



National Center for
Healthy Housing



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A Systematic Review of Health Impact Assessments on Housing Decisions and Guidance for Future Practice

March 2016



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Overview

Many of the nation's most pressing public health problems, such as asthma, depression, diabetes, and obesity, are influenced by where people live, work, and play. Policy decisions that affect housing quality, affordability, and location as well as neighborhood characteristics can shape those places to be supportive of, or detrimental to, community health and well-being—and can play important roles in reducing or even preventing disease.¹

Nationwide, housing officials and community developers are at the forefront of efforts to address many of these challenges by building affordable housing and by supporting improvements in neighborhood infrastructure and social and economic opportunities. Every day, decision-makers in the housing sector have the chance to consider health in their policies, programs, and projects to help mitigate pressing public health problems that take a massive toll on Americans' quality of life and substantially increase health care costs for taxpayers. Understanding how to integrate public health considerations into housing decisions can positively impact the health of residents and ensure strong financial stewardship of public funds.

Health impact assessment (HIA) is a rapidly growing field that can help decision-makers make better choices by bringing together scientific data, health expertise, and public input to identify the potential and often overlooked effects on public health, both positive and negative, of proposed projects, policies, and programs. HIAs can help housing officials and public health professionals identify the potential health effects of housing-related proposals.

Because the housing and health sectors often have mutual goals, such as the creation of healthy, equitable neighborhoods, HIAs offer a tool for bringing them together to maximize the impact of specific policies, plans, and programs for a wider set of societal goods. HIAs offer numerous benefits for housing decision-makers and those affected by proposed projects, plans, programs, or

policies. They facilitate broad stakeholder engagement, which provides a variety of perspectives, facilitates a shared understanding of the decision-making process and the solutions under consideration, and builds support for the recommendations.² They offer credible information based on the best available evidence used to describe the relationships between decisions and the magnitude and likelihood of their health effects. HIAs provide evidence during the decision-making process, giving stakeholders an opportunity to consider potential impacts and weigh options. HIAs can also complement required analyses such as those performed to comply with federal, state, and local environmental laws. HIAs examine whether a public policy that is expected to benefit the general population may adversely affect particular groups by explicitly considering the distribution of impacts across the population with a focus on low-income communities, communities of color, children, and seniors.

This report provides a review of 40 housing HIAs conducted in the U.S. between 2002 and 2013. Housing HIAs have examined a wide array of decisions, including the impact of housing decisions on access to transportation, jobs, parks and open space, and healthy foods; housing quality; and the impact of housing policies on neighborhood segregation by race and socioeconomic status. Of the 40 HIAs, 11 focused directly on housing policies, codes, structural design, or energy delivery systems. The remaining 29 HIAs pertained to the broader built environment (e.g., community redevelopment, transportation, planning) with at least one component of the decision-making process focused on housing. The review revealed that a variety of agencies have led the HIAs, including nonprofit organizations, public health departments, and academic institutions.

This report begins by describing the connections between housing and health and then provides a systematic review of housing decisions that have been the subject of past HIAs. Next it provides guidance for conducting future

housing HIAs. This information is organized by each of the six steps of the HIA process so that it is practical and actionable. Finally, it provides a tutorial on the major housing programs as a means of helping public health professionals understand the links between housing programs and public health. The six programs covered in the tutorial are public housing; housing choice vouchers; project-based rental assistance programs; the Low Income Housing Tax Credit program; code enforcement and inspection programs; and zoning and land use policies.

The Basics: The HIA Process and a Summary of Major Affordable Housing Programs and Policies

HIA is a rapidly growing field that brings together scientific data, health expertise, and public input to identify the potential and often overlooked effects, both positive and negative, of proposed laws, regulations, projects, policies, and programs on public health.³ HIAs broadly take into account environmental, social, and economic factors related to health and evaluate the potential impacts of a proposed project, plan, program, or policy on the health and well-being of the community, including the full range of potential positive and negative effects. HIAs employ a variety of data sources, including qualitative and quantitative analysis and input from stakeholders, to identify health concerns related to the proposal and to determine how these impacts may be distributed among the population, especially vulnerable groups such as seniors, children, and low-income families. Finally, HIAs provide pragmatic, evidence-based recommendations about how to reduce risks, promote benefits, and monitor the health effects of an implemented decision.⁴ HIA is a six-step process—screening, scoping, assessment, recommendations, reporting, and monitoring and

evaluation—that encourages stakeholder engagement at each step and is described in detail in “Guidance on Conducting Housing HIAs” on [p. 17](#).

HIAs can be fairly quick, using a “rapid” or “desktop” model, or they can take longer, through a more comprehensive approach. Rapid HIAs can be completed in weeks or months. They allow consideration of health factors in decision-making—while retaining an emphasis on stakeholder engagement and equity—in cases of compressed timelines, limited resources, or smaller scope of analysis. Comprehensive HIAs can take between several months and more than a year to complete and often involve a series of public meetings, extensive stakeholder consultation, and collection of new data. (See Table 1.) Practitioners also have used the basic principles of HIA to develop related tools such as checklists, guidelines, and simplified frameworks. These alternatives can be used to ensure that health benefits are optimized during housing decision-making in cases where an HIA is not possible or appropriate, or where sufficient evidence and support

Table 1: Types of HIAs

Rapid	An HIA that can be completed in a short time frame (weeks or months). These HIAs often have a narrow scope or are focused on less complex decisions, but can still retain an emphasis on stakeholder engagement.
Desktop	A rapid HIA that involves little or no stakeholder engagement.
Intermediate	An HIA that involves a more complex scope, more detailed analysis, and more stakeholder engagement than a rapid HIA. These HIAs typically do not require collection of new data and can take several months to complete.
Comprehensive	An HIA that requires the collection of new, primary data and involves a complex scope and extensive stakeholder engagement. These HIAs can take longer than a year to complete.

Source: Adapted from National Research Council, Improving Health in the United States: The Role of Health Impact Assessment (Washington: National Academies Press, 2011), 44, accessed July 8, 2014, http://www.nap.edu/catalog.php?record_id=13229.

exist to embed health directly into policies or projects. Additionally, housing professionals can build upon and use the evidence base gathered through prior housing HIAs to inform their work.

HIA stakeholders are the individuals or organizations who have a stake in the decision or process. This includes people who are affected by the proposed change, have an interest in the impacts and outcomes of the policy under consideration, or because of their position, have some influence on the decision-making.⁵ For a detailed definition of stakeholders and other important terms used in this report, see Appendix A. Two specific groups of stakeholders are community members and decision-makers, and in this report, “stakeholders” refers to both groups.

By helping stakeholders recognize the trade-offs inherent in a proposed action, HIAs ensure that officials and policymakers have the best health information to guide their decisions. As highlighted in the practice standards for HIA, “recommendations are effective only if they are adopted and implemented.” Therefore, to maximize their impact on decision-making, HIA practitioners should:

- Build time and resources for facilitating implementation of the recommendations into the HIA process from the outset.
- Engage with decision-makers to ensure that the recommendations are actionable and to increase buy-in for implementation.

- Develop a monitoring plan that can assist in tracking implementation of the recommendations as well as the health effects and outcomes of the decision.

An HIA will not be the most appropriate tool for all housing decisions and should be conducted only when the program, policy, or project is likely to have important health implications and when the assessment can yield important, new, and actionable recommendations. HIAs should also focus on a prioritized set of issues that are feasible to assess within resource, timeline, and other constraints. When used appropriately, HIAs can help housing officials and public health professionals improve public health outcomes, lower health care costs for families and local governments, create healthier housing and communities, and better our built environment, while maintaining strong financial stewardship of local funds.

Housing programs and policies that target low-income families offer unique opportunities to integrate health considerations into the decision-making process with particularly high potential impact, because housing-related health issues disproportionately affect this population. Additionally, stakeholder engagement informs all steps of the process, so HIAs can help ensure that the perspectives and experiences of low-income households are taken into account in housing program and policy decisions. Table 2 provides a description of the major housing programs and policies that target low-income households, and highlights opportunities for HIAs to inform decision-making about those programs and policies. A detailed description of these programs is provided in “How Housing Works” on [p. 49](#).

Table 2: HIAs Can Inform Housing Decisions at Many Levels

Housing program or policy	Description	Opportunity for HIA
Public housing	The public housing program is the oldest form of federally subsidized housing, provides affordable rental housing to low-income households, and is administered locally by about 3,300 public housing authorities (PHAs) across the U.S.	HIAs could inform PHA decisions about admissions and occupancy policies, operating and maintenance policies, redevelopment of properties, and financing structures as well as federal decisions about program regulations.
Housing choice voucher program	The program provides direct financial assistance to low-income households, allowing them to rent on the private market in the neighborhood of their choice, and is administered locally by public housing authorities.	HIAs could inform local decisions about preference policies, which prioritize vouchers for certain populations and determine applicants' placement on waiting lists, as well as the federal appropriations process for and proposed reforms to the program.
Project-based rental assistance (PBRA)	In exchange for a federal subsidy, property owners contract with HUD to provide housing to low-income households for a set period of time.	HIAs could evaluate the potential health effects of proposed plans for individual properties, such as planned new PBRA developments, proposed public housing conversions under the Rental Assistance Demonstration program, or the future affordability of properties with expiring PBRA contracts, as well as federal policies, programs, and funding decisions that affect PBRA.
Low Income Housing Tax Credit program (LIHTC)	The LIHTC provides an indirect federal subsidy that developers can use to build or renovate low-income rental housing. Almost all new affordable housing in the U.S. is built through this competitive program.	HIAs could inform the design and development process for LIHTC units or assess the potential health effects of a state's qualified allocation plan.
Code enforcement and inspection policies	These policies ensure that housing is safe for habitation. Code enforcement can either be reactive, such as in response to a resident complaint about substandard housing conditions, or proactive, in which rental units are periodically inspected for safety and compliance.	HIAs could be used when changes are proposed to code requirements or enforcement, or to how housing inspections are triggered and conducted.
Zoning and land use policies	Most jurisdictions use zoning policies and ordinances to direct residential development and other land uses and to determine the form or scale of properties.	HIAs could be used to inform large-scale zoning changes as well as individual development proposals.

Links between Housing and Health

Housing affects health through its affordability, quality, and location, and through its relationship to the composition of the surrounding community (including for example, racial, ethnic, and income diversity). Figure 1 illustrates the links between these categories and the individual health effects identified in the 40 housing HIAs reviewed (see [p. 12](#)).⁶

Housing quality determinants of health

This health determinant category concerns the way in which housing programs, projects, and policy decisions affect the physical structure of the home, change maintenance and upkeep practices, or impact residents' exposures to physical, chemical, and biological hazards. A strong literature base shows the link between poor housing quality and health. Living in substandard housing conditions may cause stress, headaches, fever, nausea, skin disease, sore throats, allergen sensitization, respiratory disease, neurological disorders, chronic disease, psychological and behavioral issues, and even death.⁷ The following is a summary of the major sources of exposures from housing:

- **Noise.** When housing is poorly constructed or maintained, residents may be exposed to noise from outside the home (e.g., traffic and industrial activities). The health effects of noise include sleep disturbances, hearing impairment, hypertension and ischemic heart disease, and decreased school performance.⁸ Research has found that adverse health effects from noise manifest differently across age groups. Seniors have an increased risk of stroke; non-elderly adults may experience depression and respiratory and cardiovascular damage; and children experience respiratory irritation and impaired reading comprehension and memory.⁹
- **Heating, cooling, and ventilation issues.** Lack of access to central heating or air conditioning is associated with an accumulation of moisture, growth
- of mold, and higher nitrogen dioxide levels, which make childhood asthma symptoms worse.¹⁰ In addition, poor ventilation inhibits adequate removal of indoor air chemicals from building products, including volatile organic compounds, formaldehyde, and particulate matter, which have varying health effects, including asthma, neurological issues, and cancer.¹¹ Inadequate heating and cooling is also a public health risk. Studies of temperature and mortality rates in U.S. cities have found that death rates increase by two to four percent per degree Fahrenheit as temperatures climb above a city's heat threshold and up to six percent per degree Fahrenheit with a drop in temperature below the area's cold threshold.¹² These effects are exacerbated among the very young or very old, racial and ethnic minorities, and socially isolated individuals. Chronic ailments made worse by temperature exposure (hypothermia and heat stress) include cardiovascular and cerebrovascular disease, respiratory conditions, diabetes, kidney disease, and neurological and movement disorders. Several peer-reviewed studies document elevated levels of emergency department visits, hospitalizations, and premature deaths from exposure to extreme temperatures.¹³
- **Injury hazards.** Poor maintenance and design of housing can present safety problems. For example, staircases and balconies with inadequate railings, windows without guards to prevent falls, and the lack of smoke detectors can lead to injury or death.¹⁴ Electrical problems may cause fires resulting in injury or death, and the use of candles in dwellings without electricity or heat leads to an average of 115 civilian deaths, 903 civilian fire injuries, and \$418 million in direct property damage annually.¹⁵ Adequate lighting is also important to prevent injury, in particular to prevent injury during domestic tasks such as cooking and cleaning. Poor natural lighting is associated with increased stress and depression.¹⁶
- **Chemical exposures.** Radon exposure may lead to lung cancer and death.¹⁷ Asphyxiation and death can result from carbon monoxide (CO) poisoning. The highest rate

Figure 1

Housing Quality, Affordability, Location, and Surrounding Social and Community Attributes Are Important to Health

Links between housing and health



Housing quality

Housing that is safe, dry, clean, maintained, adequately ventilated, and free from pests and contaminants, such as lead, radon, and carbon monoxide, can reduce the incidence of negative health outcomes such as injuries, asthma, cancer, neurotoxicity, cardiovascular disease, and poor mental health.

Housing affordability

Affordable housing enables people to pay for other basic needs such as utilities, food, and medical care, which can reduce the incidence of negative health outcomes such as malnutrition, diabetes, anxiety, and depression.

Housing community

Neighborhoods free from segregation and concentrated poverty, and in which residents have close and supporting relationships with one another, can improve physical and mental health by reducing stress and exposure to violence and crime as well as improving school performance and civic engagement.

Housing location

Easy access to public transportation, parks and recreation, quality schools, good jobs, healthy foods, and medical care can help reduce the incidence of chronic disease, injury, respiratory disease, mortality, and poor mental health.

Source: Adapted from Human Impact Partners, 29th Street/San Pedro Street Area Health Impact Assessment (2009), accessed Jan.22, 2016, <http://www.humanimpact.org/downloads/san-pedro-st-area-hia-full-report>

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of deaths from CO occurs in older age groups, especially people 75 and older.¹⁸ Children living in poorly maintained housing are at a particularly high risk for lead exposure, which can cause learning and behavioral problems.¹⁹ Further, exposure to pesticides is a particular concern in low-income neighborhoods, where pests such as cockroaches and rodents are more common.²⁰ Possible health effects associated with pesticides include attention and behavioral problems.²¹ Additionally, breathable particulate matter in air, known as PM2.5, is associated with increased risk of heart disease, insulin resistance, asthma, COPD, and diabetes.²²

- **Biological exposures.** Poor-quality housing may increase residents' exposure to allergens from pests, such as dust mites, cockroaches, mice, and rats, which can exacerbate asthma and result in hospitalizations.²³ Exposure to mold is associated with upper and lower respiratory tract symptoms, asthma, and pneumonia.²⁴ An estimated 21 percent of asthma cases in the U.S. are attributable to dampness and mold in housing.²⁵ Damp housing conditions can lead to insomnia, respiratory ailments, cough, headache, allergies, and asthma.²⁶ Coughing and wheezing symptoms in children are 1.5–3.5 times greater in damp homes.²⁷ Poor sanitation (e.g., due to poorly maintained or broken plumbing systems) leads to exposure to waste and sewage, and may result in diarrhea and other diseases.²⁸

Determinants Studied in Prior HIAs

Housing HIAs have evaluated the following exposures and outcomes related to health determinants in the housing quality category:

- Poor indoor air quality—Asthma, respiratory disease
- Insufficient heating and ventilation—Physical injuries related to exposure to temperature extremes, and acute and chronic illnesses related to exposure to air pollutants
- Lead exposure—Learning and behavioral problems, hypertension
- Rodent and pest infestation—Rashes, bites, vector-borne diseases, asthma
- Physical hazards, including exposed heating sources, wiring, unprotected windows—Physical injury and mental harm from burglaries
- Excessive noise—Stress, anxiety, cognitive function
- Lack of light, specifically daylight—Poor sense of psychological well-being, learning, and motivation; physical injuries caused by falls; feelings of isolation, apprehension, and fear; and cancer (exposure to light at night may be associated with cancer due to suppression of melatonin secretion)

Housing affordability determinants of health

A lack of affordable housing not only affects people's ability to acquire and maintain adequate shelter but also limits their capacity to meet other basic needs.²⁹ Financial constraints can force families to make tough choices between paying for rent, utilities, food, or medical care.³⁰ The lack of affordable housing and high housing costs relate to the following health determinants:

- **Crime and substandard housing.** Relative to households earning more than 80 percent of area median incomes, extremely low-income households are more likely to live in neighborhoods with serious crime and blighted buildings, and three times more likely to live in structurally inadequate units.³¹ Researchers and policymakers have connected high neighborhood concentrations of low-income people living with poor community conditions, including crime, declining property values, and low educational attainment.³² Housing affordability and housing quality interact; thus, many of the exposures and health effects discussed for housing quality (e.g., exposure to noise, air and dust toxins, mold, and inadequate physical structures) are also related to a lack of stable, affordable housing.
- **Lack of access to resources and services.** Compared with people who are able to pay their mortgages, mortgage-delinquent homeowners have worse health status and less access to health-relevant resources.³³ These delinquent homeowners are more likely to develop incident depressive symptoms, experience food insecurity, and have cost-related medication nonadherence. A national survey of adults over age 50 found that mortgage delinquency was associated with significant elevations in the incidence of mental health impairments and health-relevant material disadvantage.³⁴

- **Food and financial insecurity.** Spending a high proportion of income on rent or a mortgage means fewer resources for heating, transportation, health care, childcare, and food. Studies show that high housing costs relative to income threaten food and financial security and often lead to displacement.³⁵ High housing costs are significantly associated with hunger, inadequate childhood nutrition, and poor childhood growth.³⁶ In response to high home energy bills, 72 percent of energy assistance recipients reduced expenses for household basics:

- Twenty-four percent reported going without food for at least one day.
- Thirty-seven percent reported going without needed medical or dental services.
- Thirty-four percent said they went without the appropriate dose of a prescribed medication.³⁷

- **Housing instability and homelessness.** Having access to stable housing has been identified as one of the most important predictors of resident health.³⁸ The search for quality affordable homes often results in frequent moves for families. People with housing instability (i.e., involuntary moves that result from inability to pay rent or other circumstances) have poorer access to health care and higher rates of acute health care utilization than populations with stable housing.³⁹ Additionally, housing instability can cause stress and other mental health conditions like depression.⁴⁰ Housing instability and homelessness pose well-documented threats to the physical health of children, making them more likely to be rated as having poor health; to lack regular primary care, such as immunizations and tuberculosis screening; to have untreated or undertreated conditions such as asthma; and to be seen in the emergency room and be hospitalized. They also have 10 times more dental caries than housed children.⁴¹ Substantial evidence also indicates that children experiencing housing instability or homelessness suffer substantial adverse mental health consequences, such as anxiety, depression, and alcohol dependency.⁴² For example, half of all children in shelters show signs of anxiety and depression.⁴³ The majority of the evidence suggests that homeless children experience adverse developmental and behavioral effects.⁴⁴ These children are also at risk for negative educational consequences, including increased rates of missed school, poor academic performance, higher likelihood of repeating a grade, and an increased need for special education.⁴⁵

- **Overcrowded living conditions.** High housing costs relative to income can lead to overcrowding living conditions.⁴⁶ Overcrowding can lead to higher risks for mortality; infectious disease; poor child development and school performance; lower self-rated health; increased stress, noise, and fires; poor mental health; developmental delays; heart disease; declines in social connection; and even short stature.⁴⁷ Overcrowded homes can overstimulate children and lead to withdrawal, psychological distress, decreased motivation, patterns of helplessness, and behavioral problems.⁴⁸ In children, overcrowding has also been shown to lead to greater risk of ear infection, and when combined with exposure to other environmental risks, such as noise, is associated with an increase in urinary cortisol and epinephrine, which are biomarkers of chronic stress.⁴⁹

Each of the impacts above can lead to chronic stress and related health problems such as hypertension, anxiety, and depression; metabolic disorders, including obesity, type 2 diabetes, and cardiovascular disease; osteopenia and osteoporosis; and sleep disorders, such as insomnia or excessive daytime sleepiness.⁵⁰

Determinants Studied in Prior HIAs

Housing HIAs have evaluated the following exposures and outcomes related to health determinants in the housing affordability category:

- Budget trade-offs for essential health-supportive goods, including food, energy, health services, and child care—Food insecurity and malnutrition; morbidity and mortality resulting from having energy service cut off; negative health outcomes due to forgoing medical treatment; adverse impact on child development and education
- Overcrowding—Stress, anxiety, and poor cognitive function from excessive noise, increased cars and traffic, deterioration of homes, and shortage of onsite parking; physical injury and death from higher fire risk, more cars and traffic, and deterioration; poor cognitive development and educational outcomes
- Opting for lower-cost, substandard housing—See “Housing Quality” above
- Housing instability—Stress and homelessness, leading to increased risk of physical injury, poor mental health, and infectious disease

- Moving to neighborhoods with fewer resources and services and higher crime
- Need to obtain second jobs—Teenagers may be forced to take jobs to supplement family income; parents less available to provide transportation to and from school, leading to compromised educational outcomes; loss in family and leisure time, resulting in declining mental health and well-being
- Homeownership—Increases in “stakeholder mentality,” when residents exhibit behaviors that promote personal stability and commitments to family, their property, and the community in which they reside

Housing location determinants of health

This health determinant category pertains to physical environment factors near the home, such as access to health-supportive services, physical condition of buildings and streets, distance from air pollution, noise and traffic sources, and access to employment opportunities and public transportation. Stable, “complete neighborhoods”—mixed-use neighborhoods that include commercial services, grocery stores, open space, and public transit within a five-minute walking distance, a diversity of housing types (in terms of cost, size, and ownership versus rental), the presence of sidewalks, and connectivity of the street network—are associated with numerous health benefits. Among these are healthy body weight, higher consumption of fruits and vegetables, increased physical activity, less dependence on cars, and increased social capital.⁵¹ Vulnerable populations, including those with adverse health outcomes, are more likely to be affected, either negatively or positively, by the physical environmental factors related to housing location. Links between housing location and health include:

- **Healthy food.** The cost of food has been found to be the most significant predictor of dietary choices among people with low incomes.⁵² A lack of supermarkets in low-income areas may also limit the selection of foods available to residents.⁵³
- **Transportation and jobs.** When affordable housing is located far from jobs and requires significant transportation expenses, the actual affordability of the housing is diminished. Savings from housing that

is located more than 12 to 15 miles from a job are generally outweighed by the increase in transportation expenditures.⁵⁴ Even in markets where housing and transportation cost less, the cost burden may still be high for individuals with very low incomes.⁵⁵

- **Parks and open space.** People who live in close proximity to parks tend to have higher levels of physical activity compared with those who do not live near green spaces.⁵⁶ Urban parks can also provide places for people to experience a sense of community, which increases neighborhood cohesion. Neighborhoods with lower socioeconomic status, however, may have fewer parks, and playground equipment may be lacking or in disrepair.⁵⁷
- **Environmental exposures.** Living in close proximity to environmentally burdensome infrastructure such as highways, power plants, factories, or waste sites can increase exposure to air, noise, and water pollution, which has serious impacts on a number of health outcomes.⁵⁸
- **Blight.** Dilapidated built environments contribute to social disorder and weakened social ties, vandalism, crime, drug abuse, traffic violations, and littering.⁵⁹ Vacant lots can make residents fearful, fracture the space between neighbors, and overshadow positive aspects of the community, and may impact physical and mental health through injury, buildup of trash, attraction of pests, and impacts on anxiety and stigma.⁶⁰

Determinants Studied in Prior HIAs

HIAs have evaluated the following exposures and health outcomes related to health determinants in the housing location category:

- Air and water pollution, noise, and traffic—Respiratory disease, mental health, cardiovascular morbidity and mortality, waterborne disease, and physical injury
- Access to health-supportive services, assets, and resources—Physical activity, nutrition, health care, and social capital
- Access to employment opportunities
- Level of dependence on motor vehicles—Traffic safety affecting the likelihood of physical injury; pedestrian travel, which increases physical activity and reduces obesity risk, rates of diabetes, heart disease, and high

blood pressure; and air quality, which affects the risk of respiratory disease

- Density of alcohol outlets, such as liquor stores—Crime, violence, and injury

Housing community determinants of health

Neighborhoods affect the health of adults and children through a number of mechanisms, including concentration of poverty, socioeconomic composition, residential stability, unemployment, family support, and social relationships and norms.⁶¹ Health determinants in the housing community and health category include:

- **Neighborhood segregation.** Frequently, affordable housing is concentrated in ethnically or economically segregated neighborhoods, which have fewer institutional assets such as quality schools, libraries, public transit, and healthcare facilities, and more environmentally burdensome infrastructure such as highways, power plants, factories, and waste sites.⁶²
- **Social inclusion and capital.** Socially isolated people die at two or three times the rate of people with a network of relationships and sources of emotional and instrumental support.⁶³ Locating affordable housing in areas that remove families and individuals from their social networks and isolate them socially could challenge their ability to manage stress and reduce related illness.
- **Political participation.** Resident organization and power, though difficult to quantify, is an essential component of health outcomes associated with housing. The ability of individuals to control their living circumstances creates power, which is associated with mental health and well-being. Residents' participation in decision-making about their communities may also generate social capital by promoting greater interaction among neighbors and increased pride in the community.
- **Concentrated poverty.** Research suggests that when families move from neighborhoods with high concentrations of poverty (e.g., more than 40 percent)

to areas of lower poverty or mixed income, they experience significant benefits, including:

- Less exposure to violence and victimization from crime, resulting in reduced stress and related disorders.⁶⁴
- Improved asthma.⁶⁵
- Decreased accidents and injuries.⁶⁶
- Decreased behavioral problems.⁶⁷
- Decreased anxiety and depression.⁶⁸
- Improved school performance, including increased IQ, math, and reading test scores and decreased dropout rates.⁶⁹
- Decreased risk behaviors, such as cigarette smoking and dependency, potentially more so among girls.⁷⁰

Determinants Studied in Prior HIAs

HIAs have evaluated the following exposures and health outcomes related to health determinants in the housing community category:

- Sense of control—Mental health and well-being
- Neighbors get to know each other, take pride in community—Social capital
- Integration—Prevention of concentrated poverty and associated social disorganization
- Access to assets and resources (schools, libraries, public transportation)—Physical activity, nutrition, health care, and social capital
- Lack of labor market opportunities—Unwanted land uses (power plants, solid and hazardous waste sites, bus yards)
- Presence of highways and other busy roads running through communities—physical injury, social isolation
- Racial isolation
- Crime and violence—Stress, mental health, physical injury, and reduced physical activity
- Decline in property values
- Cycle of poverty

Review of Housing HIAs

This section highlights common practices and illustrative features of housing HIAs, and summarizes a review of 52 HIAs on housing-related programs, projects, and policy decisions conducted in the U.S. between 2002 and December 2013. Of the 52 reports identified through this review, 40 directly assessed housing-related decisions; the remaining 12 only indirectly considered housing and were not included in the analysis (Appendix B includes the list of 12 assessments that were excluded from the analysis). Five of the 40 HIAs included in the analysis were in process at the time of this review.

This analysis divided the 40 HIAs into two categories:

1. **Community development HIAs with a strong housing component.** Twenty-nine studies fell into this category, addressing housing as part of broader proposed actions concerning development or redevelopment of community resources, buildings, and infrastructure. The most common subject of these HIAs was redevelopment planning, for either distinct locations or entire cities.
2. **Housing-specific HIAs.** The remaining 11 HIAs focused on particular features of homes (e.g., home energy delivery systems) or issues directly impacting homes (e.g., rental voucher programs and affordable housing inspections). Affordable housing programs, including rental voucher systems and assistance demonstration, were common subjects of these HIAs.

Types of Decisions Studied

Twenty-one of the 29 community development HIAs evaluated proposed redevelopment plans—12 of these addressed mixed-use new or redevelopment with commercial, residential, and community spaces, and nine focused on land use plans involving solely residential uses. City and county planning were the subjects of five community development HIAs, and the remaining two

evaluated planned construction projects that would affect housing. Housing-specific HIAs covered a wider range of subjects, with five evaluating impacts of proposed actions on housing structures (e.g., accessory dwelling units, placement of garage doors, public housing demolition, universal design, and carpeting in public housing); two considering home energy issues (e.g., smart meter deployment and the Low Income Home Energy Assistance Program); two evaluating rental assistance or rental voucher programs; and two looking at housing inspection programs.

Types of Health Determinants Studied

Housing affordability was the most widely considered health determinant category, addressed in 32 of the HIAs (24 community development and eight housing-specific). The most common affordability-related health determinant evaluated was housing instability, covered in 23 of the 32. For example, the [Farmers Field Rapid HIA](#) examined the health impacts of a proposed stadium development on residents at risk of displacement during and after construction.

Twenty-eight of the 40 HIAs examined the impact of **housing quality** on resident health (18 community development and 10 housing-specific). Eight of these 28 included housing quality as a potential outcome of another determinant category such as affordability or community.

Housing location was considered in 24 of the HIAs (22 community development and two housing-specific).

Housing community was the focus of 20 of the 40 HIAs (14 community development and six housing-specific). Neighborhood integration (e.g., social, economic, and racial) and political participation were the most common determinants evaluated in this category.

Overview of housing HIA assessment methods

The 40 housing HIAs varied widely in how they conducted their assessments of current conditions and evaluated potential impacts of the proposed actions. Authors of 32 of the HIAs conducted their studies using the six-step process recommended as a minimum general standard for the HIA process.⁷¹ These six steps are discussed in detail in “Guidance on Conducting Housing HIAs” on p. 17. The remaining eight housing HIAs primarily relied on indicators from the [San Francisco Indicator Project](#), formerly the Sustainable Communities Index.⁷²

Most housing-specific HIA authors depended on literature reviews; existing data sets, such as the U.S. Census Bureau’s American Housing Survey, U.S. Census Bureau’s American Communities Survey, and the Centers for Disease Control and Prevention’s Behavioral Risk Factor Surveillance System; and interviews with stakeholders and community members. Some authors used quantitative forecasting or modeling, focus groups with stakeholders, and regulatory reviews. Several also collected new data on aspects of the built environment, primarily through field

observations of health determinants such as traffic and pedestrian features.

