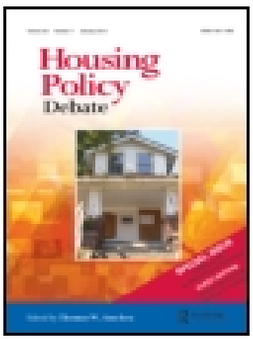

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Bridging the Housing and Health Policy Divide: Lessons in Community Development From Memphis and Baltimore

Christina Plerhoples Stacy[a], Joseph Schilling[a], Ruth Gourevitch[a], Jacob Lowy[b], Brady Meixell[a] and Rachel L. J. Thornton[b,c]

[a]Metropolitan Housing and Communities Policy Center, The Urban Institute, Washington, DC, USA; [b]Department of Pediatrics, Johns Hopkins School of Medicine, Baltimore, MD, USA; [c]Department of Health, Behavior, and Society, Johns Hopkins School of Public Health, Baltimore, MD, USA

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.

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Public health; neighborhood revitalization; housing; community development

Where we live is a key social determinant of our health. The condition of our homes and neighborhoods can negatively affect our respiratory health (Krieger, Song, Takaro, & Stout, 2000; Mudarri & Fisk, 2007; Rauh, Chew, & Garfinkel, 2002; Sharfstein, Sandel, Kahn, & Bauchner, 2001; Shaw, 2004), cognition and neurodevelopment (Bashir, 2002; Coulton, Fischer, Richter, Kim, & Cho, 2016; Sharfstein et al., 2001; Shaw, 2004), behavioral health (Bashir, 2002; Burdette, Hill, & Hale, 2011), physical fitness (Bell, Mora, Hagan, Rubin, & Karpyn, 2013; Chambers & Rosenbaum, 2013), mental stress (Shonkoff, Boyce, & 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 article, 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 the two 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

CONTACT Christina Plerhoples Stacy cstacy@urban.org

can be used to bridge the policy divide separating housing, community and economic development, and health.

1. Health, Housing, and Neighborhoods

Housing and neighborhood conditions in areas of concentrated poverty that lack opportunity can adversely affect both the physical and the mental health of residents (Building Healthy Places, 2015; Turner & Gourevitch, 2017). Substandard housing can lead to asthma, lead poisoning, behavioral and learning problems, and physical injury (Bashir, 2002; Coulton et al., 2016; De Leon & Schilling, 2017; Mudarri & Fisk, 2007; Rau, Chew, and Garfinkel 2002; U.S. Department of Health and Human Services, 2009). In addition, research shows that vacant or blighted housing is associated with 15% higher rates of violent crime (Cui & Walsh, 2014), 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, Xue, Wang, & Caughy, 1997). Work by Roux et al. (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 with those who move to low-poverty neighborhoods (Ludwig et al., 2011). Together, these studies highlight 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 because of 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 & Wimer, 2017).

Although 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 (Robert Wood Johnson Foundation Commission to Build a Healthier America, 2014; Wernham, 2011). 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 2004; 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 (Scally, Waxman, Gourevitch, & Adeeyo, 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 HIAs—a process that involves stakeholder engagement, literature review, quantitative assessment, and the application of public health expertise to identify nonhealth 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 nonhealth sector policies. As such, it lends itself to engaging directly with stakeholders and policymakers outside of health care. Because equity is a central consideration in HIAs, this process also brings diverse voices and perspectives to the table, including those of local residents likely to be affected by the policies or programs under consideration, and local grassroots and community-based organizations in additional 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 & Sandel, 2013; Wernham, 2011).

Although 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 & Desmond, 2017).

2. 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 (IRLs) Steve Barlow, Joseph Schilling, and Christina Stacy. For this project, the research team is applying the HIA

Table 1. Components of a health impact assessment (HIA).

	Step	Description
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

Note. CE = Code Enforcement.

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.

