There's No Place Like Home: Reshaping Community Interventions and Policies to Eliminate Environmental Hazards and Improve Population Health for Low-Income and Minority Communities

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Introduction

Substandard housing and environmental conditions threaten the health and well-being of individuals residing throughout the United States. Empirical evidence on the relationship between housing and health has increased exponentially.[1] However, despite the growth in research, residents continue to be exposed to environmental health hazards. Minorities and people in poverty are exposed to environmental health hazards at a disproportionately high rate. Hazards, such as lead, mold, pest infestation, radon, and carbon monoxide, among others, threaten individual safety and health and limit one's ability to access opportunity in society. Moreover, the effects of exposure can be far-reaching.[2]

Common approaches to healthy communities and homes fail to protect residents from exposure to environmental health hazards. Federal, state, and local jurisdictions often rely on education and research, regulation of real estate transactions, heightened standards for special populations, enactment of minimum habitability standards, hazard mitigation, and community-level interventions. Taken together, these approaches are fragmented, reactive

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[1] *See* World Health Org., International Workshop on Housing, Health and Climate Change: Developing Guidance For Health Protection in the Built Environment—Mitigation and Adaptation Responses (Oct. 13, 2010), http://www.who.int/hia/house_report.pdf [https://perma.cc/RK8X-NNYR].

[2] *See generally* Emily A. Benfer, *Contaminated Childhood: The Chronic Lead Poisoning of Low-Income Children and Communities of Color in Federally Assisted Housing*, 41 Harv. Envtl. L. Rev. (forthcoming 2017); U.S. Gov't Accountability Office, GAO-73-577, Lead and Children's Health 11 (2007) [hereinafter Lead and Children's Health].

rather than preventive, and under-resourced. As a result, they are inadequate to prevent negative health consequences that accrue to residents.

This article analyzes the relationship between policies governing healthy communities and housing and health outcomes for residents. Part I discusses how environmental and housing conditions affect community and individual health, with a particular focus on conditions that cause lead poisoning, asthma and respiratory distress, and cancer. Part II examines current federal, state, and local approaches to healthy housing policy, including interventions directed at individual housing units as well as the community at-large. This part also analyzes the limitations of these policies that prevent residents from attaining good health. Part III offers recommendations to improve health outcomes for individuals and communities.

I. Overview of the Environmental and Housing Conditions Affecting Individual & Community Health

It is widely accepted that there is more to health than health care.[3] Only ten to twenty percent of health is related to access to care and quality of health care services.[4] The remaining determinants of health include social, economic, and environmental factors.[5] "We literally embody, biologically, the societal and ecological conditions in which we grow up and develop and live."[6] The environmental factors affecting individual and community health include conditions of the home, hazards in the community, and lack of affordable decent housing. These factors disproportionately affect minorities and people with low socioeconomic and minority status.

A. The Home as a Predictor of Individual Health

The home can have a significant impact on individual health. On average, the majority of Americans spend "90 percent of their time indoors, and two-thirds of that time is spent in the home."[7] Children spend even more time in the home and are more vulnerable to household hazards.[8] Especially in light of the extensive time spent in the home, good health outcomes de-

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[3] Sandra Braunstein & Risa Lavizzo-Mourey, *How the Health and Community Development Sectors Are Combining Forces to Improve Health and Well-Being,* Health Aff. 30, No. 11 at 2042.

[4] *See* Tyler Norris & Ted Howard, Can Hospitals Heal America's Communities? "All in for Mission" is the Emerging Model for Impact 3, Democracy Collaborative (2015); *see also* J. M. McGinnis et al., *The Case for More Active Policy Attention to Health Promotion*, 21 Health Aff., 78, 83 (2002).

[5] *See* McGinnis, *supra* note 4, at 79–80.

[6] Harvard T.H. Chan School of Public Health, *Racism-Induced Stress Linked with High Black Infant Mortality Rates* (2017), https://www.hsph.harvard.edu/news/hsph-in-the-news/racism-induced-stress-black-infant-mortality/ [https://perma.cc/DPA5-DMAH].

[7] *See* Robert Wood Johnson Found., Issue Brief 7, Exploring the Social Determinants of Health: Housing and Health 1 (2011).

[8] *See id.*

pend on the safety and physical conditions of a home.[9] According to former Surgeon General Steven K. Galson, "A healthy home is sited, designed, built, renovated, and maintained in ways that support the health of residents."[10] In contrast, substandard and inadequate housing can result in health problems, including infectious and chronic disease, injuries, and permanent disability.[11]

Thirty-five million, or forty percent of, metropolitan homes in the United States have one or more health and safety hazards.[12] Two million people in the United States live in severely inadequate homes that lack heat, hot water, electricity or maintenance of structural defects and problems.[13] Health hazards in the home may include indoor air quality, water quality, the presence of chemicals, structural safety, infestations, water leaks, roofing problems, damaged interior walls, and other factors that affect health outcomes.[14] Indoor environmental health hazards, which include a variety of health-harming agents including dust (lead, mold, pet and pest allergens, particulate matter, and insects), gas (smoke, radon, carbon monoxide), and water (moisture and polluted water sources), pose particular risks to the health of residents. Frequently, multiple health and safety hazards exist in residences and substandard homes and neighborhoods tend to cluster together,[15] compounding the risk of adverse health outcomes for occupants.[16]

On average, poor conditions affect low-income renters more than other populations. "[One] in ten poor households nationally live in inadequate housing. . . . Low-income households may be unable to afford expensive improvements, and renters may fear retaliation from their landlords if they report problems or seek to have them addressed."[17] Rental properties have a greater prevalence of health harming conditions than owner-occupied homes.[18] Homes in the inner city tend to have a greater negative impact on health than those located outside the city.[19]

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[9] *See* Lindsay Rosenfeld et al., *Are Neighborhood-Level Characteristics Associated with Indoor Allergens in the Household?*, 47 J. ASTHMA 66, 67 (2010) ("Neighborhood-level characteristics, specifically housing code violations, appear to be related to indoor allergens, which may have implications for future research explorations and policy decisions.").

[10] U.S. DEP'T OF HEALTH AND HUMAN SERVS., OFFICE OF THE SURGEON GENERAL, THE SURGEON GENERAL'S CALL TO ACTION TO PROMOTE HEALTHY HOMES, at vii (2009) [hereinafter THE SURGEON GENERAL'S CALL TO ACTION].

[11] *See* ROBERT WOOD JOHNSON FOUND., *supra* note 7, at 2.

[12] *See* NAT'L CTR. FOR HEALTHY HOUS., STATE OF HEALTHY HOUSING: EXECUTIVE SUMMARY (2013), http://www.nchh.org/Policy/2013StateofHealthyHousing/ExecutiveSummary.aspx [https://perma.cc/NP9P-T37Q].

[13] *See* THE SURGEON GENERAL'S CALL TO ACTION, *supra* note 10, at 14.

[14] *See id.* at 5.

[15] *See* Wilhelmine D. Miller et al., *Healthy Homes and Communities: Putting the Pieces Together*, 40 AM. J. PREVENTIVE MED. 48, 49 (2011) [hereinafter Miller et al., *Healthy Homes and Communities*].

[16] *See id.*

[17] *Id.* at 51.

[18] *See* NAT'L CTR. FOR HEALTHY HOUS., *supra* note 12.

[19] Office of Healthy Homes and Lead Hazard Control, *Healthy Homes Issues: Mold*, U.S. DEPT. OF HOUS. AND URB. DEV. (Nov. 2011), http://healthyhousingsolutions.com/wp-content/uploads/2014/12/HUD_Mold_Paper_Final_11-20-12.pdf [https://perma.cc/Z5TS-FH46].

The negative health effects related to poor housing conditions include injuries,[20] mental health impairments,[21] respiratory distress, carbon monoxide poisoning,[22] gastrointestinal illness,[23] lead poisoning, and cancer, among other disabling conditions. Nearly a third of asthma cases result from substandard housing conditions, about 21,000 lung cancer deaths result from radon in homes, and over 24 million homes have lead-based paint hazards that put children at risk of lead poisoning and irreversible neurological damage.[24] The following discussion provides an overview of health effects caused by exposure to lead hazards, infestations, and radon found in the home. It is by no means exhaustive of the most relevant home health hazards, but rather illustrates the serious health consequences of common substandard housing conditions.

1. Lead Poisoning

Lead poisoning is an entirely preventable public health crisis that has resulted in permanent brain damage for millions of children throughout the twenty-first century.[25] Children, who are especially vulnerable to the effects of lead, are most often exposed to lead hazards in the home "in the form of chipping and peeling lead paint, lead dust, lead soil, and water contaminated by lead pipes, solder, or leaded sealant in wells."[26] Homes built before 1978 often contain lead-based paint and lead hazards.[27] Lead is present in approximately eighty-seven percent of homes built before 1940, sixty-nine percent of homes built between 1940 and 1959, and twenty-four percent of homes

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[20] *See* THE SURGEON GENERAL'S CALL TO ACTION, *supra* note 10, at 10. There are 18,000 residential injury deaths annually. *Id.*

[21] *See id.* at 14 (2009) ("Poor housing conditions . . . are associated with risk for poor mental health [including] aggression and withdrawal, lower general health status, and psychological distress, particularly among women and children.").