None of the studied HIAs involved collection of environmental samples (e.g., air, soil, water, or dust samples). Such data collection often lies outside the scope of an HIA due to constraints posed by the team’s technical expertise, the timeline, the budget, or the complexity involved in gathering representative samples. In addition, quantitative forecasting is not always possible or feasible because sufficient methods and resources may not be available. For example, only four of the 40 HIAs used modeling as a tool to assess impacts.

Table 3 includes links to the reports identified through the literature review methods described in Appendix B, describes the decisions the housing HIAs sought to inform, and depicts the health determinant categories addressed in each of the housing HIAs. Several of these HIAs are referenced as examples throughout the remainder of this report. Updates on these HIAs that have occurred since the time of this review can be found through the links provided in the table.⁷³

Table 3: Summary of HIAs Reviewed and Relevant Health Determinants

HIA title	Decision the HIA sought to inform	Health determinant categories examined				Energy-related
		Quality	Affordability	Location	Community	
<i>Community Development HIAs (29 of the 40 HIAs identified through the review):*</i>						
Aerotropolis Atlanta	Redevelopment plans for the site of a former Ford Assembly Plant	N	Y	Y	N	N
Atlanta Beltline	Redevelopment plans to convert a 22-mile span of freight railway into transit and trail loop, with parks, residential and commercial development	Y	Y	Y	N	N
City of Ramsey Threshold	City planning; development of policy directions for future work	Y	N	Y	N	N
Concord Naval Weapons Station Reuse Project	Redevelopment plans for a 5,028-acre former weapons storage site, including residential and commercial development, community facilities, parks, roadways, and public transit service	Y	Y	Y	N	Y
Divine Mercy Development	Mixed-use development plans for Divine Mercy Catholic Church, with church campus, school, commercial and low-density residential development, senior living; evaluation of MN Environmental Assessment worksheet	N	Y	N	N	N

HIA title	Decision the HIA sought to inform	Health determinant categories examined				Energy-related
		Quality	Affordability	Location	Community	
Community Development HIAs (29 of the 40 HIAs identified through the review):*						
Executive Park Subarea Plan [†]	Land use planning for 2,800-unit residential development on 71 acres in southeastern San Francisco	Y	Y	Y	Y	N
Farmers Field Rapid HIA [‡]	Proposed construction of 72,000-seat Farmers Field football stadium in downtown Los Angeles	Y	Y	N	Y	Y
St. Paul Light Rail	Transit development of 11-mile Central Corridor Light Rail Transit Line, under construction at time of HIA and running through diverse areas and low-income communities	Y	Y	N	N	N
Humboldt County General Plan Update [†]	County planning with three growth alternatives to accommodate future population: denser development in urban areas, some growth to exurban areas, or unrestricted growth throughout county	N	Y	Y	N	N
Long Beach Downtown Plan	New mixed-use development plan for downtown Long Beach, with residential, commercial, and cultural development	Y	Y	N	N	N
Oak to Ninth Avenue	Proposed 64-acre development project, with residential and commercial development, public open space, marinas, and wetlands restoration	Y	Y	Y	N	N
Page Avenue Revitalization	Redevelopment plans, with residential and commercial development, urban park, and senior housing	Y	Y	N	Y	N
Pittsburg Railroad Avenue Transit-Oriented Development	Transit-oriented development near proposed BART station	Y	Y	Y	N	N
Yellowstone County Growth Policy	City growth policy planning for Billings, MT	Y	Y	N	N	N
MacArthur BART	Mixed-use development proposal on transit station parking lot	Y	Y	Y	Y	Y
Long Beach Housing Element	City general planning for Housing Element	Y	Y	Y	N	N
Coffelt-Lamoreaux Public Housing Redevelopment HIA	Redevelopment plans for 296 units and surrounding complex at the Coffelt-Lamoreaux Public Housing Project in Phoenix, AZ	Y	N	Y	Y	Y
South Lincoln Homes [†]	Redevelopment plan for 270 public housing units	N	Y	Y	Y	N
San Pablo Corridor [†]	Development plans for three potential affordable housing opportunity sites along San Pablo Avenue corridor	N	Y	Y	Y	N
Eastern Neighborhoods Community Health Impact Assessment (ENCHIA) [†]	Area planning for redevelopment of several San Francisco neighborhoods	Y	Y	Y	Y	Y

HIA title	Decision the HIA sought to inform	Health determinant categories examined				Energy-related
		Quality	Affordability	Location	Community	
Community Development HIAs (29 of the 40 HIAs identified through the review):*						
The Crossings at 29th and San Pedro St.—South Central Redevelopment	Proposed 11.6-acre development of former industrial area, with more than 450 units of affordable housing, retail development, and community spaces	Y	Y	N	N	N
HOPE VI to HOPE SF: San Francisco Public Housing Redevelopment†	Explores past HOPE VI redevelopment at two sites, Bernal Dwellings and North Beach Place, to inform new HOPE SF redevelopment plans for distressed public housing sites, with affordable housing and ownership opportunities	Y	Y	Y	Y	N
Jack London Senior Housing	Proposed development, with low-income senior housing and 14,000 sq. ft. of retail space	N	Y	Y	Y	N
Clark County Highway 99 Sub-Area Plan	Twenty-year land use planning for healthy community that is economically viable, sustainable, active, and socially cohesive	N	Y	Y	Y	N
Replacing Public Housing Units Destroyed by Hurricane Ike†,‡	Housing Authority plan to address replacement of nearly one-third of 569 public housing units lost to Hurricane Ike; scattered site public housing developments	N	Y	Y	NA	N
HIA of Kings Ridge Apartments‡	Use planning for community center in low-income apartment complex	NA	NA	Y	Y	N
Merced County General Plan Update§	County general planning	N	N	Y	Y	N
HIA of the Mid-Michigan Fair and Affordable Housing Plan§	Development of regional housing plan to improve housing affordability	Y	Y	Y	Y	N
Columbus North East Area Plan HIA§	Evaluation of city's six recommendations with respect to physical activity in everyday life	N	N	Y	N	N
Housing-Specific HIAs (11 of the 40 HIAs identified in the review):						
Advanced Metering Infrastructure	Evaluation of proposed AMI (“smart metering” technology) deployment plans	Y	Y	N	Y	Y
Benton Accessory Dwelling Unit†	Evaluation of five policy options relating to ADUs	Y	Y	Y	N	N
Massachusetts Low Income Energy Assistance Program	Evaluation of LIHEAP, specifically how budget trade-offs affect child health	Y	Y	N	N	Y
Massachusetts Rental Voucher Program‡	Evaluation of proposed changes to MRVP, a state-funded housing assistance and homelessness prevention program	Y	Y	N	N	N
North Carolina Senate Bill 731	Evaluation of amendments to zoning laws to exempt low-density single-family residences from certain building design elements	N	N	N	N	N

HIA title	Decision the HIA sought to inform	Health determinant categories examined				Energy-related
		Quality	Affordability	Location	Community	
<i>Housing-Specific HIAs (11 of the 40 HIAs identified in the review):</i>						
Rental Assistance Demonstration Project HIA	Evaluation of RAD project, reorganizing public housing funding and management structures, allowing voluntary conversion of existing public housing to private and nonprofit structures, renegotiating time and use restrictions on converted housing, and promoting residential mobility from public housing through rental voucher distribution	Y	Y	Y	Y	Y
HIA of Portland City Council's Rental Housing Inspections Program	Evaluation of budgeting decision on whether city should fund an expansion of an enhanced inspections model, by comparing standard inspection model with pilot enhanced model	Y	N	N	Y	N
Trinity Plaza Housing Redevelopment[§]	Evaluation of Trinity Plaza Redevelopment Proposal to demolish building with 377 rent-controlled units and replace with 1,400 market-rate condominiums	Y	Y	N	Y	N
Universal Design in Single-Family Housing: A HIA in Davidson, NC	Evaluation of incorporating universal design and other accessibility features within single-family homes	Y	Y	N	N	N
Flooring in Public Housing[§]	Evaluation of carpeting policy in public housing developments in San Francisco Public Housing Authority, CA	Y	N	N	Y	N

Notes:

*One community development HIA, *Baltimore Vacants to Values*, was not included in the table because it was incomplete at the time of the literature review.

† Included analysis using either the San Francisco Indicator Project's indicators or Healthy Development Checklist.

‡ Rapid or desktop HIA.

§ Incomplete but provided partial information at the time of the HIA review. NA=no information available in the incomplete report.

Guidance on Conducting Housing HIAs

This section provides guidance on the six steps of HIAs—screening, scoping, assessment, recommendations, reporting, and monitoring and evaluation—and how to use them when assessing proposed housing-related actions.⁷⁴ The discussion includes examples from housing HIAs that illustrate the practices commonly followed as well as guidance on stakeholder engagement and the consideration of equity and vulnerable populations. This section describes best practice recommendations for each step of an HIA and is therefore intended to highlight the range of options available to practitioners, rather than outline a prescriptive process. Each HIA will need to be responsive to its unique decision-making context, timeline, and stakeholder priorities. Therefore, housing professionals and their partners may need to make adjustments or adaptations that will enable an HIA process that is responsive to local or decision-making context. Additional tools and resources for conducting housing HIAs are provided in Appendix C.

The HIA process

HIAs are typically conducted in six steps:⁷⁵

Step 1: Screening. During this step, the HIA team and stakeholders determine whether an HIA is needed, can be accomplished in a timely manner, and would add value to the decision-making process.

Step 2: Scoping. In this phase, the HIA team and stakeholders identify the potential health effects that will be considered and develop a plan for completing the assessment, including specifying their respective roles and responsibilities.

Step 3: Assessment. In this step, the HIA team evaluates the proposed project, program, policy, or plan and identifies its most likely health effects using a range of data sources, analytic methods, and stakeholder input to answer the research questions developed during scoping.

Step 4: Recommendations. During this step, the team and stakeholders develop practical solutions that can be implemented within the political, economic, or technical limitations of the project or policy to minimize identified health risks and to maximize potential health benefits.

Step 5: Reporting. This step involves dissemination of information—including the HIA's purpose, process, findings, and recommendations—to a wide range of stakeholders.

Step 6: Monitoring and evaluation. At this stage, the team and stakeholders evaluate the HIA according to accepted standards of practice. They also monitor and measure its impact on decision-making and on health.⁷⁶

Selected Resources and Step-by-Step Tools

Several resources and toolkits exist to further guide housing professionals and their partners through each step of the HIA process.

A Health Impact Assessment Toolkit: A Handbook to Conducting HIA. This toolkit is designed as a teaching guide for how to conduct HIA and describes each step of the process: <http://www.humanimpact.org/downloads/hia-toolkit-2011/>.

HIA: A Guide for Practice. This guide describes the key tasks and activities for HIA and highlights issues and challenges that can arise during the process: <http://www.humanimpact.org/downloads/hia-guide-for-practice/>.

Minimum Elements and Practice Standards for Health Impact Assessment. This document describes the essential elements of an HIA and provides benchmarks for effective practice: <http://hiasociety.org/wp-content/uploads/2013/11/HIA-Practice-Standards-September-2014.pdf>.

HIA Summary Guides. This document, developed by Human Impact Partners, provides a two-page summary for each step of the HIA process, including stakeholder engagement: <http://www.humanimpact.org/downloads/hia-steps/>.

Improving Health in the United States: The Role of Health Impact Assessment. This document offers guidance on conducting HIAs and describes the six-step process: <http://www.nap.edu/catalog/13229/improving-health-in-the-united-states-the-role-of-health>.

Guidance and Best Practices for Stakeholder Participation in Health Impact Assessments. This document describes how to effectively and meaningfully involve diverse stakeholders at each step of an HIA: <http://www.hiasociety.org/documents/guide-for-stakeholder-participation.pdf>.

Promoting Equity through the Practice of Health Impact Assessment. This document describes strategies for incorporating a focus on equity into the practice of HIA and how HIA can be used to advance equity: <http://www.humanimpact.org/component/jdownloads/finish/9/294>.

Equity Metrics for Health Impact Assessment Practice. These metrics can be used to help practitioners plan their approach to addressing equity in HIA and evaluate the degree to which an HIA incorporated equity: http://www.hiasociety.org/documents/EquityMetrics_FINAL.pdf.

Key considerations in conducting housing HIAs

Stakeholder Engagement

Although HIA authors and collaborators generally constitute the core HIA team, stakeholders (including community members and decision-makers) should participate in each step of the process, serving as facilitators and transmitting information between constituencies. A recent national evaluation of HIAs in the United States noted that decision-makers and other stakeholders credited the process with broadening their perceptions of health and how health is linked to other factors. The evaluation noted that “HIAs built consensus

among decision makers and their constituents and intensified cross-sector working relationships.”⁷⁷

HIAs will be most meaningful and effective if diverse stakeholders are thoughtfully involved throughout the process. The types and number of stakeholders participating in an HIA and the level of their engagement depend on the action being assessed and the resources available. At a minimum, the HIA team should ensure involvement of the affected community, empowering them to help ensure that their health and well-being are protected and facilitating “a democratic decision-making process by involving those most affected by a decision.”⁷⁸

Community expertise is vital to understanding how a proposed housing action may impact the health of local residents, and necessary to ensuring that stakeholders are engaged in the HIA process. The HIA team can use surveys; focus groups; and interviews with community members, other stakeholders, and experts to gather information about:

- Health concerns of people in specific locations, including smaller areas than those typically covered by census tract data.
- Resident perceptions of environmental conditions and community needs (e.g., health determinants such as access to jobs and healthcare).
- Whether and how residents have been included in planning for previous projects in their communities.⁷⁹

Methods to engage stakeholders and ensure their active participation in an HIA may include:

- Creating community steering committees or advisory committees.
- Including stakeholders as co-investigators for the HIA.
- Building consensus-based decision-making into the process.
- Conducting interviews and surveys and eliciting feedback through questionnaires, and comment forms.
- Sharing information through websites, articles, newsletters, workshops, on-site tours, focus groups, design charrettes (intensive planning sessions where community members, architects and designers, and

others collaborate on a vision for future development), and study sessions.

- Including stakeholders in the development and prioritization of recommendations.
- Compensating community members for their participation.

Many of the HIAs studied engaged key stakeholders, particularly in the assessment step. [The Massachusetts Low Income Energy Assistance Program HIA](#) interviewed key stakeholders, gathering opinions and perceptions of people with expert knowledge in the energy assistance area, including representatives of relevant national, state, and community government and nonprofit agencies and advocacy groups.⁸⁰ The [HIA on the Massachusetts Rental Voucher Program](#) conducted extensive interviews to gather evidence from the experience, opinions, and perceptions of stakeholders and people with expert knowledge in the affordable housing area, including representatives of relevant state, regional, and community agencies and advocacy groups.⁸¹ These interviews provided a broader picture of health determinants affected by MRVP proposals and a well-grounded understanding of affordable housing in Massachusetts and of how and why stakeholders and experts think the MRVP affects children's health.

Housing and community development professionals often have experience in community building and stakeholder engagement in the neighborhoods they serve, and often undertake these efforts as part of their initiatives. Therefore, the stakeholder engagement process for HIAs focused on housing decisions should seek to complement and strengthen, rather than duplicate, existing engagement efforts for a given project or decision. The decision of who should lead the stakeholder engagement efforts for an HIA will be based on many factors, including strength of existing relationships with stakeholders and capacity. Community-based organizations and other partners may also be particularly suited to lead or assist with stakeholder engagement efforts for an HIA.

Equity and Vulnerable Populations

Equity is a core value of HIAs.⁸² Health inequities occur when populations within a society who have varying levels of power and access to opportunity experience disparate,

unfair, or unjust outcomes. Equity should be considered at every step of the HIA. The HIA team may find the equity metrics tool developed by the Society of Practitioners of Health Impact Assessment useful in planning their approach to addressing equity.⁸³ Having the appropriate data for these metrics is critical. See Step 3, Assessment on [p. 28](#) for guidance on data sets. HIA teams should be open to new stakeholders joining the HIA, and create ongoing relationships with stakeholders early in the process, even before the start if possible, to build trust, share information, and be responsive to questions and feedback.⁸⁴ HIA teams should try to include stakeholders who have existing relationships with the most affected communities and who know about local conditions and concerns. Stakeholder engagement provides an opportunity to address the challenges associated with organizing vulnerable communities and enhances the expression of HIA core values: democracy, equity, sustainable development, and ethical use of evidence.⁸⁵ Table 4 summarizes the guidance on how to engage stakeholders and incorporate equity during each step of the HIA process.⁸⁶

The [Benton Accessory Dwelling Units](#) and [Ohio Housing Inspections HIAs](#) specifically noted equity issues in their screening processes.⁸⁷ The Benton HIA team stated that an HIA would provide health-based findings on whether to modify current policy, noting disparities in services permitted in urban areas but prohibited in rural areas. The Ohio team noted that an HIA would serve four vulnerable populations—low-income renters, mentally ill, developmentally disabled, and formerly homeless—who are more at risk of housing-related health effects that are especially prevalent in affordable housing communities.

In determining recommendations, the HIA team should ensure equity by prioritizing measures that mitigate adverse health impacts on vulnerable populations. The potential to promote health equity in later steps is illustrated by the Oregon Public Health Institute's recommendation to expand Portland's Rental Housing Inspections Program. The [final HIA report](#) noted, "The quality of rental housing raises health equity issues because vulnerable groups such as low-income individuals and ethno-racial minorities are significantly over-represented in the tenant population. Since these groups are at higher risk of multiple adverse health outcomes

Table 4: Guidance on How to Engage Stakeholders and Incorporate Equity during the HIA Process

HIA Step	Best Practice for Engaging with Stakeholders	Best Practices for Incorporating Equity in HIA
Screening	<ul style="list-style-type: none"> • Conduct an analysis to identify appropriate stakeholders, covering all the disciplines needed to fully address the proposed action and health implications. • If no prior relationship exists, “cold-call” stakeholders to recruit them to participate. • Email stakeholders, explaining the HIA and requesting a phone or in-person meeting. • Hold one-on-one in-person or phone meetings with various stakeholders to share information and educate all parties about the HIA. • Hold group meetings to clarify roles and discuss key issues. 	<ul style="list-style-type: none"> • The focus of the HIA is prioritized by communities facing inequalities as being important for their health. • Partner with community organizing groups and their members to screen projects, taking into account many considerations.
Scoping	<ul style="list-style-type: none"> • Develop a “rules of engagement” agreement and conflict of interest disclosure for stakeholder participation. • Conduct well-facilitated meetings with stakeholders to establish priorities. • Conduct surveys of, focus groups with, or voting by affected communities to establish priorities. • Conduct interviews with decision-makers to identify priorities and get input. • Hold conversations with stakeholders to build consensus on the HIA’s scope. 	<ul style="list-style-type: none"> • Ensure that scope includes equity-related goals, research questions, and research methods. • Encourage members of communities facing inequities to set goals, help develop research questions, and identify appropriate research methodology.
Assessment	<ul style="list-style-type: none"> • Conduct surveys or focus groups with affected communities to collect data. • Interview key individuals. • Request and analyze data from various organizations and agencies. • Review public testimony. 	<ul style="list-style-type: none"> • Distribute health and equity impacts across the population analyzed (e.g., impacts on specific populations predicted; the HIA uses community knowledge and experience as evidence). • Allow members of communities facing inequities to participate in research (e.g., Community Based Participatory Research (CBPR)), review research findings, and participate in drawing conclusions from research.
Recommendations	<ul style="list-style-type: none"> • Work with stakeholders to interpret HIA findings and develop and prioritize recommendations. • Hold one-on-one meetings with stakeholders to discuss recommendations. • Hold group meetings with diverse stakeholders to prioritize recommendations. • Get expert guidance to ensure that recommendations reflect effective practices. 	<ul style="list-style-type: none"> • Make recommendations that focus on impacts to communities facing inequities and are responsive to community concerns. • Include members of communities facing inequities in the development and prioritization of recommendations.
Reporting	<ul style="list-style-type: none"> • Work with stakeholders to write, review, and edit the HIA report. • Be responsive to stakeholder feedback. • Share findings and recommendations with a broad set of stakeholders. • Work with stakeholders to communicate findings and recommendations to decision-makers through media and advocacy. 	<ul style="list-style-type: none"> • Facilitate the dissemination of findings and recommendations by and in communities facing inequities using a range of culturally and linguistically appropriate media and platforms. • Assist members of communities facing inequities to develop talking points and communicate the HIA findings and recommendations to decision-makers and others.

HIA Step	Best Practice for Engaging with Stakeholders	Best Practices for Incorporating Equity in HIA
Monitoring and Evaluation	<ul style="list-style-type: none"> • Hold meetings to establish the mechanism for tracking and the frequency of monitoring. • Involve stakeholders in monitoring health outcomes (e.g., through stakeholder or citizen advisory panels). 	<ul style="list-style-type: none"> • Include in monitoring and evaluation plan clear goals to monitor equity impacts over time and an accountability mechanism (i.e., accountability triggers, actions, and responsible parties) to address adverse impacts that may arise. • Include members of communities facing inequities in the development of the plan, and in identifying who is accountable for overseeing the components of the plan.

Source: Adapted from Table 4 of Stakeholder Participation Working Group of the 2010 HIA of the Americas Workshop, Best Practices for Stakeholder Participation in Health Impact Assessment (Oakland, CA: October 2011) and the “Advancing Equity through HIA Practice” presentation by Human Impact Partners, presented at the Big Cities Health Coalition HIA training in Washington, DC, December 4, 2015.

for a variety of reasons, it is important to maintain health rental housing to minimize their health risk.”⁸⁸

[The Eastern Neighborhoods Community HIA](#) established a Community Council to assess the potential effects of a rezoning change in San Francisco.⁸⁹ The council “provided critical insights about the quality, meaning, and degree of representation of indicators data, generally observing that routinely collected public agency data typically provide an incomplete picture of neighborhood conditions.”⁹⁰ To achieve this, the council requested that indicator data be broken out by neighborhood, race, and income when possible, allowing members to better serve or advocate for vulnerable groups.

All 40 reports considered the distribution of health impacts across populations, paying specific attention to vulnerable groups and recommending ways to improve the proposed development for affected groups. Special populations for consideration in housing decisions included children and families, as well as people who were elderly, disabled, or homeless; had preexisting health conditions; or were minorities.

Step 1: Screening

During screening, the HIA team and key partners should attempt to answer the following questions:⁹¹

- **Potentially significant health effects.** Could the proposed action result in significant health effects, especially ones that may be avoidable, unequally distributed, involuntary, adverse, irreversible, or catastrophic? Could it particularly affect populations already in poor health, resulting in increased health disparities?
- **Specific proposed action.** Is there a specific proposal under consideration?
- **Added value.** Without an HIA, would these health effects be considered, understood, and managed?
- **Political influence:**
 - Are there concerns or controversies about the proposed action’s health effects among stakeholders, such as decision-makers or the affected community?
 - Would an HIA bring attention to and knowledge about these concerns and controversies to stakeholders?
 - Could HIA findings result in changes to the proposed action?
 - Could an HIA fulfill existing policy or legal requirements to evaluate health impacts?
- **Timeliness.** Could the HIA be done in time to incorporate the findings into the decision-making process?
- **Technical feasibility.** Are sufficient resources and technical expertise available to conduct an HIA and incorporate findings into proposed action decisions? If

no, then are other partners willing and able to provide resources and technical expertise? Staff members from local health departments, public health institutes, public health nonprofits, and public health departments at local colleges and universities may have experience and an interest in partnering with housing professionals on an HIA.

[The Page Avenue Revitalization HIA](#) report contained a well-documented screening process.⁹² The redevelopment project included residential townhouses, an urban park, office space, a bank, retail commercial development, a grocery store, and senior housing in Pagedale, Missouri. The team decided to conduct an HIA based on:

- **Potentially significant health effects.** The redevelopment had significant potential health effects given the physical health and economic status of the population as well as planned improvements to the infrastructure and economic vitality of the project area.
- **Added value.** The HIA would contribute new information to the decision-makers about health impacts and redevelopment options. The plan addresses economic development and service disparities, but health priorities such as physical activity and healthy eating had not been considered.
- **Political opportunity.** The HIA results would likely be valued by decision-makers, with stakeholders such as the lead developer, City of Pagedale, and the St. Louis County Department of Planning expressing interest in HIA recommendations.
- **Technical feasibility.** The team had sufficient data, resources, and multidisciplinary expertise as well as adequate funding to carry out a comprehensive HIA.
- **Timing.** At the time the HIA was being considered, the redevelopment project was in the planning and design phases. This made a one-year time frame feasible for conducting a comprehensive HIA. Further, the timing of the project and plans for the redevelopment provided a window of opportunity for influencing future decisions.

Step 2: Scoping

Once an HIA is deemed appropriate and feasible, the team must then develop the scope. Through scoping, the team, in collaboration with stakeholders, establishes and documents the goals and anticipated outcomes of the HIA by answering the following questions:⁹³

1. Who will be part of the HIA team and their roles; which technical experts, key informants stakeholders will be engaged; and what are their roles and responsibilities?
2. What is the timeline for completing the HIA?
3. Which specific proposed action and which alternatives will be evaluated?
4. What existing baseline conditions and potential health impacts of the proposed action are to be evaluated? How will the potential health impacts be prioritized in the final housing HIA scope?
5. What are the geographical and time boundaries for the analysis?
6. What populations, particularly vulnerable populations, will be evaluated?
7. What data resources and assessment methods will be employed to describe baseline conditions and predict possible health impacts? What indicators can be used to measure baseline conditions and the potential effects of the proposed action?

The outcome of scoping is a research plan that describes the potential health effects that will be considered in the assessment, establishes research questions and methods, and describes roles and responsibilities of the HIA team and stakeholders.

Team and Advisors

The HIA team should involve stakeholders in the scoping process, such as through the creation of steering committees or advisory groups. In particular, scoping is the time to develop a precise plan for engaging the relevant populations, which is vital in identifying important health concerns and questions related to the proposed action. The plan should establish clear roles and responsibilities for all participating individuals and organizations.

Stakeholders provide knowledge as well as access to data sources. Because scoping requires understanding what data are available to evaluate a proposed action, the advisors may include local, state, or federal public health agencies, who conduct disease surveillance, maintain data systems on the baseline health status of affected populations, and can help identify and understand potential health impacts. Housing expertise is also vital, both for access to relevant data and for insight into key issues. Broad, inclusive participation in this early HIA stage ensures that communication lines remain open and reduces the potential for bias. Depending on the nature of the proposed action, knowledge from other disciplines may be needed, including planning, environmental management, or transportation.

[The St. Paul Light Rail HIA](#), a community assessment of transit-oriented development policy in St. Paul, Minnesota, involved over 40 organizations, with the first three comprising the authors:⁹⁴

- PolicyLink, a national research and action institute advancing economic and social equity.
- TakeAction Minnesota, a statewide organization committed to achieving social, racial, and economic justice through community organizing, coalition building, issue campaigns, and civic engagement.
- ISIAH, a faith-based community organization of church congregations, including several in the immediate vicinity of the planned project area.
- A Community Steering Committee (CSC) of more than 20 organizations representing constituents living and working along the central corridor. HIA authors noted that “bringing together the CSC required care, identifying the landscape of advocates and interests along the Central Corridor, and building relationships through numerous conversations.”⁹⁵
- A Technical Advisory Panel of more than 20 organizations, including the City of Saint Paul Planning and Economic Development Agency, university professors, affordable housing developers, and economic development associations.
- A set of key policymakers in the zoning and transit planning process who could ensure consistent communication with decision-makers.

Setting a Timeline

During the screening step, the team should determine whether an HIA could be completed in a time frame that would allow for the recommendations to be considered in the decision-making process. In scoping, the team should develop a schedule for completing the HIA, aligning the HIA process with the key points in the decision-making process (e.g. hearings, public comment, plan publication).

The time span for conducting a comprehensive HIA can vary, but on average they take 12–18 months. If a team needs to prepare a report in a shorter time frame, it may choose to use rapid HIA, a method that allows an HIA to be conducted quickly while maintaining a high level of stakeholder engagement.

Using a rapid HIA model, [the Farmers Field HIA](#) was completed in about three months, while still adhering to minimum practice standards and engaging and empowering those affected and facing inequities.⁹⁶ The team set up three panels: affected residents, interested stakeholders, and subject matter experts from public health, city planning, and housing. The partners held a one-day scoping meeting that yielded a list of priority issues and measures to include in the HIA and a list of readily available data on existing conditions, then held a two-day meeting to discuss assessment findings, develop recommendations through a consensus process, and identify subjects on which disagreement persisted.⁹⁷

Alternatives to Be Evaluated

At a minimum, the HIA team should evaluate the potential health impacts of implementing the proposed action versus not implementing it. However, the team also may need to consider several alternative actions.

In [the Portland City Council’s Rental Housing Inspection Program HIA](#), the HIA team decided to consider three scenarios related to changes in funding levels for the inspections program and examined the relative ability of each scenario to improve health-related housing conditions.⁹⁸

-
1. **Status quo.** The enhanced inspections model would continue in two city districts, while the remaining five districts would be served by the standard model.
 2. **Enhanced model is discontinued.** The enhanced model in the two districts would be discontinued, and the entire city would be served by the standard model.
 3. **Strategic expansion of the enhanced model.** The enhanced model would continue in the two districts and be expanded to three more based on their relatively high proportions of cost-burdened households.

Although the Portland HIA team initially considered a fourth scenario—expanding the enhanced model citywide—it determined that Scenario 3 was more realistic and would be more effective in determining where to direct additional resources should they be made available for the inspections program.⁹⁹

Pathway Diagrams

During the scoping process, the team identifies a set of health determinants that are potentially associated with the proposed action. For each determinant, the team develops a health pathway diagram (also known as a causal model or causal framework) to outline plausible, logical pathways linking the proposed action to health effects. The diagrams also help inform the research plan.

For housing HIAs, pathways between a proposed action and health effects are likely to be multilayered (e.g., increasing housing inspection frequency can identify electrical hazards which, if fixed, may decrease incidence of fires and therefore decrease burns and death). The team should identify intermediate steps and exposures between the proposed action, its health determinants, and the health outcomes. Depending on the complexity of a proposed action, multiple diagrams might be required. Health determinants identified for housing HIAs will probably fall into one or more of four categories: those affecting housing quality, housing affordability, housing location, and the community.

[The Long Beach Housing Element HIA](#) used pathway diagrams to illustrate the how the housing element of the City of Long Beach's general plan could impact housing affordability, location, and quality and, in turn,

affect health.¹⁰⁰ As part of their general plans, every city in California is required to adopt a housing element, which analyzes a city's current and projected housing needs and describes a plan to meet those needs. Figure 2 includes the housing quality pathway. At the scoping stage, pathway diagrams need not indicate the direction, probability, or magnitude of health impacts; instead, these will be evaluated during the assessment step. (See [p. 28.](#))

Pathway diagrams are extremely helpful in paring the list of potential environmental, biological, and social impacts and simplifying the complex interplay among environmental and cultural factors, human and social behavior, and human biology. Pathway diagrams can help the HIA team identify the health effects that warrant or benefit most from assessment as well as the determinants that may be difficult to assess. To ensure transparency, HIA teams should document decisions not to assess certain health determinants.