2.1. 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 (U.S. Census 2010) and faces a low population density, having expanded 35% in land area between 1970 and 2010 but growing by only 4% in population during this time (Schilling, 2016). The city also faces high rates of poverty, with 32% of Memphis families in poverty and more than half of all children in the 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, the housing that does exist is aging and much of it is in need of repair. When both factors are considered, nearly 40% of all occupied housing units in Memphis exhibit at least one of the Census Bureau's selected physical or financial conditions of poor quality, which include: lacking complete plumbing or kitchen facilities, containing more than one occupant per room or having a gross rent exceeding 30% of a household's income (U.S. Census Bureau, 2017b).

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 Beonheur Children's Hospital, 2017; Leyenaar et al. 2016). Among adults, 8.7% have asthma (compared with 6% nationally) and 14.9% have diabetes (compared with 9.8% nationwide). In Memphis, 21.1% of residents do not have health insurance coverage, compared with 16.5% nationwide (CDC 2018; City Health Dashboard 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 & 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 sectors 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 & 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 policymakers, practitioners, and researchers to better understand the relationships among health, housing conditions, community development, neighborhood revitalization, and crime in Memphis.

A key player in these efforts has been Neighborhood Preservation Inc. (NPI), a Memphis nonprofit that promotes neighborhood revitalization by collaboratively developing practical and sustainable resolutions to blighted properties and to the systems that lead to widespread neglect, vacancy, and abandonment of real estate. NPI was founded in 2012 by a group of economic and community development leaders in Memphis, and focuses on policy advocacy and implementing/documenting replicable comprehensive neighborhood improvement projects. The group works to lessen legal and systemic impediments to the removal of blighted properties. The HIA case study discussed here evolved from NPI's local leadership and expertise on blight elimination.

Although a growing body of research documents the health and safety impacts from living in or near substandard structures and abandoned buildings, little research exists that examines the potential health impacts from the wide array of policy and legal interventions that communities use to prevent, abate, and reclaim vacant and neglected properties (De Leon & Schilling, 2017). In response to this, NPI came together with researchers at the Urban Institute to frame a project around this gap in the literature, but more importantly relied on NPI's pivotal partnership with the city's housing code enforcement operations to provide access and insights to important local leaders and stakeholders. Around the same time (spring of 2016), the city's housing code enforcement operation was beginning a transformation, spearheaded by recently elected Memphis Mayor Jim Strickland and his appointment of a new code enforcement director with substantial code enforcement experience. Given their keen interest and experience in attacking blighted properties, the timing seemed ideal for building stronger policy and programmatic connections between health and housing.

The collaborative nature of an HIA made it the ideal process for bridging the health–housing policy divide in Memphis. NPI's extensive role as convener, facilitator, and community catalyst for neighborhood revitalization ideally positioned it to help lead the outreach and engagement activities for this IRL project. Another important HIA dimension at play with the Memphis project was the ability to blend qualitative engagement with quantitative analysis of relevant data. Beginning in early 2015, NPI, together with the Memphis Bloomberg Innovation Team, created a real property data intermediary called the Memphis Property Hub whose primary mission was to document, track, collect, and disseminate existing local and administrative data about real estate properties, especially blighted, vacant, and foreclosed homes. With this readily available Property Hub, the Memphis HIA team could easily access and analyze point-level data on substandard housing, health, and neighborhood characteristics. We found city code enforcement service requests to be concentrated in high-poverty neighborhoods (0.46 correlation to city code requests per unit) and areas with larger populations of color (0.49 correlation to city code requests per unit). Using data such as these, as well as census tract-level maps, the team has been able to identify where code enforcement is concentrated, where it is lacking (both 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. Although one member had been a consultant/advisor to an HIA and was previously a Robert Wood Johnson Scholar with 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 latter university department. 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 included developing a community outreach and engagement plan, developing a logic model (see Figure 1), conducting a preliminary literature review, inventorying stakeholders and data sources, and convening a local PAG. 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 data sets, including code enforcement data from both the city and county, crime data, and health data. Thanks to the efforts of the law Graduate Research Assistant (GRA), the team also collected 1 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

