homes and duplexes rather than larger multifamily properties.¹ Comparatively, 1.5 percent of all 2016 service requests were for multifamily properties, while 31 percent of the city's units are in multifamily properties.² They also learned that although there is a system in place for prioritizing cases, few code enforcement employees rely on this categorization to determine prioritization (23 percent of service requests are coded as low priority), so when an officer goes out to respond to service requests for the day, he randomly selects from amongst requests rather than going to the properties with the most serious problems first.

In addition to the quantitative research, the qualitative research (which involved a series of in-depth interviews with individuals throughout the city and across sectors) uncovered a complex, nuanced landscape of stakeholders working to address these issues. For example, interviews with city employees highlighted the challenges surrounding coordination between different city and county stakeholders, and instances where differing agency scopes led to gaps in services related to addressing mold in the home. In addition, the qualitative interviews also highlighted the collaborative momentum in Memphis around issues related to substandard housing and health, and work already happening on the ground that could be furthered through HIA recommendations and more refined and targeted policy agendas.

These analyses led to a range of policy recommendation, which are in the final phase of review and refinement (Figure 2). Recommendations under consideration fall into four categories: better prioritization of health and safety code cases, increased cross-agency and cross-sector coordination, broader coverage and resources for code enforcement and repairs, and more proactive enforcement overall.

To increase prioritization of health and safety cases, the HIA team is recommending that the code department develop a strategic response to service requests that incorporates public health concerns. This would likely involve updating their policy manual to place heavier weight on requests that are likely to cause more serious negative health outcomes, and updating the data systems to automatically prioritize higher priority requests. The team is also recommending that the city study the potential impacts of giving code officers administrative citation rights so that they can use less resources taking minor offenders to court and focus their efforts on more serious cases.

Another set of recommendations that arose from the HIA focuses on improving coordination across agencies and sectors. Specifically, recommendations include identifying and filling gaps in services such as mold and bedbugs by coordinating between city code and the county health department, improving the referral system between agencies and nonprofits so that when an issue arises for a homeowner, they know what services are available to help them. The team is also recommending cross training of officers from different agencies and the creation/strengthening of cross agency working groups for city and county officials. This

¹Defined here as properties with 3 or more units.

²Though, it is possible that in limited cases multiple units in a multifamily property were addressed in a single property service request entry.

cross-training recommendation is already being implemented through a city/county healthy homes training that will take place in the fall of 2018, which the HIA team is helping to coordinate. Better linkages between various data systems would also be useful, such as the sharing of information between city code enforcement and county health officers so that each knows when the other has received a request at a particular property, and the sharing of information between the environmental court and city and county officials so that they can keep track of the progress of each service request.

A final set of recommendations focuses on broadening coverage of code enforcement services to reach properties that have been overlooked, and making enforcement more proactive so that properties are inspected before a problem occurs. To achieve both of these objectives, the team recommends proactively sweeping multifamily and problem areas (doing inspections of entire apartment complexes and neighborhoods at once) and more widely advertising code enforcement services to ensure that citizens are aware of their rights and options.

The team also considered recommending that the city implement a full rental registration with a required inspection, but determined that such a blanket inspection process would likely be inefficient since the inspections would be unnecessary for most properties. Instead, the city is in the process implementing a chronic nuisance ordinance, which would have a registration component but only require an inspection if there is a known problem on the property. This will help to proactively target problem properties and enhance coverage, but will not waste resources on properties that are unlikely to require repairs.

To increase coverage of structural issues within owner occupied homes, the team is recommending expanding voluntary healthy homes inspection programs, where a homeowner can invite a volunteer to do an inspection without fear of punishment from the city. Recommendations for broader coverage also focus on expanding the coverage of types of issues covered by code, such as updating ordinances and laws to better target bed bugs and mold (two issues not sufficiently addressed by any department currently). More broadly, the team is recommending that the city consider what resources are needed to better address the full scale of the problem, and look to allocate additional resources toward healthy homes and neighborhoods.