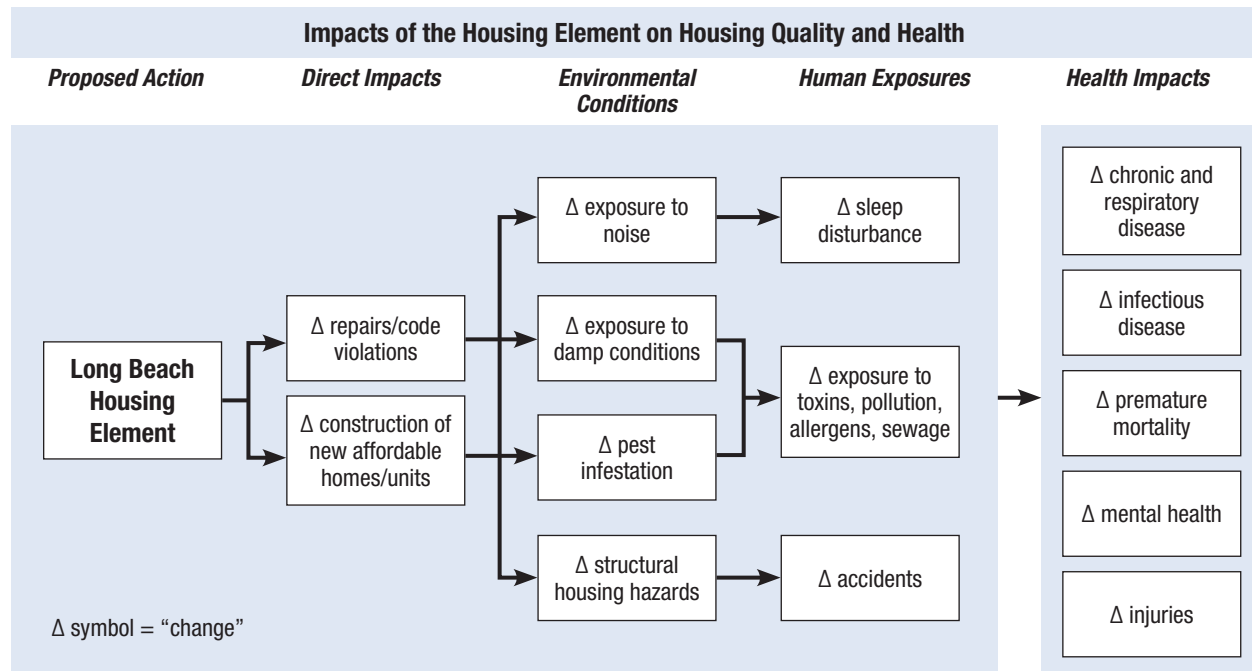
For example, the HIA team for [the Concord Naval Weapons Station Reuse Project HIA](#) decided to limit its evaluation to five health determinants: housing, jobs, transportation, retail and services, and parks and open space.¹⁰¹ Although acknowledging that residual contamination in groundwater and soil were important, the team decided not to include them because the necessary analysis could not be done within the constraints of the team's technical expertise, the proposed action timeline, and the budget. In addition, environmental investigation and remediation of the site was already subject to federal regulatory oversight and was being done by another organization.

Geographical Boundaries

HIA teams should set and document manageable geographical and temporal boundaries for their analysis based on the relationship between the proposed action, the health determinants, and health outcomes. For example, analysis around air quality issues may focus on a geographic area within 300 meters of roadways or other emission sources, whereas a pathway related to employment may have citywide boundaries. Sometimes, these boundaries should also be set to ensure that the scope stays within the limits of time and budget resources. Such stipulation is important because available data are sometimes not available at the level of small

Figure 2: Pathway Diagrams Outline Links between Proposed Actions and Health

Long Beach housing element pathway diagram for housing quality



communities or neighborhoods. [The Replacing Public Housing Units Destroyed by Hurricane Ike HIA](#) summary report stipulated that the HIA covered the area within the Galveston city limits, where data were available at the point, parcel, census block, or census tract level, depending on the measure.¹⁰² When data were available only at the census tract level, the team used statistical techniques to estimate values at the “more refined” census block level. Final reporting of results occurred at the census block level.

Vulnerable Populations

During scoping, the HIA team should determine if the proposed action will affect one or more vulnerable populations, and if yes, whether it will create, exacerbate, or mitigate health inequities for these groups. The team should then answer the following questions:

- Will the proposed action have a larger impact on the vulnerable population than on the general population?

- Will the effect contribute cumulatively to pre-existing adverse conditions or exposures in the vulnerable population?
- Does the vulnerable population have attributes that mediate or exacerbate the effect of the proposed action?

[The Massachusetts Low-Income Energy Assistance Program HIA](#) focused on the health of children in low-income families who were deemed economically vulnerable because of their eligibility for housing subsidies.¹⁰³ [The Clark County Highway 99 Sub-Area Plan HIA](#) focused on low-income citizens, particularly the elderly, minorities, and children in low-income neighborhoods, because these populations disproportionately lived in areas of concentrated poverty and suffered from corresponding health impacts such as violence, HIV/AIDS and other STDs, weather-related deaths, lack of access to goods and services, social isolation or segregation, poor nutrition, and traffic fatalities.¹⁰⁴

Assessment Resources and Analytical Methods

The availability of resources and expertise ultimately shapes the HIA scope. The team must have the necessary technical capacity and resources to collect, analyze, and interpret data and the ability to coordinate an inclusive process involving diverse stakeholders. The practitioner must also have the ability to communicate findings to decision-makers. Common HIA assessment methods readily applicable to housing HIAs include:¹⁰⁵

- Using peer-reviewed research articles and grey literature—reports and publications outside of academic journals—to characterize relationships between health determinants and health outcomes and to quantify those relationships when possible.
- Analyzing existing national, regional, and local data sets, appropriate for the scale of the decision (e.g., census surveys, vital statistics, housing surveys, and surveillance data).
- Examining regulatory criteria, standards, and guidance.
- Gathering community expertise through surveys, focus groups, and interviews.
- Collecting primary data, such as environmental sampling to assess contaminants in air, soil, and water; noise; and radiation or other dangerous conditions, such as floods, fires, landslides, or injury hazards.
- GIS mapping of demographics, health statistics, or environmental measures to identify spatial relationships between places, populations, and environmental conditions and areas of concentrated hazards.
- Quantitative forecasting of the impact and changes in baseline conditions if a proposed action is implemented.

Economic analyses (e.g., cost-benefit, direct and indirect costs) may also be a useful assessment tool for housing HIAs.

As shown in Figure 3, certain methods such as quantitative modeling may require substantial time and expertise, while others are less resource-intensive. The HIA team should justify the selection or exclusion of particular methods or data sources to keep the process

Figure 3: Different HIA Methods Require Varying Levels of Resources

Level of resources needed by method

Resource requirements for HIA analysis methods	
Least resources	<ul style="list-style-type: none"> • Literature review • Analysis and mapping of existing data • Expert opinion • Application of quantitative forecasting methods • Interviews or focus groups • New quantitative data collection and analysis
↓ Most resources	

Source: Human Impact Partners, A Health Impact Assessment Toolkit: A Handbook to Conducting HIA, 3rd Edition (February 2011)

transparent and provide stakeholders with the necessary information to evaluate the validity of the findings.¹⁰⁶

Depending on the resources and assessment methods available, an HIA team may need to narrow the scope of assessment and develop a focused set of health issues, indicators, and methods that will be used to measure baseline conditions and examine potential impacts. Teams should document the rationale for selecting the elements included in the final scope, based on criteria such as greatest potential significance for health, equity, stakeholder priorities, and other factors. In the Divine Mercy Development HIA, the Minnesota Department of Health wanted to “inform recommendations to the Minnesota Environmental Quality Board on how to incorporate climate change and health impacts into their Environmental Assessment process.”¹⁰⁷ After its first review, the team had a list of hundreds of indicators. Through the scoping process, the team narrowed that to 26 indicators, two of which related to the goal of preserving or providing “affordable housing to reduce overcrowding, support home ownership, housing stability, and development of social networks.”¹⁰⁸

To lend credence to the HIA findings, the team should use multiple, diverse methods to assess health impacts, and should consider and characterize the quality and strength of evidence available. HIA practitioners may also find it helpful to refer to literature reviews from

existing housing HIAs and update them with more current sources as needed in order to build upon prior research. The number of methods used in an HIA will depend on a range of factors, including the scope of the HIA, resource availability and capacity, timeline, and data availability. For example, [the Massachusetts Low Income Home Energy Assistance Program HIA](#) decided to use three primary resources—literature review, existing data sets, and interviews—while the [Oak to Ninth HIA](#) used eight: literature review, regulatory review, stakeholder interviews, secondary data analysis, GIS mapping, quantitative forecasting, and review and analysis of public comments and testimony.¹⁰⁹

Documenting Scope

The output of the scoping process should be a summary of questions that can feasibly be answered by the HIA.¹¹⁰

The steering committee for [the Portland City Council’s Rental Housing Inspection Program HIA](#) developed five research questions to be assessed:¹¹¹

1. How many additional inspections and related property improvements would result from the enhanced inspections program as compared with the standard model?

2. How many more inspections and related property improvements would result if the enhanced program were strategically expanded to other parts of the city, based on risk of relatively high amounts of substandard housing?
3. What are the magnitude, likelihood, and direction of health impacts?
4. Will the health impacts of expansion vary based on income, race, and ethnicity?
5. How do the city’s two inspection models address tenant behaviors that exacerbate or mitigate the health impacts of substandard housing?

The HIA team that conducted the large and complex [MacArthur BART Transit Village](#) study organized its scoping summary into a list of social, environmental, and health determinants to be assessed; relationships between health determinants and health outcomes; candidate questions for assessment; candidate mitigations and design strategies; and HIA research methods and tasks.¹¹² (See Figure 4.)

Regardless of the format, it is important to document the scoping decisions and the direction the HIA will take.

Figure 4: The HIA Team Should Document Scoping Decisions

Social and environmental health determinants	Relationships between health determinants and health outcomes	Facts about the decision at hand	Candidate questions for health impact assessment	Candidate mitigations and design strategies	HIA research methods and tasks
Level of environmental noise	Chronic noise exposure harms sleep, temperament, hearing, and blood pressure	Noise will be evaluated within the Environmental Impact Report Developer planning unspecified acoustic mitigations	Will area noise sources (e.g., freeway and Bay Area Rapid Transit) create health hazards for new project residents? Are regulatory requirements for acoustic mitigations sufficient to protect health and sleep?	Noise barrier between highway and housing Noise reduction on the Bay Area Rapid Transit tracks	Measure ambient noise in area Measure sound exposure levels associated with Bay Area Rapid Transit trains Apply health outcomes forecasting equations (annoyance, sleep disturbance) Identify best practices in residential noise mitigations

Source: UC Berkeley Health Impact Group, MacArthur BART Transit Village Health Impact Assessment (January 2007)

Step 3: Assessment

Once the HIA team has decided on the scope, finalized the research questions, secured the appropriate expertise to conduct the analysis, and identified the resources necessary to answer the questions, it can begin the assessment. The purpose of this step is to profile existing conditions and evaluate the potential health impacts—and the distribution of effects—associated with the proposed action.

Baseline Profiles

To accurately measure the impacts of a proposed action and make the best recommendations possible, the HIA team should first ascertain the baseline housing conditions within the affected area, including current health status among the potentially affected population and community factors. The team should use multiple resources to develop these baseline profiles, such as literature, existing data sets, community expertise, and new data collection. See Appendix C for resources for peer-reviewed studies, reports and publications outside of academic journals, regulatory materials, and existing data sets.

Literature can provide evidence linking health determinants to health outcomes, including peer-reviewed and grey literature (reports and publications outside of academic journals).¹¹³ [The Ohio Affordable Housing Inspections HIA](#) included an extensive section detailing the results of a review of the scientific and grey literature related to the association between housing quality and health outcomes, focusing on housing-related problems that were the responsibility of the owner or manager and were likely to be identified and addressed in a physical inspection.¹¹⁴ The review covered the links between housing quality and chronic diseases such as asthma and other respiratory symptoms, unintentional injuries, stress and mental health, social isolation, and lead exposure.

Existing health, environmental, and community data sets are rich sources of information about existing housing, demographic, health, environmental, economic, and social and community conditions in an area. Various data sets used in housing HIAs are shown in Table 5. Appendix C contains information on where to find these data sets online. For example, spatial analysis (e.g., GIS mapping) is a valuable tool for illustrating existing

conditions and their distribution in a proposed action area. [The Humboldt County HIA](#) team used GIS mapping to quantify how much of the county’s population lived near community resources such as public parks.¹¹⁵ [The Benton County HIA](#) used mapping to illustrate current county resident access to various goods and services, including schools, neighborhood and regional parks, food markets, and medical facilities.¹¹⁶ The HIA team can also present tables comparing existing conditions in the community that will be affected by the proposed housing action with those in other areas to help identify vulnerable populations or to determine whether the community is disproportionately burdened with health, environmental, or housing issues.

Regulatory criteria, standards, and guidance can help HIA teams put existing housing and health conditions into context. For example, if a local environmental agency has outdoor particulate matter data for the census block where the proposed action is located, the team can compare these data with EPA regulatory criteria for particulates. HIA teams may also review regulations to see if any are pertinent to existing health issues of concern. In its review of North Carolina legislation, the [Senate Bill 731 HIA](#) team found precedent and legal grounds for considering health implications in zoning and design standards legislation, since zoning legislation was put into place explicitly “for the purpose of promoting health, safety, morals, or the general welfare of the community.”¹¹⁷ In its review of public standards, objectives, regulations, and guidance relevant to planning and health, [the Oak to Ninth Avenue HIA](#) team found no specific mandates to consider health comprehensively in land use and transportation planning and policy.¹¹⁸ [The Concord Naval Weapons Station Reuse Project HIA](#) checked the compliance of each of proposed action alternative with various aspects of the city’s general plan and other policies, for example, how each alternative measured up against the affordable housing policies set forth in the plan’s housing element.¹¹⁹

New data collection can provide information not likely to be found through other resources and empower community members by involving them in the process. More than half of the housing HIAs used some community data collection, such as stakeholder interviews, community phone surveys, and focus groups. The information gathered from qualitative research methods

Table 5: Housing and Community Development Practitioners Have Access to Many Data Tools

Useful data sets for housing HIAs

Existing data set	Housing data*	Demographic data [†]	Health data [‡]	Social and community data [§]	Economic data	Environmental data [#]
U.S. Census Bureau American Housing Survey	X	X		X	X	
U.S. Census Bureau American Community Survey	X	X	X		X	
CDC Behavioral Risk Factor Surveillance System		X	X			
Bureau of Labor Statistics data sets					X	
HUD Picture of Subsidized Households	X				X	
County Health Rankings data		X	X	X	X	
Regional Housing Needs data	X					
U.S. Vital Statistics data		X				
State and local public health department data (e.g., neighborhood health indicators; health care utilization from municipal hospitals)			X			
Federal, state, and local environmental/planning agency data (e.g., neighborhood environmental factors)	X	X		X		X
Federal, state, and local transportation/public works dept. data (e.g., transit usage; traffic patterns; accident data)				X		
State and local education dept. data (educational usage and outcomes)				X		
State and local housing dept. data (code violations; housing inspection data; housing demographics)	X			X		
National Energy Assistance Directors' Association telephone survey of LIHEAP recipient households	X	X		X		
U.S. Department of Agriculture data sets related to food security				X		

Notes:

* Housing data include information on housing characteristics and condition, e.g., year of construction, building type, number of floors, presence of basements, housing code violations, etc.

[†] Demographic data include socioeconomic characteristics of the population, e.g., age, annual income, race/ethnicity, highest level of education, gender, etc.

[‡] Health data include statistics related to the health of the population, e.g., health care utilization and prevalence of chronic conditions and diseases, etc.

[§] Social and community data include information on neighborhood characteristics, e.g., education usage, employment rates, neighborhood poverty rates, neighborhood health indicators, traffic usage, etc.

^{||} Economic data include statistics on household expenditures, sources of income, benefits, energy usage, etc.

[#] Environmental data include analytical results, e.g., particulate matter data from nearby pollution sources, other regulatory monitoring data.

provides local perspective that can be used alone or in conjunction with quantitative data to prepare profiles of existing conditions.¹²⁰ Collecting new data can be useful in filling data gaps. For example, as part of [the Pittsburg Railroad Ave. Transit Oriented Development HIA](#), the HIA team conducted a limited environmental quality assessment using the Pedestrian Environmental Quality Index (PEQI), a tool to assess factors that support or prevent safe walking.¹²¹ The team used the PEQI results to summarize street and intersection environmental factors known to affect people's travel behaviors.

Even when HIA teams do not have the time, resources, or capacity to collect new data, they may be able to access data that is being collected by other agencies or organizations about the proposed housing action. For example, government agencies may be willing to share data that are not yet publicly available with an HIA team.

Some housing HIAs present existing conditions at the beginning of the report as did the Aerotropolis team in [the Aerotropolis Atlanta HIA](#).¹²² Most, however, summarize existing conditions by health determinant. [The Coffelt-Lamoreaux Public Housing Redevelopment HIA report](#) did both, presenting overall profiles of public housing, demographics, and community health in the beginning, then presenting sections for each determinant (access to healthy food, access to physical activity, access to safe streets and transportation, healthy and safe housing, and social networks and cohesion), with each section listing existing conditions, potential health impacts, and recommendations.¹²³

Impact Analysis

Once an HIA team has profiled existing health, social, environmental, and housing conditions, it should assess how each proposed action or alternative may affect these conditions and in turn affect health, and examine the distribution of those impacts. Although forecasting effects with absolute certainty is not possible, the team should use the best available evidence to present reasoned predictions of health impacts.¹²⁴

The primary goal of an HIA is to evaluate the effect of a proposed action on health conditions, but pathways

between the action and health outcomes are often complex and the HIA team must use proxies or indicators of health outcomes. In the Long Beach Housing Element pathway diagram shown in Figure 2, instead of analyzing changes in mortality, chronic disease, mental health, and injuries, the analysis focused on impacts on:¹²⁵

- Housing affordability, through evaluation of current and future availability of affordable housing units and the expected changes in the distribution of resident populations in Long Beach.
- Housing location, through analysis of planned locations of proposed resident sites and emergency shelters.
- Housing quality, through evaluation of housing code enforcement.

In all of these determinant categories, [the Long Beach Housing Element HIA](#) team predicted potential positive impacts on health.

In assessing potential effects of housing-related health measures on health determinants, the HIA team should consider the following five characteristics:¹²⁶

- **Direction.** Is the impact positive, negative, neutral, or unclear?
- **Magnitude.** How large is the expected effect?
- **Severity.** What is the severity of the impact?
- **Likelihood.** How certain is the effect to occur?
- **Distribution.** Will the impact be shared equally among the exposed populations? In analyzing the distribution of effects, the HIA team should consider whether the proposed action:
 - Will affect a vulnerable population.
 - Will have a larger effect on a specific population than on the general population. For example, comparisons of expected health effects of the proposed action on the population of concern with those expected to be experienced by a larger group not affected by the action (e.g., comparing effects in the affected neighborhood with those of the entire state) can be useful.

- Will contribute cumulatively to pre-existing adverse conditions. For example, is the action planned for a community that has already been subjected to hazardous exposures?
- Will have effects that can be mediated or exacerbated by attributes of the population of concern. For example, does a low-income community rely on public housing in an area that may undergo mixed-income redevelopment?

In evaluating housing-related measures of health, the most effective approach may be for the HIA team to analyze impacts using a combination of qualitative and quantitative methods, including empirical literature, original research, quantitative forecasting, and spatial analysis.

Literature from peer-reviewed research and other public health studies can provide the basis for predictive analysis.¹²⁷ For example, an HIA conducted in Humboldt County, California, included a measure of vehicle miles traveled in rural counties compared with urban counties. [The Humboldt County General Plan Update HIA](#) team applied this estimate to assess potential future increases in vehicle miles traveled under various growth scenarios (e.g., compact urban vs. sprawling rural).¹²⁸

Original research and primary data, although resource intensive, can support quantitative forecasting and help to predict impacts. To better understand if the frequency of physical inspections would change housing quality, [the Ohio Housing Inspections HIA](#) team conducted a new examination of inspection data, looking for the presence of health-related housing quality issues among properties with multiple inspections.¹²⁹ The team found that quality issues may go unaddressed without a second physical inspection. Since streamlining inspection and code enforcement processes may reduce the frequency of inspections, the HIA found that the proposed policy change could result in negative health impacts and made recommendations for protecting health during implementation of a streamlined process. HIAs may also provide agencies an opportunity to analyze and share data which are not yet publicly available.

Qualitative research can be used to summarize stakeholder perspectives on the potential impacts of a proposed action by tapping the expertise and experience

of potentially affected members of the public, obtaining data through focus groups and interviews, or reviewing public testimony.¹³⁰ Community members may be able to offer perspective on the possible impacts that a proposed policy could have on people's daily lives.¹³¹

Quantitative forecasting can be used to provide ranges or estimates of risks or hazards based on available exposure data. These predictive methods generally include modeling changes in specific exposures that could affect health, such as changes in air quality, noise levels, and pedestrian and vehicle collision rates. Four of the 40 housing HIAs used modeling as a tool to assess impacts:

- [The Pittsburg Railroad Ave. Transit Oriented Development HIA](#) team performed air quality modeling and noise modeling. The noise modeling, for example, included two models, one without and one with a sound wall.¹³²
- [The San Pablo Corridor HIA](#) team performed four types of quantitative forecasting: noise modeling, air dispersion modeling of particulate matter emissions from vehicle traffic, retail food environmental index, and PEQI.¹³³

Spatial analysis, such as GIS mapping, can be used to quantify and illustrate projected changes from baseline conditions. [The St. Paul Light Rail HIA](#) team used GIS mapping extensively to illustrate the potential impact of the proposal on pedestrian safety.¹³⁴ The team overlaid the anticipated increase in housing on data on intersection quality, illustrating areas with poor pedestrian infrastructure and expected housing growth. (See Figure 5.) Given the less-than-adequate existing infrastructure, the team determined that the proposed action might not be able to attain the positive health and environmental benefits of increased walking and biking in the corridor.

The HIA team should present the results of the health impact analysis in a simple, straightforward manner so that all stakeholders can understand the conclusions. For each of five policy alternatives, [the Benton Accessory Dwelling Units HIA](#) summary shows each health determinant, the indicators under each determinant, and the magnitude and direction of potential health impacts.¹³⁵ (See Figure 6.) This detailed yet simple presentation allows

Figure 5: Mapping and Spatial Analysis Are Valuable Tools in HIA

Unsafe intersections for pedestrians relative to projected increases in housing by station area



Source: PolicyLink, ISAIAH, and TakeAction Minnesota, Healthy Corridor for All: A Community Health Impact Assessment of Transit-Oriented Development Policy in Saint Paul, Minnesota (2011). http://www.pewtrusts.org/~media/assets/0001/healthycorridorreport_final.pdf?la=en

the reader to easily and quickly view the impacts of the proposed action and any alternatives. When deciding how to graphically depict and summarize the potential health impacts, the HIA team should develop clear definitions and use graphics and symbols that will be relevant to their stakeholder groups.

In [the Advanced Metering Infrastructure HIA](#), the summary table fit key assessment findings into the context of the health determinants of concern: fuel poverty, adequacy of housing, and enhanced two-way functionality,

unintentional injuries and premature deaths, vulnerability to heat and cold, and ambient air quality.¹³⁶ (See Figure 7.) The team presented findings showing the direction, magnitude, severity, likelihood, and distribution of all effects as well as the quality of the evidence.

In discussing results, the lack of robust, formal scientific evidence or an established cause-and-effect relationship for each finding should not preclude reasoned, experience-based predictions, but the HIA team should acknowledge data and evidence limitations while still

Figure 6: Readers Need to Be Able to Readily Review Findings and Compare Policy Alternatives

Summary of housing-related health measures for the Benton County HIA of accessory dwelling units

Indicator	Policy Options				
	One	Two	Three	Four	Five
Healthy Housing	0	-4	5	8	4
HH.1: proportion of households paying more than 30% or 50% of their total household income on gross rent or mortgage	*	-	+	++	+
HH.2: proportion of housing unit types to housing need by household size and income	*	-	+	++	+
HH.3: Proportion of households living below the poverty line	*	-	+	++	+
HH.4: Proportion of households living in overcrowded and substandard conditions	*	-	++	++	+
Access to Goods and Services	0	5	-10	-14	-9
AGS.1: Proportion of households within 1/2 mile of a public school	*	+	--	---	--
AGS.2: Proportion of population within 1/2 mile of a public park or recreational facility	*	+	--	---	--
AGS.3: Accessibility of full-service grocery store/supermarket	*	+	--	---	--
AGS.4: Average distance to the nearest hospital, urgent care clinic, or other medical facility	*	+	--	---	--
AGS.5: Accessibility to Senior Centers	*	+	--	--	-
Family and Social Cohesion	0	-4	12	8	4
SC.1: Proportion of households with a resident over the age of 65	*	-	+++	++	+
SC.2: Proportion of households with a disabled resident	*	-	+++	++	+
SC.3: Proportion of households with grandparents as caregivers of children	*	-	+++	++	+
SC.4: Mortality rates by age and gender	*	-	+++	++	+
Transportation and Mobility	0	5	-5	-9	-6
TM.1: Household access to a private automobile	*	+	--	---	--
TM.2: Average vehicle miles travelled by rural Benton County residents per day	*	+	*	-	-
TM.3: Average minutes travelled to work per day by rural Benton County residents	*	+	*	-	-
TM.4: Access to public transportation services	*	+	--	---	-
TM.5: Proportion of commute trips made by driving alone	*	+	-	-	-
Total Cumulative Impact	0	2	2	-7	-7

Source: Benton County Health Department Health Promotions Division, Benton County Health Impact Assessment: Accessory Dwelling Units (June 30, 2010). <http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/21254/Fellows.pdf?sequence=1>

Figure 7: Summary Results Should Be Presented Simply and Clearly

Predicted health impacts of advanced metering infrastructure in Commonwealth Edison service territory

Health determinants and outcomes	Size of at-risk group (Direction negative unless otherwise noted)	Severity/likelihood	Quality of evidence
Fuel poverty from higher electricity costs			
Pressure on household budgets	All households with advanced metering infrastructure	▼▼▼	●●●
Poor nutritional status	12% of Illinois households that are food insecure	▼▼▼	●●●
Decreased access to health care	10.2% of adults report limited access to physician due to cost	▼▼▼	●●
	12.4% of adults report limited access to prescription medicine due to cost	▼▼▼	●●
Poor housing quality	5.2% of households report moderate/severe housing problems	▼	●●●●
Health impacts related to advanced metering infrastructure technology			
Reduced air pollution from fewer emissions	28.9% of adults report high blood pressure or cardiovascular disease	=	●●●
	14% children, 13% adult population with asthma		
Remote connection after disconnection	All households with advanced metering infrastructure	=	●
Remote disconnect for nonpayment	47% of households have housing costs >30% of income	▼▼	●●
Exposure to non-ionizing radiation	All households with advanced metering infrastructure	=	●
Unintentional injuries and premature deaths from disconnected service			
No access to electrically-powered devices for medical uses	25% of low-income households use electrically-powered medical devices	▼▼	●
Use of alternative, risky sources for heat and light	0.2% of poor households nationally heat home with cook stove	▼▼	●●●
	13.3% of households use portable electric space heater		
Temperature-sensitive conditions made worse by exposure to heat or cold			
Decreased access to cooling	56.6% of low-income households report no central air conditioning (37.9% of all households)	▼▼▼	●●●●
Decreased access to heating	20.3% of low-income households report electricity as main heating fuel (11.3% of all households)	▼▼	●●●●
Heat and cold-related illness (e.g., heat cramps, hyperthermia, hypothermia)	Age (7.2% of households include a child < 5 years, 11.2% of households include a senior 65 years +) Social isolation (18% of adults report no social support; 31.6% of low-income seniors live independently) Disability status (5.6% of households include a member living with a mobility-limiting disability; 10.2% of low-income households include a member living with a mobility-limiting disability)	▼▼▼▼	●●●●
Heart disease	28.9% of adults report high blood pressure or cardiovascular disease	▼▼▼	●●●●
Respiratory disease	14% children, 13% adult population with asthma	▼▼▼▼	●●●●
Diabetes	8% of adults report diabetes diagnosis	▼▼	●●●

Legend:

▼▼▼ Strong impact on many

▼▼ Strong impact for medium number or moderate impact on many

▼ Moderate impact on medium number or strong impact on few

▼ Moderate impact on few

●●●● 10+ Strong studies

●●● 5-10+ Strong studies or data analysis

●● <5 Strong studies OR 5 or more studies of moderate quality

● <5 studies of moderate quality OR studies with mixed results

= There is evidence to suggest impact, however none was found during the pilot or there was insufficient evidence to comment

Source: Sandel M, Munsch K, Snyder L, and Alexander BR, The Health Impact Assessment (HIA) of the Commonwealth Edison (ComEd) Advanced Metering Infrastructure (AMI) Deployment (April 2012).

making informed judgments about health effects based on available information.¹³⁷

Step 4: Recommendations

After the HIA team completes the assessment phase, it should offer recommendations to mitigate negative health impacts and maximize positive ones. The team should present a preliminary list of recommendations to stakeholders, who can help set priorities and prepare a final set, making sure that recommendations are:¹³⁸

- Responsive to projected health impacts.
- Evidence- or experience-based and effective.
- Technically and politically feasible.
- Acceptable.
- Economically efficient.
- Without any or with few adverse side effects. (Some decisions may have significant residual negative effects on health even if recommendations are incorporated and the HIA should explicitly acknowledge this.)
- Enforceable.

Where possible, HIA teams should further develop and integrate the recommendations into a Health Management Plan, outlining how they will be implemented, including deadlines, responsibilities, management structure, potential partnerships, engagement activities, and monitoring.¹³⁹ The plan is critical for accountability.

Recommendations in housing HIAs are typically grouped into one or more of the four determinant categories. Table 6 contains examples from the 40 housing HIAs reviewed for this report. The recommendations tended to focus on the adequacy of homes' physical structure and ventilation design. Almost all of the 40 housing HIAs had at least one recommendation addressing housing affordability issues, such as minimizing displacement,

ensuring housing diversity to minimize concentrated poverty, and maintaining sufficient affordable housing. Recommendations addressing access to healthy foods, neighborhood services, and public transportation as well as traffic safety were common recommendations related to housing location.