[22] *See id.* at 6 ("Carbon monoxide exposure is responsible for approximately 450 deaths and more than 15,000 emergency department visits annually; 64% of these exposures occurred in the home. Acute exposure to high levels can cause unconsciousness, long-term neurological disabilities, coma, cardiorespiratory failure, and death.") (internal citations omitted).

[23] Patrick Drayna et al., *Association Between Rainfall and Pediatric Emergency Department Visits for Acute Gastrointestinal Illness*, 118 ENVTL. HEALTH PERSP. 1439, 1439 (2010). During periods of heavy rainfall, flooding, groundwater saturation, sewer overflows, and cross-contamination in water pipes can all lead to an increased risk for acute gastrointestinal illnesses due to water quality issues. *Id.*

[24] CHANGELAB SOLUTIONS, UP TO CODE: CODE ENFORCEMENT STRATEGIES FOR HEALTHY HOUSING 5 (2015), http://www.changelabsolutions.org/sites/default/files/Up-tp-Code_Enforcement_Guide_FINAL-20150527.pdf [https://perma.cc/SM5Y-9GZ6].

[25] *See generally* Emily A. Benfer, *Contaminated Childhood: How Federal Law and Policy Failed to Prevent the Chronic Lead Poisoning of Low-Income Children and Communities of Color in the United States*, HARVARD ENVTL. L. REV. (forthcoming 2017) [hereinafter *Contaminated Childhood*].

[26] Benfer, *supra* note 2.

[27] Lead-based paint was banned from residential use in 1978. *See* CONSUMER PROD. SAFETY COMM'N, CPSC ANNOUNCES FINAL BAN ON LEAD-CONTAINING PAINT (1977), https://www.cpsc.gov/Recalls/1977/cpsc-announces-final-ban-on-lead-containing-paint [https://perma.cc/MMC3-9GNH] (discussing regulations banning the use of lead in residential paint).

built between 1960 and 1978.[28] Approximately twenty-three million homes have one or more lead-based paint hazards, and an additional thirty-eight million homes have lead-based paint that will eventually become a hazard if not maintained.[29] "Lead in the environment does not dissipate, making it likely that a developing child will inhale or ingest it and become lead poisoned."[30]

Lead poisoning has an adverse effect on most major organ systems, including the cardiovascular, reproductive, immune, nervous, digestive, kidney, and renal systems.[31] As a result, lead poisoning causes severe and permanent biological and neurological damage that affects cognition, behavior, bodily functions, growth, and development. Even at low levels of exposure, it can lead to brain damage, reduced IQ, diminished intellectual and academic abilities, academic failure, juvenile delinquency, developmental delay, and learning disabilities.[32] It can result in neurobehavioral disorders, including hyperactivity, attention deficit, and other problems. At high levels, it triggers encephalopathy, convulsions, and coma.[33] Ultimately, lead poisoning can result in death.[34]

Once a child is lead poisoned, the effect on the brain is immediate and permanent, even after the toxin is removed from the body;[35] the harm is irreparable and no interventions can reverse it.[36]

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[28] Benfer, *supra* note 2.

[29] *Id.* When the paint deteriorates or chips, it creates paint chips, lead-contaminated dust, and lead-contaminated soil that is ingested or inhaled. *See* NATIONAL SURVEY OF LEAD AND ALLERGENS IN HOUSING 1, at ES-2 (2001).

[30] Benfer, *supra* note 2.

[31] *Id.* at 9.

[32] *Id.*; *see also* Bruce P. Lanphear et al., *Cognitive Deficits Associated with Blood Lead Concentrations <10 µg/dL in US Children and Adolescents*, 115 PUB. HEALTH REP. 521, 526–28 (2000); Bruce P. Lanphear et al., *Low-Level Environmental Lead Exposure and Children's Intellectual Function: An International Pooled Analysis*, 113 ENVTL. HEALTH PERSP. 894, 897–99 (2005); Letter from Sheela Sathyanarayana, Chair, Children's Health Prot. Advisory Comm., to Gina McCarthy, Adm'r, EPA (Jan. 8, 2015), https://www.epa.gov/sites/production/files/2015-01/documents/naaqs_for_lead_letter.pdf [https://perma.cc/D4VP-GCYQ] (noting that at blood lead level of 0.1 µg/dL, lead poisoning was associated with a one-point IQ loss, as well as other neurological and other health and developmental harms).

[33] Benfer, *supra* note 2, at 9; *see also* U.S. DEP'T OF HEALTH & HUMAN SERVS., THE NATURE AND EXTENT OF LEAD POISONING IN CHILDREN IN THE UNITED STATES: A REPORT TO CONGRESS 1 (1988) [hereinafter NATURE AND EXTENT OF LEAD POISONING].

[34] Benfer, *supra* note 2; *see also* Council on Envtl. Health, *Prevention of Childhood Lead Toxicity,* 138 PEDIATRICS 1 (2016); NATURE AND EXTENT OF LEAD POISONING, *supra* note 33, at 1. Before chelation therapy was developed in the 1950s, two-thirds of children who ingested lead paint, thereby suffering convulsions and swelling of the brain, died as a result. David Rosner & Gerald Markowitz, *Building the World That Kills Us: The Politics of Lead, Science, and Polluted Homes, 1970 to 2000*, 42 J. URB. HIST. 323, 326 (2016). Chelation therapy introduces Dimercaprol and Ethylenediaminetetraacetic acid into the blood stream to bind with lead and allow it to pass from the body. *Id.*

[35] Rosner & Markowitz, *supra* note 34, at 340.

[36] Benfer, *supra* note 2, at 8–9; *see also* LEAD AND CHILDREN'S HEALTH, *supra* note 2.

2. Asthma & Respiratory Distress

Environmental factors in substandard housing conditions, such as the presence of cockroaches, rodents, mold, excess moisture, and poor air quality, can cause and contribute to severe asthma.[37] Eighty-four percent of homes in the United States have dust mite allergens,[38] eighty-two percent have mouse allergens, and sixty-three percent have detectable levels of cockroach allergens.[39] Older homes and housing units located in low-income neighborhoods have high concentrations of mouse and cockroach allergens.[40] In one study, eighty-one percent of apartments in Gary, Indiana had cockroach, mice, ants, spiders, or fly infestations.[41] In the apartments evaluated, ninety-eight percent had detectable levels of allergens.[42] In another study of several countries in Europe, Canada, and the United States, at least twenty percent of buildings had one or more signs of conditions that would cause mold.[43] Several studies conducted in the United States estimated that the prevalence of dampness or mold in houses is approximately fifty percent.[44]

Forty percent of asthma episodes are triggered by household presence of mold, dust mites, or rodents.[45] Both the Institute of Medicine and the World Health Organization Guidelines for Indoor Air Quality found sufficient evidence of an association between exposure to indoor dampness and mold and upper respiratory tract symptoms, wheezing, coughing, and asthma symptoms in sensitized people.[46] The President's Task Force on Environmental Health Risks and Safety Risks to Children cited to environmental issues in the home as one of the barriers to effective asthma care.[47]

Asthma places severe limitations on an individual's ability to engage in activities of daily living.[48] For example, asthma alone results in fourteen mil-

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[37] *See* Johnna S. Murphy & Megan T. Sandel, *Asthma and Social Justice: How to Get Remediation Done*, 41 AM. J. PREVENTIVE MED. 57, 57 (2011); *see also* THE SURGEON GENERAL'S CALL TO ACTION, *supra* note 10, at 7.

[38] THE SURGEON GENERAL'S CALL TO ACTION, *supra* note 10, at 7–8.

[39] *See id.* at 8.

[40] *See id.*

[41] *See* Changlu Wang et al., *Survey of Pest Infestation, Asthma, and Allergy in Low-Income Housing*, 31 J. COMM. HEALTH 31, 31 (2008).

[42] *Id.*

[43] *Id.*

[44] *See* WORLD HEALTH ORG., EUROPE, WHO GUIDELINES FOR INDOOR AIR QUALITY: DAMPNESS AND MOULD 7 (2009).

[45] Tracey Ross et al., *Creating Safe and Healthy Living Environments for Low-Income Families*, CTR. FOR AM. PROGRESS 3 (July 20, 2016), https://www.americanprogress.org/issues/poverty/reports/2016/07/20/141324/creating-safe-and-healthy-living-environments-for-low-income-families/ [https://perma.cc/3T3S-PHYU].

[46] *See* WORLD HEALTH ORG., *supra* note 44, at 66–67.