Once the HIA recommendations are finalized, the research team will report out their findings and work with local stakeholders to implement them and track their progress over time. The reporting phase will intensify in September and October of 2018 when their HIA report is publicly released and then presented to local stakeholders at the 3rd annual Blight Summit. Following the report's release, NPI will take the lead on disseminating the HIA's findings to a variety of different local audiences through presentations at community and policy meetings. As part of its outreach to policymakers and practitioners, NPI also plans to publish a shorter policy brief that focuses on the HIA's major findings and recommendations. The team has plans for outreach beyond Memphis through blog posts and academic articles and presentations. Monitoring and evaluation will follow this reporting phase, which will allow the team to modify their process for future studies. Through this HIA process, the team was able to work closely with a wide variety of stakeholders and data

sources to identify ways in which code enforcement might better target population health in Memphis.

Zoning for a Healthy Baltimore, Baltimore, Maryland

Baltimore, a mid-Atlantic city with a population of approximately 615,000 people, has experienced a population decline of approximately 35% since 1950 ('Data & Demographics' 2016; 'U.S. Census Bureau QuickFacts: Baltimore city, Maryland; UNITED STATES' 2017; Johnson Thornton et al. 2013). As of 2014, there were more than 16,000 vacant buildings, comprising 8% of residential properties in the city (Whiteman 2014; 'Vital Signs 15' 2017). For every 10,000 housing units, there are 562 vacant buildings and 677 vacant lots, and the Johns Hopkins Center for a Livable Future reports that 12.5% of Baltimore is considered a food desert, or "an area where the distance to a supermarket is or supermarket alternative is more than ¼ mile, the median household income is at or below 185% of the Federal Poverty Level, over 30% for households have no vehicle available, and the average Healthy Food Availability Index Score for all food stores is low." (Fuller 2017). As data from the Baltimore Neighborhood Indicators Alliance illustrates, the vacant properties in the city are not distributed equitably throughout the city ('Vital Signs 15' 2017). Rather, vacant houses and lots are overconcentrated in low-income and predominantly racial/ethnic minority neighborhoods in Baltimore (Mui, Gittelsohn, and Jones-Smith 2017; 'Vital Signs 15' 2017). Similar evidence of concentrated disadvantage can be seen when examining health outcomes for Baltimore City residents.

For example, although Baltimore's average life expectancy is 73.6 years, there is a 20-year gap in life expectancy separating residents living in Baltimore's healthiest and least healthy neighborhoods (Fuller June 2017; 'Vital Signs 15' 2017). Data from the Baltimore Neighborhood Indicator Alliance indicates that life expectancy in 2015 varied by 21 years across neighborhoods throughout the city ('Vital Signs 15' 2017). In some instances adjacent neighborhoods varied by 15 years ('Vital Signs 15' 2017). Neighborhoods with the lowest life expectancy and high vacancy rates also have the largest concentrations of households spending more than 30% of total income on rent and housing expenses ('Vital Signs 15' 2017). Likewise, many of these same neighborhoods experienced the highest rates of gun homicides, and juvenile arrests for drug offenses in 2015 and suboptimal birth outcomes including the lowest percentage of neonates with a healthy birth weight ('Vital Signs 15' 2017).

In recent years, city government agencies have partnered with local community organizations and public policy researchers to address these vast disparities affecting access to health-promoting neighborhoods, housing, and opportunities for healthy living throughout Baltimore. We describe one such effort that bridged the gap between health and housing and sought to spur healthy development and creation of healthier neighborhood environments in Baltimore. The project, an initiative to reduce the density of alcohol outlets in areas of high crime and economic blight, originated out of the *Zoning for a Health Baltimore* HIA, which was completed in 2011. This collaboration provides a roadmap for understanding ways that experts and organizations in housing and health can work together to incorporate public health and housing perspectives into neighborhood revitalization.

Zoning for a Healthy Baltimore was co-led by researchers at Johns Hopkins and the Chief Epidemiologist at the Baltimore City Health Department (2009–2010). The HIA was conducted in partnership with the Baltimore City Health Department and in cooperation with the Baltimore City Planning Department. The HIA and its principal findings are described elsewhere (Thornton et al. 2013). *Zoning for a Healthy Baltimore* sought to inform Baltimore's comprehensive zoning code rewrite process, known as *TransForm Baltimore*, with specific emphasis on the potential health implications of the City's comprehensive zoning code rewrite and the proposed new zoning code. At times, city leaders expressed concern that the emphasis on health would detract from the primary purpose of *TransForm Baltimore*, which they expressed in terms of economic development opportunities. Yet, through consistent dialogue and efforts to achieve mutual understanding, the HIA team were able to identify areas of shared priority with officials from the Baltimore City Planning Department. Among these were: 1) insuring that the zoning code promoted the health and welfare of the population, and 2) identifying ways that the zoning code could support economic development in general and address community concerns regarding crime and quality of life in Baltimore neighborhoods in particular.