Social inclusion, political participation, and integration were major themes of community-related recommendations. Although the community category had comparatively fewer recommendations, many of the recommendations listed in other determinant categories also impact community determinants. Promotion of mixed-income and mixed-use communities not only addresses housing affordability but also helps ensure social integration and neighborhood stability. Similarly, recommendations to ensure that housing is located in safe areas with access to jobs, retail, schools, and public transportation can provide residents of such communities with a stronger ability to participate in political processes. Improving housing quality through rehabilitation of substandard housing also improves community cohesion.

While many of the recommendations highlighted in Table 6 may be strategies already employed by housing and community development professionals in their work, the prioritization of recommendations by stakeholders is a unique value-add of the HIA process. For example, in developing and prioritizing recommendations, community members may value investments in safety and security over other amenities that could be provided in a housing development. The HIA process can help housing professionals understand how to maximize limited resources to best protect and promote health and address stakeholder priorities. Further, having documentation of the public health benefits of various approaches and strategies that could be used in housing actions could provide justification for additional funding and credibility in implementation.

Table 6: HIAs Provide Pragmatic, Evidence-Based Recommendations

Example recommendations from housing HIAs

HIA	Recommendation	Health determinant addressed
<i>Housing quality</i>		
Massachusetts Low Income Energy Assistance Program	<ul style="list-style-type: none"> Energy assistance programs should explore use of a home energy insecurity scale to allow energy assistance programs to assess energy self-sufficiency before and after receipt of benefits. 	Electricity; lighting; heating, cooling, and ventilation; physical structure adequacy
Ohio Housing Inspections	<ul style="list-style-type: none"> Across local and federal agencies (HUD, USDA, and IRS), develop and implement a standardized physical inspection tool to increase consistency in reports and noncompliance remediation. Develop and implement a risk-based inspection agenda that focuses resources and streamlines inspection schedules based on housing and characteristics, including property age and property size. Frequency of inspection should vary depending on property age, number of units, and inspection history. Formal analysis of existing properties based on number units, structure age, and violations could be done to assist help identify high-risk properties. 	Physical structure; electricity; lighting; heating, cooling, and ventilation; noise regulation; sanitation
Portland City Council's Rental Housing Inspections Program	<ul style="list-style-type: none"> Allocate funds to enable the Portland Bureau of Development Services to implement the tenant-landlord education strategies developed by the Quality Rental Housing Workgroup. Housing-related health interventions are most effective when they address both housing conditions and tenant and landlord behaviors. Allocate funds to enable the Portland Bureau of Development Services to implement the BDS Information Technology Advancement Project (ITAP) to improve tracking. This system will allow inspectors and their public health partners to more readily identify locations of inspections, types of violations, time to remediation, enforcement, and fines for renter- and owner-occupied housing. 	Overcrowding; social equity
Page Avenue Revitalization	<ul style="list-style-type: none"> City of Pagedale and the developer should promote healthy air quality and noise levels within housing units through proper ventilation and design measures that reduce exposure to traffic. Developer should select building materials and ventilation systems to reduce allergies and toxic exposures. Developer should build housing units to EPA's Indoor AirPLUS construction specifications. 	Physical structure adequacy; indoor environmental quality; noise regulation; heating, cooling, and ventilation
Yellowstone County Growth Policy*	<ul style="list-style-type: none"> Amend Public Nuisance Ordinance to address the removal of boarded-up and abandoned houses. 	Physical structure adequacy
Pittsburg Railroad Ave. Transit Oriented Development	<ul style="list-style-type: none"> The Plan can include requirements of adequate ventilation to discourage moisture condensation. 	Physical structure adequacy
Long Beach Downtown Plan	<ul style="list-style-type: none"> Adopt a rental-trust-account program to allow tenants residing in substandard homes to pay reduced rent until their homes are repaired. Include real, enforceable commitments with clear timelines. 	Physical structure adequacy
Coffelt-Lamoreaux Public Housing Redevelopment	<ul style="list-style-type: none"> Housing Authority should improve existing housing units by replacing swamp coolers with heating, cooling, and ventilation systems; updating electric cooking appliances; adding automatic closing devices on doors and windows; installing sound insulation during renovation; improving lighting; and conducting lead soil tests and mitigating if needed. 	Physical structure adequacy; heating, cooling, and ventilation; noise regulation

HIA	Recommendation	Health determinant addressed
Housing affordability		
Massachusetts Low-Income Energy Assistance Program	<ul style="list-style-type: none"> • Increase federal and state funding to pay for the influx of new participants when the state changes the Low Income Home Energy Assistance Program (LIHEAP). 	Access to shelter
Portland City Council's Rental Housing Inspections Program	<ul style="list-style-type: none"> • Portland Bureau of Development Services can strategically expand the enhanced model to areas with higher rates of cost-burdened households, to minimize a major driver of health inequity and maintain quality housing for renters at a time when increasing numbers of households are priced out of homeownership. 	Social equity; access to shelter
Atlanta Beltline†	<ul style="list-style-type: none"> • Offer programs and assistance to help at-risk households remain in communities facing redevelopment. • Require diversity of housing types and prices within Beltline area. 	Access to shelter; overcrowding; social equity; property values
Concord Naval Weapons Station Reuse Project	<ul style="list-style-type: none"> • City of Concord should match the cost of new housing to the projected wages of new jobs by adopting a stronger inclusionary housing ordinance for the Concord Naval Weapons Station. Disperse affordable housing throughout the project site to ensure social inclusion and integration of all populations. 	Access to shelter; overcrowding; social equity; property values (also covers some social/community determinants such as integration)
Divine Mercy Development	<ul style="list-style-type: none"> • Developer should ensure a healthy mix of housing with at least 20 percent owner-occupied and at least 20 percent rental. • Developer should promote a stronger, more diverse community by ensuring that at least 50 percent of rental housing is affordable to low-income people. 	Access to shelter; overcrowding; social equity; property values
Farmers Field HIA	<ul style="list-style-type: none"> • AEG, developer, and the City should adopt “no net loss” policies within the impact zone of the proposed development to ensure that no affordable units are permanently lost. • Developer should provide funding for housing personnel to work with residents on housing- and displacement-related issues, including by conducting a survey to establish a baseline of extremely low-income, very low-income, and low-income units for use in monitoring the no net loss policy and by monitoring and enforcing rent control violations. • The City should use existing ordinances and land use policies to limit condominium conversions and demolitions. • The developer should fund various teams to educate residents about their legal rights and available resources related to housing and displacement. • The developer should establish a housing trust fund dedicated to the production of new affordable housing for extremely low-income households. 	Access to shelter; overcrowding; social equity; property values
St. Paul Light Rail	<ul style="list-style-type: none"> • Saint Paul City Council should adopt a narrowly targeted requirement that residential and mixed-use projects within a one-quarter-mile radius of the transit station make a percentage of units affordable, facilitate production of affordable housing by paying in-lieu fees to the housing trust fund, or provide gap financing or land for deed-restricted permanently affordable housing development or alternative sites. • The City Council should codify its commitment to affordable housing, specifying explicit changes to the zoning ordinance to promote diversity and providing housing types affordable to all economic groups. 	Access to shelter; overcrowding; social equity; property values

HIA	Recommendation	Health determinant addressed
Housing affordability		
Oak to Ninth Avenue	<ul style="list-style-type: none"> Developer and the City should ensure that the distribution of housing costs reflects the household income distribution of Oakland (≥ 25 percent affordable to low-income and very low-income households; ≥ 25 percent affordable to mid-income). Developer and the City should incorporate mixed-income dwellings in segregated areas. 	Access to shelter; overcrowding; social equity; property values
Pittsburg Railroad Ave. Transit Oriented Development	<ul style="list-style-type: none"> Designate ≥ 40 percent of units as affordable (16 percent low income, 15 percent very low income, 9 percent extremely low income). Protect current federally subsidized units from conversion to market rate. Offer means-tested rental voucher program to allow more existing residents to access new housing. 	Access to shelter; overcrowding; social equity; property values
Housing location		
Atlanta Beltline	<ul style="list-style-type: none"> Adopt land-use regulations that prioritize the needs of pedestrians, bikers, and transit users. Identify opportunities to create additional park acres. Locate new transit stops near existing neighborhoods and new housing and job growth near transit stops. Find innovative solutions to provide access to healthy foods in the planning area. Provide adequate lighting along trails, within parks, around transit stops, and along sidewalks and walkways that access these features of the BeltLine. Install police or 911 call boxes at intervals. Locate residential units, schools, senior centers, day care centers, and hospitals away from high-volume road segments or mitigate air pollution. Monitor particulate matter in potential hotspot areas near high traffic volume. Install noise barriers where appropriate and determine least obtrusive truck traffic routes. Study creation of railroad quiet zones (to encourage silencing of freight train horns near residential areas). 	Access to neighborhood resources, including retail, schools, healthcare, parks/recreation, healthy food, child care; Safety (crime, traffic)
Concord Naval Weapons Station Reuse Project	<ul style="list-style-type: none"> City of Concord should maximize residential density, especially near the BART station, distribute retail and services throughout the residential neighborhoods, and maximize the land available for parks and open space. Target density should be at least 20 units per acre. City of Concord should adopt a Living Wage Ordinance to ensure that new construction and permanent jobs pay enough for residents and their families to lead healthy lives. Ensure that new jobs provide health benefits. City of Concord should adopt local hiring policies and build on existing workforce development programs to prepare Concord residents for jobs created by the project. Conduct a needs assessment with regard to parks and open space. Allocate land between those uses accordingly, and specify programming that is responsive to community needs. Ensure that the linear park proposed on the west side of the site is large enough and contains programming to accommodate existing and new residents and families. Develop an operations and maintenance plan for open space to ensure ongoing care and use. Consider giving significant acreage to the East Bay Regional Parks District to for maintenance. Ensure that new neighborhoods are walkable and bikeable for children and seniors by using pedestrian safety and traffic-calming measures. Promote public transit use by providing high-quality and high-frequency bus routes. Ensure that existing Concord residents have access to new parks, recreation facilities, retail, and public services by creating greenways or other pedestrian-friendly routes and public transit between existing neighborhoods and the CNWS site. Through zoning or other mechanisms, encourage provision of healthy goods and services on the site, and discourage the offering of unhealthy goods. 	Access to retail, transportation, services, parks and open space; employment

HIA	Recommendation	Health determinant addressed
<i>Housing location</i>		
Coffelt-Lamoreaux Public Housing Redevelopment	<ul style="list-style-type: none"> • Improve existing healthy food options, working with existing stores and introducing shuttle service; a community garden; a school gardening program; and a new small grocery store. • Improve access to physical activity by adding shade, a walking and jogging track, a water play area for children, and community gathering spots; upgrading and repairing recreational facilities; renovating the playground; building partnerships to improve the community center; and introducing new physical activity infrastructure. • Improve access to safe streets and affordable transportation. 	Access to healthy food; access to parks/recreation; traffic safety (also covers several social/community determinants)
Long Beach Housing Element	<ul style="list-style-type: none"> • Collaborate with community stakeholders to identify healthy sites for housing development with limited blight or exposure to unhealthy resources such as fast food restaurants and liquor stores. 	Access to healthy foods; crime safety
Divine Mercy Development	<ul style="list-style-type: none"> • Monitor the feedlot near the planned development for air quality issues. • Consider increasing the density of development and clustering activities more closely together to increase walkability in the community and preserve more land for open space and agricultural uses. • Consider building a recreation facility and including trails that link residential and commercial areas with the park and trail system. • Consider developing a tree-planting plan to provide canopy coverage for residential and commercial areas. • Consider providing bus service for residents, particularly seniors, so they are able to access goods and services. • Monitor hazardous intersections on-site to see if enhancements should be made to prevent traffic accidents. • Consider attracting a grocer who accepts state and federal food assistance programs to the site, or provide public transport to a grocery store farther away. 	Outdoor environmental quality; access to parks/recreation; traffic safety; access to public transportation; access to healthy foods
Oak to Ninth Avenue	<ul style="list-style-type: none"> • Create safe, continuous, and functional routes connecting the waterfront to adjacent neighborhoods. Provide public transit services directly to the waterfront. • Implement a traffic-calming program in adjacent residential neighborhoods; provide countdown pedestrian signals and median refuge islands at high-volume intersections; divert through traffic around mixed-use neighborhoods; investigate speed limit reductions in mixed-use areas; and implement bike and walking trails. • Add a neighborhood elementary school. • Reduce the number of residential units within 500 feet of the interstate. • Require monitoring of particulate matter hotspots, and develop requirements for air quality mitigation and traffic-demand management measures triggered by monitoring results. 	Access to public transportation; access to retail services; access to parks/recreation; traffic safety; access to schools; outdoor environmental quality
Clark County Highway 99 Sub Area Plan	<ul style="list-style-type: none"> • Engineering firm should conduct a noise study and mitigate traffic noise in residential areas as needed. • In low-income areas, especially those with children and elders, create parks and green spaces. • Reduce crime risk through adequate levels of community policing, fire, and EMS services; limit access to alcohol retail outlets; and identify and prioritize pockets of crime for policing. 	Outdoor environmental quality; access to parks/recreation; crime safety
HIA of Kings Ridge Apartments[†]	<ul style="list-style-type: none"> • Implement three educational programs at the local community center to improve cardiovascular disease, diabetes, and breast cancer outcomes. 	Access to healthcare

HIA	Recommendation	Health determinant addressed
Housing Community		
Ohio Housing Inspections	<ul style="list-style-type: none"> • Develop and implement a risk-based inspection agenda based on housing and tenant characteristics, considering subgroups at increased health risk; older adults, families, and individuals with disabilities may be differently affected by housing quality issues. • Housing agencies should review the potential disproportionate impact of reduced inspections on these vulnerable populations. • Policymakers should consider streamlining inspections. • Agencies should use existing tenant-level reporting tools (e.g., TRACS Tenant Characteristics Report; HFA tenant and income data) to monitor the presence of vulnerable populations as the makeup of tenants changes over time. 	Social inclusion; social integration
Universal Design in Davidson, North Carolina[§]	<ul style="list-style-type: none"> • Build homes with zero-step entries to make them accessible to people of all ages and abilities; amend building codes to include zero-step entry, accessible bathrooms on main floors, 34-inch entryways and hallways, and reinforced bathroom walls. 	Social inclusion
Atlanta Beltline	<ul style="list-style-type: none"> • Involve all stakeholder groups in the multiyear development process, including people who work, live, or go to school in the area, and make a plan to include future residents. • Strive to exceed federal accessibility standards by educating city staff and developers on principles and execution of Universal Design. Adhere to those principles in the development review process. • Ensure that new parks are designed and existing parks retrofitted to optimize use and access by people of all abilities. • Increase access to trails, especially in underserved neighborhoods. • Design environments that promote social interaction. 	Social inclusion; political participation; neighborhood integration
Oak to Ninth Avenue	<ul style="list-style-type: none"> • Create courtyards to provide common spaces for residents to mingle. • Integrate below-market and market-rate units in the same building to prevent environmental justice issues. 	Social capital; integration; social inclusion
Yellowstone County Growth Policy	<ul style="list-style-type: none"> • Support neighborhood development that provides more than one entrance and exit and reduce the number of cul-de-sacs and dead-end streets. • Encourage community gathering places. • Construct an aquatic and community center. 	Integration; social inclusion; social capital
Coffelt-Lamoreaux Public Housing Redevelopment	<ul style="list-style-type: none"> • Create a community council to empower local residents; facilitate community education meetings; and provide incentives for residents to get involved. 	Political participation

Notes:

* *Riverstone Health Population Health Services, Yellowstone County/City of Billings Growth Policy Health Impact Assessment, undated.*

† *Center for Quality Growth and Regional Development at the Georgia Institute of Technology, Atlanta BeltLine Health Impact Assessment, undated.*

‡ *Suter, E., Rapid Health Impact Assessment on the Kings Ridge Complex Community Center in Jacksonville, Florida, Spring 2012.*

§ *Town of Davidson Design for Life, Universal Design in Single-Family Housing: A Health Impact Assessment (HIA) in Davidson, NC, November 2013.*

Step 5: Reporting

A full HIA report should list the study team and funder(s), and with permission, members of any advisory committees or organizations involved as stakeholders. For each health determinant analyzed, the HIA report should:¹⁴⁰

- Discuss the available scientific evidence.
- Describe the data sources and analytical methods used, including their rationale.
- Profile existing conditions.
- Detail the analytical results.
- Characterize the health impacts and their significance.
- List corresponding recommendations for each proposed action and alternative.
- Describe the limitations of the HIA.

Where possible, practitioners should document major public comments on the HIA and their responses to those comments.

HIA teams have a number of options for reporting findings and recommendations. The process should offer stakeholders a meaningful opportunity to review evidence, methods, findings, conclusions, and recommendations.¹⁴¹ At a minimum, housing HIAs should be considered action documents intended to stimulate conversation among decision-makers and their partners about links between a proposed action and health effects. As such, authors may send completed reports to a city or state's housing agency or planning department, or to other organizations responsible for decision-making and implementation regarding the proposed action to help inform or be incorporated into planning decisions.

The following organizations have websites with repositories of HIAs, including the 40 HIAs reviewed for this document, which may be useful exemplars:

- The Health Impact Project, a collaboration of the Robert Wood Johnson Foundation and The Pew Charitable Trusts, a national initiative designed to promote the use of HIAs as a decision-making tool for policymakers, has many HIAs available on its website (<http://www.pewtrusts.org/en/projects/health-impact-project>).
- The University of California Los Angeles Health Impact Assessment Clearinghouse, created by the UCLA HIA Project with funding from the Robert Wood Johnson Foundation (www.hiaguide.org), has a database, including a summary of each HIA and links to background information on health topics addressed and methods used.
- The San Francisco Indicator Project, a system of indicators for livable, equitable, and prosperous cities, has a list of case studies, including projects that adapted the indicators for use in HIAs (<http://www.sfindicatorproject.org/>).

Many HIA teams also post housing HIAs on their websites. For example, the Georgia Tech Center for Quality Growth and Regional Development—the primary author of the Aerotropolis HIA report—posted the executive summary, full report, and a short overview flyer on its own website.¹⁴² Housing HIA practitioners also have used several other reporting methods to play a more direct role in informing the decision-making process, including:

- **Testimony.** Authors of five of the studied HIAs testified at HUD hearings. For example, a pediatrician who participated in [the Advanced Metering Infrastructure HIA](#) cited the findings while testifying before the Illinois Commerce Commission and offered recommendations that should be considered to increase positive health impacts and mitigate negative ones during the deployment of advanced metering infrastructure in local communities.¹⁴³
- **Meetings with decision-makers.** Four authors met with local governmental bodies and legislators outside of formal hearings, and nine others met with decision-makers to discuss findings and recommendations. [The Aerotropolis Atlanta HIA](#) dissemination plan included meetings with many stakeholders, including the developer, planners, and officials from the various cities potentially impacted by the proposed action; health and environmental officers; and airport representatives.¹⁴⁴
- **Public presentations.** Practitioners from [the North Carolina Senate Bill 731 HIA](#) presented their findings to the Town of Davidson's Board of Commissioners, among others.¹⁴⁵

- **Policy briefs, project briefs, and case studies.** HIA practitioners have in some instances prepared briefs and case studies to distribute to various committees, legislatures, and the public. The authors of the HIA on the proposed redevelopment of [the Coffelt-Lamoreaux public housing property](#) interviewed several stakeholders to get feedback on the impact of the process, which they featured in a case study.¹⁴⁶
- **Publication in peer-reviewed journals.** Publication can help make more people aware of an HIA's utility. An article on [the Page Avenue Revitalization HIA](#) highlighted lessons learned, such as the value of flexible, organized, interdisciplinary teams and the importance of engaging community stakeholders and decision-makers before, during, and after an HIA.¹⁴⁷ An article in the *American Journal of Preventive Medicine* noted that [the Atlanta Beltline HIA](#) was one of the first “to tie specific assessment findings to specific recommendations and to identifiable impacts from those recommendations.”¹⁴⁸

Step 6: Monitoring and evaluation

Whenever possible, the HIA team and stakeholders should evaluate the HIA according to accepted standards of practice and its impact on decision-making. They should also develop a plan to monitor and measure the impact of the implemented decision on health determinants and health outcomes.

To guide the evaluation process, the HIA team should develop an evaluation plan that includes:

- The roles and responsibilities of the team and stakeholders in the evaluation.
- The purpose, objectives, and research questions for the evaluation.
- The resources needed to implement the evaluation plan and any cost and benefit considerations in undertaking the evaluation.
- A description of the methods, indicators, data sources, and tools that will be used in the evaluation.
- A timeline for the evaluation.
- A strategy for disseminating findings with key stakeholders.¹⁴⁹

To gauge the HIA's quality according to established standards and the original assessment plan, practitioners and their partners can conduct a process evaluation. These evaluations can provide valuable insight regarding the effectiveness of how the HIA was designed and carried out, and can also be conducted during the course of the HIA to facilitate mid-process improvements. Process evaluations typically involve observing and documenting aspects of the HIA process, such as methods for stakeholder engagement or communicating findings with decision-makers, and capturing perspectives from participants in the HIA process and key stakeholders through interviews, focus groups, surveys, or other methods.¹⁵⁰ More involved process evaluations could include additional stakeholders (e.g., outside evaluators), gather more evaluation data, and require more resources.¹⁵¹

As part of their process evaluation, [the Coffelt-Lamoreaux HIA](#) team interviewed various stakeholders to evaluate the participatory nature of the HIA, specifically what the involvement of residents meant to various parties.¹⁵²

- The Housing Authority reported that the depth of resident engagement through the process was a powerful factor in developing needed relationships, noting that the elaborate engagement efforts kept residents “passionately invested and helped solidify a prioritization plan for the department's resources.”
- The developer noted that being able to engage residents through the entire HIA process helped build an understanding of resident needs and directly informed the architectural programming. It also meant “having buy-in from residents, while being able to manage expectations.”
- City of Phoenix officials said they planned to continue working with residents on future actions in a manner similar to the HIA process, such as working with residents to identify and prioritize areas in need of pedestrian safety improvements.
- Residents said having a voice was empowering and helped them come together as a community.
- Funders stressed the value of community engagement because it ensured that resources were used in a manner that the residents stated would positively impact their lives.¹⁵³

[The St. Paul Light Rail HIA](#) process had a significant impact on community empowerment, building a strong network of engaged residents and advocates and catalyzing relationships between the community steering committee and technical experts. Community members helped set the course for the research, shared their experience with key decision-makers, and gained technical knowledge and a better understanding of the zoning process as well as how they could affect it in the future.¹⁵⁴

To measure the HIA's effect on decision-making and its success according to the objectives established during scoping, practitioners and their partners can conduct an impact evaluation. These evaluations examine the extent to which the HIA impacted stakeholders and the extent to which the HIA's recommendations were adopted and implemented.¹⁵⁵

A number of housing HIAs have had their recommendations successfully implemented. One such instance was [the Jack London Senior Housing HIA](#) in Oakland, California.¹⁵⁶ The proposed development was to create 55 affordable housing units as low-income senior housing. The area around the proposed development had many busy streets and highways, which the HIA identified as risk factors for respiratory disease, traffic injury, and noise-related health consequences. In response, the developer agreed to redesign the entrance of the complex so residents would enter through a courtyard to act as a noise buffer and increase social cohesion. In the case of [the Flooring in Public Housing HIA](#), the HIA process identified many of the health consequences of poorly maintained carpeting, including allergen retention and exacerbation of respiratory problems.¹⁵⁷ The recommendations included removing or not installing carpet in a portion of units in the new HOPE VI development. This proposed action was accepted by the San Francisco Housing Authority; the flooring policy for development was amended, and staff members were trained on the proper removal of carpeting to mitigate health consequences.¹⁵⁸

Outcome evaluation can be used to assess whether implementation of the proposed action resulted in changes in specific health determinants or health outcomes. These types of evaluations are complex and difficult, and to date have not been conducted as part of an HIA process.¹⁵⁹

Monitoring can be used to ensure accountability in the implementation of the HIA's recommendations and track the effects of the proposed action on health determinants and health outcomes as it is implemented.¹⁶⁰ Monitoring tracks indicators that also can be used to inform the other evaluations. As described in the practice standards for HIA, monitoring is generally the responsibility of the project proponent or an authorizing, funding, or implementing public agency (hereafter called "the monitoring agency").¹⁶¹ The HIA team is not responsible for, nor does it necessarily have the capacity to do comprehensive monitoring.¹⁶²

However, HIA reports should, where possible, propose a monitoring plan that the monitoring agency could implement. Plans may also be independent documents or be included in a Health Management Plan developed during the recommendations step. Monitoring plans should include:

- Short- and long-term goals.
- Indicators.
- Triggers or thresholds at which the monitoring agency or other responsible parties may need to review and adapt the decision's implementation in order to protect health.
- List of resources required to conduct, complete, and report the monitoring.
- A mechanism to report findings to decision-makers and stakeholders.¹⁶³

[The St. Paul Light Rail HIA](#) contains a useful example of a monitoring plan.¹⁶⁴ The practitioners focused on monitoring the health determinant their Community Steering Committee considered most important: mitigating the effects of gentrification. (See Table 7.)

The monitoring agency should:

- Identify the specific health determinants to be tracked, which may be identical to those selected during scoping.
- Track the adoption of the HIA recommendations.
- Examine the discussion of HIA findings during the decision-making process.

- Track decision implementation to determine whether it is carried out in accordance with HIA recommendations.
- Monitor health determinants, and where possible, health outcomes, after the decision is made to evaluate predicted impacts.
- Delineate a method to inform stakeholders, especially the affected community, of the monitoring results.

Data sources for monitoring and evaluating HIA impacts may include:

- Media reports about the HIA or the decision-making process.
- Accounts from public agencies or decision-makers on changes.
- Agency reports on a proposed action, such as inspection records for compliance with building standards.
- Interviews with decision-makers and stakeholders.

The HIA report can also provide a foundation for monitoring. For example, after a proposal has been decided upon and implemented, the monitoring agency can draw upon data sources and indicators used in the HIA to track changes in health determinants or health outcomes over time, update air quality models, or conduct new stakeholder surveys.

Monitoring can help determine whether predictions of impact were accurate and recommendations were successful in mitigating risks and enhancing positive effects. The monitoring agency should identify unintended effects or unforeseen health consequences, ideally recommending adaptations to mitigate negative outcomes. The monitoring agency should share methods and results with the public, including the affected community, in a timely fashion.

In developing the plan, the monitoring agency must also decide who will collect the data and identify questions to be answered, similar to the HIA scoping process. (See Table 7.) In some cases, organizations outside the HIA team plan to conduct monitoring. For example, in [the HOPE VI to HOPE SF: San Francisco Public Housing Redevelopment HIA](#), the authors stated that the city's Department of Public Health would conduct ongoing

monitoring using its Healthy Development Monitoring Tool.¹⁶⁵ For [the St. Paul Light Rail HIA](#), the team decided that the Metropolitan Council and Corridors of Opportunity would collect data and share them with the HIA partners, who would then prepare a memo explaining the impacts on the baseline health conditions and delineate actions the community, officials, and technical advisors could take to ensure equitable health outcomes.¹⁶⁶

Although most of the HIAs studied included an evaluation plan, they did not generally contain monitoring or evaluation results because the reports were prepared before proposed actions were decided upon. When possible, HIA practitioners should consider documenting the impact of the HIA process and outcomes and in such cases, should make monitoring methods and results available to the public, including the affected community, in a timely fashion.¹⁶⁷

Organizational capacity and resource needs

The HIA process generally involves multiple organizations, agencies from diverse sectors, and one or more community groups. Engaging these myriad groups throughout the process ensures sufficient capacity and resources to fully evaluate health determinants and create a meaningful, influential assessment. For example:

- Public agencies may collaborate on an HIA but may not be able to advocate for particular recommendations. They do, however, have significant capacity to support the process:
 - Public health departments have databases of health information within their jurisdictions and may be able to conduct health data analysis and mapping.
 - Housing departments have extensive data on housing in their jurisdictions (e.g., housing and code violations; inspections; demographics) and may have the capacity to do housing data analysis and mapping.
 - Housing finance agencies have funding resources and expertise in housing data and affordable housing policies.

Table 7: Monitoring Measures an HIA’s Impact on Decision-Making and Health

Select indicators used for the St. Paul Light Rail HIA

Indicator	Monitoring Questions	Organization Responsible for Collecting Data (Tentative Suggestions)
Total number and location of subsidized affordable units by area median income level	How is the quantity of affordable housing changing over time?	HousingLink and Met Council as part of Corridors of Opportunity (COO) Evaluation
Average rents across the Central Corridor	What level of income is necessary to afford the average rent? Are rents increasing?	HousingLink and Met Council as part of COO Evaluation
Home sales and values by neighborhood	How much do residents/prospective residents need to spend to buy a home, and how much will they profit/lose by selling a home? Do numbers vary by neighborhood? Did these numbers increase or decrease in the last 5 years?	Met Council as part of COO Evaluation
Property value changes within a 1/4 mile, 1/2 mile, and 1 mile from station areas, in comparison to average city changes	How are property values changing in response to station area development?	Met Council as part of COO Evaluation
Housing cost burden for both renters and owners	What percentage of residents pays an unaffordable amount on rent/mortgage relative to income? Has affordability increased or decreased in the last 5 years?	Met Council as part of COO Evaluation
Racial/ethnic diversity	What is the racial/ethnic breakdown of residents? How has that changed in the last 5 years?	Met Council as part of COO Evaluation

Source: PolicyLink, ISAIAH, and TakeAction Minnesota, *Healthy Corridor for All: A Community Health Impact Assessment of Transit-Oriented Development Policy in Saint Paul, Minnesota (2011)*, <http://community-wealth.org/content/healthy-corridor-all-community-health-impact-assessment-transit-oriented-development-policy>.

- Academic partners have access to research and state-of-the-art methodologies for analysis. They may also be able to provide students to help with new data collection.
- Community-based organizations have existing relationships with the people most affected by proposed housing actions and understand resident concerns. They may also have the capacity to get the community involved in the HIA process or be able to conduct surveys or focus groups to gather information about priority health issues and strategies for implementing recommendations.
- Other nonprofit organizations can provide expertise on the HIA process, including training and technical assistance.¹⁶⁸

The HIA team should provide accessible materials for organizations that may wish to communicate the results and findings with decision-makers and the public. A clear summary of the health effects of the proposed action and alternatives or recommendations should be presented. Infographics, video shorts, and other tools can make complex information more understandable.

Interdisciplinary cooperation and collaboration ensure a democratic process, guide the wise use of HIA resources, and increase the chances for the process to be fully informed and transparent. Appendix D provides a list of agencies and organizations that authored or co-authored at least one of the 40 housing HIAs.

Public health agencies and housing and community development organizations face significant resource constraints and are subject to a complex array of federal, state, and local laws and regulations. HIAs can help them navigate these challenges by building support for well-planned projects, allaying community concerns, and streamlining the way health concerns are integrated and addressed. Through the use of HIA, the two sectors can build collaborations that leverage their unique assets toward their shared goal of improving community health and quality of life.