[47] *See id.*

[48] For a description of a typical tenant experience with mold and health effects, *see* Emily A. Benfer & Amanda M. Walsh, *When Poverty is the Diagnosis: The Effects of Living Without on the Individual,* 4 IND. J. OF L. & SOC. EQUITY 1, 6–9 (2014).

lion missed work days each year.[49] Asthma is the leading cause of school absences.[50] Each year, 10.5 million school days are missed due to asthma.[51] In 2013, asthma caused 13.8 million missed school days among children ages five to seventeen.[52] These absences, compounded by the negative effects of asthma-related oxygen depletion, can have long-term consequences on child development, behavior, and academic achievement.[53] Ultimately, asthma costs the United States $56 billion annually, including $50.1 billion in direct health care costs, including the costs of 1.8 million asthma-related visits in United States emergency departments every year.[54] Left untreated, the indoor environmental threats that cause and trigger asthma can have lifelong effects on individual health.[55]

3. Cancer

Lung cancer can be caused by exposure to environmental toxins found in the home, such as radon gas and asbestos. Radon is a colorless, odorless, radioactive gas found naturally in the earth. The natural outdoor level and target level for indoor levels of radon gas is 0.4 picoCuries per liter of air (pCi/L).[56] Although radon can be present in well water, it presents the greatest risk in soil, since it is the natural byproduct of uranium decay.[57] Since radon is most often found in soil, it enters a home through the ground, passing through cracks in the foundation and fissures in the structure of the home.[58] Radon can enter a home irrespective of the building's age or structure, and once inside the home it is trapped and accumulates, affecting occupants.[59]

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[49] *See* ASTHMA AND ALLERGY FOUND. OF AMERICA, ASTHMA FACTS AND FIGURES (2015), http://www.aafa.org/page/asthma-facts.aspx [https://perma.cc/YV32-H8YT].

[50] *See* CTRS. FOR DISEASE CONTROL AND PREVENTION, ASTHMA AND SCHOOLS (2015), https://www.cdc.gov/healthyschools/asthma/ [https://perma.cc/8YSW-Y28Y].

[51] *See* U.S. ENVTL. PROT. AGENCY, MANAGING ASTHMA IN THE SCHOOL ENVIRONMENT (Mar. 15, 2017), https://www.epa.gov/iaq-schools/managing-asthma-school-environment [https://perma.cc/PCM4-TWKG].

[52] *See* ASTHMA AND ALLERGY FOUND. OF AMERICA, *supra* note 49.

[53] *See* Joel L. Bass et al., *The Effect of Chronic or Intermittent Hypoxia on Cognition in Childhood: A Review of the Evidence*, 114 PEDIATRICS 805, 814 (2004).

[54] *See* Tiffany Wang et al., *Emergency Department Charges for Asthma-Related Outpatient Visits by Insurance Status*, 25 J. HEALTH CARE FOR POOR AND UNDERSERVED 396, 396 (2014).

[55] *See* ASTHMA AND ALLERGY FOUND. OF AMERICA, *supra* note 49.

[56] U.S. ENVTL. PROT. AGENCY, BASIC RADON FACTS (Feb. 2013), https://www.epa.gov/sites/production/files/2016-08/documents/july_2016_radon_factsheet.pdf [https://perma.cc/BSB5-TWJK].

[57] Radon is a naturally occurring radioactive gas emitted by the normal decay of uranium, which is found in most soils; some soils have higher levels than others. *See* U.S. ENVTL. PROT. AGENCY, RADON IN HOMES AND BUILDINGS, https://www3.epa.gov/radtown/radon-homes-buildings.html [https://perma.cc/83DW-G2YE] [hereinafter RADON IN HOMES AND BUILDINGS].

[58] Klaus Schmid, *Radon in Indoor Spaces, An Underestimated Risk Factor for Lung Cancer in Environmental Medicine*, 107 DTSCH ARZTEBL INT. 181, 183 (2010), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2853156/ [https://perma.cc/C3FC-F29Z].

[59] RADON IN HOMES AND BUILDINGS, *supra* note 57.

Nearly one in fifteen homes in the United States have radon levels above the U.S. Environmental Protection Agency (EPA) action level of 4pCi/L.[60] Homes in the Midwest and Eastern states are more likely to have elevated radon levels than Southern or West Coast states. In one Midwestern state, sixty percent of houses tested above the EPA's action level.[61] Occupants of single-family homes are twice as likely to know about radon and whether their house has been tested than occupants of apartments.[62]

Residents of the home breathe in the radon gas, and radioactive particles become trapped in their lungs, damaging the tissue and increasing their risk of lung cancer.[63] Radon is the second leading cause of lung cancer in the United States[64] and the leading cause of lung cancer among nonsmokers, causing an estimated 15,400 to 21,800 lung cancer deaths annually.[65]

B. Environmental Hazards in the Community

The location of a home also has an influence on individual health.[66] "[O]ne's health and life expectancy is determined more by zip code than genetic code."[67] In fact, over 131 million Americans, or forty percent, live in neighborhoods with bad air quality.[68] Communities with large concentrations of low-income and minority residents are especially likely to live near industrial areas and be exposed to high levels of pollutants.[69] These communities are less likely to be protected by zoning laws and are frequently in close proximity to waste facilities, bus depots, and highways.[70] Even low levels of pollution can increase morbidity and mortality.[71] Asthma rates increase near high pollution areas, such as freeways or factories.[72] Similarly, lead poison-

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[60] *Id.*

[61] THE SURGEON GENERAL'S CALL TO ACTION, *supra* note 6, at 7; *see also* U.S. ENVTL. PROT. AGENCY, BASIC RADON FACTS (Feb. 2013), https://www.epa.gov/sites/production/files/2016-08/documents/july_2016_radon_factsheet.pdf [https://perma.cc/BSB5-TWJK].

[62] *See* Laura S. Larsson et al., *Householder Status and Residence Type as Correlates of Radon Awareness and Testing Behaviors*, 26 PUB. HEALTH NURSING 387, 387 (2009).

[63] RADON IN HOMES AND BUILDINGS, *supra* note 57.

[64] U.S. ENVTL. PROT. AGENCY, HEALTH RISK OF RADON (Apr. 19, 2017), https://www.epa.gov/radon/health-risk-radon [https://perma.cc/5J5L-YKW5].

[65] *See* Warren E. Leary, *Research Ties Radon to as Many as 21,800 Deaths Each Year*, N.Y. TIMES (Feb. 20, 1998), http://www.nytimes.com/1998/02/20/us/research-ties-radon-to-as-many-as-21800-deaths-each-year.html?mcubz=2 [https://perma.cc/3ESV-J395].

[66] *See* Ruchi S. Gupta et al., *The Protective Effect of Community Factors on Childhood Asthma*, 123 J. ALLERGY CLINICAL IMMUNOLOGY 1297, 1297 (2009).

[67] Ross et al., *supra* note 45.

[68] *Air Pollution: Everything You Need to Know*, NAT. RES. DEF. COUNCIL (Nov. 1, 2016), https://www.nrdc.org/stories/air-pollution-everything-you-need-know [https://perma.cc/8THX-XHE2].

[69] Miller et al., *Healthy Homes and Communities*, *supra* note 15, at S51.

[70] *Id.*

[71] *Id.*

[72] Emily Benfer, *Health Justice: A Framework (and Call to Action) for the Elimination of Health Inequity and Social Injustice*, 65 AM. U.L. REV. 275, 297 [hereinafter Benfer, *Health Justice*].

ing increases in high-traffic areas and near former or existing industrial sites where lead contamination in the soil and vegetation is common.[73]

The school environment can also be a source of poor health. School bus exhaust, mold, pests, poor ventilation can be sources of asthma.[74] Even drinking water in schools may have lead contamination, especially in under-financed school systems that have few resources to remedy the problem.[75] The majority of schools, especially in low-income and minority communities, are in need of repairs or updates to improve safety and decrease harmful exposures to health and other risks.[76] Children are particularly sensitive to these unhealthy conditions.

The presence, or absence, of opportunities within a community also has an effect on health. The number of educational and economic resources across U.S. communities varies widely, contributing to the gradient seen in educational attainment, income, and job status.[77]

C. Lack of Affordable Housing

The United States has an extreme and chronic affordable housing crisis.[78] For approximately two million families with low socioeconomic status, housing is severely deficient.[79] As noted by the Joint Center for Housing Studies of Harvard University in *State of the Nation's Housing 2016*, there were "only thirty-one rental units affordable and available for every one hundred extremely low-income[80] renters, and fifty-seven rental units affordable and available for everyone one hundred very low-income[81] renters."[82] The lack of affordable housing is directly linked to poor health outcomes.[83] Due to the high cost of housing and since the "rent eats first,"[84] low-income families are forced to dedicate fewer resources to health and health care, as well as heat food and other basic needs.[85] Lack of affordable housing is associated with increased prevalence of relocation and mobility, causing a

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[73] Miller et al., *Healthy Homes and Communities, supra* note 15, at S51.