The *Zoning for a Healthy Baltimore* HIA, led by Dr. Thornton (PI) identified a variety of ways in which zoning code changes may affect health via impacts on neighborhood. Among these were findings identifying ways in which zoning could be a strategy to increase access to healthy foods via increasing the number of zoning districts where urban gardens and farmers' markets were allowed (Scharper 2010). Furthermore, based on the strength of the public health evidence, the HIA found that addressing alcohol outlet density and location through zoning could decrease violent crime, improve health equity, and help disadvantaged neighborhoods become healthier places to live (Thornton et al. 2013). One of the key findings from the HIA was that there is strong and consistent evidence that living close to alcohol outlets or in a neighborhood with high concentrations of alcohol outlets is associated with high violent crime and worse health-related outcomes for residents including interpersonal violence, excessive alcohol consumption, and related harms (Thornton et al. 2014; Jennings et al. 2014; Campbell 2009; LaVeist 2000). Related research led by Dr. Jennings (Co-I) found that, among otherwise similar Baltimore neighborhoods, every additional alcohol outlet was associated with a 2.2% increase in the number of violent crimes.² As Figures 3 and 4 show, non-conforming liquor stores in Baltimore are concentrated in high-poverty neighborhoods and areas with larger populations of non-white residents. Despite opposition from store owners, residents and community organizations in some of Baltimore's most distressed communities initially voiced strong support for these provisions given their likely effects on crime and potential to make Baltimore neighborhoods healthier places to live (CPHA Baltimore 2017).

Informed by the *Zoning for a Healthy Baltimore* HIA, the Baltimore City Planning Department in collaboration with the City Solicitor's Office, the Baltimore City Health Department, and researchers from Johns Hopkins developed a set of three zoning provisions within *TransForm Baltimore* that addressed alcohol outlet location and density in a way that was deemed to be consistent with federal and state law³ Alcohol outlets are notoriously difficult to regulate and using zoning policy as a mechanism to regulate them was a novel and innovative approach. On December 5, 2016, the Baltimore City Council approved

TransForm Baltimore. The version approved includes the three-alcohol outlet related provisions developed through this collaborative, research-informed process.

Specifically, these three provisions address the location, distribution, and density of alcohol outlets in Baltimore. One of the resulting provisions requires non-conforming off-premise alcohol outlets (i.e. liquor stores) in residential neighborhoods to relocate, close, or convert to an approved use by June 5, 2019. Two related provisions prevent further overconcentration of liquor stores in commercial areas and strengthen regulations for outlets that sell alcohol for both on- and off-premise consumption (i.e. taverns). These provisions took effect in June 2017 and affected liquor stores and taverns have two years to come into compliance with the new law. Once implemented, these liquor store and tavern provisions are expected to reduce the number of both these types of alcohol outlets in Baltimore unless they are forestalled by legal challenges or new legislation. The provision referencing liquor stores in residential neighborhoods (18–701) is likely to result in the elimination of 76 liquor stores city-wide, which represents a 6% reduction in the number of liquor stores in Baltimore.

4 Discussion and Conclusions

The examples from Memphis and Baltimore highlight the promise of cross-sector collaborations involving city agencies, academic partners, and other community stakeholders to structure and implement housing, urban planning, and community development policies that consider population health and have the potential to transform neighborhoods into healthier places to live. While access to safe, quality, and affordable housing in stable neighborhoods is an important element of improving population health, we hope these examples illustrate the importance of approaching this cross-disciplinary work with a broader scope in mind. The tools used here to identify areas for better coordination and cross disciplinary thinking can be used to address gaps in other areas, such as the health implications of policies that affect access to high quality education, transit, and jobs; and exposure to violence and crime.