Partnerships between housing agencies and public housing professionals can present opportunities to pool financial resources, technical expertise, and organizational capacity. Resources for conducting HIAs may be available through competitive grant programs, such as those operated by the [Health Impact Project](#), and through local philanthropic organizations. In other cases, the analyses may be an eligible expense under existing funding sources. Housing and public health agencies can also consider opportunities to dedicate staff resources for HIAs into existing job descriptions and organizational structures.

Selected Resources

Planning for Healthy Places with Health Impact Assessments. The American Planning Association and the National Association of County and City Health Officials offer an online guide to HIA along with training at <http://advance.captus.com/planning/hia2/home.aspx>.

Georgia Tech Built Environment and Public Health Clearinghouse. The Georgia Institute of Technology catalogues a range of in-person, one- to five-day HIA training courses. Visit <http://bephc.gatech.edu/hia/professional/inperson>.

Enterprise Green Communities. The 2015 Green Communities Criteria strengthens and expands the organization's guidelines for consideration of health. It draws upon the principles of HIA and integrative design to outline ways that architects, designers, and developers can consider the connections between their work and public health (<http://www.enterprisecommunity.com/criteria>).

EPA Smart Location Database. This database summarizes approximately 100 different indicators associated with the built environment and location efficiency that can help inform quantitative analyses in HIAs. Indicators include density of development, diversity of land use, street network design, and accessibility to destinations as well as various demographic and employment statistics. Most attributes are available for all U.S. census block groups (http://www.epa.gov/smartgrowth/pdf/sld_userguide.pdf).

Health Impact Project. A collaboration between the Robert Wood Johnson Foundation and The Pew Charitable Trusts, this project is designed to promote and support the use of HIAs as a decision-making tool. The project maintains an interactive map and database of completed and ongoing HIAs in the U.S. as well as other resources at <http://www.healthimpactproject.org>.

Human Impact Partners. This nonprofit organization offers an array of tools and resources for new HIA practitioners at <http://www.humanimpact.org>.

NeighborWorks America. This organization offers health-related resources, including videos, training resources, and data tools, to support the community development field in creating healthy homes and neighborhoods. Visit <http://www.neighborworks.org/Community/Health>.

University of California Los Angeles Health Impact Assessment Clearinghouse. Created by the University of California, Los Angeles' HIA Project, with funding from the Robert Wood Johnson Foundation, the clearinghouse has a database of U.S. HIAs, including a summary of each assessment and links to background information on the health topics addressed and methods used. Visit <http://www.hiaguide.org>.

The San Francisco Indicator Project. The project is a system of indicators for livable, equitable, and prosperous cities. The site provides a list of case studies, including projects that adapted the indicators or its associated Healthy Development Checklist for use in their HIAs. Visit <http://www.sfindicatorproject.org>.

The Society of Practitioners of Health Impact Assessment. SOPHIA is a membership network of HIA practitioners that provides HIA resources, reports, journal articles, other publications, and links to HIA courses and workshops on its website (<http://hiasociety.org>).

Getting started

Here are some simple first steps housing officials and community developers can take:

- **Determine whether HIA is the most appropriate tool for ensuring that health is considered in a given housing decision.** Proposed projects, programs, plans, and policies pertaining to public housing programs, housing choice voucher programs, project-based rental assistance, Low Income Housing Tax Credits, code enforcement and inspection policies, and zoning decisions may all be suitable for HIA.
- **Attend a training session on how to conduct an HIA.** See the selected resources listed above to find an organization offering HIA information and training. Local colleges and universities may also offer courses on HIA.
- **Reach out to national HIA experts and organizations that support HIA practitioners.** Many organizations are working around the country to advance the use of HIA in decision-making. These experts can offer advice about how to get started. (See “Selected Resources” above.)
- **Use existing data sources to examine the project’s potential connections to health.** Readily available data sets can help officials and developers identify prevalent public health issues among the communities most likely to be affected by the proposed project, program, or policy.
- **Review available online tools.** Explore SOPHIA’s minimum elements and practice standards (<http://hiasociety.org/wp-content/uploads/2013/11/HIA-Practice-Standards-September-2014.pdf>), the Healthy Community Design Checklist Toolkit available on the Centers for Disease Control and Prevention’s website (<http://www.cdc.gov/healthyplaces/toolkit>), or the San Francisco Indicator Project’s website (<http://www.sfindicatorproject.org>) to identify and address important health issues in the decision-making process. More than 30 cities have created similar indicator projects, which track neighborhood-level data on a variety of measures important to local health. Housing officials can check to see if an indicator project is available in their community through the National Neighborhood Indicators Partnership or the Community Indicators Consortium.

- **Identify a local health practitioner.** Staff members from local health departments, public health institutes, public health nonprofits, and public health departments at local colleges and universities may have experience and an interest in partnering on an HIA.
- **Determine what organizational resources (staff and funding) are available to conduct an HIA and the timeline for the decision.** Early screening and scoping can determine whether a full HIA, rapid HIA, or other tool is the best approach to understand the health effects of the proposed housing project, plan, or policy.

Public health professionals can engage housing experts and build awareness of the benefits of HIAs in a variety of ways:

- **Offer trainings.** HIAs are new to many housing professionals. In addition to collaborating with them on HIAs, health professionals can provide trainings targeted to housing and community issues. They also can reach out to development intermediaries such as NeighborWorks America, which trains nearly 11,000 housing and community development professionals annually, or approach other organizations such as Enterprise Community Partners and the Local Initiatives Support Corporation for resources to support housing HIAs.¹⁶⁹
- **Provide public health data and expertise.** Local, state, and federal public health professionals have critical knowledge to contribute in identifying potential health impacts of a proposed housing decision and can assist housing professionals in accessing and using agency data systems (e.g., neighborhood health indicators, utilization data from hospitals, and prevalence rates of chronic conditions). Public health professionals may also have the capacity to analyze and map these health data to assist decision-makers and support housing professionals in communicating the benefits of their work. This expertise can supplement housing professionals’ own extensive data and resources to create a more complete picture of the potential effects that housing proposals may have on public health and to support the monitoring of health impacts over time.

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- **Offer testimony.** Public health professionals can use HIA findings in expert testimony presented to local, state, or federal officials.
 - **Meet with political and housing decision-makers.** HIA practitioners can meet with local, state, and federal officials and legislators to discuss the process, findings, and recommendations. [The Aerotropolis Atlanta HIA](#) team scheduled meetings with stakeholders, including the developer, planners, and officials from the various cities that would potentially be affected by the proposed action; health and environmental officers; and airport representatives.¹⁷⁰
 - **Give public presentations.** Health professionals can present findings to housing and community development groups to illustrate the benefits of using HIAs for proposed actions. For example, findings have been presented at the New Partners for Smart Growth Conference, which brings diverse disciplines together to collaborate on smart growth issues, and local and state community development corporation conferences that address housing and economic development issues.
 - **Develop policy briefs, project briefs, and case studies.** HIA practitioners can prepare briefs and presentations for various local and state committees and legislatures as well as other stakeholder groups. The authors of [North Carolina Senate Bill 731 HIA](#) presented the findings to members of the Town of Davidson's board of commissioners. The authors of an HIA on the proposed redevelopment of [the Coffelt-Lamoreaux public housing](#) property interviewed several stakeholders to get feedback on the impact of the process, which they featured in a case study.¹⁷¹
 - **Publish HIA findings in peer-reviewed housing and health journals.** Publication in the peer-reviewed literature, as well as in reports and other venues, can help raise awareness of the utility of HIA. An article on [the Page Avenue Revitalization HIA](#) highlighted lessons learned, such as the value of flexible, organized, interdisciplinary teams and the importance of engaging community stakeholders and decision-makers before, during, and after an HIA.¹⁷²
 - **Learn common housing terminology.** Everyone is familiar with the terminology used in his or her own field but often does not understand common terms from other disciplines. For example, in public health circles, "CDC" generally refers to the Centers for Disease Control and Prevention; in housing, it often is shorthand for community development corporations, which can be prime audiences for public health professionals to talk with about HIAs. These nonprofit organizations were created to lead community change efforts and are often affordable housing developers. Public health professionals should consider reaching out to local CDCs and CDC associations at the local and state levels to build support for HIAs.
 - **Engage in the collection and monitoring of community indicators.** Although public health professionals may be involved in this process, housing professionals may not be—or vice versa. Public health professionals involved in community indicator projects can reach out to housing and community development groups and encourage them to participate.¹⁷³
 - **Pursue joint funding.** Both housing and public health organizations are looking for innovative ways to leverage shrinking resources. Shared funding opportunities can help catalyze or solidify partnerships between the two sectors.

How Housing Works

The purpose of this section is to provide a tutorial on housing policies and programs that target low-income households, explanations about how specific housing programs and policies affect health, and suggestions for points in the housing policy development and decision-making processes that may benefit from future HIAs. This section is intended for the public health professionals to help them understand the key goals of relevant housing programs and the critical decision-making points and levels of government involved in housing policy decisions where health information can be included. The programs described in this section all operate in unique regulatory and local contexts, resulting in nuances in implementation and constraints that may limit the extent to which practitioners are able to effectively integrate health. Understanding these challenges and the local context in which the programs are being implemented is a critical first step for public health professionals wishing to collaborate with housing partners.

The six programs that constitute the major U.S. affordable housing programs and policies are: (1) public housing; (2) housing choice vouchers; (3) project-based rental assistance; (4) Low Income Housing Tax Credit (LIHTC); (5) code enforcement and inspections; and (6) zoning and land use. Additional reading and resources for each housing program are listed in Appendix E.

Public housing

Overview

The public housing program, the oldest federal housing subsidy, was established by the Housing Act of 1937 to provide affordable rental housing to low-income households. Because public housing rents are capped at affordable levels, residents can avoid the choices that low-income households searching for market rate housing often have to make: live in substandard or overcrowded

market-rate housing they can afford, or pay rent above affordable levels and have little left in the budget for food, health care, and other necessities. Residing in a public housing unit can offer stability as long as residents remain income-eligible and do not violate their leases, or their building is not slated for demolition or redevelopment.

U.S. Department of Housing and Urban Development (HUD) provides funding for and regulates approximately 1.2 million public housing units, housing approximately 2.2 million Americans and operated by over 3,000 local public housing authorities (PHAs).¹⁷⁴

Public housing serves individuals and households with very low incomes.¹⁷⁵ The availability of public housing can benefit residents' health through housing affordability and stability. However, current funding mechanisms and past location and operating decisions have left many residents living in substandard units and in neighborhoods of concentrated poverty.¹⁷⁶ Public housing in urban centers has historically been concentrated in high-poverty neighborhoods with limited access to services, amenities, and job centers, which are essential to supporting the health and wellbeing of public housing residents. As of 2008, approximately 20 percent of public housing units were located in areas where at least 40 percent of residents lived below the poverty line.¹⁷⁷

Funding and most programmatic public housing policies originate at the federal level; however, PHAs generally have responsibility for implementing HUD regulations and designing revitalization and redevelopment plans for public housing developments and surrounding neighborhoods. Local decision-makers, particularly local PHAs, could be partners in more thorough assessment of the health conditions of residents and the potential outcomes of changes to public housing.

PHAs screen potential tenants for eligibility. The most important eligibility criterion is income. To serve

households with the greatest housing affordability challenges, HUD requires PHAs to reserve 40 percent of their units for extremely low-income households (households with incomes equal to 30 percent or less of area median family income (MFI)), though many PHAs set aside a higher portion of units for this population.¹⁷⁸ Rent for public housing units is capped at 30 percent of the household's income.¹⁷⁹

When screening potential tenants, PHAs have discretion to give priority to particular populations, such as the elderly, people with disabilities, or families with children. A senior or person with a disability heads more than half of public housing households.¹⁸⁰ Other PHA preferences include local residents, victims of domestic violence, working households, and veterans. Many PHAs have waiting lists with thousands of eligible households, and they often close their waiting lists when the lists become too large to be manageable. The wait for a public housing unit can stretch into many years.¹⁸¹

In addition to determining eligibility and maintaining waiting lists, PHAs are responsible for managing the upkeep and maintenance of public housing units. They enforce lease rules and evict tenants who violate their leases. PHAs often provide resident services, such as referrals to other agencies for non-housing assistance, programming to foster self-sufficiency, and outreach to facilitate engagement in the building's management. Although HUD requires that PHAs engage public housing residents in the administration of public housing programs by participating in RABs and Resident Councils, there are cases where public housing residents have limited power through these advisory roles. More active resident bodies that have a more robust working relationship with the PHA have more potential to work toward positive health outcomes.

PHAs receive federal funding in the form of the Public Housing Operating Fund and the Public Housing Capital Fund, to manage and maintain public housing developments.¹⁸² The purpose of the Public Housing Operating Fund is to make up the shortfall between revenue from rent payments and maintenance and operating costs. The Public Housing Capital Fund provides funds for capital improvements and renovations. However, funding for operating and capital improvement costs has

consistently been inadequate; PHAs have deferred and forgone maintenance, leaving many units uninhabitable and beyond repair. Some public housing units have been permanently lost from the housing stock due to deferred maintenance. Despite regular HUD inspections and housing condition requirements, approximately 15 percent of the nation's public housing stock is inadequate and in substandard condition. Residents in these units may face exposures which harm their health, such as poor air quality and rodent and pest infestation; and physical hazards, which pose injury hazards.¹⁸³

No federal funding has been authorized to increase the total stock of public housing since the early 1990s.¹⁸⁴ HUD has tried to arrest the loss of public housing due to poor maintenance and lack of capital improvements through public housing redevelopment programs. The two most important parts of this effort are the Choice Neighborhoods Program and the Rental Assistance Demonstration (RAD).¹⁸⁵ These programs created by HUD to preserve at-risk public housing units have only limited reach. The level of congressional appropriations restricts HUD in the number of Choice Neighborhood grants (as well as operating and capital funds) it can award, currently five to seven a year. Congress has also approved conversion of only 60,000 public housing units through the RAD program.¹⁸⁶

Choice Neighborhoods was launched in 2011 to replace and expand upon the HOPE VI program, an earlier HUD program that funded redevelopment of distressed public housing into higher-quality mixed-income housing. (Funding for HOPE VI was discontinued in 2010.) Like HOPE VI, Choice Neighborhoods funds redevelopment of distressed public housing and seeks to address neighborhoods with concentrated poverty through mixed-income development. Choice Neighborhoods planning and implementation grants are competitively awarded, and the process encourages targeted revitalization of high-poverty neighborhoods. PHAs, local governments, and nonprofit and for-profit organizations with public partners are all eligible to apply for these grants. The program requires that grantees replace demolished public and assisted housing units on a one-for-one basis to prevent any net loss of affordable housing.

HUD's RAD program, launched in 2013, was designed to preserve public housing buildings at risk of being lost from

the affordable housing stock due to inadequate upkeep. Through a competitive process, PHAs with severely distressed public housing buildings are allowed to convert the subsidized rent they offer tenants to long-term, project-based rental assistance contracts. The PHAs then use those contracts to leverage private and other public financing to rehabilitate distressed buildings.

Public housing residents displaced by demolition of their units (through programs such as Choice Neighborhoods or RAD, for example) are entitled to relocation assistance from the PHA during construction and are guaranteed the right to return to the redeveloped building. While the construction and rehabilitation work is conducted, PHAs must help residents to relocate to different housing. Some residents move to other public housing units if they are available. HUD also requires PHAs to issue housing vouchers (see [p. 52](#)) to residents displaced by demolition.

Public housing properties are inspected by PHAs, HUD-certified inspectors under contract with the agency, and HUD staff using the Uniform Physical Condition Standard (UPCS). UPCS evaluates properties in five areas:¹⁸⁷

- Site, such as walkways, play areas, parking lots, and property grounds.
- Building exterior, such as the foundation, doors, walls, windows, and roofs.
- Building systems, including water, electrical, fire, heating, ventilation, and air conditioning systems.
- Common areas, such as community rooms, laundry rooms, and kitchens.
- Housing units.

The UPCS protocols for each area outline specific features, called “inspectable items,” that the inspector is required to inspect, such as doors, windows, and walkways, and a series of health and safety items to assess.¹⁸⁸ The UPCS checklist also lists a series of “observable deficiencies” that indicate a defect or danger to the health and safety of residents. These deficiencies include items such as exposed wires, evidence of pest infestation, tripping hazards, and broken pipes or drains. For each of the five areas, inspectors assess if deficiencies are present for each inspectable item and then rate the level of the deficiency.¹⁸⁹

PHAs must conduct a pre-occupancy, or move-in, inspection of each newly leased apartment with the resident or a representative before a lease is signed. Many PHAs use the UPCS for these inspections, but they can also develop their own forms to document the condition of the housing unit using the UPCS as a guide.¹⁹⁰ PHAs must also conduct an annual inspection of each of their public housing units using UPCS.¹⁹¹ HUD contractors assess a PHA’s performance by inspecting a random sample of units on a frequency of every one, two, or three years depending on the PHA’s size and performance rating.¹⁹² Finally, to monitor the quality of these assessments, HUD staff members conduct periodic quality assurance inspections of a sample of the units that contractors previously inspected.

Stakeholders in Public Housing

Decision-makers

- Congress determines funding levels for public housing
- HUD administers the program

Other Key Stakeholders

- Local governments
- Assisted-housing owners
- Non- and for-profit developers who partner with PHAs
- Public housing residents individually and through resident advisory boards and resident councils

Prior HIAs of Public Housing Decisions

Of the 298 HIAs that were complete or in progress as of December 2013, 26 were on public housing decisions. The following are examples:

- [The Choice Neighborhood Transformation Plan for a Community in Albany, Georgia HIA](#) was conducted on the redevelopment of a public housing project and provided the Albany Housing Authority with additional data, resources, stakeholder input, and recommendations.

- [The Flooring in Public Housing HIA](#) was conducted by the San Francisco Department of Public Health to inform the San Francisco Housing Authority’s policy on flooring for public housing.
- [The Housing and Urban Development Designated Housing Rule HIA](#) was a federal HIA conducted to inform HUD’s planned update to the designated housing rule, which allows housing authorities to allocate certain public housing properties, or a portion of them, for occupancy by seniors and people with disabilities.
- [The Replacing Public Housing Units Destroyed by Hurricane Ike HIA](#) in Galveston, Texas was conducted to provide recommendations on the siting and upgrading of public housing to replace units that were destroyed by Hurricane Ike in 2008.

Recommendations for Bringing HIA into Public Housing Decisions

HIAs offer an opportunity to bring health and equity considerations into public housing policies and could be integrated into decision-making in several ways. First, HUD could commission or collaborate with partners on HIAs of federal decisions that will affect public housing policies or play a direct role in identifying decisions where an HIA could add value to the agency’s decision-making process. [The Housing and Urban Development Designated Housing Rule HIA](#) is one such example where staff from HUD identified the designated housing rule as an opportunity to demonstrate the value of HIA in a federal rule-making process. PHAs can—as those in San Francisco, Denver, and Galveston have—conduct HIAs and incorporate the recommendations into public housing administration policies and redevelopment plans, as well as specific policy questions. HUD can also encourage PHAs’ voluntary use of HIAs by giving extra points in competitive grant funding opportunities such as Choice Neighborhoods. RAD program applicants could conduct HIAs and incorporate the recommendations into their proposals. Health analyses and additional stakeholder engagement could be included in the environmental impact review processes conducted in response to federal and state requirements as part of actions related to public housing.

Housing Choice Voucher Program

Overview

The Housing Choice Voucher (HCV) program, formerly known as “Section 8 vouchers,” provides housing assistance directly to low-income households, allowing them to rent homes in the private market at below-market rents.¹⁹³ The flexibility of the program, as well as its reliance on the private market, distinguishes this form of housing assistance from “place-based” assistance, such as public housing and project-based rental assistance (discussed below). Housing vouchers can positively affect the health of low-income individuals and families by supporting housing affordability, quality, and stability. Because families theoretically have flexibility in where they move, they can also realize benefits from residential integration.

HUD sets major program rules for HCV, such as FMR levels, income eligibility, and housing quality standards, and provides guidance and oversight to PHAs administering the program. PHAs administer the voucher program and are responsible for voucher distribution practices, waiting list preferences, local payment standards, portability processes, and mobility programs. PHAs also may decide to eliminate some or all of their public housing and distribute vouchers instead. PHAs also choose whether to “project-base” any of their vouchers. A small number of PHAs have expanded resident decision-making power through a program known as Moving to Work, in which HUD agrees to ease some program limitations and requirements for high-performing housing authorities participating in the demonstration.¹⁹⁴

Funding for and many programmatic characteristics of HCV originate at the federal level,¹⁹⁵ and in recent years, the program’s budget has been reduced.¹⁹⁶ Future funding discussions provide opportunities to use HIA to analyze the potential health impacts of various budget options. Other important decision points for introducing HIAs can be found at the local level where the program is administered, during the development of local housing plans and HCV program plans.

Typically, a household with a voucher pays rent equal to 30 percent of household income.¹⁹⁷ Using federal funds, a

local or state PHA pays the private landlord the difference between that amount and the market rent for the unit, up to a set limit.¹⁹⁸ However, because voucher funding is limited, PHAs generally use waiting lists or lotteries to manage demand.¹⁹⁹ About 2.1 million low-income families currently receive vouchers.²⁰⁰

HUD designed HCV rules to allocate vouchers to households in greatest need. Seventy-five percent of newly distributed vouchers must go to families with extremely low incomes.²⁰¹ HUD also encourages PHAs to prioritize victims of domestic violence.²⁰² Within these parameters, PHAs have broad discretion for distributing vouchers. Many use preference systems to increase voucher access among specific groups, such as the homeless, people with disabilities, working families, local residents, seniors, and veterans.²⁰³ In some cases, PHAs set aside a portion of their vouchers for specific housing units or populations, while others use a preference system to rank applicants on the list.

Families that receive HCVs go through an initial PHA certification process to confirm eligibility according to total household income, composition, and other eligibility criteria or preference status. Assuming the household is found to be eligible, its voucher would be available for a unit of a particular size. The verification procedure is repeated annually.

The maximum rent for a voucher-assisted apartment is loosely based on Fair Market Rents (FMRs) calculated by HUD, based on number of bedrooms, for each metropolitan area.²⁰⁴ Housing authorities can set their payment standards—the maximum rent they will certify as reasonable for an apartment of a given size—equal to the FMR or up to 10 percent higher or lower. With information about the local payment standard and their personal apartment size limit, voucher recipients then look for any privately owned apartment within the PHA's jurisdiction.

Landlords do not need to sign up in advance for the voucher program. Before signing a lease, a prospective tenant asks the landlord to accept the voucher, and if the landlord agrees, the tenant takes paperwork back to the PHA for approval. The PHA inspects the unit to ensure that it meets minimum housing quality standards

and, if it does, enters into a contract with the landlord.²⁰⁵ Finally, the landlord and tenant sign a lease, which can be renewed upon its expiration if all parties agree to do so.

However, families with vouchers are not always able to find a reasonably priced apartment with a willing landlord in a neighborhood that meets their needs or preferences. In that instance, HUD rules allow local PHAs to set higher FMR levels to increase voucher holders' housing options.²⁰⁶ In addition, tenants can choose to pay more than the customary 30 percent of income—up to 40 percent of income is allowable in most places—to rent a home that costs more than the local payment standard.²⁰⁷

For the first year that a tenant has a voucher, it must be used in the geographic area served by the PHA that granted it. A local PHA's jurisdiction may extend to a full city or county. State-level PHAs may cover all of the state or exclude the cities, towns, or counties that have their own PHAs. After the first year, vouchers become "portable," that is, families can use them outside the issuing PHA's geographic coverage area.²⁰⁸ Housing authorities must let voucher holders know about this option. If tenants choose to leave the coverage area, they become subject to the payment standards and rules of the PHA responsible for the new area of residence.

PHAs can attach up to 20 percent of their voucher assistance to specific housing units if the owner agrees to either renovate or construct the units, or the owner agrees to set aside a portion of the units in an existing development.²⁰⁹ These are called "project-based vouchers" (not to be confused with project-based rental assistance) and can ensure site selection in neighborhoods with strong schools and other amenities, or help provide access to housing where critical services are provided for high-need populations, such as the chronically homeless.²¹⁰

In addition, some PHAs operate "mobility" programs, which help voucher recipients move out of high-poverty, racially segregated, or other disadvantaged areas through establishing target neighborhoods and geographic criteria for where vouchers can be used and providing mobility counseling, rental search assistance, and other support. Mobility programs can be part of a legal settlement to remedy inequities in the distribution of local affordable

housing, or they may be created or managed as an affirmative step toward expanding affordable housing options in a region.²¹¹

HUD evaluates each PHA's voucher program using the Section 8 Management Assessment Program (SEMAP).²¹² SEMAP measures PHAs' capacity to calculate rents correctly, conduct housing quality inspections before entering into a lease or Housing Assistance Payment (HAP) contract, and perform other program compliance functions. It also assesses the residential locations of voucher-assisted households to evaluate whether vouchers are expanding housing opportunities outside of high-poverty areas. Resident health outcomes are not included in SEMAP.

HUD's Housing Quality Standards (HQS) are property maintenance standards that specifically apply to housing units in the HCV program. All units must meet HQS regulations before assistance can be paid to the landlord on behalf of a tenant. Inspections occur at least annually for as long as the landlord participates in the voucher program.

HQS requires three different types of inspections: an initial inspection when a voucher holder finds a unit to rent, annual inspections of all units in the program, and special inspections in the event of specific complaints from tenants, landlords, or members of the public.²¹³ Housing authorities are responsible for conducting initial, annual, and ad hoc inspections of the units and reporting findings to HUD of units in the voucher program to ensure that they meet the HQS.

The HQS establishes minimum standards for the health and safety of families in the voucher program, which according to HUD, currently consist of 13 key elements of housing quality, performance requirements, and acceptability criteria to meet each performance requirement.²¹⁴

- Sanitary facilities
- Food preparation and refuse disposal
- Space and security
- Thermal environment
- Illumination and electricity

- Structure and materials
- Interior air quality
- Water supply
- Lead-based paint
- Access
- Site and neighborhood
- Sanitary condition
- Smoke detectors

HUD is developing a new inspection protocol, UPCS-V, which is intended to replace the use of the HQS for housing units in the HCV program.²¹⁵

Stakeholders in the HCV Program

Decision-makers

- HUD
- Congress

Other stakeholders

- State and local elected representatives
- National associations of PHAs, affordable housing advocates, legal aid offices, and poverty alleviation groups
- Rental property owners, including developers of buildings financed under the Low Income Housing Tax Credit program (discussed later in this section)
- Voucher recipients and other eligible households

Prior HIAs of the Housing Choice Voucher Program

As of December 2013, only one HIA had been applied to a housing voucher decision. The 2005 HIA of the Massachusetts Rental Voucher program (MRVP) assessed proposed changes to the state-funded program, which includes a "mobile" voucher component similar to the standard federal HCV program.²¹⁶ The aspects of MRVP studied included restricting the tenant-paid portion of the rent to 40 percent of income, limiting the amount

of time a family could receive the housing subsidy, adding work requirements for non-elderly and non-disabled households, and increasing the frequency of re-certifications (verification of family income and composition to ensure ongoing eligibility).

Recommendations for Bringing HIA into HCV Decisions

The following are decision points during which an HIA could bring value:

- A federal-level HIA of housing spending bills could examine the potential impacts of reducing voucher funding, continuing stable funding based on existing vouchers, or expanding the program to serve additional low-income households.
- Federal, state, or local legislation that attempts to reform or amend aspects of the HCV program, such as by imposing time limits for assistance or work requirements.
- Local annual, five-year, and administrative plans prepared by PHAs that determine how individuals on the HCV waiting list are prioritized (e.g., homeless persons, persons with disabilities, families, etc.) or that establish payment standards, for example.

Project-Based Rental Assistance Programs

Overview

Federal project-based rental assistance (PBRA) programs, created in 1974, facilitate the development of privately owned affordable housing, with most construction occurring in the 1970s and 1980s.²¹⁷ Forty years later, many of these same units are serving low-income families today, and are in need of rehabilitation and renovation.

Private for-profit and nonprofit property owners decide whether to participate in PBRA programs. If they choose to do so, the total rent they may collect for a unit (i.e., the combined federal and tenant portion) is contractually determined based in part on local fair market rents.

The federal government provides them with subsidies that make it financially feasible to rent housing units to low-income households. In return for the subsidies, the property owner agrees to keep the units affordable for a certain length of time, often 15 or 20 years, but sometimes as long as 40 years.

Since their inception in 1974, PBRA programs have provided ongoing subsidies to new developments and existing affordable housing. For new construction or substantially rehabilitated developments, PBRA programs may include or be paired with other sources of construction assistance, such as LIHTC (discussed below) or funding from federal block grants, such as Community Development Block Grants (CDBGs) and the HOME Investment Partnerships Program (HOME).

PBRA contracts are linked to specific housing units, but not necessarily entire buildings. Some developers combine PBRA and market-rate apartments to create a mixed-income community. PBRA can be used for different types and styles of residential buildings, including townhomes, single-family homes, and traditional apartment communities.

Approximately 1.5 million apartments are subsidized with PBRA nationwide.²¹⁸ Project-Based Section 8, the primary form of PBRA, provides affordable housing for more than 1.2 million households.²¹⁹ HUD oversees most PBRA programs, but some state and local PHAs administer programs locally on HUD's behalf. In addition, state-level Housing Finance Agencies (HFAs), which are chartered by the states to meet affordable housing, are often involved when the HFA is serving in the role of the state's PHA.

In most cases, tenants apply directly at participating properties and pay rents equal to 30 percent of their income, with the remainder of the contractually determined rent paid by the federal government. To be eligible for a PBRA-assisted apartment, households must fall within the programs' income limits and sometimes meet other requirements. In general, apartments are reserved for households with incomes of 50 percent of AMI or less, but some apartments may have higher or lower income limits.²²⁰ In general, each participating property maintains its own PBRA waiting list.

A few PBRA programs serve only specially designated populations and have separate federal appropriations: Section 202 is limited to elderly households; Section 811 is for those with severe disabilities; and Section 521 serves rural households.

On-site supportive services can also contribute to better outcomes for residents of other PBRA apartments, regardless of age or disability. When considering PBRA policies and implementation, reliable supportive services funding can also determine the housing developments' capacity to serve residents' needs. The Section 202 and 811 programs include supportive service requirements, and HUD funds these through its Service Coordinator Program. Local partnerships or federally funded service coordinators provide an array of on-site supports for residents of subsidized housing. These partners may come from workforce development organizations, healthcare providers, and other organizations that deliver social services or financial assistance to low-income households. Partnerships between affordable housing operators and service providers can help to strengthen these programs, deepen focus on health and wellness, and help make Medicaid Home and Community-Based Services funding or other healthcare dollars available to support service delivery.