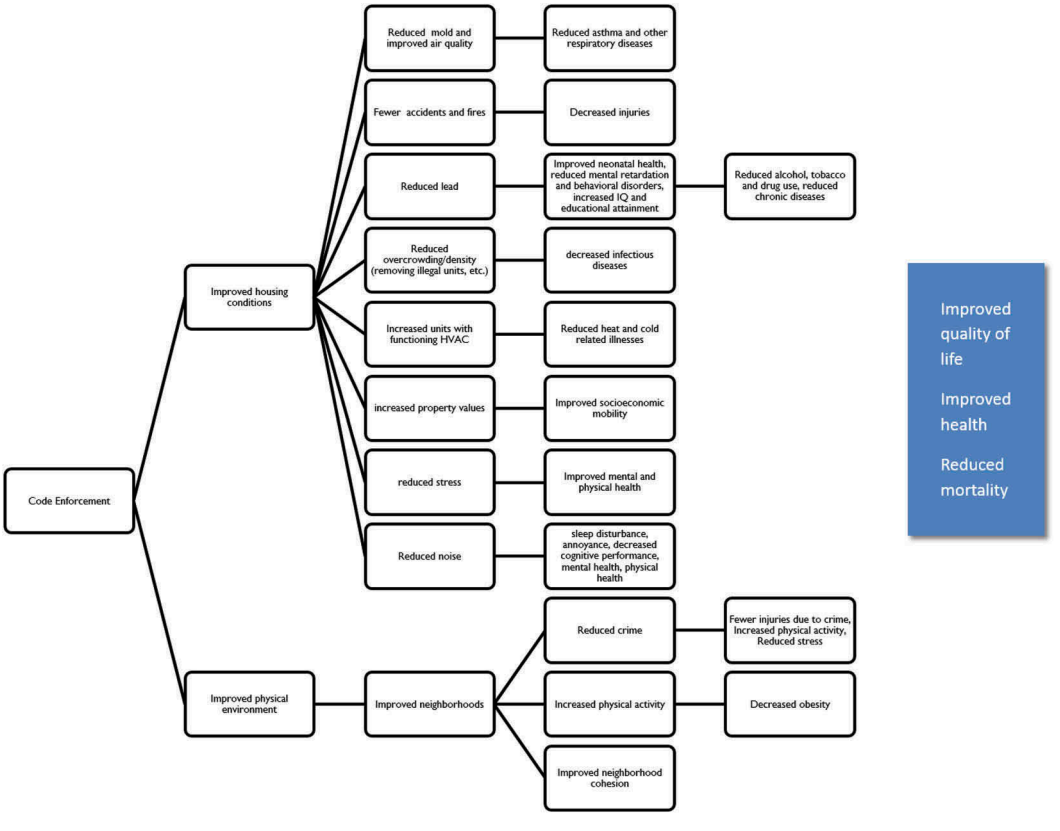

Figure 1. Strategic code enforcement and health logic model.

ordinances) on court cases, by address. This data set 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 1 month of 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 among 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 services requests outside of the home such as junk in the yard rather than structural issues within the home (only 16% 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% of all 2016 service requests were for multifamily properties, whereas 31% 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% 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 recommendations, which are in the final phase of review and refinement (see 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 fewer 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 dealing with mold and bed bugs by coordinating between city code and county health departments, 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 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 among 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