[74] *Id.*

[75] *Id.*

[76] *Id.*

[77] *Id.* at S49.

[78] Josh Leopold et al., *The Housing Affordability Gap for Extremely Low-Income Renters in 2013*, Urban Inst. (June 15, 2015), http://www.urban.org/research/publication/housing-affordability-gap-extremely-low-income-renters-2013/view/full_report [https://perma.cc/VR9L-H332].

[79] *Id.*

[80] Joint Ctr. for Hous. Studies of Harvard Univ., State of the Nation's Housing 2016, *Executive Summary*, 5 (2016), http://www.jchs.harvard.edu/sites/jchs.harvard.edu/files/son_2016_200dpi_ch1.pdf [https://perma.cc/4D2Z-VTP6] (defining extremely low-income as "earning 30 percent or less of area median").

[81] *Id.*

[82] *Id.*

[83] In 2007, roughly forty million Americans spent more than thirty percent of their income on housing expenses. Miller et al., *Healthy Homes and Communities*, *supra* note 15, at S51.

[84] *See generally* Matthew Desmond, Evicted: Poverty and Profit in the American City (2016); Miller et al., *Healthy Homes and Communities*, *supra* note 15, at S51.

[85] Miller et al., *Healthy Homes and Communities*, *supra* note 15, at S51.

disruption in schooling, health care, and social networks.[86] As a result, it is common for low-income households to experience delays in seeking preventive and routine medical care, have difficulty adhering to medication schedules, and have increased emergency department utilization.[87]

Low-income individuals and families are often hard pressed to find adequate affordable housing and may need to move often to avoid homelessness.[88] Thirty percent of low-income children live in households with housing instability, defined as "frequent moves, difficulty paying rent, spending more than fifty percent of household income on housing, being evicted or living in overcrowded conditions."[89] "People with low-household incomes, the elderly, people with disabilities, and minority populations are least likely to have access to safe, healthy, affordable, and accessible homes."[90] Housing instability is associated with delay in receipt of health care and increased emergency department use for primary care among children.[91]

People with low incomes may not be able to secure adequate, affordable homes and may be forced to move often.[92] Further, affordability does not connote the condition of the property. Therefore, even if an individual is able to identify affordable replacement housing, it may also contain hazards to health. Often, the only alternative is homelessness, a situation experienced by an estimated 2.1 million adults and 1.3 million children annually.[93] "Homelessness and housing instability contributes to adverse health outcomes, including increased asthma morbidity, tuberculosis, and developmental delay, as well as school failure and delinquency," and increased complications with ongoing illnesses and disabilities.[94] Until the United States addresses the affordable housing crisis, healthy homes and communities cannot be achieved.

D. Disproportionate Effect on Low-Income People and Communities of Color

People with low socioeconomic status and racial and ethnic minorities are exposed to environmental health risks in the home and community at a disproportionately high rate.[95] There has been a dramatic increase in the number of high-poverty neighborhoods, with the number of people living in high-poverty areas nearly doubling since 2000 from 7.2 million to 13.8 mil-

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[86] *Id.*
[87] *Id.*
[88] THE SURGEON GENERAL'S CALL TO ACTION, *supra* note 10, at 18.
[89] Wilhelmine D. Miller et al., *Healthy Starts for All: Policy Prescriptions*, 40 AM. J. PREVENTIVE MED., S19, S22 (2011) [hereinafter Miller et al., *Healthy Starts for All*].
[90] THE SURGEON GENERAL'S CALL TO ACTION, *supra* note 10, at 18.
[91] Miller et al., *Healthy Starts for All*, *supra* note 89, at S22.
[92] *Id.*
[93] *Id.*
[94] *Id.*
[95] *Id.* at S48.

lion.[96] Poverty is becoming more concentrated in communities of color. The highest rate of poverty at 24.1% is in the black population, followed by the Hispanic population at 21.4%.[97] One in four black people in poverty and one in six Hispanic people in poverty live in extreme poverty neighborhoods compared to one in thirteen of white poor.[98]

Close to half of children five and under live in low-income families.[99] For children, health outcomes are dramatically affected by income, education, and racial or ethnic group.[100] For example, children in poor families are five times more likely to be in less than optimal health, compared with families in the highest income levels.[101] Child poverty is more common among African Americans and American Indians, with thirty-eight percent of African American children and thirty-six percent of American Indian children living in poverty in 2014.[102] This is *nine* times the rate for poor white children (four percent).[103]

Low-income minority renters have a higher incidence of exposure to substandard housing conditions compared to other renters or homeowners.[104] Indoor environmental hazards are common in low-income housing and this type of exposure is common in housing developments.[105] In one study, living in public housing was associated with exposure to higher levels of cockroach and mouse allergens, which is a cause of asthma.[106] In addition, low-income minority groups are the most exposed to air pollution and toxins in their community.[107] The majority of people who live adjacent to commercial

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[96] *See* Norris & Howard, *supra* note 4.

[97] Bernadette D. Proctor et al., U.S. Census Bureau, Income and Poverty in the United States: 2015 Current Population Reports 14 (2016).

[98] Michael B. Sauter, et al., *Cities Hit Hardest by Extreme Poverty*, 24/7 Wall St., (Apr. 7, 2017), http://247wallst.com/special-report/2017/04/07/cities-hit-hardest-by-extreme-poverty-2/ [https://perma.cc/ATP6-4WPA].

[99] Proctor et al., *supra* note 97, at 10.

[100] Miller et al., *Healthy Starts for All*, *supra* note 89, at S23.

[101] *Id.*

[102] Annie E. Casey Found., Kids Count: Data Book: State Trends in Child Well-Being 16, 22 (2016), http://www.aecf.org/m/resourcedoc/aecf-the2016kidscountdatabook-2016.pdf [https://perma.cc/2AG3-RJMU].

[103] *Id.* at 19.

[104] The Surgeon General's Call to Action, *supra* note 10, at 15 (citing Joint Ctr. for Hous. Studies of Harvard Univ., *supra* note 80).

[105] Gary Adamkiewicz et al., *Environmental Conditions in Low-Income Urban Housing: Clustering and Associations with Self-Reported Health*, 104 Am. J. Pub. Health 1650, 1653 (2014).

[106] Lindsay Rosenfeld et al., *Are Building-Level Characteristics Associated with Indoor Allergens in the Household?*, 88 J. Urb. Health 14, 18 (2011).

[107] *See* Marie Lynn Miranda et al., *Making the Environmental Justice Grade: The Relative Burden of Air Pollution Exposure in the United States*, 8 Int'l J. Envtl. Res. & Pub. Health 1755, 1757 (2011); *see also* Benfer, *supra* note 2 ("[S]tudies have documented limited access to clean water in low-income communities of color. Water contamination has largely affected children of color who live in rural areas, indigenous communities, and migrant farmworker communities. Contaminated water can cause an abundance of health-related issues, particularly for young children. Depending on the contaminant, possible health problems can include waterborne diseases, blood disorders, and cancer.").

waste facilities in the United States are minorities.[108] Data spanning a twenty-year time period indicates that half of the people who live within 1.86 miles of a toxic waste facility in the United States are minorities.[109] Approximately 70% of Superfund sites, with dangerously high levels of contaminants including neurotoxins and carcinogens, are within a mile of low-income public housing or federally assisted housing that is predominately occupied by people of color.[110] Minorities are nearly twice as likely as white people to live within a "fenceline zone"[111] of an industrial facility that contributes to air pollution, safety issues, and health concerns.[112] The percentage of blacks within fenceline zones is seventy-five percent greater than for the United States as a whole, and the percentage of Latinos is sixty percent greater.[113] The poverty rate in the fenceline zones is fifty percent higher than for the United States as a whole.[114] In many cases, the siting of these communities was due to deliberate government action.[115] For example, government actors intentionally located federally assisted housing in toxic environments.[116]

The burden of environmentally induced asthma falls largely on low-income minorities and is evident in disparities in asthma epidemiology.[117] The public health field identified racial differences in asthma prevalence as an important public health concern.[118] Forty percent of the risk of asthma in

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[108] *See* Jane Kay & Cheryl Katz, *Pollution, Poverty, People of Color: The Factory on the Hill*, ENVTL. HEALTH NEWS (June 4, 2012), http://www.environmentalhealthnews.org/ehs/news/2012/pollution-poverty-and-people-of-color-richmond-day-1 [https://perma.cc/8P48-4LJZ].

[109] Jasmine Bell, *5 Things to Know About Communities of Color and Environmental Justice*, CTR. FOR AM. PROGRESS (Apr. 25, 2016), https://www.americanprogress.org/issues/race/news/2016/04/25/136361/5-things-to-know-about-communities-of-color-and-environmental-justice/ [https://perma.cc/THQ4-RLA2].