With two exceptions, current PBRA funding is largely for contract renewals rather than adding new affordable units to the program. New units may be added to the PBRA stock if a PHA privatizes its public housing through programs such as RAD. This process can provide access to capital funds to rehabilitate and maintain public housing, but it puts the affordability of the apartments at risk in the long run, after affordability commitments end. Second, new PBRA contracts are sometimes combined with other programs, such as the Low Income Housing Tax Credit (discussed below), to make units affordable to households with very or extremely low incomes. This strategy is often used to create permanently supportive housing for at-risk populations, such as homeless veterans or people with disabilities.

Project-based Section 8, Section 202, Section 811, and other PBRA contracts are managed through HUD's Office of Multifamily Housing Programs. Some state and local PHAs have contracts with HUD to serve as Performance-

Based Contract Administrators (PBCAs), managing PBRA programs locally on HUD's behalf. PBCAs verify that property owners are abiding by their contracts and screening applicants appropriately. They also process contract renewals and rent adjustments, conduct on-site reviews, and follow up on problems noted in property inspections.

The Section 521 Rural Rental Assistance program is managed by the USDA's Rural Development Office. Section 521 adds a project-based rental subsidy to rental housing developed through other USDA rural housing development programs to make these developments affordable for the elderly, people with disabilities, and low-income or very-low-income households in rural areas. Recommendations to Congress about rural PBRA programs may originate with HUD or USDA.

Many PBRA units are reaching the end of their federal contracts, at which point property owners are free to opt out of the program and begin charging market-rate rents. The issue of expiring federal contracts may provide the best opportunity for an assessment of the potential health impacts of the loss of these units from the affordable housing stock.

Property owners in high-cost or amenity-rich areas are more likely to opt out of PBRA programs. Transit, walkability, and other community assets provide important resources for low-income households, but locations with these features tend to be prime real estate in demand for other purposes. In lower-cost areas, PBRA units may be lost due to difficulty funding capital repairs rather than intentionally opting out of the program.

Residents in PBRA apartments have the right to form tenant organizations, per HUD regulations, which provide them with a collective voice and some power to affect building quality, preserve the PBRA subsidy, create health-supportive programming, and make other changes.

Local city or county leaders, neighborhood associations, tenant organizations, and affordable housing developers all play important roles in determining whether and where privately owned affordable housing is available. The location of affordable developments may become a source of debate at council hearings and neighborhood association meetings. Although development approval

processes vary, local elected officials often have some capacity to block developments or influence whether existing affordable housing is preserved.

Stakeholders in the PBRA Program

Decision-makers

- HUD
- U.S. Department of Agriculture
- Congress
- Affordable housing developers, property managers, and owners
- The National Affordable Housing Management Association and National Leased Housing Association, which represent affordable housing developers, managers, and owners
- PHAs

Other Stakeholders

- Local city or county leaders, neighborhood associations, tenant organizations, and affordable housing developers
- Local partnerships or federally funded service coordinators
- HFAs and departments of housing and community development
- Advocates for affordable housing and national community development corporations

Prior HIAs of the PBRA Program

Although the review of Housing HIAs did not identify prior HIAs of the PBRA program, a few HIAs have looked at topics relevant to PBRA. For example, [the Clark County Highway 99 Sub-Area Plan HIA](#) in Clark County, Washington, studied housing relocation, a topic directly connected to decisions about preserving affordable housing with expiring PBRA contracts.²²¹

Recommendations for Bringing HIA into PBRA Decisions

PBRA programs provide several opportunities for HIAs:

- HIAs may evaluate the impacts of proposed plans for individual properties, such as planned PBRA developments, proposed public housing conversions under RAD, or PBRA properties with expiring contracts.
- Federal HIAs might study decisions that broadly affect PBRA, such as annual appropriations or the length of affordability commitments. HIAs may also examine decisions relevant to specific housing programs—for example, Section 202, Section 811, or Section 521—such as funding levels or supportive service policies.

Low Income Housing Tax Credit Program

Overview

Congress created the Low Income Housing Tax Credit (LIHTC) program as part of the Tax Reform Act of 1986, and creates partnerships among the federal government, states (and sometimes localities), for-profit and nonprofit developers, syndicators, and private investors.²²² The LIHTC reduces the costs of development by providing tax credits to developers and requiring them to ensure that rents are affordable for low-income households for a specified period.

Almost all new affordable housing rental housing now being built in the U.S. makes use of the LIHTC. In 2010, the LIHTC program financed approximately half of all multifamily housing units built in the U.S.²²³ It is also an important source of funding for rehabilitation and redevelopment of existing affordable housing projects.

Unlike other federal housing programs, which are regulated by HUD, the LIHTC program is regulated by the Internal Revenue Service (IRS) of the Department of the Treasury.²²⁴ Congress does not appropriate funding for the LIHTC program because the program is administered as part of the tax code. Specifically, IRS develops the

guidelines by which tax credits are provided to states, and is responsible for overseeing state allocation of the credits (based on population) and for ensuring developers' compliance with program requirements.

Two types of tax credits are available depending on the type of affordable rental construction. The "9 percent credit" is generally available for new construction, and allows the investor or developer to claim roughly 9 percent of a project's qualified costs of construction.²²⁵ The "4 percent credit" is generally claimed by developers who are rehabilitating existing affordable housing or are doing new construction that is primarily financed with tax-exempt bonds.²²⁶ Both credits are subtracted directly from a taxpayer's liability each year for 10 years.²²⁷

Each state has an allocating agency (usually the state HFA) that oversees and monitors compliance with the LIHTC program and reports to the IRS. Local housing authorities, nonprofit organizations, and project owners may have responsibility for determining and recertifying tenant eligibility.

Each state specifies its criteria for how tax credits are allocated in its Qualified Action Plan (QAP). States award developers tax credits through a competitive allocation process, using scoring outlined in the QAP, with additional points given to projects that meet state preferences. Both for-profit and nonprofit developers compete for these tax credits.

Developers can claim the credits themselves, but they usually sell them to raise capital, selling directly to investors or to a syndicator. Syndicators act as brokers between developers and investors. Syndicators will pool several projects into one LIHTC fund and market that fund to potential investors. By bundling the tax credits, the investors can lower the debt required to build housing developments, which allows projects to offer more affordable rents and still be financially viable. Syndicators receive a fee (recently amounting to less than 1 percent of the total credit value) to navigate complex tax and administrative requirements to ensure that developers and investors adhere to the rules and regulations of the program.

Both for-profit and nonprofit developers seek additional funding—including local grants, Section 515 funding (rural housing), HOPE VI, HOME, CDBG, Federal Home Loan Bank, Section 8, and tax abatements—to increase

the financial viability of their projects and to be more competitive during the tax credit allocation process.

Several federal regulations and priorities determine which housing developments receive tax credits:²²⁸

- The project must be a residential rental property.
- The property owner must commit to one of two possible low-income occupancy rules: the 20-50 rule, which stipulates that at least 20 percent of the units be occupied by households with incomes at or below 50 percent of the area median income, or the 40-60 rule, which requires that at least 40 percent of the units be occupied by households at or below 60 percent of the area median income.
- The affordable units must have rent levels (including utilities) of no more than 30 percent of tenants' gross incomes.
- Credits are allocated only for "qualified construction costs"—costs of construction for affordable units—though the project may have a mix of affordable and market-rate units, and may include commercial or community space.
- Property owners must operate under income and rent restrictions for at least 30 years.

Further, federal law requires states to set aside at least 10 percent of the credits for properties owned by nonprofit organizations and permits them to offer enhanced tax credits, equal to 130 percent of qualified construction costs, rather than 100 percent, to projects in difficult development areas (DDAs) or qualified census tracts (QCTs).²²⁹

In addition to these federal rules, each state's QAP also sets regulations that determine which projects receive preference for the tax credits. These typically include projects that serve the lowest-income families (e.g., even below the federal requirement) and are structured to remain affordable for the longest period of time. Each state's QAP outlines these preferences and designates "set-asides," tax credits that states automatically allocate to projects with particular characteristics. Examples of preferences and set-asides include:

- Geographic preferences.
- Local housing market needs or conditions.

- Type of project financing and extent of use of matching funds.
- Proposed resident characteristics.
- Building characteristics, generally unit size.
- Type of project—i.e., new construction versus rehabilitation.

The LIHTC program can affect health through its ability to increase (or decrease) concentrated poverty. Areas with more concentrated poverty can negatively affect health due to limited access to social and health services and more crime and violence. Residents living in concentrated poverty neighborhoods may also be socially isolated, affecting both physical and mental health.

The location of properties relative to pollution as well as amenities and services can have direct impacts on health. These include but are not limited to exposures to air, water, and soil contaminants; access to streets that are safe for walking and biking; and access to health and other social services.

Within guidelines specified by the federal government, states have discretion over the types and locations of affordable housing projects that can make use of the tax credit. Local governments are involved through their decisions about land use and residential development, developing land-use and zoning plans that identify locations for residential development and overseeing the development review process, which can include requests for zoning changes, review by citizen boards, and public meetings. Local governments also identify neighborhoods for investment and revitalization, which can make properties in those neighborhoods more attractive in the tax credit allocation process.

Federal and state preferences could potentially work at cross purposes, as the federal requirement gives preference for projects in high-poverty neighborhoods (i.e., qualified census tracts) while states—and other parts of the federal government (including HUD through its Affirmatively Furthering Fair Housing rule)—prefer to assist developers in building affordable housing in mixed-income or lower-poverty neighborhoods.

The development and rehabilitation of affordable rental housing through the LIHTC program is primarily constrained by the preferences and set-asides described in the state’s QAP and by local development costs. No credit is associated with the cost of land, and even with the credit, finding affordable housing projects in strong housing markets can be difficult due to the high cost of land. Other subsidies—including grants and tenant rental assistance—are required to make projects in these areas financially feasible or to develop units that are affordable to very-low-income households.

Further, the costs of construction of space not specifically for affordable units makes it more difficult to incorporate community or social services spaces in affordable housing projects. Proposing and developing mixed-income housing projects through the LIHTC program also can be challenging because different financing sources for market-rate and affordable units must be combined.

Stakeholders in the LIHTC Program

Decision-makers

- U.S. Department of the Treasury
- State housing finance agencies

Other Stakeholders

- For-profit and nonprofit developers
- Syndicators
- Local governments
- Congress

Prior HIAs of the LIHTC

HIAs that have been used in the planning, siting, and design of affordable housing projects financed with LIHTCs include:

- [The Crossings at 29th Street and San Pedro Street—South Central Redevelopment HIA](#) was conducted to inform plans for a proposed 11.6-acre development in South Los Angeles providing more than 450 units of affordable housing as well as retail and multipurpose space for community activities.²³⁰

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- [The Jack London Senior Housing HIA](#) in West Oakland, CA, was undertaken to identify potential health effects that could arise from a proposed residential and commercial development that included affordable housing for seniors.²³¹
 - [The Georgia Qualified Allocation Plan for Low Income Housing Tax Credits HIA](#) assessed the state’s proposed criteria for allocating tax credits and considered how these criteria could affect health through the effects of decisions on housing for vulnerable populations and community development.²³²

Recommendations for Bringing HIA into LIHTC Decisions

In tax credit projects, as in all residential development projects, an HIA could be conducted during the planning and design stage, or local governments could require developers to assess the potential health impacts of different development scenarios as part of the development review process. An HIA also could be undertaken during the development of the state’s QAP and its criteria for awarding tax credits, similar to the HIA performed for the Georgia QAP. An HIA could be submitted during the state’s public comment period for the QAP. Additionally, opportunities exist to integrate health directly into QAPs without performing an HIA. As mentioned previously (see [p. 3](#)), practitioners have used the basic principles of HIA to develop related tools and approaches that can be used in cases where an HIA is not possible or appropriate, or where sufficient evidence and support exist to embed health directly into policies or projects. The 2015 version of the Enterprise Green Communities Criteria—which are integrated into the QAPs of 20 states—includes a new “Design for Health” requirement that affordable housing development teams use readily accessible community health information to guide building design and programming.²³³

Code enforcement and inspection policies

Housing codes directly affect residents’ health by ensuring and increasing housing quality. By regulating fresh air, light, structural safety, and mechanical and electrical systems, codes ensure the safety and health of residents.

For example, sufficient ventilation improves indoor air quality, which can lead to less asthma and respiratory disease. Adequate light can reduce physical falls and also improve mental well-being. Safely installed electrical systems can reduce physical injuries related to falls or electrocution. Sound heating and cooling systems limit exposure to heat, cold, and air pollutants. The regulation of insects and vermin and lead-based paint has direct impacts on residents’ health and well-being. In addition, control over garbage and debris can have direct physical health impacts for residents, and can also reduce stress and anxiety for residents and neighbors.

Overview

Model codes are generally developed and revised by national code development organizations, but are adopted and implemented by state or local government agencies or departments. They are also used by federal agencies such as HUD as requirements for new home financing backed by Federal Housing Administration loans. The International Code Council (ICC) is the primary organization responsible for developing the various building codes.²³⁴ The National Fire Protection Association and others also develop codes. The ICC develops model codes through a process led by industry experts, with state and local code officials making the final decision. Local code enforcement policies generally follow ICC building and property maintenance codes. Changes to codes can occur through the model code development process, such as the Governmental Consensus Process used by the International Code Council, or through amendments to state or local laws and regulations. In many cases, states and localities have adopted some or all of the model codes but also have separate state or local codes. Two sets of codes are discussed briefly in this section: housing and property maintenance codes and tenant-landlord regulations.

Housing and Property Maintenance Codes

Housing codes, also referred to as property maintenance codes, and also sanitary codes, establish minimum standards for the physical characteristics of a housing unit, a residential building, and the land on which the residential property is located. These codes typically address the following issues:

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- Standard space and occupancy
 - Adequacy of light and ventilation
 - Soundness of foundation, floors, and ceilings
 - Condition of plumbing, electrical, mechanical, and fire safety systems
 - Response to problems, such as insects, vermin, peeling paint, moisture damage, and mold
 - Building security
 - Control of garbage and debris inside and outside
 - Proper maintenance of trees and shrubbery²³⁵

These codes also regulate the presence and locations of motor vehicles, property registration, and the use and maintenance of city- or county-owned land.

Often, the authority having jurisdiction over the code enforcement process is the local government—specifically, the agency responsible for conducting inspections and administering and ensuring compliance with the code. This is generally the local code enforcement office, but it may be a health or a housing department. Code enforcement officials can conduct routine inspections of residential buildings. However, most housing code enforcement occurs as the result of complaints from residents. Once a complaint is received, an authorized official will inspect the property, making notes on the condition of the property and often taking pictures. If a code violation is identified, a notice is sent to the property owner. The time allocated for resolving the issue varies depending on the violation. At the end of the allocated period, the inspector re-inspects the property. If the problem is corrected, no fine is issued, but if it is not fixed, the owner is fined, and fines continue to accrue until the situation is resolved.

Although inspections triggered by complaints are essential, many communities recognize that tenants may not complain because they are unaware that an issue violates the code or are uncomfortable calling the government. These communities may require landlords to register their rental properties with the municipality.

Local officials may conduct active surveillance of problem properties or neighborhood blocks—sometimes in

collaboration with local police or community groups—to proactively identify issues that could be individual health and safety risks or lead to further neighborhood decline.

Community groups and neighborhood planners have a vested interest in local housing code enforcement. These groups may encourage proactive property inspection rather than complaint-driven inspections, especially in revitalizing and transitioning neighborhoods, where residents and community organizations are in frequent contact with local code enforcement officials to ensure that properties are maintained and that absent property owners are identified (since absentee landlords have been shown to contribute to blighted properties). Real estate agents and lending institutions pay close attention to local code enforcement, because condition problems affect the value of nearby properties.

Landlord-Tenant Regulations

Most states and many localities have adopted landlord-tenant regulations, generally based on the Uniform Residential Landlord and Tenant Act (URLTA). URLTA was written in 1972 by the National Conference of Commissioners on Uniform State Laws in the United States to specify the rights and obligations of private residential landlords and tenants.²³⁶ Part of URLTA explains that the landlord has the following responsibilities for the condition of the property:

1. Ensure compliance with all applicable housing and building codes that affect the safety and health of the tenant.
2. Make necessary repairs to maintain a habitable and safe condition.
3. In multifamily apartment buildings, ensure that common areas, hallways, lobbies, elevators, and stairwells are maintained in a safe and clean condition.
4. Maintain plumbing, electrical, heating, and air conditioning systems.
5. Provide and maintain hot water and any other utilities not supplied by the tenants.

In general, URLTA was designed to be enforced by tenants and landlords, in court if necessary.

Stakeholders

Decision-makers:

- Local code enforcement officials
- PHAs
- International Code Council
- State and local elected officials

Other key stakeholders:

- Legal aid organizations
- State and local health departments
- Community groups and neighborhood planners
- Real estate agents and lending institutions
- Housing developers and landlords

Prior HIAs of Housing Code Policies

Examples of HIAs being conducted in response to proposed changes to local building codes or enforcement programs include:

- The Ohio Housing Finance Agency conducted [the Ohio Housing Inspections HIA](#) to inform decisions on proposed modifications to housing inspection programs in the state that would reduce the number of inspections on affordable housing units by improving interagency coordination.²³⁷
- [The Portland City Council's Rental Housing Inspections Program HIA](#) informed the council's decision on whether to fund the Rental Housing Inspections Program at a level sufficient to continue, and potentially expand, an enhanced inspections pilot.²³⁸

Recommendations for Bringing HIA into Housing Code Decisions

An HIA could be undertaken when a change is proposed to either state or local code requirements or code enforcement policies. A federal HIA could examine changes to HQS. An HIA could be performed on changes to the model codes developed by the ICC.

Zoning policies

Overview

Most local jurisdictions in the U.S. have a zoning policy or ordinance that indicates where residential development and other land uses can be located and in what form or scale. Zoning is the chief regulatory tool by which localities prescribe where different types of development can be built and the mechanism by which they implement their long-term land-use visions, often referred to as the Comprehensive Land Use Plan or General Plan.

A local jurisdiction's zoning policy or ordinance plays a major role in the development and availability of affordable housing. Depending on the local government's policy objectives, zoning can either include or exclude affordable housing—or housing generally—which also will affect housing affordability. Similarly, zoning decisions can also determine the extent to which new affordable housing is built in economically integrated areas.

Zoning is primarily a local activity, determined by local government staff, elected officials, and community boards. Community groups are also important stakeholders with an opportunity for participation in the public comment process required of most zoning changes. Opportunities to introduce an HIA include during comprehensive reviews and updates of a community's zoning ordinance, or during the development review and rezoning process for a particular property. Local jurisdictions usually express zoning ordinances on a map dividing a locality into "districts," and in text designating permitted land uses and building requirements for each district. Examples of land use categories include residential (e.g., single-family detached, single-family attached, multifamily), commercial, park, industrial, and community facility. Building requirements in the zoning ordinance typically regulate height, lot coverage, density, property-line setbacks, and parking ratios. Additionally, most zoning codes specify minimum housing unit and lot sizes.

The local legislative council must approve any changes to the zoning code. Elected officials also frequently make the final decisions on conditional use permits, PUDs, and areawide master plans. Elected officials may also hear

appeals to decisions rendered by the zoning commission or planning commission. In jurisdictions operating under a strong mayor system, the mayor is also involved in each of these decisions.

Unlike comprehensive changes to the zoning code, which happen infrequently (every five or more years), micro-scale zoning decisions are made throughout the year. Each code allows property owners to seek “variances” or “adjustments” for special circumstances pertaining to their properties. Zoning administrators adjudicate these requests, often in conjunction with appointed zoning commissions or boards. Administrators and zoning boards tend to use public hearings as part of their deliberation processes and are required to notify nearby neighbors of the request.

The local planning commission is an appointed advisory commission that makes recommendations to a body of elected officials on land use decisions. Planning commissions review and make recommendations on requests for conditional use permits, PUDs, and areawide master plans, and provide input on comprehensive changes to the zoning code and the Comprehensive Land Use Plan. In some jurisdictions, the planning commission also serves as the zoning commission.

For-profit and nonprofit developer associations, business associations, local planning advocacy organizations, environmental groups, housing advocates, and neighborhood associations are among the stakeholders that often seek to influence changes to the zoning code. Many of these groups, along with school administrators, parent-teacher associations, and local service providers, also engage in zoning decision-making affecting specific development proposals.

Zoning is almost always the domain of the local jurisdiction, but state policies can affect local decisions. States authorize local zoning via enabling statutes. Some states, such as California and New Jersey, require that local zoning codes provide “realistic opportunities” for the development of housing that serves very low- and extremely low-income households, seniors, and people with disabilities. Other states, such as Massachusetts and Connecticut, offer financial incentives to towns that use

zoning to create higher-density, mixed-income housing opportunities in strategic locations.

Federal policy can also create incentives for local zoning that accommodates affordable housing. HUD’s new Affirmatively Furthering Fair Housing rule clarifies that the department will scrutinize zoning policies in its review of local housing agency applications for HOME, CDBG, and other federal dollars. The Federal Transit Administration recently added supportive zoning policies to its list of criteria for granting “New Starts” capital funds to regions seeking to expand or develop transit systems.

Affordability

Zoning policies can contribute to housing affordability—and in turn to improved public health—by supporting housing diversity; enabling supply to catch up with demand; incorporating specific requirements or incentives; reducing the risk, time, and cost involved in approvals; and maximizing opportunities for efficiently scaled development. Zoning influences the supply of housing by limiting the amount of land available for residential uses and the number of homes that can be built on a given parcel. Although density limits most directly influence the number of homes that can be built, other zoning terms such as height limits, minimum unit sizes, and parking requirements also have major impacts on the scale and supply, as well as the costs, of housing.²³⁹

Zoning restrictions on scale and density can affect the cost efficiency of housing development and operation. Sites zoned for higher density allow developers to reduce their per-unit costs by distributing fixed costs over a greater number of units. Also, medium- to large-scale housing developments (e.g., 40–60 units per development or greater) are usually more economical to manage, operate, and integrate with services.

Some jurisdictions allow multifamily housing and accessory dwelling units in relatively few places by right, opting instead to require a conditional use permit. Although this can make the zoning code more flexible, and even create openings for various types of housing in zoning districts where they might otherwise be restricted outright, there is also a downside. Discretionary,

conditional approvals significantly increase the time, risk, and cost associated with the development process.

Rezoning that loosens restrictions on heights, densities, and parking requirements can make certain forms of affordable housing more economically feasible. But in many settings, this same increased potential can catalyze the market and enable market-rate developers to replace lower-priced housing with more expensive homes.

Zoning can also affect housing affordability directly, through explicit requirements or incentives. Multiple communities have embraced inclusionary or incentive zoning policies that tie affordable housing to new market-rate development because these policies expand the types of locations accessible to lower-income households and create affordable housing in desirable locations. As market-rate developers increasingly recognize the value of walkable, healthy communities, inclusionary zoning and related policies can be helpful for ensuring that lower-income households have access to these communities.

For example, approximately 400 jurisdictions nationwide have some zoning policy that requires a share of newly constructed homes to be priced affordably for low- and moderate-income households (generally earning 50–120 percent of area median income).²⁴⁰ Jurisdictions with this type of inclusionary housing policy include large cities, such as New York and Washington, as well as smaller places around the country. Inclusionary zoning can apply to both sale and rental units. Localities can tailor their policies to local housing needs and market conditions, leading to variation on terms such as the share of units that must be affordable, the income ranges served, the size of housing developments subject to the policy, and whether a developer can pay a fee instead of building the affordable units. Inclusionary zoning policies also differ as to how long affordable units must stay affordable, though typically this period is 30 years or more.

Policies that offer concessions such as density bonuses and reductions in parking space requirements, or other enticements such as reduced property taxes, to encourage developers to voluntarily provide a share of their units at affordable prices are known as incentive zoning or voluntary inclusionary zoning.

Affordable housing overlay zones apply special requirements and allowances in addition to the existing zoning code to promote a specified public goal within a designated area or district. Some jurisdictions have used overlay zones to target incentives for affordable housing to specific areas.

Local governments often negotiate for affordable housing as part of their discretionary review of large-scale developments. This may occur as part of the “Planned Unit Development” process, through conditional-use permit deliberations, or frequently as part of the review of larger, “master-planned” communities. A master-planned community is a large-scale development that requires modifications to the jurisdiction’s Comprehensive Land Use Plan. Because of the highly discretionary nature of these communities and the need for new public infrastructure, jurisdictions often require that a share of the homes be affordable to low- and moderate-income households.

Zoning codes that support housing diversity in varied locations also encourage mixed-income communities, which provide lower-income households with alternatives to high-poverty and segregated communities. This helps ensure that more households have access to health assets such as grocery stores that offer fresh, healthy foods and safe recreational opportunities.

Location

The impact of zoning on housing location has significant health implications. For example, a growing body of evidence indicates that walkable, mixed-use communities with easy access to recreational opportunities and transit options provide tangible health benefits, such as lower body mass indices and reduced rates of obesity.²⁴¹ Zoning codes are the primary determinant of where multifamily rental housing and other lower-cost housing types, such as manufactured homes, accessory dwelling units (sometimes called “granny flats”), and smaller-sized homes or apartments may be located, which in turn can affect residents’ access to health-promoting features such as spaces for physical activity; stores with affordable, healthy foods; or employment opportunities. In addition to specifying explicitly where residential development

can occur, zoning requirements can act as a tool for either exclusion or inclusion in a given neighborhood. Historically, requirements such as minimum lot and home sizes and restrictions on multifamily housing have resulted in the exclusion of lower-income households from some affluent, suburban communities. In contrast, intentionally flexible zoning codes can increase housing location options for households of various types and incomes. Zoning policies can steer housing development away from areas with significant air pollution, noise, traffic, and other potential health hazards and promote healthier housing by requiring that hazards be mitigated. For example, rather than prohibit housing near potentially hazardous highways, a jurisdiction may hinge approval on the developer implementing certain design or safety measures, such as ventilation systems, noise-proofing, or the orientation of buildings away from the highway. Zoning can also be used to limit the density of certain types of retail uses, such as alcohol or tobacco outlets, in proximity to housing.

A locality's zoning code must balance numerous interests. Local governments often balance the need for adequate housing with the need for job creation and economic development. Some employment-generating uses, such as neighborhood retail, can coexist with housing in a mixed-use format. Other employment-generating uses are less compatible. Industrial uses and even office buildings frequently need their own space. Local zoning decisions that increase density or facilitate housing for lower-income households or people with disabilities frequently encounter strong neighborhood resistance. Elected officials involved in zoning decision-making can face challenges to balance neighbors' interests with the needs of the jurisdiction and region to better house its workforce or underserved segments of the community. To provide greater housing choices for lower-income households, local governments must balance the legitimate goals of creating adequate opportunities for community participation and careful deliberation with an efficient approvals process that lowers the overall costs of developing housing.

Zoning codes also operate under various constraints. In many localities, retail and office development provide more tax revenue than new homes. Fiscal considerations may therefore lead some jurisdictions to zone for businesses at the expense of housing. A local jurisdiction's authority to regulate private development through the zoning code

stems from its police powers, granted by the state, for the purposes of furthering the health, safety, and general welfare of residents. These powers have limits, however. For example, under the "takings" clause of the U.S. Constitution, zoning regulations cannot eliminate total economic use of a property. Zoning ordinances also cannot single out individual properties for restriction, often referred to as "spot zoning."²⁴² Additionally, in many states codes must be consistent with the municipality's Comprehensive Land Use Plan. Accordingly, comprehensive or even parcel-level zoning changes may first require corresponding changes to the overall land use plan.²⁴³

Stakeholders in Zoning Policy

Decision-makers:

- Local elected representatives
- Zoning administrators and commissioners
- Planning commissioners

Other stakeholders:

- For-profit and nonprofit developer associations
- Business associations
- Local planning advocacy organizations
- Environmental groups
- Housing advocates
- Neighborhood associations

Prior HIAs of Zoning Policies

Most built environment HIAs have examined individual development proposals rather than large-scale zoning changes, with a couple of notable exceptions:

- [The Baltimore City Comprehensive Zoning Code Rewrite HIA](#) examined the potential health impacts of the city's proposed zoning code revisions, and focused on issues including obesity, physical activity, nutrition, and violent crime.²⁴⁴
- [The St. Paul Light Rail HIA](#) assessed the potential health effects of a proposed transit-oriented development rezoning policy that would set the foundation for

development and growth along the Central Corridor light rail line in the Twin Cities.²⁴⁵

Recommendations for Future HIAs of Zoning Policies

Housing HIAs could be used to inform large-scale zoning changes as well as individual development proposals. Other zoning changes that present opportunities for HIA include increases or decreases in the use of by-right approvals or discretionary review for housing types that can help increase the amount of housing available to lower-income households, such as multifamily housing, accessory dwelling units, small homes, micro-apartments, and manufactured housing.

Other housing programs and policies

The above sections include many of the major housing programs and policies that target low-income families, but HIAs may also be useful for informing other key housing decisions:

- **Property management and operations.** Property owners and managers establish policies and practices,

such as energy use, pest control methods, and cleaning products, that guide the day-to-day operation of their units and have implications for the health of residents.²⁴⁶

- **Local housing and community development funding allocations.** Many jurisdictions use funds from the HOME Investment Partnerships Program (HOME) and the Community Development Block Grant to create affordable housing for low-income households and address community development needs.²⁴⁷ In addition, some states and localities use mechanisms such as “tax increment financing,” which allows local governments to borrow against anticipated revenue from future development to pay for infrastructure improvements that support community and economic development.²⁴⁸
- **HUD programs for specific groups.** Several HUD programs target housing and supportive services to vulnerable populations. For example, HUD has programs focused on people with disabilities, those living with HIV and/or AIDS, and others.²⁴⁹

Public health professionals can work with partners in the housing field to identify decision points where HIAs might be particularly useful for protecting and promoting health.

Appendix A: Glossary of Key Terms

4 percent credit. An annual tax credit equal to roughly 4 percent of a project's qualified construction costs available for a 10-year period, typically claimed for rehabilitation projects or new construction that is financed with tax-exempt bonds.

9 percent credit. An annual tax credit equal to roughly 9 percent of a project's qualified construction costs available for a 10-year period, generally reserved for new construction and more competitive than the 4 percent credit.

20–50 rule. One of the two income rules associated with the Low Income Housing Tax Credit (LIHTC) program (see below). For projects to be eligible for the tax credit, at least 20 percent of the units must be rent restricted and occupied by households with incomes at or below 50 percent of the HUD-determined area median income (adjusted for household size, see below).

40–60 rule. One of the two income rules associated with the LIHTC program. For projects to be eligible for the credit, at least 40 percent of the units must be rent restricted and occupied by households with incomes at or below 60 percent of the HUD-determined area median income (adjusted for household size).

Acute illness. An illness characterized by signs and symptoms of rapid onset and short duration; may be severe and impair normal functioning.

Affordable Housing. Housing for which the occupant(s) is/are paying no more than 30 percent of his or her income for gross housing costs, including utilities. Please note that some jurisdictions define affordable housing based on other, locally determined criteria, and that this definition is intended as an approximate guideline or general rule of thumb.