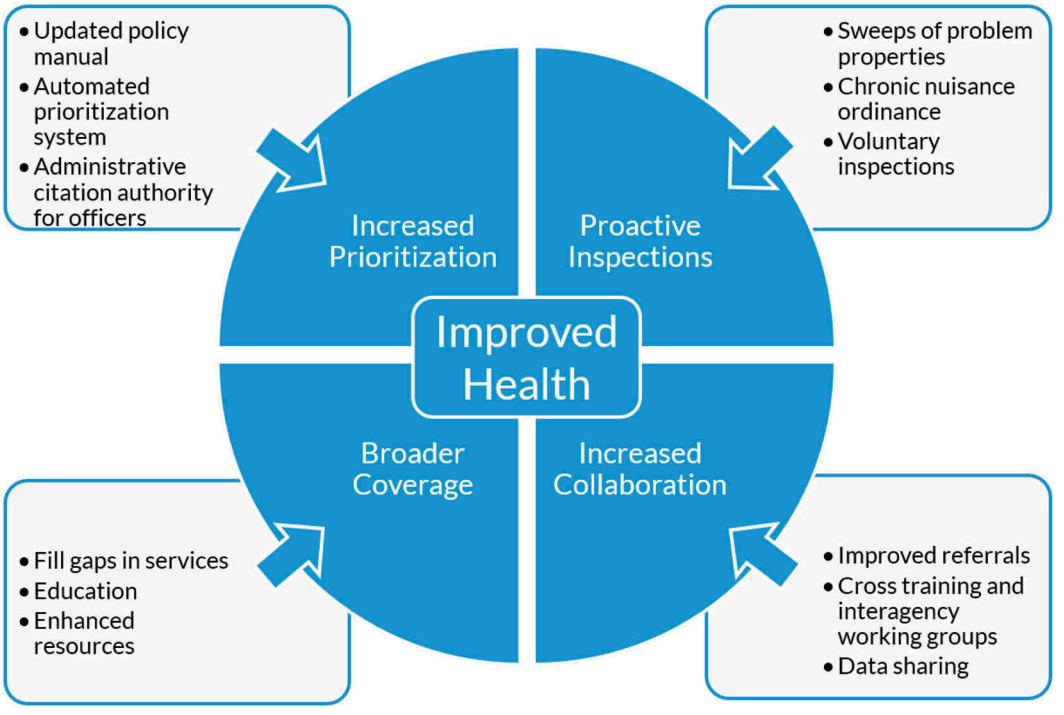

Figure 2. Recommendations for better targeting health through code enforcement in Memphis, Tennessee.
Source: "Strategic Housing Code Enforcement and Public Health: A Health Impact Assessment in Memphis, Tennessee," p. 62, by Stacy et al. 2018. https://www.urban.org/sites/default/files/publication/99190/strategic_housing_code_enforcement_and_public_health.pdf

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 of implementing a chronic nuisance ordinance, which would have a registration component but would 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 they finalized the HIA recommendations, the research team reported on their findings and worked with local stakeholders to implement the recommendations and track their progress over time. The reporting phase spanned September and October of 2018, when their HIA report was publicly released and then presented to local stakeholders at the 3rd annual Blight Summit. Following the report's release, NPI took the lead in disseminating the HIA's findings to a variety 325 of different local audiences through presentations at community and policy meetings, a process that is still ongoing. 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.

2.2. Zoning for a Healthy Baltimore, in 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; Thornton et al., 2013; U.S. Census Bureau, 2017a). As of 2014, there were more than 16,000 vacant buildings, comprising 8% of residential properties in the city (Vital Signs 15, 2017; Whiteman, 2014). 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 et al., 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, & 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 et al., 2017; Vital Signs 15, 2017). Data from the Baltimore Neighborhood Indicator Alliance indicate that life expectancy in 2015 varied by 21 years across neighborhoods throughout the city (Vital Signs 15, 2017). In some instances in adjacent neighborhoods it 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 (i.e., liquor stores) in areas of high crime and

economic blight, originated out of the Zoning for a Healthy 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 dialog 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: (a) insuring that the zoning code promoted the health and welfare of the population, and (b) 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 (Principal Investigator; 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 a high concentration 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 (Campbell et al., 2009; Jennings et al., 2014; LaVeist & Wallace, 2000; Thornton et al. 2013). Related research led by Dr. Jennings (Co-Investigator; 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. As Figures 3 and 4 show, nonconforming liquor stores in Baltimore are concentrated in high-poverty neighborhoods and areas with larger populations of nonwhite 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 law.[3] 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 approved version 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 nonconforming off-premise alcohol outlets in residential neighborhoods to relocate, close, or convert to an approved use by June 5, 2019.[4] Two related provisions prevent further overconcentration of liquor stores in commercial