In reflecting on the Memphis and Baltimore HIA experiences, three essential elements of successful health and housing collaborations emerged: 1) multiple levels and types of translation between policymakers, practitioners, and researchers; 2) the engagement process and structure of HIAs; and 3) the pivotal role and critical leadership of a local intermediary.

Meaningful collaboration requires effective translation, since different sectors and disciplines often have their own terminologies and cultures (Kania and Kramer 2011; Hermann, Henry, and Hogan 2017). For Memphis and Baltimore, the translation activities seemed to span several critical dimensions and scales, such as mapping the housing and code enforcement processes in Memphis and the local government zoning and land development processes in Baltimore. Process mapping, in these cases, helped public health

³The three provisions appear in the Baltimore City Council Bill 12-0152 *TransForm* Baltimore Alcohol Outlet Density Reduction. They state: 1) Liquor Stores in Residential Zones required to stop selling alcoholic beverages within two years after effective date of Ordinance. (18-701); 2) Taverns will be required to meet the zoning definition of Tavern (1-314 and 14-336) within two years after effective date of Ordinance (18-702); and 3) New Liquor Stores may not be closer than 300 feet to an existing store, except in downtown (14-335)

and housing researchers, policymakers, and practitioners develop a shared understanding of the policy domains and systems they were each attempting to influence and change. Certainly, these cross disciplinary activities and discussions were not without challenges. It took considerable energy and focus for each team to create its own cross disciplinary understanding and effectively design and develop their respective research projects.

Translating health and housing principles, terminology, and practices was a fundamental first step for the community development and health fields, so as to establish a common understanding of respective complexities and select interventions that addressed the appropriate policy intersections. For example, the Memphis team's cross disciplinary group of graduate research assistants allowed us to bring multiple sectors together to discuss overlapping topics while identifying and translating terms that were not commonly used by all parties in the room. For instance, the abbreviation "CDC" is used to refer to community development corporations by the housing sector, whereas the same abbreviation is used to reference the Centers for Disease Control and Prevention, a federal agency within the U.S. Department of Health and Human Services, by the public health and health care sectors. Identifying these inconsistencies in terminology and shorthand up front allowed us to minimize miscommunication throughout the process.

Baltimore's HIA required in-depth analysis of the practices and procedures for zoning, comprehensive planning, and local land development processes which served as the framework for its analysis and recommendations. For Memphis, a similar level of analysis and conversations are happening relating to the mapping of housing code enforcement processes from inspection through cases filed with the Shelby County Environmental Court. In some ways, the public health researchers and practitioners in each case study undertook a crash course in the fundamentals of local government land use, urban planning, housing code enforcement, and community development. The same could be said in the sphere of public health for the urban planners, economists, and housing and community development leaders. Public health's disciplinary focus on the pathways and drivers of disease, how it varies among certain populations, and how individual and collective behaviors can increase or decrease the risks of exposure were often new concepts for the community development and urban planning professionals. Building this common understanding was critical for identifying, selecting, and coordinating a cohesive set of public health, housing, and urban planning policies that could effectively address the intersections of health issues across a variety of housing conditions and neighborhood circumstances.

In both case studies, the involved teams focused on the translation of research into policy action, a key objective of the HIA process. For the Memphis team, community action and policy change were embedded into the IRL grant program that required each team to consist of two researchers and one fully engaged community partner. IRL curriculum, convenings, and virtual workshops focus on concepts and practices of policy change, communications, and outreach. Building on these insights, the Memphis team has already grounded their analysis and recommendations around current and proposed policy and program changes. Baltimore's research team spent countless hours attending and participating in meetings and public hearings on the rewrite to the city's zoning code to ensure incorporate community

voices into the research and subsequently translate their findings into community-based advocacy and policy change efforts.

Second, HIAs provide a natural format for cross-sector collaboration, stakeholder engagement, and research translation into concrete policy actions. HIAs serve to bring together stakeholders from multiple disciplines and sectors to consider health while achieving other important policy objectives. Success in optimizing health via housing, urban planning, and community development policy requires a unique set of policy stakeholders. These include public health, housing, community development, and urban planning professionals. Community representatives including neighborhood association leaders and residents also need a seat at the table to articulate the ways in which community transformation, affordable housing, and urban planning policies and programs could impact their daily lives.