Area Median Income (AMI). See Median Family Income below.

Biological hazards. These include but are not limited to mold; infestation; human and animal waste; wastewater; sewage; rotting material; and accumulation of trash that may harbor viruses, parasites, fungi, or bacteria. Additional biological hazards affecting certain vulnerable populations (e.g., those with respiratory allergies and asthma) include animal dander, cat saliva, dust mites, and pollen.

Building and property maintenance codes. Laws adopted by states and localities explaining the standards for new construction and property maintenance that are required to ensure the health and safety of residents and neighborhoods.

“By-right” zoning approval. Land uses allowed “by-right” are approved administratively, without public hearings or the need for discretionary review. Before a development can be built, however, other approvals may still be needed, such as design review and building permits.

Chemical hazard. Chemicals that have the potential to cause adverse health effects. Housing-related chemical hazards include but are not limited to pesticides, volatile organic chemicals, environmental tobacco smoke, cleaning agents, lead-based paint, asbestos, substances in manufactured building materials (e.g., formaldehyde in wood), and radon.

Chronic illness. An illness lasting three months or more, by the definition of the U.S. National Center for Health Statistics. Chronic diseases generally cannot be prevented by vaccines or cured by medication, nor do they disappear on their own.

Choice Neighborhoods Program. A HUD program to redevelop distressed public and assisted housing and revitalize high-poverty neighborhoods through investments in education and neighborhoods.

Community cohesion. A community in which there is a sense of belonging for all residents and in which the diversity of people's different backgrounds and circumstances are appreciated and positively valued.

Community Development Block Grant (CDBG). The Community Development Block Grant program, better known as CDBG, is a federal funding stream that is distributed by HUD to state and local governments to support a wide range of community development programs, such as affordable housing, anti-poverty programs, and job creation. Funds are generally distributed through state or local departments of housing and community development.

Community Development HIA. An HIA with a strong housing component, addressing housing as part of broader community development proposed actions concerning human-made surroundings, resources, buildings, and infrastructure designed to support human activity.

Comprehensive Land Use Plan. A policy document that provides an overarching land use vision for a jurisdiction, and establishes a framework (often likened to a constitution) for zoning decisions, to guide the long-term physical development of the jurisdiction. Less specific than the zoning code, the Comprehensive Plan seeks to coordinate various areas of land use planning, including housing, transportation, open space, and economic development, among other areas. Like the zoning code, it is usually expressed through a map as well as text.

Conditional use permit. Conditional use permits allow uses normally prohibited in a zoning district, on the condition that they include mitigating measures, as decided through a deliberative, public process.

Decision-makers. Individuals or organizations who, because of their positions, have the power to implement proposed policies, programs, and projects.

Density. A measure of residential development intensity, typically calculated as housing units per acre, or the ratio of homes to square feet.

Density bonus. An allowance in the zoning code to build at a higher density than normally permitted, in exchange for providing a public benefit, such as affordable housing or publicly accessible green space.

Design charrette. An intensive planning session in which stakeholders in a project collaborate on a vision for future development, attempt to resolve conflicts, and identify and visually depict solutions.

Difficult Development Areas (DDAs). Metropolitan or nonmetropolitan areas in which construction, land, and utility costs are high relative to incomes. A list of HUD-defined DDAs is available from HUD: http://www.huduser.org/portal/Datasets/QCT/DDA2013_Notice.pdf.

Enhanced LIHTCs. Tax credits totaling 130 percent of the qualified basis for projects in difficult development areas (DDAs) or qualified census tracts (QCTs).

Health equity. The idea of health equity "implies that ideally everyone should have a fair opportunity to attain their full health potential and, more pragmatically, that none should be disadvantaged from achieving this potential, if it can be avoided."250

Extremely low-income households. Households with incomes equal to or less than 30 percent of median family income.

Fair market rent (FMR). A rent level for each U.S. metropolitan area calculated by HUD to guide housing authorities in setting the maximum rent level for assisted units (and voucher payments). FMRs are usually based on the 40th percentile rent for a specific size of rental (measured by the number of bedrooms). Housing authorities then use the FMR to set their voucher programs' payment standards, which may be slightly higher or lower.

Floor-area ratio (FAR). A means for regulating lot coverage and density that also impacts the height of buildings. FAR is the ratio of total building floor area to the area of the lot. Multiplying the FAR by the lot area produces the maximum floor area allowed.

Form-based zoning. Zoning codes or districts that are more prescriptive about the scale and design of buildings, and less concerned with building use, as compared to traditional zoning. Form-based codes get more specific about desired building form (heights, width, setbacks, and architectural details), as well as the desired relationship of buildings to the street and sidewalk, and how buildings

and parking are placed on a site. Form-based codes are often adopted first in piecemeal form, for instance as an overlay zone or an add-on to the existing zoning code text. In the past decade, however, some jurisdictions have redone their entire zoning ordinances based on the principles of a form-based code.

Health determinants. Factors from the social, economic, and physical environments, and a person’s individual characteristics and behaviors that directly and indirectly influence health, including:²⁵¹

- Individual factors (age, gender, genetic makeup, existing health conditions and disabilities).
- Individual behaviors (diet, physical activity, addictions, coping mechanisms).
- Public services and infrastructure (access to education, parks, community centers, transportation, economic development, health care).
- Living conditions (housing; access to food; disease vectors; air, water, and soil quality; working environment; wages and benefits; noise; lighting).
- Social, economic, and political factors (racism, social cohesion, political participation, segregation, inequality, poverty).

HIA team. The HIA authors and collaborators who lead the HIA process. The HIA team works to ensure that stakeholders are engaged in the HIA process, serving as facilitators and transmitting information between various stakeholder groups.

HOME Investment Partnerships Program (HOME). The HOME Investment Partnerships Program (HOME) is a federal funding stream that is distributed by HUD to state and local governments specifically to assist with the creation of affordable housing for low-income households. Funds are generally distributed through state or local departments of housing and community development.

HOPE VI. A precursor to the Choice Neighborhoods program, this was a HUD program from 1993 to 2010 that funded the redevelopment of distressed public and assisted housing into higher-quality mixed-income housing.

Housing Assistance Payment (HAP). A payment from HUD to a property owner equal to the difference between market-rate and affordable rents for the apartments with project-based rental assistance. Contracts between HUD and property owners under project-based rental assistance programs are also referred to as HAP contracts.

Housing Choice Vouchers (HCVs). A housing subsidy that tenants can use to rent privately owned housing. In most cases, a tenant pays the landlord 30 percent of income, and the PHA pays the rest of the rent (up to a predetermined limit, called a payment standard).

Housing Cost Burden. Paying more than 30 percent of income for housing, including utilities.

Housing Quality Standards (HQS). The minimum housing quality levels for any housing that can be subsidized using a HCV. HQS are established by HUD and enforced by the PHA.

Housing HIA. HIAs designed to help housing policy makers and community planners understand the effect of housing-related decisions on health. Housing HIAs include housing-specific HIAs and community development HIAs.

Housing-specific HIA. HIAs focusing on specific features of homes (e.g., home energy delivery systems) or items directly impacting homes (e.g., rental voucher programs and affordable housing inspections).

Inclusionary zoning. A zoning policy that requires developers to include a share of homes for low- or moderate-income households in otherwise market-rate developments. Most inclusionary policies are accompanied by various forms of regulatory relief to help offset the costs of pricing units affordably.

Incremental vouchers. Voucher funding that adds on to the existing level of assisted housing funding is referred to as “incremental vouchers.” In recent years, incremental vouchers have all been targeted to special populations, such as homeless veterans through special VASH vouchers.

Indicator. A way to measure a health outcome.

Infectious disease. Disorders caused by organisms, such as bacteria, viruses, fungi, or parasites (also known as communicable disease).

Low-income households. Households with incomes equal to or less than 80 percent of median family income.

Low Income Housing Tax Credit (LIHTC). An indirect federal subsidy administered by states to incentivize new construction and rehabilitation of affordable rental housing.

Median family income (MFI). A measure of income based on the median income documented by the American Community Survey for each U.S. metropolitan area and non-metropolitan county, and occasionally for parts of a metropolitan area. The MFI for a particular area is also known as area median income (AMI). The income limits for HUD programs are set in relation to the area's MFI, adjusted for household size.

Mobility programs. Programs that facilitate moves by voucher holders to neighborhoods, often in the suburbs, with lower poverty rates and/or less racial segregation.

Overlay zone. A land use tool that applies special requirements and allowances on top of the existing zoning code to promote a specified public goal, such as affordable housing, within a designated area or district.

Pathway diagrams. Also known as a causal model or causal framework, pathway diagrams link health determinants with health effects through direct and indirect pathways, helping the HIA team prioritize which health effects may warrant or benefit most from assessment and identify areas of uncertainty where some health determinants may be difficult to assess.

Permanent supportive housing. Affordable housing with (1) no time limits on residency and (2) coordinated supportive services that help residents overcome their barriers to stable tenancy. Permanent supportive housing often serves specific target populations, such as the chronically homeless, individuals with substance use disorders, or individuals with other physical or mental disabilities.

Physical hazard. A non-chemical factor in the environment that can harm a body without necessarily touching it. Physical hazards include but are not limited to electricity, cold, heat, radiation, noise, lighting, and slip/trip/fall hazards.

Planned Unit Development (PUD). A land development project involving a mixture of land uses and densities that is approved as a cohesive unit, rather than on a lot-by-lot basis.

Portability. The capacity of a voucher household to move—even moving out of the city, county, or state—while keeping its housing voucher. This is also referred to as “porting a voucher.”

Project-Based Rental Assistance (PBRA). An umbrella term for a set of programs that contractually link privately owned rental housing with ongoing HUD subsidies and an obligation to rent to low-income households for a set period of time.

Project-Based Section 8. One of the primary forms of project-based rental assistance, Project-Based Section 8 includes Section 8 New Construction and Substantial Rehabilitation (NC/SR) and Section 8 Moderate Rehabilitation (Mod Rehab). Each of these programs has been repealed and no longer funds the creation of new units of affordable housing, but contracts on existing properties continue to be renewed.

Project-basing. Linking an HCV to a specific property, rather than a household.

Public Housing Authority (PHA). A local or state agency that administers HUD-funded affordable housing programs. Each has a specific geographic coverage area, which occasionally overlaps other areas. Local PHAs typically serve a county or a city. State-level PHAs typically administer programs in rural areas or areas without a local PHA. PHAs own and operate public housing units, provide onsite supportive services, and administer the HCV program throughout the country.

Qualified Allocation Plan (QAP). A plan developed by each state's housing finance agency that outlines the state's affordable housing goals and priorities.

Qualified basis or qualified construction costs. The dollar amount of a project that is eligible for tax credits. Includes the construction costs, as well as some soft costs (including architectural and engineering costs, soil tests, and utility fees) for the affordable component of the project (i.e., the units that are reserved for low-income households).

Qualified Census Tracts (QCTs). Census tracts in which at least half of the households have incomes that are less than 60 percent of the area median income or in which there is a poverty rate of at least 25 percent. Lists and maps of QCTS are available from HUD: <http://www.huduser.org/QCT2013/qctmap.html>.

Recertification. A process, typically occurring annually, in which the PHA verifies the household's income, assets, and composition in order to calculate the total tenant payment for the unit.

Rental Assistance Demonstration (RAD) program. A HUD that converts public housing subsidies to long-term project-based contracts in order to leverage financing to rehabilitate and preserve severely distressed housing at risk of loss. A demonstration program is a federally funded project to study the impacts of changes to existing programs that attempt to achieve greater efficiency or improved outcomes.

Section 202 program. A form of project-based rental assistance that is limited to households with at least one member age 62 or older. Supportive services are also provided in Section 202 properties, but they may be fairly limited. For example, services may assist with housekeeping, transportation, and some meals.

Section 521 program. A program administered by the U.S. Department of Agriculture to support affordable housing in rural areas.

Section 8 or Section 8 Tenant-Based Rental Assistance. The former name of the HCV program. The phrase is still in common use.

Section 811 program. A form of project-based rental assistance that is limited to those with a serious disability, including mental illness. Supportive services are also provided to residents.

Service-enriched housing. Rental housing for the low-income population that offers services and assistance to residents. The need for such services is not a requirement for tenancy. There is a mechanism for immediate support and assistance when residents appear to need—or specifically request—assistance.²⁵²

Social capital. Those features of social relationships, such as levels of interpersonal trust and norms of reciprocity and mutual aid, that facilitate collective action for mutual benefit.²⁵³

Social cohesion. The property by which the whole society, and individuals within, are bound together through the action of specific attitudes, behaviors, rules, and institutions, which rely on consensus rather than pure coercion.²⁵⁴

Social equity. Equal opportunity, in a safe and healthy environment, implying fair access to jobs, education, and resources; full participation in political and cultural life; and self-determination in meeting fundamental needs.²⁵⁵

Social integration. The extent to which individuals have social ties or social connections.

Stakeholder. An individual or organization that stands to gain or lose from a decision or process, i.e., people who are affected by a proposed action either through health or finances; who have an interest in the health impacts of the proposed action; because of their position, have an active or passive influence on the decision-making and implementation process of the proposed action (but cannot ultimately decide what action is taken); or have an economic or business interest in the outcome of the decision.²⁵⁶

Syndicator. An organization that connects private investors with developers seeking equity for a qualified LIHTC project. Enterprise Community Partners and Local Initiatives Support Corporation (LISC) are the largest syndicators.

Uniform Residential Landlord-Tenant Act (URLTA). A sample law governing residential landlord and tenant interactions, which is generally the basis for local landlord-tenant regulations.

Urban sprawl. A fiscally and environmentally unsustainable development pattern consuming farmland and open space and having potentially negative effects on a community's quality of life.²⁵⁷

Vector-borne disease. Vectors of human disease are typically species of mosquitoes and ticks able to transmit viruses, bacteria, or parasites to humans.

Very low-income households. Households with incomes equal to or less than 50 percent of median family income.

Water-borne disease. Diseases caused by pathogenic microorganisms that most commonly are transmitted in contaminated fresh water. Infection commonly results during bathing, washing, drinking, preparation of food, or consumption of food thus infected.

Zoning variance. An exception to specific terms of the zone for a given parcel.

Appendix B: Housing HIA Literature Search Methodology

In conducting the literature review, the National Center for Healthy Housing (NCHH) first identified HIAs related to housing policy and practice conducted between 2002 and 2013 using two comprehensive databases:

- The directory of complete and current HIAs, maintained by the Health Impact Project (<http://www.healthimpactproject.org/resources/reports>).
- The UCLA Health Impact Assessment Clearinghouse (<http://www.hiaguide.org>), a product of the UCLA-HIA Project.

NCHH identified relevant reports through two searches, one of HIAs categorized in “housing” and the other of those categorized in “community development.”

To ensure that all complete HIAs relevant to housing policy and practice were included in the review, NCHH then cross-referenced the list with the HIA Gateway database maintained by Public Health England (<http://www.apho.org.uk/default.aspx?RID=44538>), using the search term “HIA/all levels/housing/United States.”

NCHH also searched Google and PubMed using the search term “Health Impact Assessment housing United States” to confirm that other relevant reports were not overlooked.

HIAs included in the literature review addressed a number of housing-related policies, including rental housing vouchers, housing inspection programs, private housing structures, and several different components of public housing developments, including number and arrangement of units and types of flooring. Elements pertaining to housing, including cost, displacement, segregation, and quality and habitability, were isolated from HIAs on the development of “complete” or “livable” communities.

When possible, components of the HIAs identified in the review included:

- Who undertook the study and the relationship between the HIA team and the housing decision-makers.
- Source of project funding.
- Housing policy or practice being reviewed.
- Health determinants and outcomes addressed, including examining any pathway diagrams describing the potential connections between the proposed action and health effects.
- Analytic methods.
- Data sources.
- Means of community engagement (surveys, focus groups).
- Major findings.
- Recommendations.
- Reporting methods.
- Monitoring and evaluation plans.
- Outcomes.
- How equity was considered and addressed.

The literature review identified a total of 52 reports, 40 of which directly assessed housing-related decisions (see the full list of these 40 HIAs in Appendix F along with their URL references). The remaining 12 were not considered in this report because they considered housing only indirectly during analysis of other matters (e.g., highway construction, pedestrian walkways in public areas, airports, waterways). (See Table 8.)

Five of the 40 HIAs considered were only partially completed at the time of this review, but they provided useful information and were included in this document. The 40 HIAs were further separated into two sub-categories: community development (n=29), and housing-specific (n=11) HIAs.

Table 8: Summary of HIAs excluded from analysis

HIA title	Decision the HIA sought to inform	Health determinant categories examined				Energy-related
		Quality	Affordability	Location	Community	
<i>HIAs Excluded from Analysis (12 HIAs):</i>						
Analyzing the Public Health Impacts of Highway Reconstruction in MA	Restoration of McGrath Highway, which would bring the highway to ground level	N	Y	N	N	N
HIA: Westerly Creek Connection	Renovate a portion of the Westerly Canal to include open green spaces, development, and a walking and biking path to promote physical activity	N	Y	Y	N	N
Zoning for Walkable Neighborhoods: A Desktop HIA‡	Desktop HIA examined the impacts of a proposed zoning classification for walkable mixed-use neighborhoods	Y	Y	Y	Y	N
Derby Redevelopment HIA	HIA that considered the health impacts of the proposed community development plans—master plan, design guidelines, budget request—and made recommendations to improve physical activity and public safety	N	Y	Y	N	N
Lowry Corridor Phase 2 HIA	HIA that addressed the health impacts of the redevelopment of a blighted urban corridor into a mixed-use, pedestrian-friendly area	N	Y	Y	Y	N
Robbinsville Pedestrian Connectivity Plan and HIA	Rapid HIA that was integrated into the planning process for the Robbinsville Pedestrian and Greenway Plans to determine the impact on physical and mental health	N	N	N	N	N
Healthy Waterways: A HIA of the City of Rochester, NY's Local Waterfront Revitalization Program	HIA that focused on how the revision of the Local Waterways Revitalization Program in 2013 may affect the health of the residents nearby, visitors to the waterfront, and the general population	Y	Y	N	Y	N
Santa Monica Airport HIA	Rapid HIA that focused on the health impacts of the Santa Monica airport activity on the surrounding community, which included nearby schools, daycare centers and residential homes	Y	N	N	N	N
SE 122nd Ave. Planning Study HIA	HIA addressed how the SE 122nd Avenue Pilot Study—a neighborhood planning study—would affect opportunities for physical activity, access to healthful foods, traffic safety, air quality, and community cohesion	N	Y	N	Y	N
South Billings Master Plan HIA	HIA on the South Billings Master Plan for long-term policy direction of Urban Renewal District and creation of a vibrant community	N	Y	Y	N	N
South Hill Neighborhood HIA	HIA to assess the potential health impacts of a proposed neighborhood redevelopment plan that included development of commercial core, low-residency multifamily residential development, office and light industrial parks, municipal park, YMCA, and community college	N	N	Y	Y	N
Sycamore Light Rail Station HIA	HIA of both land use and transportation planning that examines how future development projects, such as 300 new affordable housing units in the light rail corridor, can positively impact current and future residents of the adjacent neighborhoods	Y	Y	Y	N	N

Appendix C: Tools and Resources for Housing HIAs

Data sets to measure baseline health and housing conditions

Name and URL	Description
American Housing Survey—U.S. Census/HUD (http://www.census.gov/programs-surveys/ahs/data.html)	Current information on a wide range of housing subjects, including size and composition of the nation's housing inventory, vacancies, physical condition of housing units, characteristics of occupants, equipment breakdowns, home improvements, mortgages and other housing costs, and people eligible for and beneficiaries of assisted housing.
American Community Survey—U.S. Census (http://www.census.gov/programs-surveys/acs)	An ongoing statistical survey that samples a small percentage of the population every year and provides population and housing characteristics for communities, states, and the nation.
Behavioral Risk Factor Surveillance System—Centers for Disease Control and Prevention (CDC) (http://www.cdc.gov/brfss/)	Annual state-by-state phone survey of self-reported health outcomes (e.g., diabetes, high blood pressure, asthma) used to determine national and state disease rates.
County Health Rankings (http://www.countyhealthrankings.org)	County-by-county figures on length of life, self-reported general health, and a subset of health influences.
Economy at a Glance—Bureau of Labor Statistics (http://www.bls.gov/eag/)	Labor force and employment data by state and metropolitan areas.
Environmental Public Health Tracking (http://ephtracking.cdc.gov/showStateTracking.action)	Data on rates of illnesses that can have environmental triggers and on environmental data such as air pollution and drinking water quality from 23 states and one city; administered by CDC.
HUD Picture of Subsidized Housing—HUD (http://www.huduser.org/portal/datasets/assthsq.html)	HUD subsidized housing data by program, by geographic location from the national level to individual housing projects, and by a wide array of variables; sortable and query-ready.
Topologically Integrated Geographic Encoding and Referencing system (TIGER)—U.S. Census and ESRI http://www.census.gov/geo/www/tiger/ http://www.esri.com/data/download/census2000_tigerline/index.html	Downloadable shapefiles for GIS analyses, includes census tracts, block groups, counties, states, metropolitan areas, roadways, waterways, congressional districts, and more.
Local housing department data	Information regarding housing inspections, housing code violations and other demographics.
Local school system data	Information regarding school populations, attendance, and performance.
Local planning department data	Housing and demographic data and possibly some health data from comprehensive plans.
State and local departments of public health	Data on vital statistics (e.g., mortality rates and causes, birth rates) and specific illnesses (varies by state) and some city- or county-level information (varies by state).

Name and URL	Description
US Vital Statistics Reports—CDC (http://www.cdc.gov/nchs/nvss.htm)	Collected data from local jurisdictions on vital events (births, deaths, marriages, divorces, and fetal deaths).
WONDER—CDC (http://wonder.cdc.gov)	Online statistical tool that draws on a number of health statistical databases and allows calculation of rates of certain illnesses for states or regions.
Neighborhood-level resources	<p>Neighborhood-level housing and health data; see for example:</p> <p>The Baltimore Neighborhood Indicators Alliance, http://bniajfi.org/</p> <p>San Francisco Indicator Project, http://www.sfindicatorproject.org</p> <p>The Boston Indicators Project, http://www.bostonindicators.org/indicators/health</p> <p>City of Chicago Public Health Indicators by community, https://data.cityofchicago.org/Health-Human-Services/Public-Health-Statistics-Selected-public-health-in/iqnk-2tcu</p> <p>Philadelphia Community Health Database, http://www.chdbdata.org/</p> <p>Metro Atlanta Health Equity Atlas, http://atlantaequityatlas.com/ and Neighborhood Nexus, http://www.neighborhoodnexus.org/.</p> <p>PLAN for a Healthy L.A., http://healthyplan.la/the-health-profiles/</p> <p>Minnesota Compass, http://www.mncompass.org</p>

Analytic tools to gauge health implications of housing and community development proposals

Tool	Website	Description
Design for Health (DFH) HIA Tools	http://designforhealth.net/hia/hia-rapid-assessment/ http://designforhealth.net/hia/hia-threshold-analysis/	<p>DFH HIA Rapid Assessment—an interactive workshop that brings together stakeholders to identify and assess health impacts.</p> <p>HIA Threshold Analysis Workbook—a detailed, spreadsheet-based assessment that focuses on proven health thresholds and associations related to topics of concern to urban planners and community developers.</p>
Equitable Development Toolkit—PolicyLink	https://www.policylink.org/equity-tools/equitable-development-toolkit/about-toolkit	Online toolkit that includes 27 tools—including tools focused on affordable housing—to reverse patterns of segregation and disinvestment, prevent displacement, and promote equitable revitalization.
Meridian Township, Michigan development checklist	http://advance.captus.com/planning/hia2/pdf/Module2/Ingham%20County%20Meridan%20Township%20Checklist.pdf	Simple checklist used by planners to review proposed projects and suggest design features that might support health.
San Francisco Indicator Project (formerly the Sustainable Communities Index)	http://www.sfindicatorproject.org/resources	Comprehensive, open-source system of more than 100 measures of community features such as transportation, housing, services, and economy, with data on their links to health.
UCLA HIA Screening/Scoping Checklist	http://www.ph.ucla.edu/hs/health-impact/training/pdfs/UCLA_HIA_checklist.pdf	Checklist of health determinants, including many related to housing quality and community factors, for use in early HIA steps.

Public health, housing, and community development professional networks

Resource	Description
Planning and Community Health Center—American Planning Association (https://www.planning.org/nationalcenters/health/)	Initiative that supports the integration of health into planning practice.
Association of State and Territorial Health Officials (http://www.astho.org/Programs/Environmental-Health/Built-and-Synthetic-Environment/Health-Impact-Assessments/Health-Impact-Assessments)	Organization that coordinates health impact assessment work among states.
Built Environment and Public Health Clearinghouse—Georgia Tech (http://www.bephec.gatech.edu)	University program that provides training resources at the university and professional levels and is a source for relevant news on health and place.
Build Healthy Places Network (http://www.buildhealthyplaces.org)	Initiative that catalyzes and supports collaboration across the health and community development sectors. It houses extensive resources, metrics, and tools to facilitate partnerships between community development and public health.
CDC Healthy Community Design Initiative (http://www.cdc.gov/healthyplaces/healthy_comm_design.htm)	Longstanding initiative that provides grants and tools and other resources for those working at the intersection of the built environment and public health.
Health Impact Project (a collaboration of the Robert Wood Johnson Foundation and The Pew Charitable Trusts) (www.healthimpactproject.org)	National center that supports health impact assessments, provides technical assistance and training, holds conferences, and provides resources to build health into decisions in housing, community development, and other sectors and maintains a comprehensive database of U.S. health impact assessments.
National Association of County and City Health Officials (http://www.naccho.org/topics/environmental/health-impact-assessment)	Association that coordinates health impact assessment work among the nation's local health departments.
National Neighborhood Indicators Partnership—Urban Institute (http://www.neighborhoodindicators.org/)	Collaboration of the Urban Institute and local partners in 35 cities to further the development and use of neighborhood-level information systems for community building and local decision-making; website provides information about how partners are using data sources in local communities.
National Network of Public Health Institutes (NNPHI) (https://nnphi.org/relatedarticle/nnphis-member-institutes-as-national-health-impact-assessment-hia-training-and-capacity-building-centers/#)	A national center that supports a network of nonprofit public health institutes, has an HIA initiative, and has helped develop a network of state-based projects that can collaborate and provide data and technical assistance for integrating health into decisions in sectors such as community development.
Society of Practitioners of Health Impact Assessment (SOPHIA) (http://www.hiasociety.org)	A network of health impact assessment practitioners dedicated to HIA practice as a way to reduce health inequities and improve health.
UCLA HIA Project (http://www.ph.ucla.edu/hs/health-impact/)	A joint endeavor of Partnership for Prevention and researchers at the UCLA School of Public Health that aims to assess the feasibility of HIA and develop prototypes that demonstrate methodologies, eventually enabling HIA to contribute to more informed decision-making about public policies impacting health in the U.S.; manages the UCLA HIA Clearinghouse Learning and Information Center. (http://www.hiaguide.org)

Appendix D: Agencies and Organizations That Have Conducted Housing HIAs

Organization	Description	Website	Housing HIAs authored
Public agencies			
San Fran. Dept. of Public Health Program on Health, Equity, and Sustainability	Interdisciplinary team that works in partnership with residents, public agencies, and private organizations to advance healthy environments and social justice.	http://www.sfhealthequity.org/	Public Housing Carpet Policy Forum; Trinity Plaza Apartment Focus Group Results; Executive Park Subarea Plan HIA; Healthy Hope SF; Impacts on Community Health of Area Plans for the Mission, East SoMa, and Potrero Hill/ Showplace Square; Jack London Gateway Rapid HIA
Ohio Housing Finance Agency	Facilitates development, rehabilitation, and financing of low- to moderate-income housing. The Agency's programs help first-time homebuyers, renters, senior citizens, and others find quality affordable housing that meets their needs.	https://www.ohiohome.org/about.aspx	HIA: Alignment of Affordable Housing Physical Inspection Policies of Ohio
Benton County Health Dept. Health Promotion Division	Policy initiatives that improve the built environment and promote active living and access to healthy, fresh affordable food; coordination of Benton County Community Health Assessment and Community Health Improvement process; Healthy Communities Coalition to monitor community projects and provide input into obesity and tobacco prevention activities; capacity and leadership development among low-income, minority, and rural community members to participate in health policy initiatives.	https://public.health.oregon.gov/HealthyEnvironments/TrackingAssessment/HealthImpactAssessment/Pages/completedhias.aspx	HIA of Accessory Dwelling Unit Policies in Rural Benton County, OR
Design for Life, Town of Davidson, NC	An initiative to foster healthy community design through the use of health impact assessments, public participation, and collaborative efforts in Davidson, the Charlotte-Mecklenburg region, and NC.	http://www.healthimpactnc.com/	HIA of SB731: Zoning/ Design and Aesthetic Controls; Universal Design in Single Family Housing: An HIA in Davidson, NC
Columbus Public Health, Healthy Places Program	Healthy Places' program mission is to enhance healthy and active living, through policies and practices that impact how we build the places we live, work, and play. Program works to create a built environment that encourages walkability, bikeability, and physical activity through community design processes such as land use and transportation planning.	http://columbus.gov/publichealth/programs/healthy-places/	2007 Northeast Area Plan HIA

Organization	Description	Website	Housing HIAs authored
Public agencies			
MN Climate and Health Program, MN Dept. of Health Environ. Impacts Analysis Unit	The MN Climate and Health Program is helping to understand the impacts of changes occurring in MN's climate and prepare local public health and the public for the risks to health and well-being.	http://www.health.state.mn.us/divs/climatechange/	Divine Mercy Development HIA
Humboldt County Public Health Branch, CA	Public Health Nursing services to better the health of families and individuals; Nurse-Family Partnership, an evidence-based public health program for low-income mothers pregnant with their first child; women, infants, and children supplemental nutrition program; maternal child and adolescent health programs.	http://www.humboldt.gov/1101/Public-Health-Services	Humboldt County General Plan Update HIA
Riverstone Health	Provides vital services including public health, personal health, and educational services. Actively engaged in community health initiatives, issues, and concerns. Serves communities by providing HELP—Health, Education, Leadership, and Protection. Combines the strength of government with the power of vision in an entrepreneurial model that transforms perceptions of public health.	http://www.riverstonehealth.org	Yellowstone County/City of Billings Growth Policy HIA
Denver Housing Authority	A quasi-municipal corporation with a portfolio of over 11,000 units and housing choice vouchers, providing affordable housing to more than 26,000 very-low-, low-, and middle-income individuals representing over 10,000 families, creating a vibrant, revitalized, sustainable, transit-oriented, and mixed-income community of choice.	http://www.denverhousing.org	HIA South Lincoln Homes
Clark County Public Health, Vancouver, WA	Public Health's long-term vision is "Active, healthy families and people of all ages, abilities and cultures living, playing and working in thriving communities." Public Health provides services that prevent and control the spread of diseases; prepares for natural and manmade disasters; ensures safe food, water, and air; promotes wellness and good nutrition; collects and assesses data on community health; issues birth and death records; reaches out to at-risk and vulnerable populations to improve access to health services; and supports healthy development of first-time moms and their children.	http://www.clark.wa.gov/public-health/	Technical Report 9: Highway 99 Sub-Area Plan HIA
Community organizations			
Strengthening Rural Families, Benton County, OR	Programs that serve communities of rural Benton County, including Alsea, Philomath, Blodgett, Kings Valley, Monroe, and Philomath. With locally based community coordinators in each area, SRF promotes development of healthy families through education, advocacy, coalition building, and community connections.	http://www.ruralfamilies.org/	HIA of Accessory Dwelling Unit Policies in Rural Benton County, OR