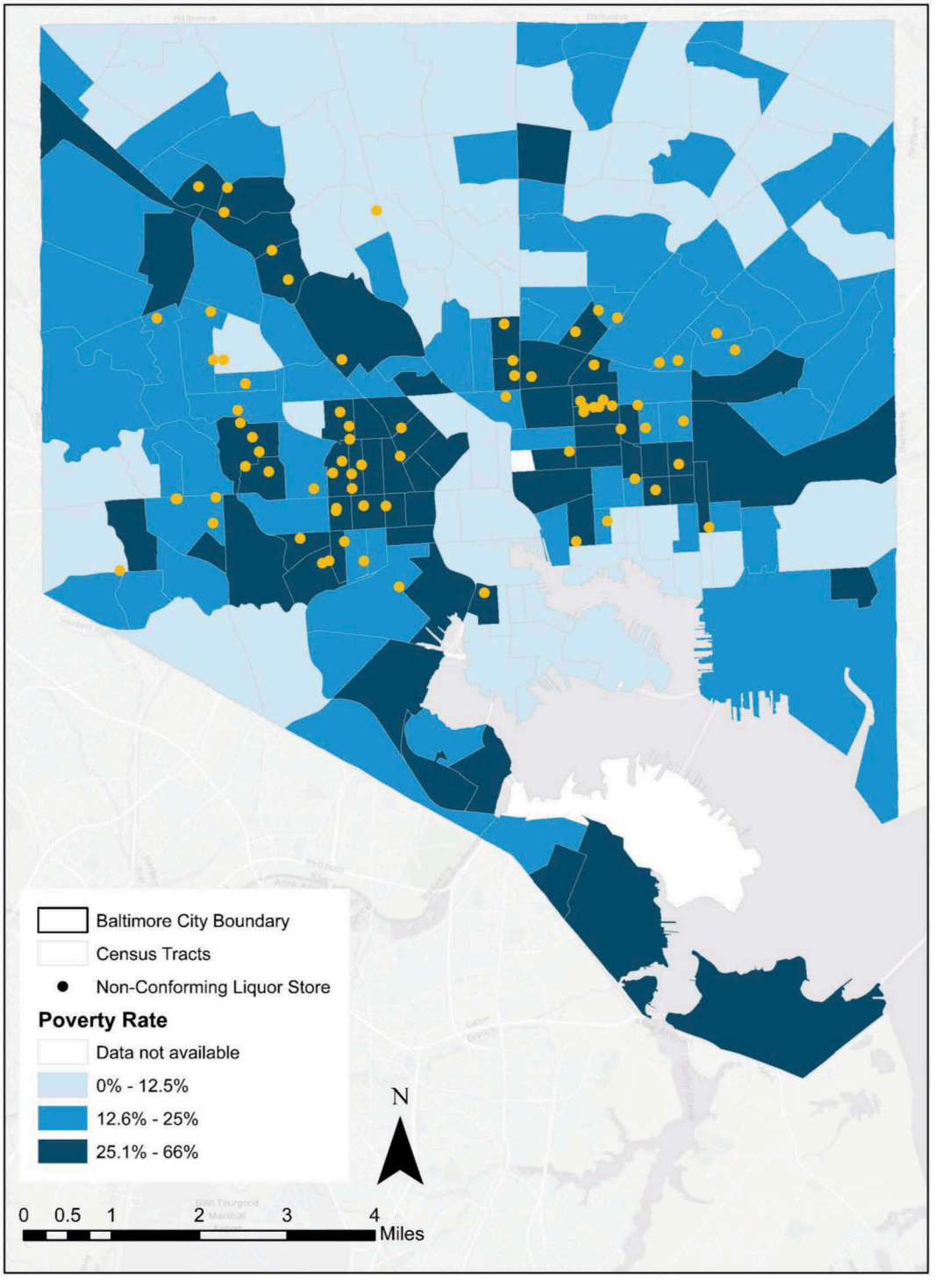

Figure 3. Nonconforming liquor stores by poverty rate in Baltimore, Maryland, census tracts.
Source: Author calculations from U.S. Census Bureau American Community Survey Five Year data (2011–2015) and City Liquor store data.