[110] Sylvia Carignan, *Majority of Superfund Sites Near Low-Income Housing*, BLOOMBERG (May 9, 2017), https://www.bna.com/majority-superfund-sites-n73014450645/ [https://perma.cc/3ALN-2UT4].

[111] A fenceline zone is an "area designated as one-tenth the distance of the vulnerability zone, in which those affected are least likely to be able to escape from a toxic or flammable chemical emergency, but not representing the outer bounds of potential harm. For example, if the vulnerability zone is a radius of 10 miles around the facility, then the fenceline zone is a radius of one mile around the facility." ENVTL. JUSTICE AND HEALTH ALLIANCE FOR CHEM. POLICY REFORM, A DEMOGRAPHIC ANALYSIS OF CHEMICAL DISASTER VULNERABILITY ZONES (2014), http://comingcleaninc.org/assets/media/images/Reports/Who%27s%20in%20Danger%20Report%20FINAL.pdf [https://perma.cc/H37E-PB64].

[112] *See* Bell, *supra* note 109.

[113] ENVTL. JUSTICE AND HEALTH ALLIANCE FOR CHEM. POLICY REFORM, WHO'S IN DANGER? RACE, POVERTY AND CHEMICAL DISASTERS 3 (2014), http://comingcleaninc.org/assets/media/images/Reports/Who's%20in%20Danger%20Report%20FINAL.pdf [https://perma.cc/6H3N-VB28].

[114] *Id.*

[115] *Id.*

[116] *See* Benfer, *supra* note 2.

[117] *See* Gupta et al., *supra* note 66, at 1301; *see also* ASTHMA AND ALLERGY FOUND. OF AM & NAT'L PHARMA. COUNCIL, ETHNIC DISPARITIES IN THE BURDEN AND TREATMENT OF ASTHMA (2005), http://www.aafa.org/media/Ethnic-Disparities-Burden-Treatment-Asthma-Report.pdf [https://perma.cc/D9PW-4T8Y].

[118] *See* Gupta et al., *supra* note 66, at 1297.

minority children is due to exposure to residential allergens that could be reduced, if not eliminated.[119] African American children are twice as likely to be hospitalized, more than twice as likely to have an emergency department visit, and four times more likely to die due to asthma than white children.[120] A study of asthma prevalence among school children in Chicago demonstrated the disparity, with African American children having asthma prevalence at twenty percent, twice that of white (ten percent) and Hispanic children (eleven percent).[121] The study revealed that as the African American population increased in a community, so did the asthma prevalence.[122] According to the President's Task Force on Environmental Health Risks and Safety Risks to Children, the percent of children from households below the federal poverty line with asthma is higher than children from higher-earning households.[123] "Children living in poverty are more likely to be diagnosed, to experience more severe symptoms, and to have ongoing asthma symptoms than their more affluent peers."[124] Thus, the long-term and societal consequences of asthma threaten already vulnerable populations.[125]

The cost of treating asthma symptoms can be crippling to an individual experiencing financial hardship and perpetuate the problem by limiting the ability to pay for care.[126] The majority of emergency department visits for asthma occur among minorities, those of lower socioeconomic status, Medicaid patients, and the uninsured.[127] According to one study:

> [T]he 16% of Americans who are uninsured often wait for symptoms to deteriorate due to financial barriers to care, and eventually must seek urgent care in the ED. In fact, visits to the [emergency department] accounted for 39% of all health care visits for asthma among uninsured patients, compared with 14% for the privately insured and those insured by Medicaid.[128]

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[119] *See* ASTHMA AND ALLERGY FOUND. OF AMERICA ET AL., *supra* note 117, at 17.
[120] *Id.* at 6.
[121] *See* Gupta et al., *supra* note 66, at 1299.
[122] *Id.*
[123] *See* Benfer, *Health Justice*, *supra* note 72, at 297; U. S. ENVTL PROT. AGENCY, PRESIDENT'S TASK FORCE ON ENVIRONMENTAL HEALTH RISKS AND SAFETY RISKS TO CHILDREN 2 (2012), https://www.epa.gov/sites/production/files/2014-08/documents/federal_asthma_disparities_action_plan.pdf [https://perma.cc/UUB4-PYLV].
[124] *See* Benfer, *Health Justice*, *supra* note 72, at 297; *see also* Johnna S. Murphy & Megan T. Sandel, *Asthma and Social Justice: How to Get Remediation Done*, 41 AM. J. PREVENTIVE MED., S57 (2011).
[125] *See* ASTHMA AND ALLERGY FOUND. OF AM & NAT'L PHARMA. COUNCIL, *supra* note 117.
[126] *See* Tiffany Wang, et al., *Emergency Department Charges for Asthma-Related Outpatient Visits by Insurance Status*, 25 J. HEALTH CARE FOR THE POOR AND UNDERSERVED 396, 400 (2014).
[127] *See id.* at 396.
[128] *Id.*

"Access to care is hampered by socioeconomic disparities, shortages of primary care physicians in minority communities, and language and literacy barriers."[129]

Further, community factors make a difference in asthma prevalence.[130] For example, as one study found, neighborhoods with more civic engagement and community diversity, economic vigor and commercial vitality, buying power, and workforce potential had lower levels of childhood asthma.[131] Lower asthma rates were also common in neighborhoods with many cultural and entertainment facilities and restaurants.[132] In contrast, neighborhoods with high asthma rates had little community interaction and community members were less likely to move.[133]

Racial segregation is a key factor underlying the differences in exposure to residential and environmental toxins and pollutants.[134] In a recent study of the one hundred largest metropolitan areas in the United States, researchers determined that segregation produces large differences in opportunities for growth and development for children.[135] The researchers concluded that "high levels of segregation lead to entrenched disparities in wealth, educational attainment, and income between blacks and whites that can be attributed to the lower property values, inadequate schools, and paucity of job opportunities in minority communities."[136] Thus, the United States's legacy of race-restrictive covenants and investment in segregated communities resulted not only in today's segregated housing communities but also in urban squalor and overcrowded housing.[137] Despite civil rights laws, high levels of segregation persist,[138] with blacks residing in greater segregation than any other group in United States history.[139] Demonstrative of the pervasiveness of racial segregation, research shows that even high-income blacks live under higher levels of segregation than the poorest Hispanic and Asian populations.[140]

Federal housing programs meant to promote access to affordable housing perpetuate this segregation. For example, despite the fact that studies show the Housing Choice Voucher Program (HCVP) can successfully help families access healthier communities and better health outcomes,[141] partici-

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[129] Asthma and Allergy Found. of Am & Nat'l Pharma. Council, *supra* note 117.
[130] *Id.*
[131] *Id.* at 1300.
[132] Gupta et al., *supra* note 66, at 1300.
[133] *Id.* at 1301.
[134] *See generally* Benfer, *Health Justice*, *supra* note 72, at 282–87.
[135] Miller et al., *Healthy Homes and Communities*, *supra* note 15, at S49.
[136] *Id.* at S49–50.
[137] Benfer, *supra* note 2.
[138] Gregory Acs et al., *The Cost of Segregation: National Trends and the Case of Chicago, 1990–2010*, Urban Inst. (Mar. 28, 2017), http://www.urban.org/research/publication/cost-segregation [https://perma.cc/VZX5-48Z3].
[139] Miller et al., *supra* note 15, at S49.
[140] *Id.*
[141] Philip Tegeler & Salimah Hankins, *Prescription for a New Neighborhood*, Shelterforce (2012), http://www.shelterforce.org/article/2769/prescription_for_a_new_neighborhood/ [https://perma.cc/ZT7F-DPTR] (discussing studies linking moves from low to

pants are concentrated in neighborhoods that are "poorer, more racially segregated, and of lower quality than other neighborhoods."[142] Specifically, short periods of time in which to identify housing,[143] barriers to using vouchers outside of narrow jurisdictional lines,[144] the ability of landlords in many jurisdictions to refuse to rent to HCVP families,[145] and the failure of developers and landlords who receive federal housing subsidies to engage in affirmative marketing to low-income and minority families[146] segregate families and exacerbate barriers to achieving good health.

Communities of color and ethnic minorities experience environmental-related health problems at a greater rate than non-minorities.[147] Poverty and segregation create enormous barriers to achieving positive health outcomes.[148]

II. Traditional Approaches to Healthy Housing and Communities

Current law addresses healthy housing and communities through regulations governing homes coupled with policies regarding community development. There are five approaches most commonly employed by federal, state, and local jurisdictions to combat exposure to in-home health hazards.[149] These approaches include education and research, regulation of real estate transactions, implementation of standards for special populations, enactment of baseline habitability standards, and hazard mitigation. Current approaches to address sources of health hazards within the surrounding area

high opportunity areas with "significant reductions in obesity and diabetes for women . . . significant mental health improvements for women and girls").

[142] Poverty & Race Research Action Council, Urban Inst., Expanding Choice: Practical Strategies for Building a Successful Housing Mobility Program 3 (2012), http://prrac.org/pdf/ExpandingChoice.pdf [https://perma.cc/F43T-AETL].