Organization	Description	Website	Housing HIAs authored
Community organizations			
Crittenton Women's Union	Crittenton Women's Union helps low-income women achieve economic independence, combining direct service programs, independent research, and public advocacy.	http://www.liveworkthrive.org/	LIHEAP HIA
Citizens Utility Board	Nonprofit, nonpartisan organization that represents the interests of residential utility customers across the state, intervening in ratemaking proceedings before the Illinois Commerce Commission, in the courts, and before other public bodies; providing consumers with information and assistance regarding their utility companies; and working for lower rates and better service from the state's investor-owned electric, gas, and telephone companies.	http://www.citizensutilityboard.org/	The HIA of the Commonwealth Edison AMI Deployment (AMI HIA)
South of Market Community Action Network, San Francisco, CA	A multiracial community organization that educates, organizes, and mobilizes immigrant and low-income residents to fight for improvements to their quality of life by engaging in the decision-making process that affects their neighborhood and greater San Francisco. SOMCAN provides direct services and organizes low-income, immigrant youth and families who are most at risk of displacement as a result of the neighborhood's increasing development activities, empowering immigrant families to challenge their existing conditions and to be in the forefront in confronting these issues.	http://www.somcan.org/	Trinity Plaza Focus Group Results
Los Angeles Community Action Network	LA CAN's goals are to organize and empower community residents to work collectively to change the relationships of power that affect our community; to create an organization and organizing model that eradicate the race, class, and gender barriers that are used to prevent communities from building true power; and eliminate the multiple forms of violence used against and within our community to maintain status quo.	http://cangress.org/	Rapid HIA of the Proposed Farmer's Field Development
ISIAIH	Faith-based community organization with 100 member congregations, including several situated in the immediate vicinity of the Central Corridor Light Rail Transit Line. ISIAIH is a vehicle for congregations, clergy, and people of faith to act collectively and powerfully toward racial and economic equity in the state of Minnesota.	http://isaiahmn.org/	Healthy Corridors for All HIA
East Yard Communities for Environmental Justice, Long Beach, CA	EYCEJ is an environmental health and justice nonprofit organization working toward a safe and healthy environment for communities that are disproportionately suffering the negative impacts of industrial pollution. EYCEJ promotes direct democratic decision-making and taking collective action for safe and healthy communities where we live, work, learn, and play.	http://eycej.org/	Rapid HIA of the Long Beach Downtown Plan

Organization	Description	Website	Housing HIAs authored
Community organizations			
Beyond Housing, Pagedale, MO	Beyond Housing began with actual houses and housing preservation, focusing on quality and stability to give people a place to start. Beyond Housing is a community development organization that works in defined geographies like the Normandy School District in order to focus our resources where we can have the greatest impact.	http://www.beyondhousing.org	Page Avenue HIA
Phoenix Revitalization Corporation	PRC is a nonprofit community development corporation dedicated to the revitalization of neighborhoods by facilitating community improvement projects, and the maintenance and creation of low-income and workforce housing. An emphasis is placed on the revitalization of Central City South, a community located immediately south of the Phoenix downtown business district and the Arizona State Capitol Mall.	http://www.phxrevitalization.org	Coffelt-Lamoreaux Public Housing Redevelopment HIA
West Oakland Environmental Indicators Project	A resident-led, community-based environmental justice organization dedicated to achieving healthy homes, healthy jobs, and healthy neighborhoods for all who live, work, learn, and play in West Oakland, California. Through our Community-Based Participatory Research projects and our Collaborative Problem-Solving Model, we build community empowerment and help local residents to achieve their own vision for healthy neighborhoods.	http://www.woeip.org/	Jack London Gateway Rapid HIA
Nonprofit organizations			
Human Impact Partners	HIP both conducts HIAs and works to build the capacity of others to do so, with a focus on communities facing health inequities. HIP has conducted HIAs on the local, state, and federal levels—with experience in communities across the country, from California to Maine. Working in direct partnership with communities, public health and other agencies, and academic experts, HIP helps pinpoint tailored strategies to bring diverse stakeholders to the table, navigate the practical steps of conducting HIAs, and determine how to understand and use their results so that the health needs of the community are met. Through training and mentorship, we also build the capacity of impacted communities and their advocates, workers, public agencies, and elected officials to conduct HIAs and use results to take action.	http://www.humanimpact.org	The Rental Assistance Demonstration (RAD) Project HIA; Concord Naval Weapons Station Reuse Project HIA; Rapid HIA of the Proposed Farmer's Field Development; Humboldt County General Plan Update HIA; Rapid HIA of the Long Beach Downtown Plan; Pittsburg Railroad Avenue Specific Plan HIA; Long Beach Housing Element HIA; Pathways to Community Health: Evaluating the Healthfulness of Affordable Housing Opportunity Sites Along the San Pablo Avenue Corridor Using HIA; Jack London Gateway Rapid HIA

Organization	Description	Website	Housing HIAs authored
Nonprofit organizations			
Advancement Project	Multiracial civil rights organization tackling inequity with innovative strategies and strong community alliances. It combines law, communications, policy, and technology to create workable solutions and achieve systemic change. Drawing from its work as first responders to the housing crisis in post-Katrina New Orleans, Advancement Project's Inclusive Development project strives to help lay the foundation for a movement to address the national public housing crisis that has displaced thousands of families in low-income communities around the country.	http://www.advancementproject.org	The Rental Assistance Demonstration (RAD) Project HIA
National People's Action	Network of community power organizations from across the country that works to advance a national economic and racial justice agenda, with over 200 organizers working to unite everyday people in cities, towns, and rural communities. HJM's goals are to preserve the social safety net that public and publicly subsidized housing provides for people; transform all forms of social housing into vibrant, sustainable communities; create more opportunities for low-income residents to develop cooperative economies in their communities; create new and rehabilitate existing social housing units to provide low-income residents living in social housing the opportunity to obtain living-wage job training and placement; and directly confront racialization and criminalization of people living in social housing. HJM has been heavily involved in discussions and activism around RAD and its predecessors.	http://www.npa-us.org	The Rental Assistance Demonstration (RAD) Project HIA
Oregon Public Health Institute	Serves as an independent catalyst and convener among local and state public health agencies, private entities, and community-based organizations; identifies and seizes opportunities for public policy and systems change, advocating to prevent and resolve health problems and address unmet community health needs; researches and disseminates best practices and innovative policy approaches; and acknowledges accomplishments of current and emerging public health leaders.	http://www.ophi.org	Rental Housing and Health Equity in Portland, OR: A HIA of the City's Rental Housing Inspections Program
City of Ramsey, MN	Our City staff and City Council are working to give order and control over future growth to continually provide employment opportunities to citizens and provide for the future with a steady tax base. City is working toward a retail/commercial area that includes restaurants, shopping, entertainment, and employment opportunities.	http://www.cityoframsey.com	City of Ramsey HIA

Organization	Description	Website	Housing HIAs authored
Nonprofit organizations			
Legal Aid Foundation of Los Angeles	LAFLA seeks to achieve equal justice for poor and low-income people in greater LA. LAFLA's team of attorneys, paralegals, and support staff work in the community, providing direct representation, offering counsel and advice, providing referrals, and educating the community about their legal rights through workshops and seminars.	http://www.lafla.org/	Rapid HIA of the Proposed Farmer's Field Development; Long Beach Housing Element HIA
Physicians for Social Responsibility Los Angeles	PSR-LA is a physician and health advocate membership organization working to protect public health from nuclear threats and environmental toxins. Representing over 5,000 physicians, health professionals, and concerned residents in Southern California, we inform the medical community and policymakers about toxic threats, promote safer practices, and strengthen local community organizations to engage in meaningful public health and environmental advocacy.	http://www.psr-la.org/	Rapid HIA of the Proposed Farmer's Field Development
PolicyLink	A national research and action institute advancing economic and social equity by lifting up what works.	http://www.policylink.org/	Healthy Corridors for All HIA
TakeAction Minnesota	Statewide organization of individual and organizational members committed to achieving social, racial, and economic justice through community organizing, coalition building, issue campaigns, and civic engagement.	http://www.takeactionminnesota.org/	Healthy Corridors for All HIA
Californians for Justice	CFJ's members develop the skills and leadership necessary to become part of the next generation of grassroots civil rights leaders. Our goal is for CFJ members to learn the practical skills and political analysis needed to win real change. CFJ organizes hundreds of young people, parents, and community members to create meaningful reforms to public education across the state and in our local school districts.	http://caljustice.org/	Rapid HIA of the Long Beach Downtown Plan
Local Initiatives Support Corporation Phoenix	Focus on Transit Oriented Development began in 2011, when LISC made a \$10 million lending commitment to the Sustainable Communities Fund to support development along the light rail corridor in Phoenix, Tempe, and Mesa. To date, \$5 million has been allocated to fund the preservation or creation of 375 units of affordable or workforce housing.	http://programs.lisc.org/phoenix	Coffelt-Lamoreaux Public Housing Redevelopment HIA
Academic institutions			
Boston University School of Medicine	A leader in medical education and research, BUSM provides an exceptional educational environment for students interested in pursuing careers as physicians or scientists exploring basic science, clinical investigation, or public health- and health services-oriented research. Located in Boston's historic South End, the School shares a campus with Boston University School of Public Health (SPH), Boston University Henry M. Goldman School of Dental Medicine (GSDM), Dr. Solomon Carter Fuller Mental Health Center, and Boston Medical Center (BMC), our primary teaching hospital.	http://www.bumc.bu.edu/busm/	Unhealthy Consequences: Energy Costs and Child Health: A Child HIA of Energy Costs and the Low Income Home Energy Assistance Program (LIHEAP HIA); Affordable Housing and Child Health: A Child HIA of the Mass. Rental Voucher Program

Organization	Description	Website	Housing HIAs authored
Academic institutions			
McCormack Center for Social Policy at the University of Massachusetts Boston	Research and evaluation partner of choice for policy makers and philanthropists concerned with the structural causes of poverty, focusing on improving the lives of those outside the circles of power. The Center for Social Policy creates avenues of understanding for social issues, building organizational capacity to improve planning, processes, and partnerships. Through our Reshaping Poverty Policy agenda, our work produces solid evidence and advances viable policy options that address poverty, homelessness, and workforce development.	http://www.umb.edu/csp	LIHEAP HIA; Affordable Housing and Child Health: A Child HIA of the Mass. Rental Voucher Program
Heller School for Social Policy and Management, Brandeis Univ.	As a graduate school and research institution, the Heller School has pioneered in a variety of policy areas, including health; mental health; substance abuse; children, youth, and families; aging; international and community development; developmental disabilities; philanthropy; and work and inequalities. Mission is to drive positive social change through research, education, and public engagement that inform policies and programs designed to address disparities in well-being and promote social inclusion in a sustainable way.	http://heller.brandeis.edu/	LIHEAP HIA; Affordable Housing and Child Health: A Child HIA of the Mass. Rental Voucher Program
Harvard School of Public Health	The School produces knowledge through research, reproduces knowledge through higher education, and translates knowledge into evidence that can be communicated to the public, policy makers, and practitioners to advance the health of populations. Our objectives are to provide the highest level of education to public health scientists, practitioners, and leaders; foster new discoveries leading to improved health for the people of this country and all nations; strengthen health capacities and services for communities; and inform policy debate, disseminate health information, and increase awareness of health as a public good and fundamental right.	http://www.hsph.harvard.edu/	LIHEAP HIA; Affordable Housing and Child Health: A Child HIA of the Mass. Rental Voucher Program
Dept. of Maternal and Child Health, Boston Univ. School of Public Health	Maternal and Child Health trains students for careers that improve the health of women, children, youth, and entire families and communities, while addressing health inequities and the systems and policies that contribute to family health. Combines an understanding of human development and the social determinants of health as they accumulate and interact across the life span and across generations. Through education and research, MCH faculty give special attention to the impact of gender, race and racism, and culture on people's health, and we recognize that the strengths of individual and communities must be harnessed to create comprehensive solutions. Our faculty conduct research, education, and service in partnership with community-based organizations, advocates, and local, national, and international government agencies.	http://www.bu.edu/sph/academics/departments/community-health-sciences/concentration-in-maternal-a-child-health/	Affordable Housing and Child Health: A Child HIA of the Mass. Rental Voucher Program

Organization	Description	Website	Housing HIAs authored
Academic institutions			
Ohio State Univ. College of Public Health	Through interdisciplinary research, we seek to understand the forces that affect public health and the delivery of health services. We prepare the next generation of public health practitioners, health care managers, and scholars. Collaborating with government agencies and other partners, we develop solutions to current and emerging public health problems.	http://cph.osu.edu/	HIA: Alignment of Affordable Housing Physical Inspection Policies of Ohio
Georgia Tech Center for Quality Growth and Regional Development	As an applied research center, CQGRD develops analytic tools and solutions that communities can implement in order to foster quality growth and development, both within the Atlanta area and as a national and international model. Quality growth is the creation of more livable, sustainable communities. CQGRD works with others to create and promote a new vision and form for cities, suburbs, regions, and megaregions, serving communities—particularly those in the southeastern U.S.—through research, education, and extensive outreach.	http://www.cqgrd.gatech.edu/	Aerotropolis Atlanta Brownfield Redevelopment HIA; Atlanta BeltLine HIA
UC Berkeley Health Impact Group	UCBHIG is a nonpartisan, independent collective that promotes the field of HIA through advocacy, education, research, and community outreach. Faculty from both the School of Public Health and the College of City and Regional Planning participate in UCBHIG, focusing largely on the development of qualitative and quantitative tools for assessing the impacts associated with a variety of planning and policy decisions at the regional, state, and national levels.	https://sites.google.com/site/ucbhia/	Oak to Ninth Avenue HIA; MacArthur BART Transit Village HIA; HOPE VI to HOPE SF San Francisco Public Housing Redevelopment HIA
School of Medicine, Washington University in St. Louis	Committed to advancing human health throughout the world. Faculty members are actively engaged in the local, regional, and global community, with efforts to improve human health that range from studying and remedying disparities in health care, to educating local populations on disease risk, to effecting change in public health policy. Multidisciplinary efforts, such as those coordinated through the Institute for Public Health, are leading efforts to positively impact human health.	http://medicine.wustl.edu/	Page Avenue HIA

Organization	Description	Website	Housing HIAs authored
Academic institutions			
<p>Washington University in St. Louis:</p> <p>Sam Fox School of Design and Visual Arts</p> <p>George Warren Brown School of Social Work</p> <p>Center for Social Development</p>	<p>Sam Fox School of Design and Visual Arts: Digital technologies have transformed the way we live and the way we create, increasing the potential for interaction and communication as boundaries between the global and the local disappear more rapidly. The Sam Fox School recognizes that design and the visual arts play significant roles in inspiring solutions to social and environmental concerns, and has formulated an educational model that is flexible and attuned to the global realities of our complex century.</p>	<p>http://samfoxschool.wustl.edu/</p>	<p>Page Avenue HIA</p>
<p>George Warren Brown School of Social Work: Educate and prepare future social work and public health leaders in areas of policy, practice, and research; pioneer research and apply results to impact policy and practice locally, nationally, and internationally; and collaborate with organizations to use evidence to improve access to and quality of social services and to address social and economic justice.</p>	<p>http://brownschool.wustl.edu/Pages/Home.aspx</p>		
<p>Center for Social Development: Mission is to create and study innovations in public policy that enable individuals, families, and communities to formulate and achieve life goals, and contribute to the economy and society. Through innovation, research, and policy development, CSD makes intellectual and applied contributions in social development theory, evidence, community projects, and public policy.</p>	<p>http://csd.wustl.edu/Pages/default.aspx</p>		
<p>School of Public Health, St. Louis University</p>	<p>School improves health and well-being locally, nationally, and internationally through unique interdisciplinary approaches that inspire students, generate knowledge, and engage individuals and communities. Members of the St. Louis University College for Public Health & Social Justice community are called to action to be men and women for and with others. We contribute to health and well-being for all by balancing the ideals of ability, community, tenacity, ingenuity, opportunity, and necessity.</p>	<p>http://www.slu.edu/publichealth.xml</p>	<p>Page Avenue HIA</p>

Organization	Description	Website	Housing HIAs authored
Academic institutions			
Center to Eliminate Health Disparities (CEHD), University of Texas Medical Branch	The CEHD pursues health equity guided by the values of respect for science and research, social justice, integrity, respect for people, diversity, and community solidarity. CEHD uses several approaches to organizing its work, including addressing the health system, but also the causes of health inequities, recognizing that social determinants of health affect people's health outcomes less through health care services than through other factors such as income, neighborhood and living conditions, racism, and other factors. Much of CEHD's work is focused on local research-to-action projects that have the potential to be scaled up, developing tools including user-friendly online tools, guidelines and workbooks, training videos, and documentaries of processes we have engaged. The CEHD staff undertake work in the context of testing interventions or working with partners for change, collaborating with partners who have a stake in the issues as well as those engaged in policy development and planning.	http://www.utmb.edu/cehd/	Improving Health Through Housing and Neighborhood Development in Galveston, TX: Use of HIA to Develop Planning Tools and Coordinated Community Action
Georgia Health Policy Center, Andrew Young School of Policy Studies, Georgia State University	The Andrew Young School of Policy Studies strengthens communities across the globe through policy research, scholarship, public engagement, and the development of leaders.	http://aysps.gsu.edu/departments/georgia-health-policy-center/	Improving Health Through Housing and Neighborhood Development in Galveston, TX: Use of HIA to Develop Planning Tools and Coordinated Community Action
Dept. of Sociology, Georgia State University	Committed to excellence in the advancement of knowledge about social forces, social behavior, and social change. Carries out the University's trifold mission of offering educational opportunities to both nontraditional and traditional students, engaging in high-quality research on important topics, and maintaining external linkages that coordinate the efforts of the university with those of the community.	http://www2.gsu.edu/~wwwsoc/	Improving Health Through Housing and Neighborhood Development in Galveston, TX: Use of HIA to Develop Planning Tools and Coordinated Community Action
Other organizations			
Abt Associates	Abt Associates is a mission-driven, global leader in research and program implementation in the fields of health, social and environmental policy, and international development. Provides governments, businesses, and private organizations with the research, technical assistance, and consulting services.	http://www.abtassociates.com/	LIHEAP HIA
National Center for Medical-Legal Partnerships	The National Center for Medical-Legal Partnership convenes national partners and local practitioners in the health care, public health and legal fields. Convenes learning networks, fellowships, and an annual summit; hosts monthly webinars; creates toolkits to support medical-legal partnerships in the field; and develops resources to help community health centers, children's hospitals, and civil legal aid offices coordinate care.	http://medical-legalpartnership.org/national-center/	AMI HIA

Organization	Description	Website	Housing HIAs authored
Other organizations			
Energy Programs Consortium	The EPC fosters coordination and cooperation among state and federal agencies in the areas of energy policy and program development. EPC is a joint venture of the National Association of State Community Services Programs, representing state weatherization and community service programs directors; National Association of State Energy Officials, representing state energy policy directors; National Association of State Regulatory Utility Commissioners, representing state public service commissioners; and National Energy Assistance Directors' Association, representing state directors of the Low-Income Home Energy Assistance Program.	http://www.energyprograms.org/	AMI HIA
Humboldt Partnership for Active Living (HumPAL)	HumPAL is a multidisciplinary effort to address the relationship of land use choices, community design, and public health by implementing small projects designed to increase physical activity; prioritizing use of scarce resources; and analyzing and addressing related land use policy issues. Partnership finds innovative, cost-effective ways to improve services for the most at-risk populations in the county, including professional leaders from traffic, public works, and planning departments, County Public Health, Humboldt State University, non-motorized transportation planners and activists, nutrition and education advocates and service providers, senior advocacy organizations, and members of neighborhood groups.	http://www.humpal.org	Humboldt General Plan Update HIA
Catalyze Research and Consulting, LLC	Provide strategic support services to government, nonprofit organizations and consulting firms in their community development initiatives. Apply a diverse set of skills and expertise in people-place relations, including project management, health impact assessments, participatory research, and report writing, into tangible strategies and policy that support healthy communities.	http://www.catalyzeresearch.com/	Coffelt-Lamoreaux Public Housing Redevelopment HIA
EnviroHealth Consulting, Denver, CO	EnviroHealth Consulting integrates public health goals and policies into land use and transportation planning, assisting local governments; residents; public health, planning, and transportation organizations; planning firms; foundations; and national organizations with planning, policy, and program development and building capacity and support for healthy built environments. Services include healthy community strategic planning and project management; training and workshops; HIA: Rapid (mini), Intermediate & Comprehensive; literature searches and data collection, analysis, and evaluation; community engagement; technical assistance for incorporating health language into planning documents and conducting HIAs; walkability audits and food audits; and nationwide and local surveys, mapping exercises, focus groups, and interviews.	http://envirohealthconsulting.com/index.html	HIA South Lincoln Homes

Organization	Description	Website	Housing HIAs authored
<i>Health care organizations</i>			
Family Advocacy Program, Boston Medical Center	FAP employs two staff attorneys to provide advocacy and legal services to Boston Medical Center patient families to ensure that each family is healthy. By representing individual families, training BMC staff, and working on policy change, FAP combats the adverse health effects that poverty can cause.	No page dedicated to the Family Advocacy Program. Link to BMC site: http://www.bmc.org/	Affordable Housing and Child Health: A Child HIA of the Mass. Rental Voucher Program

Appendix E: Additional Resources for U.S. Housing Programs

Public housing

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Appendix F: Web Links for Reviewed HIA Reports

Community development HIAs (29)*	
Aerotropolis Atlanta Brownfield Redevelopment HIA	http://www.pewtrusts.org/~media/Assets/2011/12/01/Aerotropolishial.pdf http://www.pewtrusts.org/~media/Assets/2011/12/01/Aerotropolishia_il.pdf
Atlanta BeltLine Health Impact Assessment	http://www.pewtrusts.org/~media/Assets/2012/03/01/AtlantaBeltline.pdf
City of Ramsey HIA	http://www.pewtrusts.org/~media/Assets/2008/04/cityoframseyHIareport.pdf
Concord Naval Weapons Station Reuse Project	http://www.pewtrusts.org/~media/assets/external-sites/health-impact-project/hip-2009-concord-naval-weapons-station-report.pdf?la=en
Divine Mercy Development HIA	http://www.pewtrusts.org/~media/Assets/2011/11/DivineMercyDevelopmentHIAFinalReportNov20115.pdf
Executive Park Subarea Plan HIA†	http://www.healthimpactproject.org/resources/document/executive-park-sub-area-plan.pdf http://www.pewtrusts.org/~media/Assets/2007/08/executiveparksubareaplan.pdf
Farmers Field Rapid HIA†	http://www.pewtrusts.org/~media/assets/2007/08/executiveparksubareaplan.pdf
Healthy Corridor for All: A Community HIA of Transit-Oriented Development Policy in St. Paul, MN	http://www.policylink.org/sites/default/files/HEALTHYCORRIDOR_SUMMARY_FINAL_20120111.PDF
Humboldt County General Plan Update HIA†	http://www.pewtrusts.org/~media/Assets/2008/03/humboldtcountygeneralplanupdate.pdf
Long Beach Downtown Plan Rapid HIA	http://www.pewtrusts.org/~media/Assets/2011/04/01/LongBeachDowntownRapidHIA.pdf
Oak to Ninth Avenue HIA	Public Review Draft: http://www.pewtrusts.org/~media/assets/2006/05/oak_to_ninth_avenue_hia.pdf
Page Avenue HIA	http://www.pewtrusts.org/~media/Assets/2010/09/PageAvenuefullHIAreport.pdf
Pittsburg Railroad Avenue Specific HIA	http://www.pewtrusts.org/~media/Assets/2008/06/pittsburgrailroadavenuetransitorienteddevelopment.pdf
Yellowstone County/City of Billings Growth Policy HIA	http://www.pewtrusts.org/en/~media/Assets/External-Sites/Health-Impact-Project/riverstonehealthyyellowstonecountygrowthpolicy.pdf
Mac Arthur BART Transit Village HIA	http://www.pewtrusts.org/~media/Assets/2007/01/macarthurbartucberkeleyhia.pdf
Long Beach Housing Element HIA	Full Report: http://www.pewtrusts.org/~media/Assets/2013/08/01/LongBeachHousingElementHIA.pdf Appendices: http://www.pewtrusts.org/~media/Assets/2013/08/01/LongBeachHousingElementHIAappendices.pdf
Coffelt-Lamoreaux Public Housing Redevelopment HIA	http://www.pewtrusts.org/~media/Assets/2013/11/01/CoffeltHIA_Finalreport_May2014.pdf
HIA South Lincoln Homes, Denver, CO†	http://www.pewtrusts.org/~media/Assets/2009/04/SouthLincolnHomesHealthImpactAssessmentReport.pdf

Community development HIAs (29)*	
Pathways to Community Health: Evaluating the Healthfulness of Affordable Housing Opportunity Sites Along the San Pablo Corridor Using HIA†	http://www.pewtrusts.org/~media/Assets/2009/08/SanPabloCorridor.pdf
Impacts on Community Health of Area Plans for the Mission, East SoMa, and Potrero Hill/Showplace Square†	http://www.pewtrusts.org/~media/Assets/2008/04/SouthofMarketMissionandPotreroShowplaceSquareAreaPlans.pdf
The Crossings at 29th and San Pedro St.—South Central Redevelopment HIA	http://www.pewtrusts.org/~media/Assets/2009/07/Crossingat29thandSanPedroSouthCentralRedvelopment.pdf
HOPE VI to HOPE SF San Francisco Public Housing Redevelopment: A HIA†	http://www.pewtrusts.org/~media/Assets/2011/01/hopevitohopesfsanfranciscopublichousingredevelopment.pdf
Jack London Gateway Rapid Health Impact Assessment	http://www.pewtrusts.org/~media/Assets/2007/05/JackLondonSeniorHousing.pdf
Technical Report 9: Highway 99 Sub-Area Plan Health Impact Assessment	http://www.pewtrusts.org/en/~media/Assets/External-Sites/Health-Impact-Project/clarkcountyhighway99subareaplan.pdf
Replacing Public Housing Units Destroyed by Hurricane Ike†‡	http://www.pewtrusts.org/en/~media/Assets/External-Sites/Health-Impact-Project/GalvestonHIAFinalSummaryReport1
Rapid HIA on the Community Center in Kings Ridge Complex, Jacksonville, Florida‡	http://www.pewtrusts.org/en/~media/Assets/External-Sites/Health-Impact-Project/RapidHIAontheCommunityCenterinKingsRidgeComplexinJacksonvilleFL.pdf
Merced County General Plan HIA§	http://www.pewtrusts.org/~media/assets/2009/11/05/mercedcountygeneralplan_hia_update.pdf?la=en
HIA of the Mid-Michigan Fair and Affordable Housing Plan§	http://www.pewtrusts.org/hip/hia-of-the-mid-michigan-fair-and-affordable-housing-plan.html http://www.midmihealthycommunities.org/pubs/ICHD-MMHAP_Housing-Plan-Assessment_Report.pdf
2007 Northeast Area Plan HIA§	http://www.pewtrusts.org/~media/assets/2007/columbusnortheast_hia_w2011eval%20(1)
Housing-specific HIAs (11)	
The HIA of the Commonwealth Edison (ComED) Advanced Metering Infrastructure (AMI) Deployment	http://www.pewtrusts.org/~media/Assets/2012/04/01/HIAofAMI.pdf http://www.healthimpactproject.org/resources/body/HIA-of-AMI.pdf
A HIA of Accessory Dwelling Unit Policies in Rural Benton County, Oregon†	http://www.pewtrusts.org/~media/Assets/2010/06/30/bentonaccessorydwellingunits.pdf http://accessorydwellings.files.wordpress.com/2011/10/benton-county-accessory-dwelling-unit_hia-final.pdf
Unhealthy Consequences: Energy Costs and Child Health; A Child HIA of Energy Costs and the Low Income Home Energy Assistance Program (LIHEAP)	http://www.hiaguide.org/sites/default/files/ChildHIAofenergycostsandchildhealth.pdf
Affordable Housing and Child Health: A Child Health Impact Assessment of the Massachusetts Rental Voucher Program‡	http://www.pewtrusts.org/~media/Assets/2005/06/01/MARentalvoucherprogramHIA.pdf
HIA SB 731: Zoning/Design and Aesthetic Controls	http://www.pewtrusts.org/en/~media/Assets/External-Sites/Health-Impact-Project/NCSB731HIAFullReport.pdf

Housing-specific HIAs (11)	
HIA of Affordable Housing Inspections in Ohio	Project Brief: http://www.pewtrusts.org/~media/Assets/2014/05/01/Ohio-Housing-Inspections_HIA_Project_Brief.pdf
Health Impacts of Privatizing Public Housing: Rental Assistance Demonstration Project Health Impact Assessment	http://www.pewtrusts.org/~media/Assets/2012/02/RADfinalradfinalreport.pdf
Rental Housing and Health Equity in Portland, Oregon: A Health Impact Assessment of the City's Rental Housing Inspections Program	Full Report: http://www.pewtrusts.org/~media/Assets/2012/08/OPHhiafinalreport829.pdf http://ophi.org/download/PDF/RHIP%20HIA_Final%20Report_web(2).pdf
Anticipated Effects of Residential Displacement on Health: Results from Qualitative Research (Trinity Plaza)§	Web page: http://www.sfhealthequity.org/elements/housing41/19-elements/housing/62-health-impacts-of-displacement-trinity-plaza-study
Universal Design in Single-Family Housing: A HIA in Davidson, NC	http://www.pewtrusts.org/en/~media/Assets/2013/11/UniversalDesignandHousinginDavidsonNC
Public Housing Carpet Policy Forum§	http://www.sfhealthequity.org/elements/housing41/19-elements/housing/61-public-housing-carpet-policy-forum

Notes:

* One community development HIA, *Baltimore Vacants to Values*, was not included in the table because it was incomplete at the time of the literature review.

† Report included analysis using either the San Francisco Indicator Project's indicators or Healthy Development Checklist.

‡ Report was identified as a rapid or desktop HIA.

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