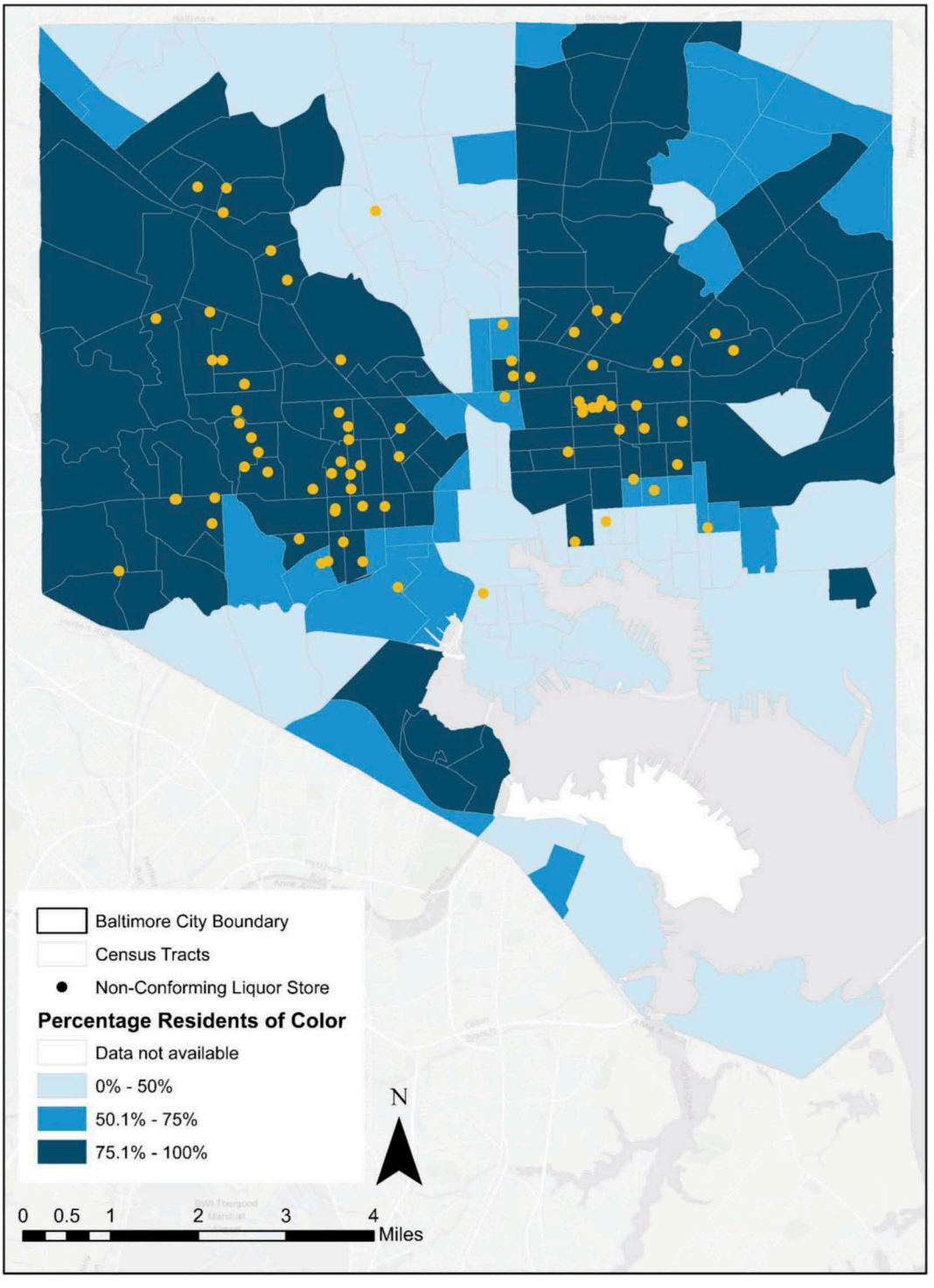

Figure 4. Nonconforming liquor stores by percentage of residents of color in Baltimore, Maryland, census tracts.
Source: Author calculations from U.S. Census Bureau American Community Survey Five Year data (2011–2015) and City Liquor store data.

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 2 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 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.

3. 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. Although 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, as well as exposure to violence and crime.

In reflecting on the Memphis and Baltimore HIA experiences, three essential elements of successful health and housing collaborations emerged: (a) multiple levels and types of translation between policymakers, practitioners, and researchers; (b) the engagement process and structure of HIAs; and (c) 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 (Herrmann, Henry, & Hogan, 2017; Kania & Kramer, 2011). 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 and housing researchers, policymakers, and practitioners develop a shared understanding of the policy domains and systems they were 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 the respective research projects.