Finally, strong intermediaries and local leaders are necessary to facilitate collaboration and translation and make the HIA process effective. In Memphis, NPI played a critical role as community research partner and will be responsible for translating the HIA's insights and recommendations into local policy action. Since NPI has strong roots in the community development in Memphis, the trust they have built through decades of community engagement will allow them to translate the recommendations in a way that is meaningful to local communities and key stakeholders.

In Baltimore, faculty from the Johns Hopkins University schools of Medicine and Public Health were the catalysts for the zoning HIA. Local government officials from housing, health, planning, law, and community development agencies were essential for translating the HIA findings into policy action. In Baltimore and Memphis, local government officials were ideally positioned to translate HIA findings into policy while trusted intermediaries with specialized expertise and capacity were essential to producing rigorous and comprehensive findings through the HIA process.

As for future research, there are a wealth of opportunities for building on these examples in Memphis and Baltimore. Each of the case studies uncovered the complexities that arise in coordinating across community development, neighborhood revitalization, housing, and health. Cross-site research that compares different approaches across different cities to identify the common elements and unique community characteristic could help establish closer connections between health and neighborhood revitalization programs and policies. Furthermore, while HIAs are a key mechanism for incorporating health perspectives into non-health sector policymaking, it is still necessary to move beyond health impact assessment to policy assessment and program evaluation following adoption of more collaborative and coordinated interventions. This evaluation of impacts should be cross-sector as well but still in keeping with the stated goals/priorities of a given policy. From a public health perspective, the insights and lessons from Memphis and Baltimore could facilitate better coordination across each of the varying social determinants of health and healthcare institutions would help to not only shorten illnesses and alleviate health issues, but also prevent them in the first place. And, a greater focus on these underlying causes of

illness could save money by addressing the root cause of the problem rather than treating the symptoms with band aids, inhalers, and emergency room visits.

Improving neighborhoods and population health takes a concerted effort across multiple policy dimensions as well as ongoing coordination between multiple sectors with competing demands and priorities to ensure that there is neither duplication of effort nor gaps in practice. Lessons learned from *Zoning for a Healthy Baltimore* and the *Memphis Strategic Code Enforcement HIA* lend insight into how sectors can work together to address the upstream social determinants of health.

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References

- Aurand Andrew, Dan Emmanuel, Diane Yentel, Ellen Errico. (2017). *The Gap: A Shortage of Affordable Homes*. Washington, DC: The National Low Income Housing Coalition.
- Barlow Steve. (2016). *Memphis Fights Blight: Collaborating to Win the Battle Against Vacant and Abandoned Property*. St. Louis: Federal Reserve Bank of St. Louis Retrieved from <https://www.stlouisfed.org/publications/bridges/fall-2016/memphis-fights-blight>
- (2016). *Memphis Neighborhood Blight Elimination Charter*. Retrieved from memphisfightsblight.com.
- Bashir Samiya A. (2002). Home Is Where the Harm Is: Inadequate Housing as a Public Health Crisis. *American Journal of Public Health* 92 (5): 733–8. [PubMed: 11988437]
- Bell Judith, Mora Gabriella, Hagan Erin, Rubin Victor, Karpyn Allison. (2013). *Access to Healthy Food and Why It Matters: A Review of the Research*. Oakland, CA: PolicyLink.
- Building Healthy Places. (2015). *Making the Case for Linking Community Development and Health: A Resource for Those Working to Improve Low-income Communities and the Lives of the People Living in Them*. Building Healthy Places Network.
- Burdette Amy M., Hill Terrence D., and Hale Lauren. (2011). Household Disrepair and the Mental Health of Low Income Urban Women. *Journal of Urban Health: Bulletin of the New York Academy of Medicine* 88 (1): 142–53. [PubMed: 21229394]
- Campbell CA et al. (2009). The Effectiveness of Limiting Alcohol Outlet Density as a Means of Reducing Excessive Alcohol Consumption and Alcohol-Related Harms. *Am J Prev Med* 2009; 37(6):556–569. [PubMed: 19944925]
- Chambers Earle C., and Emily Rosenbaum. (2013). Cardiovascular Health Outcomes of Latinos in the Affordable Housing as an Obesity Mediating Environment (AHOME) Study: A Study of Rental Assistance Use. *Journal of Urban Health: Bulletin of the New York Academy of Medicine* 91 (3): 489–98.
- NYU Langone Health. 2018 “City Health Dashboard.” Accessed September 25, 2018. <https://www.cityhealthdashboard.com/>