[143] *Id.* at 8 ("The standard 60-day search process may put pressure on households to locate a unit more quickly than possible, leading to unit selection in higher poverty neighborhoods with lower performing schools.").

[144] *Id.* at 11 ("Portability enables a household to use a voucher issued in one jurisdiction when moving to another jurisdiction where the program is administered by a different local PHA . . . a series of barriers may await city households who apply directly to suburban PHA voucher programs, including lack of notice of waiting list openings, residency preferences for admission, first-come-first-served waiting list rules, and in-person application requirements at some PHAAs.").

[145] Poverty & Race Research Action Council, State and Local Source-of-Income Nondiscrimination Laws: Protections that Expand Housing Choice and Access to Healthy, Stable Homes, Appendix B: State, Local, and Federal Laws Barring Source-of-Income Discrimination (2017), http://prrac.org/pdf/AppendixB.pdf [https://perma.cc/QK6F-S5HY] (discussing how source-of-income anti-discrimination laws only exist in twelve states, the District of Columbia, and a handful of cities).

[146] *See generally* Megan Haberle et al., Poverty & Race Research Action Council, Accessing Opportunity: Affirmative Marketing and Tenant Selection in the LIHTC and Other Housing Programs (2012), http://www.prrac.org/pdf/affirmativemarketing.pdf [https://perma.cc/FD46-MT75].

[147] Benfer, *supra* note 2.

[148] Miller et al., *Healthy Starts for All*, *supra* note 89, at S49.

[149] This part only concerns the most commonly employed approaches and does not include programs or policies jurisdictions employed on an individual basis.

include community development, urban policy development, and community-based measures. However, despite varied approaches, the law fails to safeguard the health and safety of residents. Taken together, current policy concerning healthy communities and homes is fragmented, reactive, rather than preventive, and under-resourced. These systemic limitations impede program efficacy, resulting in resident exposure to, and injury from, health hazards.

A. Education and Research

Jurisdictions commonly employ campaigns to educate residents about the dangers of health hazards. This low-cost intervention provides policymakers with the opportunity to reach a wide audience with the goal of preventing harm from hazard exposure. In addition, many jurisdictions commission studies to gather data on issues related to health hazards, such as sources of exposure and effectiveness of programs. These studies yield empirical data that policymakers can use to implement programs and enact laws.

1. Educational Materials

Providing materials is one of the easiest things policymakers can do to address healthy housing. Materials can raise awareness among residents of the threats posed by health hazards, which may prevent future harm. By engaging with community partners, jurisdictions can more effectively educate residents on health hazards as well as their rights.[150] Reflecting this low-cost and relatively easy to implement method of harm prevention, several government entities make information on health hazards readily available to residents. For example, at the federal level, the EPA provides extensive information on mold safety and remediation.[151] The EPA sources are intended to educate residents about mold exposure and health effects, testing and sampling for mold, prevention, control, remediation in schools and commercial areas, and guidelines for cleanup, including how to address water leakage and when to consult a specialist.[152] Similarly, the federal Residential Lead-Based Paint Hazard Reduction Act[153] works to eliminate lead-based paint hazards and prevent childhood lead poisoning in part through a public education outreach component.[154]

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[150] Beth McKee-Hughes, *Partner with Community Organizations*, *in* CHANGELAB SOLUTIONS, UP TO CODE: CODE ENFORCEMENT STRATEGIES FOR HEALTHY HOUSING 10, 11 (2015), http://www.changelabsolutions.org/sites/default/files/Up-tp-Code_Enforcement_Guide_FINAL-20150527.pdf [https://perma.cc/SM5Y-9GZ6].

[151] *See generally* U.S. ENVTL. PROT. AGENCY, THE KEY TO MOLD IS MOISTURE CONTROL (2017), www.epa.gov/mold [https://perma.cc/AGY2-ZGC4].

[152] *Id.*

[153] *See* 42 U.S.C.A § 4851 (1992).

[154] *See* U.S. ENVTL. PROT. AGENCY, RESIDENTIAL LEAD-BASED PAINT HAZARD REDUCTION ACT OF 1992-TITLE X (2016), https://www.epa.gov/lead/residential-lead-based-paint-ha

Development and dissemination of educational materials is not limited to federal policymakers. States, too, commonly engage in public education initiatives to curb the incidence of injury from indoor environmental health hazards. Many states accomplish this through educational provisions in statutes addressing a specific health hazard. For example, the Illinois Structural Pest Control Act directs any fines collected pursuant to the Act to be "deposited into the Pesticide Control Fund. . . for the purposes of *conducting a public education program* on the proper use of pesticides."[155] Under Washington State Code, landlords must provide tenants written or posted information on the negative health effects posed by mold as well as steps to take to minimize health risks.[156]

In addition to provisions in hazard-specific statutes, some jurisdictions mandate education through general code sections. California's Business and Professions Code requires the state to develop a booklet to educate consumers about several common environmental hazards related to real property.[157] These hazards include, but are not limited to, asbestos, radon gas, lead-based paint, formaldehyde, fuel and chemical storage tanks, and water and soil contamination.[158] Under the law, the booklet must include information on the hazard's significance, mitigation techniques, and additional sources of information.[159]

Research suggests that education can be an effective intervention.[160] A study on the effectiveness of hazard awareness training in construction building trades found an improved safety climate after employees participated in a union-delivered safety training.[161] However, unlike the study participants, who received dedicated training from an instructor, residents, particularly those that are low-income, may lack access to educational materials, the time necessary to absorb the information, and the ability to

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zard-reduction-act-1992-title-x [https://perma.cc/2UFF-EFMK] (noting that education and outreach is intended to increase public awareness of "the scope and severity of lead poisoning from household sources; potential exposure to sources of lead in schools and childhood day care centers; the implications of exposures for men and women, particularly those of childbearing age; the need for careful, quality, abatement and management actions; and the need for universal screening of children," among others).

[155] ILL. COMP. STAT. ANN. 225 § 235/9(b) (West 1975) (emphasis added); *see also* STATE OF CAL., DEP'T OF CONSUMER AFF., STRUCTURAL PEST CONTROL BD., BUSINESS AND PROFESSIONS CODE AND RULES AND REGULATIONS (2015), http://www.pestboard.ca.gov/pestlaw/pestact.pdf, [https://perma.cc/NZC4-M838].

[156] WASH REV. CODE ANN § 59.18.060 (West 2013).

[157] CAL. BUS. & PROF. CODE. §10084.1 (West 1989).

[158] *Id.* at § 10084.1(a)(1).

[159] *Id.*

[160] Rosemary K. Sokas et al., *An Intervention Effectiveness Study of Hazard Awareness Training in the Construction Building Trades*, 124 PUB. HEALTH. REP. 161, 168, (2009). The study "evaluated knowledge, attitudes, and self-reported work practices among apprentice and journeyman trainees in two construction trades at baseline and three months after participation in two training sessions as part of a 10-hour Occupational Safety and Health Administration hazard awareness training program . . . . Follow-up surveys were completed by 92 (53%) of respondents and documented significant increases" in safety knowledge. *Id.*

[161] *Id.*

consult with an expert on information contained therein. Without this support, the effectiveness of publishing educational information will be limited.

2. Research on Hazards

Many jurisdictions, both at the federal and state level, use empirical analysis to develop policies related to environmental health hazards. Using the best available research and information to guide decision-making, or evidence-based policy, allows governments to maximize resources while advancing policies that positively affect people's lives.[162] Applying this approach, Illinois,[163] Louisiana,[164] Maine,[165] New York,[166] and Oklahoma[167] laws direct relevant agencies to establish a task force to research the threat of mold, with the goal of making recommendations to policymakers. Similarly, a 2002 Pennsylvania Senate Resolution urged the Department of Health to establish a task force to investigate mold in homes, schools, and other buildings.[168] In 2013, the New Mexico House of Representatives voted to direct the state's Department of Health to conduct a literature review on scientific studies on the relationship between Parkinson's Disease and pesticide use.[169]

The ability of this approach to improve the health of residents rests on the assumption that there is adequate research into the relationship between interventions and health outcomes, that lawmakers read such reports, and that they act in a timely matter.[170] Whether policy mandates adequate research to thoroughly understand and identify health hazards remains an open question. This approach relies on lawmakers being well-informed enough to initiate policy that requires such research in the first place. Even when research exists and is readily available, lawmakers may be slow to incorporate findings into policy. Furthermore, disagreement over how to interpret scientific findings may also lead lawmakers to disregard findings or even overturn previous policy decisions.

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[162] PEW CHARITABLE TRUSTS, MACARTHUR FOUND., EVIDENCE-BASED POLICYMAKING, A GUIDE FOR EFFECTIVE GOVERNMENT 2 (2014), http://www.pewtrusts.org/~/media/assets/2014/11/evidencebasedpolicymakingaguideforeffectivegovernment.pdf [https://perma.cc/FNP2-R36H] (stating that an evidence-based policy approach allows governments to reduce spending, expand innovative programs, and strengthen accountability).