Translating health and housing principles, terminology, and practices was a fundamental first step for the community development and health fields, 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 by the housing sector to refer to community development corporations, whereas the same abbreviation is used by the public health and health care sectors to reference the Centers for Disease Control and Prevention, a federal agency within the U.S. Department of Health and Human Services. 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 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 a 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 whereas 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. Both 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 common elements and unique community characteristics could help establish closer connections between health and neighborhood revitalization programs and policies. Furthermore, although HIAs are a key mechanism for incorporating health perspectives into nonhealth sector policymaking, it is necessary to move beyond health impact assessment to policy assessment and program evaluation following the 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 health-care institutions would help to not only shorten illnesses and alleviate health issues but also prevent them in the first place. Also, 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 bandaids, 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 are neither gaps in practice nor duplication of effort. 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.

Notes

1. Defined here as properties with three or more units.
2. Although it is possible that in limited cases multiple units in a multifamily property were addressed in a single property service request entry.
3. The 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)."
4. New zoning ordinances typically apply to future uses and not to existing nonconforming uses as they are considered grandfathered in place subject to a few exceptions such as abandonment. Zoning ordinances can apply to such nonconforming uses by giving the existing business or property owners a reasonable period of time to amortize their business and use. Baltimore's new regulations require some, but not all, of these corner liquor stores to relocate by 2019. Certainly, this provision, like many zoning ordinances, could be the subject of legal challenge as to whether this 2-year amortization period is sufficient. As of the writing of this article no such litigation had been filed against these provisions.

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Notes on Contributors

Christina Plerhoples Stacy, PhD, is a senior research associate in the Metropolitan Housing and Communities Policy Center at the Urban Institute where she specializes in urban economics and applied econometrics. She is also a fellow

with the Interdisciplinary Research Leaders program, led by the University of Minnesota with support from the Robert Wood Johnson Foundation. Stacy earned her bachelor's degree from Boston College, her master's degree in public and international affairs from the University of Pittsburgh, and her doctorate degree in agricultural, food, and resource economics from Michigan State University.

Joseph Schilling is a senior research associate in the Metropolitan Housing and Communities Policy Center and Policy Advisory Group at the Urban Institute. He is also a fellow with the Interdisciplinary Research Leaders program, led by the University of Minnesota with support from the Robert Wood Johnson Foundation. In 2010, he founded the Vacant Properties Research Network, a dynamic hub for policy and research translation involved with regenerating legacy cities. He holds an LLM in environmental law and policy from the George Washington University and a JD from Hastings College of the Law in San Francisco, California.

Ruth Gourevitch is a research assistant in the Metropolitan Housing and Communities Policy Center at the Urban Institute. Her research focuses on place-based strategies for economic mobility, neighborhood change dynamics, and the intersection of housing, health, and education. She holds a BA in urban studies from Brown University.

Jacob Lowy is a research assistant at the Johns Hopkins School of Medicine Department of Pediatrics. Previously he served as assistant to the Medical Director of the New York State Department of Health AIDS Institute and has a research background in HIV treatment and prevention policy, and U.S. immigration policy and Latin American politics. He graduated with honors from Haverford College with a BA in political science and has completed the Post-Baccalaureate Premedical Program at Goucher College.

Brady Meixell is a research assistant in the Metropolitan Housing and Communities Policy Center at the Urban Institute. His research focuses on economic and racial inequality within cities, expanding access to services for low-income families, and place-based interventions to address poverty and related issues. He holds a BA in public policy from the College of William and Mary.

Rachel L. J. Thornton is an assistant professor of pediatrics at the Johns Hopkins University School of Medicine. She holds a joint appointment in the Department of Health, Behavior and Society at the Johns Hopkins Bloomberg School of Public Health. She is a former White House Fellow and served as a health policy advisor to senior staff at the U.S. Department of Housing and Urban Development. She earned her PhD in health policy and management from the Johns Hopkins Bloomberg School of Public Health and received her MD from Johns Hopkins.

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