- Cohen Deborah A., Mason Karen, Bedimo Ariane, Scribner Richard, Basok Victoria, and Farley Thomas A.. (2003). Neighborhood Physical Conditions and Health. *American Journal of Public Health* 93 (3): 467–71. [PubMed: 12604497]
- Corbun Jason. (2011). Confronting the Challenges in Reconnecting Urban Planning and Public Health. *American Journal of Public Health*.
- Coulton Claudia, Fischer Robert L., Richter Francisca Garcia-Cobian, Kim Seok-Joo, and Cho Youngmin. (2016). “Housing Crisis Leaves Lasting Imprint on Children in Cleveland.” Chicago, IL: MacArthur Foundation.
- Cui Lin. 2010 “Foreclosure, Vacancy and Crime,” Department of Economics, University of Pittsburgh, 23.
- Dannenberg Andrew L., Bhatia Rajiv, Cole Brian L., Heaton Sarah K., Feldman Jason D., and Rutt Candace D. (2008). Use of Health Impact Assessment in the U.S.: 27 Case Studies, 1999–2007. *American Journal of Preventative Medicine*: 34 (3), 241–256.
- ‘Data & Demographics’. (2016). Baltimore City Department of Planning. Retrieved from <https://planning.baltimorecity.gov/planning-data>.
- De Leon Erwin, and Schilling Joseph. (2017). *Urban Blight and Public Health: Addressing the Impact of Substandard Housing, Abandoned Buildings, and Vacant Lots*. Washington, DC: Urban Institute.
- Fuller Christian; Goins Jana; Gross Jonathan; Krach Kelsey; Mendes Michelle; Ngamsnga Kompan; Phelan-Emrick Darcy; Toure Elizabeth. (2017). *Baltimore City: 2017 Neighborhood Health Profile*. Baltimore, MD: Baltimore City Department of Health.
- Herrmann Lynn Katherine, Henry Beverly, and Hogan Lorraine. (2017). Building collective impact to improve health and reduce obesity among children: a report on a participatory research approach. *American Journal of Health Studies* 32 (2): 111–136.
- Jennings JM et al. (2014). Neighborhood Alcohol Outlets and the Association with Violent Crime in One Mid-Atlantic City: The Implications for Zoning Policy. *J Urban Health* 2014; 91(1):62–71.
- Kania J and Kramer M. (2011). Collective Impact. *Stanford Social Innovations Review* 9, (1): 36–41.
- Kirby JB, and Kaneda T. (2005). Neighborhood Socioeconomic Disadvantage and Access to Health Care. *Journal of Health and Social Behaviors*: 46(1): 15–31.
- Krieger James W., Song Lin, Takaro Timothy K., and Stout James. (2000). Asthma and the Home Environment of Low-Income Urban Children: Preliminary Findings from the Seattle–King County Healthy Homes Project. *Journal of Urban Health* 77 (1): 50–67. [PubMed: 10741842]
- LaVeist TA et al. (2000). Health Risk and Inequitable Distribution of Liquor Stores in African American Neighborhood. *Soc Sci Med* 51(4):613–617. [PubMed: 10868674]
- Le Bonheur Children’s Hospital. (2017). Asthma program improves health, lowers healthcare costs. Retrieved from <http://www.lebonheur.org/for-providers/physician-publications/delivering-on-a-promise/winter-2014/breathe-easy.dot>
- Lind Kermit, and Schilling Joe. (2016). Abating Neighborhood Blight with Collaborative Policy Networks – Where Have We Been and Where are we Going? *The University of Memphis Law Review*; Vol 46.
- Ludwig j, Sanbonmatsu L, Gennetian L, Adam E, Duncan GJ, Katz LF, Kessler RC, Kling JR, Lindau ST, Whitaker RC, McDade TW Neighborhoods, obesity, and diabetes – a randomized social experiment. *New England Journal of Medicine*. 2011 365:1509–1510. DOI: 10.1056/NEJMsal103216. [PubMed: 22010917]
- McGinnis JM, Williams-Russo P, Knickman JR. (2002). The case for more active policy attention to health promotion. *Health Affairs*, 21:78–93
- Memphis Property Hub. (2017). Reports on Memphis Demographics. Retrieved from <https://memphisfightsblight.policymap.com/maps>
- Mudarri David, and Fisk William J.. (2007). *Public Health and Economic Impact of Dampness and Mold*. Berkeley, CA: Lawrence Berkeley National Laboratory.
- Mui Y, Gittelsohn J, and Jones-Smith JC. (2017). Longitudinal Associations between Change in Neighborhood Social Disorder and Change in Food Swamps in an Urban Setting, *Journal of Urban Health*, 94: 75–86. [PubMed: 28074429]