[163] HJR0012, 93rd Gen. Assemb., Reg. Sess. (Ill. 2004).

[164] LA. STAT. ANN. § 40:1289.1 (West 2015).

[165] ME. REV. STAT. ANN. tit. 10, § 1480 (West 2007).

[166] N.Y. PUB. HEALTH LAW § 1384 (McKinney 2012) (repealed 2012).

[167] OKLA. STAT. ANN. tit. 15 § 765.4 (West 2004).

[168] S.J. Res. 171, 107th Leg. (Pa. 2001).

[169] H 50-042, 1st sess., at 1–3 (N.M. 2011).

[170] *See generally* ChangeLab Solutions, *Evaluate the Code Enforcement Program*, *in* CHANGELAB SOLUTIONS, UP TO CODE: CODE ENFORCEMENT STRATEGIES FOR HEALTHY HOUSING 24, 26 (2015), http://www.changelabsolutions.org/sites/default/files/Up-tp-Code_Enforcement_Guide_FINAL-20150527.pdf [https://perma.cc/SM5Y-9GZ6] ("Data collection and analysis can provide valuable information to both government agencies and the community.").

B. Regulation of Real Estate Transactions

The transference of an interest in a property from one party to another, whether seller and buyer or landlord and tenant, is an area in which jurisdictions impose rights and obligations concerning healthy housing. The most common approaches concerning real property involve disclosure of hazards prior to transfer and standards for new construction.

1. Mandatory Disclosure

The law imposes several obligations on the transferor of property during a real estate transaction. This nearly always includes a responsibility to disclose defects related to a property, including indoor environmental health hazards. Many jurisdictions specifically require the transferor to inform the transferee of the presence of any such hazards when the transaction involves the sale of real property.

Michigan's Seller Disclosure Act[171] exemplifies this obligation. Under the Act, the seller of real property must disclose the presence of environmental hazards, "such as, but not limited to, asbestos, radon gas, formaldehyde, lead-based paint, fuel or chemical storage tanks, and contaminated soil on the property."[172] In instances in which the seller fails to disclose a risk, the law typically gives several rights to the buyer. Under the Illinois Radon Awareness Act, if a seller does not inform a buyer of a radon risk prior to the buyer making an offer, the seller is required to disclose the radon risk and allow the buyer to amend their offer.[173]

While it is less common to mandate a general disclosure when the transfer of interest in property concerns a tenancy, federal law requires a landlord to share information concerning certain health hazards with perspective tenants. Under the Lead-Based Paint Hazard Reduction Act and the Lead Disclosure Rule, landlords must share any information about a known lead risk on the property before a tenant enters into a rental agreement.[174] In the absence of federal disclosure requirements for other hazards, some states have adopted their own approach. Pursuant to Virginia law, for example, landlords must disclose, in writing, the presence of mold in a rental unit.[175] Virginia tenants have the right to terminate the tenancy if the landlord's disclosure states there is visible mold in the unit.[176] If the tenant elects to take possession of the unit despite the presence of the hazard, the landlord is

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[171] Seller Disclosure Act §1, MICH. COMP. LAWS. ANN. § 565.951 (West 1994). The Act only applies to sellers of residential property consisting of up to four dwelling units. *Id.*

[172] Seller Disclosure Act § 7, MICH. COMP. LAWS. ANN. § 565.957 (West 2006).

[173] Radon Testing and Disclosure Act 46, ILL. COMP. STAT. ANN. ch. 420 § 10 (West 2013).

[174] 42 U.S.C.A § 4852d (West 1992); Lead Disclosure Rule, 40 C.F.R. § 745.61 (2017), https://www.gpo.gov/fdsys/pkg/FR-1996-03-06/pdf/96-5243.pdf [https://perma.cc/7YUJ-VHUC].

[175] Disclosure of Mold in Dwelling Units, VA. CODE. ANN. § 55-248.11:2 (West 2008).

[176] *Id.*

obligated to remediate and obtain a re-inspection of the unit to confirm the there is no "visible evidence of mold."[177]

The effectiveness of disclosure rests on a transferee's ability to weigh information and make meaningful choices regarding housing accommodations. This is undermined by two assumptions. First, the transferor is typically only obligated to disclose "known" information. The law does not impose a duty to discover any health hazard via inspection or other means. In the absence of such an obligation, and in the interest of preserving a transaction as well as not incurring liability to remediate, the transferor may opt to refrain from taking steps, such as hiring an inspector who would surface an issue. In such instances, because the transferor does not "know" of a hazard, the threat is passed to the transferee. The second assumption is that the transferee can make a meaningful choice based on disclosure. The ability to use disclosed information to make decisions is severely limited for low-income residents, who are disproportionately affected by the affordable housing shortage.[178]

Creating additional difficulty for low-income residents in search of healthy housing is the fact that many jurisdictions lack a centralized, easy to navigate system to track data on unhealthy housing. While large cities, such as Chicago,[179] Houston,[180] and Seattle,[181] have searchable databases, they may not be comprehensive or reliably updated. Most suburban and rural municipalities do not have any system that allows residents to easily acquire health and safety information about prospective housing. The absence of a repository of information contributes to residents' vulnerability to environmental health hazards. Without this information, prospective tenants and homebuyers may not discover a hazard until it causes injury. Ultimately, unless there is an adequate supply of affordable healthy housing, and until residents have an easy, reliable mechanism to obtain information about properties, transferees will not be able to fully reap the benefit of hazard disclosure requirements.

2. Requirements for New Construction and Home Improvement

As policymakers increase their understanding of the threats posed by environmental health hazards, many elect to update local building codes. This is evident when examining building standards for new residential

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[177] *Id.*

[178] *See generally* Allyson E. Gold, *No Home for Justice: How Eviction Perpetuates Health Inequity Among Low-Income and Minority Tenants*, 24 GEO. J. ON POVERTY L. & POL'Y 59, 68 (2016) (discussing how recent changes in the housing market have created a shortage of affordable housing options).

[179] *See* CITY OF CHICAGO BUILDING VIOLATIONS SEARCH, https://www.cityofchicago.org/city/en/depts/bldgs/provdrs/inspect/svcs/building_violationsonline.html [https://perma.cc/K8RA-VQMV].

[180] *See* CITY OF HOUSTON BLIGHT TRACKER, http://mycity.houstontx.gov/nuisancetracker/ [https://perma.cc/5AMU-R5EC].

[181] *See* SEATTLE CODE VIOLATION CASES, https://data.seattle.gov/Community/Code-Violation-Cases/dk8m-pdjf [https://perma.cc/D29T-EX4D].

properties. For example, several states, including Illinois[182] and Massachusetts,[183] require that all new residential construction include radon-resistant construction techniques. In addition to new construction, lawmakers' understanding of the threat of environmental health hazards may lead to the termination of certain practices that previously threatened the health of residents. The federal government famously accomplished this when Congress banned the use of lead-based paint from residential dwellings in 1978, and the EPA promulgated the Repair, Renovation and Painting Rule.[184]

Requirements for new construction safeguard future housing. However, without retroactive applicability, it is insufficient to eliminate hazards from the vast majority of housing stock. Moreover, characteristics of new housing stock suggest that benefits realized will accrue primarily to wealthier residents. In 2015, the size of new single-family homes hit a record 2,467 square feet[185] and home prices rose 6.6 percent.[186] In contrast, "growth in the low-rent supply is largely driven by downward filtering of older units,"[187] which do not benefit from policy changes that update requirements for new construction. As a result, individuals who are most vulnerable to environmental health hazards are excluded from changes in real estate law enacted to protect residents.

C. Common Approaches for Special Populations

Policies often govern environmental health hazards differently for special groups than for the general population. This is typically informed by the particular needs or vulnerabilities unique to that population. In particular, the law generally places increased protections on spaces occupied by children and persons living with disabilities.

1. Children

Children are particularly vulnerable to indoor environmental health hazards. Relative to adults, their nervous systems, immune systems, and bodies are underdeveloped and they spend a greater portion of their day indoors.[188] The law recognizes the vulnerability of children and imposes greater regulation on spaces they will occupy. Several states require increased scrutiny to ensure that schools and daycares are free from health

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[182] Radon Resistant Construction Act, ILL. COMP. STAT. ANN. Ch. 420 § 52/1 (West 2013).

[183] MASS. GEN. LAWS ch. 43, § 93-100 (West 1938).

[184] Consumer Protection Safety Act of 1977 § 1303, 15 U.S.C.A §§ 2057, 2058 (1972); Lead Renovation, Repair and Painting Rule 40 C.F.R. 745 Part E, https://www.ecfr.gov/cgi-bin/text-idx?SID=CD05f748c481fd0ec85ffb94b9193066&node=SP40.31.745.e&rgn=div6 [https://perma.cc/4M8S-JZBK].