- n.a. (2017). New Zoning Code Moves Baltimore Forward. Retrieved from <http://www.cphabaltimore.org/2017/02/new-zoning-code-moves-baltimore-forward/>.
- O'Campo P, X Xue MC Wang, and Caughy M. (1997). Neighborhood Risk Factors for Low Birthweight in Baltimore: A Multilevel Analysis. *American Journal of Public Health*: 87(7): 1113–1118. [PubMed: 9240099]
- Ogari Lillian, and Sweat David. (2016). Seeing is Believing: Patterns of Life Expectancy, Poverty, Equity & Health in Shelby County TN. Shelby County, TN: Shelby County Health Department, Office of Epidemiology.
- Rauh Virginia A., Chew Ginger L., and Garfinkel Robin S.. (2002). Deteriorated Housing Contributes to High Cockroach Allergen Levels in Inner-City Households. *Environmental Health Perspectives* 110 (S2): 323–7. [PubMed: 11929744]
- Robert Wood Johnson Foundation Commission to Build a Healthier America. (2014). Time to Act: Investing in the Health of Our Children and Communities. Princeton, NJ: Robert Wood Johnson Foundation.
- Rose Kalima, and Teddy Ky-Nam Miller. (2016). “Healthy Communities of Opportunity: An Equity Blueprint to Address America’s Housing Challenges.” Oakland, CA: PolicyLink.
- Roux Diez, Merkin SS, Arnett D, Chambless L, Massing M, Nieto FJ, Sorlie P, Szklo M, Tyroler HA, Watson RL. (2001). Neighborhood of Residence and Incidence of Coronary Heart Disease. *New England Journal of Medicine*: 345(2): 99–106. [PubMed: 11450679]
- Sandel Megan, and Desmond Matthew. (2017). Investing in Housing for Health Improves Both Mission and Margin. *Journal of the American Medical Association: Viewpoint*.
- Scally Corianne, Waxman Elaine, Gourevitch Ruth, and Adeeyo Sade. (2017). Emerging Strategies in Integrating Health and Housing. Washington, DC: Urban Institute.
- Scharper Julie. (2010). “City farms could flourish under new zoning code.” Baltimore, MD: The Baltimore Sun.
- Schilling Joseph. (2016). Lessons from Memphis’s Collaborative Campaign Against Blight. Washington DC: Urban Wire, Urban Institute.
- Sharfstein Joshua, Sandel Megan, Kahn Robert, and Bauchner Howard. (2001). Is Child Health at Risk While Families Wait for Housing Vouchers? *American Journal of Public Health* 91 (8): 1191–3. [PubMed: 11499101]
- Shaw Mary. (2004). Housing and Public Health. *Annual Review of Public Health* 25: 397–418.
- Shonkoff JP, Boyce WT, McEwen BS. (2009). Neuroscience, molecular biology, and the childhood roots of health disparities: Building a new framework for health promotion and disease prevention. *Journal of the American Medical Association*. 301:2252–9 [PubMed: 19491187]
- Stacy Christina Plerhoples. (2017). The Effect of Vacant Building Demolitions in Crime Under Depopulation. *Journal of Regional Science*.
- Suther Emily, and Sandel Megan. (2013). Health Impact Assessments. Rhode Island: Rhode Island Medical Journal.
- Tach Laura, and Wimer Christopher. (2017). Evaluating Policies to Transform Distressed Urban Neighborhoods. Washington, DC: US Partnership on Mobility from Poverty.
- Tennessee Farm Bureau Federation. (2014). Food Deserts: Policy Development 2014 Retrieved from <https://www.tnfarmbureau.org/wp-content/uploads/2010/10/Food-Deserts.pdf>
- The Urban Child Institute. (2013). Data Book 2013: The State of Children in Memphis & Shelby County. Memphis: TN.
- Thornton RL, Greiner JA, Fichtenberg CM, Feingold BJ, Ellen JM, and Jennings JM. (2013). Achieving a healthy zoning policy in Baltimore: results of a health impact assessment of the TransForm Baltimore zoning code rewrite. *Public Health Rep*, 128 Suppl 3: 87–103. [PubMed: 24179284]
- Turner Margery Austin, Edelman Peter, Poethig Erika, and Laudan Aron with Matthew Rogers and Christopher Lowenstein (2014). Tackling Persistent Poverty in Distressed Urban Neighborhoods: History, Principles, and Strategies for Philanthropic Investment. Washington, DC: Urban Institute.
- Turner Margery Austin, and Gourevitch Ruth. (2017). How Neighborhoods Affect the Social and Economic Mobility of their Residents. Washington, DC: US Partnership on Mobility from Poverty.

- U.S. Census Bureau. (2017). QuickFacts: Baltimore city, Maryland U.S. Census Bureau, Retrieved from <https://www.census.gov/quickfacts/fact/table/baltimorecitymaryland,US/PST045216>.
- U.S. Census Bureau. (2017). U.S. Census Bureau's American Community Survey Office, 2012–2016. Retrieved through the online portal NHGIS (IPUMS NHGIS, University of Minnesota, www.nhgis.org).
- U.S. Census Bureau. (2010). U.S. Decennial Census 2010: Profile of General Population and Housing Characteristics Retrieved from American FactFinder.
- US Department of Health and Human Services. (2009). Surgeon General's Call to Action to Promote Healthy Homes. Washington, DC: US Department of Health and Human Services, Office of the Surgeon General.
- Vital Signs 15. (2017). Baltimore Neighborhood Indicators Alliance. Retrieved from https://bniajfi.org/vital_signs/.
- Wernham Aaron. (2011). Health Impact Assessments are Needed in Decision Making About Environmental and Land-Use Policy. *Health Affairs*: 30, no. 5, 947–956. [PubMed: 21555479]
- Whiteman Eliza Davenport. (2014). Managing urban vacancy: Decision strategies for vacant lot reuse in Baltimore, Maryland. Boston, MA: Tufts University.

Figure 1.
Strategic code enforcement and health logic model.

Figure 2.
Figure 2. Recommendations for better targeting health through code enforcement in Memphis, Tennessee.

Source: Baltimore City Planning Department data, U.S. Census Bureau American Community Survey 2011-2015.
 Service Layer Credits: Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community.

Figure 3.
 Nonconforming liquor stores by poverty rate in Baltimore, Maryland, census tracts.

Source: Baltimore City Planning Department data, U.S. Census Bureau American Community Survey 2011-2015.
Service Layer Credits: Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community.

Figure 4.
Nonconforming liquor stores by percentage of residents of color in Baltimore, Maryland, census tracts.

Table 1.**Components of an HIA**

Steps		
1	Screening	HIA team and stakeholders determine whether an HIA is needed
2	Scoping	HIA team and stakeholders identify the pathways between CE and potential health impacts
3	Assessment	HIA team and stakeholders gather relevant data, assess the pathways between inputs and impacts, and draw conclusions regarding the potential impact of the policy
4	Recommendations	HIA team and stakeholders use the results from the assessment to suggest changes to the policy for the benefit of public health
5	Reporting	HIA team and stakeholders disseminate findings to decision makers, affected communities, and the general public, and work to implement the recommendations
6	Monitoring/Evaluation	Practitioners and stakeholders evaluate the HIA according to accepted standards of practice and monitor and measure its impact on decision making and health

Source: Adapted from National Academy of Science 2011:<http://www.nationalacademies.org/hmd/~/media/Files/Activity%20Files/Environment/EnvironmentalHealthRT/2011-Nov-RT/132291.pdf>