[185] JOINT CTR. FOR HOUS. STUDIES OF HARVARD UNIV., *supra* note 80, at 8.

[186] *Id.* at 10.

[187] *Id.* at 27.

[188] *See* Gold, *supra* note 178, at 70.

hazards. In North Carolina, for example, local school boards have a "duty to protect the health of school-age children from toxicants at school."[189] Pursuant to this duty, the school boards must "study methods for mold and mildew prevention and mitigation," incorporating recommendations into public school facility management as well as take certain steps to address the use of pesticides, arsenic-treated wood, mercury, and exposure to diesel exhaust fumes on school grounds.[190] In Illinois, the Smoke-free Act bans indoor smoking and smoking anywhere within fifteen feet of an entrance to a public building.[191] However, the Act applies to private residences only when they serve as a daycare, childcare, or other special facilities.[192]

To mitigate the devastating effects of lead exposure, many jurisdictions require mandatory home inspection if a child has an elevated blood lead level. In Connecticut, primary health care providers must conduct a blood lead screening for all children under the age of three and any child between the ages of thirty-six and seventy-two months who has not been previously screened.[193] If a child has an elevated blood lead level,[194] the local health department will conduct an epidemiological investigation and inspection to identify sources of lead exposure, including within the home.[195] Once the sources of lead are identified, the public health department director will order an abatement or remediation order.[196]

2. Persons with Disabilities

The law also provides special protections to persons with disabilities. Section 504 of the Rehabilitation Act prohibits discriminatory action against people with disabilities who live in federally funded housing programs.[197] Under Section 504, federally funded housing providers may not refuse to provide services or decline to make repairs that would be available to able residents.[198] Further, it requires that the federally funded housing providers make reasonable accommodations to the property so that disabled residents are able to fully enjoy their housing.[199] Such accommodations include modifications to a policy, alterations to the actual property, or changes in services or programs offered.[200]

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[189] N.C. GEN. STAT. ANN. § 115C-12(34) (West, 1981).
[190] N.C. GEN. STAT. ANN. § 115C-47(47) (West, 1981).
[191] 410 ILL. COMP. STAT. ann. § 82/15 (West, 2008).
[192] *Id.* § 82/10.
[193] CONN. GEN STAT §19a-111g (West 2007); Conn. Dept. of Pub. Health, *Mandatory Universal Blood lead Screening begins in Connecticut* (Jan. 6, 2009) http://www.ct.gov/dph/cwp/view.asp?Q=434526&A=3659 [https://perma.cc/WWV7-2LXF].
[194] *Id.*
[195] *Id.*
[196] *Id*.
[197] 29 U.S.C.A § 701 (2014); 24 CFR § 8.1(a) (2017).
[198] 24 CFR § 8.4 (2017).
[199] *Id.*
[200] 29 U.S.C.A. § 701 (1998).

The Americans with Disabilities Act (ADA) extends protections under Section 504 to people living in non-federally assisted entities. The ADA requires state and local governments, as well as private businesses, to provide the protections of Section 504 to people with disabilities.[201] Title II of the Act bars public entities from discriminating against people with disabilities in any of the services or programs they offer and Title III bars discrimination in common use, public spaces of residential buildings.[202] For these purposes, discrimination includes failing to make alterations that would make the housing accessible or in condition to be used by disabled persons.[203]

The rights articulated by Section 504 and the ADA can provide relief for residents living in substandard housing conditions. For example, the U.S. Department of Housing and Urban Development (HUD) does not include lead hazards in the definition of life threatening conditions or the circumstances qualifying a family to move with continued assistance.[204] Because the Lead Safe Housing Rule does not require pre-rental lead hazard risk assessments in all federally assisted housing, a child has a high likelihood of developing lead poisoning.[205] As a result, a family living in federally assisted housing whose child developed lead poisoning did not have a right to relocate under HUD regulations.[206] However, because lead poisoning substantially limits major life functions of learning and interacting, as well as major bodily functions related to neurological development and kidney function among others, it qualifies as a disability under the law.[207] In light of the effect of exposure to lead, a family with a child experiencing lead poisoning is entitled to a modification of policies and practices so that they have the opportunity to use and enjoy housing that will not threaten their health and well-being, such as immediate transfer to a lead-free home. Such reasonable accommodations under Section 504 and the ADA give families the opportunity to use and enjoy housing that will not threaten their health and well being.

D. Enactment of Minimum Habitability Standards

Jurisdictions commonly establish a threshold that housing must satisfy to meet basic health and safety standards. Doing so allows jurisdictions to place the onus of property maintenance on homeowners. The standards set by a local jurisdiction may follow federal guidance. However, more commonly, the federal government is silent on building requirements regarding

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[201] 42 U.S.C.A. 12131 (1990).

[202] *Id.* §§ 12132; *see* Dep't of Justice, Title III Technical Assistance Manual, § III-1.2000 (1993), http://www.ada.gov/taman3.html [https://perma.cc/SQZ2-DPVC].

[203] *Id.* § 12131.

[204] 24 C.F.R. 982.354 (2017).

[205] 24 C.F.R. 35 et seq.

[206] *See* Benfer, *supra* note 2, at 41.

[207] *See* 42 U.S.C. § 12102(1)(A); Emily Benfer, *Overview of the ADA Amendments Act of 2008*, Am. Const. Soc'y Advance (2009), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2341414 [https://perma.cc/W35Q-Y5GL].

particular health hazards. In these circumstances, state and local governments develop their own regulations.

1. With Guidance from the Federal Government

The federal government provides support to state and local jurisdictions to address certain indoor environmental health hazards. The Department of Housing and Urban Development, for example, sets minimum housing quality standards for properties that receive funding under the Housing Choice Voucher Program.[208] The EPA Federal Radon Action Plan brings together nine federal agencies in an EPA-led committee to address the threat of radon exposure.[209] In addition to the EPA, the agencies include the Departments of Health and Human Services, Agriculture, Defense, Energy, Housing and Urban Development, Interior, Veterans Affairs, and the General Services Administration.[210] Together, these organizations work to diminish the risk of exposure to radon in residences, schools, daycare facilities, and new construction sites. The Plan draws particular attention to the economic benefits of decreasing radon exposure and the financial incentives around radon testing and mitigation and supports risk reduction programming through grant funding.[211]

In addition, the EPA promulgated recommendations concerning the maximum average level of indoor radon. Under the EPA recommendation, the highest level of indoor radon is four picocuries per liter (pCi/L).[212] This standard serves as a guideline for state and local jurisdictions, which may enact their own laws concerning radon. Following the EPA action level, six states (Connecticut,[213] Florida,[214] Illinois,[215] Iowa,[216] Kentucky,[217] and Michigan[218]) have laws that set four picocuries per liter as the recommended radon safety standard. These jurisdictional responses to radon illustrate how state law may evolve under guidance from the federal government.

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[208] *See generally* DEP'T HOUS. & URBAN DEV., HOUSING CHOICE VOUCHER PROGRAM GUIDEBOOK, at ch. 10 (2001), https://portal.hud.gov/hudportal/documents/huddoc?id=DOC_11754.pdf [https://perma.cc/FA3N-3GKC].

[209] ENVTL. PROT. AGENCY, THE NATIONAL RADON ACTION PLAN-A STRATEGY FOR SAVING LIVES (2015).

[210] *Id.*

[211] *Id.*

[212] ENVTL. PROT. AGENCY, THE GUIDE TO PROTECTING YOURSELF AND YOUR FAMILY FROM RADON (2016). *See generally* 15 U.S.C. § 2661 ("The national long-term goal of the United States with respect to radon levels in buildings is that the air within building in the United States should be as free of radon as the ambient air outside of buildings.").

[213] CONN. AGENCIES REGS. § 19a-79-7a(e)(17)(B) (2014).

[214] FLA. STAT. § 404.056 (2017).

[215] 105 ILL. COMP. STAT. § 5/10-20.48 (2012).

[216] 441 IOWA ADMIN. CODE §109.11(7) (237A) (2016).

[217] 902 KY. ADMIN. REGS. 95:040 (2014).

[218] MICH. ADMIN. CODE R. 400.1934 (2014).

2. In the Absence of Federal Guidance

Given that federal law does not comprehensively address substandard housing conditions, state and local jurisdictions have enacted their own approaches to specific environmental health hazards. Some jurisdictions accomplish this on a hazard-by-hazard basis. For example, long before the federal government adopted the CDC's definition of an intervention blood lead level, the Chicago Municipal Code defined lead poisoning as an elevated blood lead level of five micrograms per deciliter (µg/dL) or higher and requires that property owners maintain their residential buildings "in such a manner so as to prevent the existence of a lead hazard."[219] Likewise, in the absence of federal bedbug guidance, the Maine legislature enacted law regarding a landlord's duties and responsibilities in the event of a known or suspected bedbug infestation.[220]

However, rather than enact a law for every type of substandard housing condition, most jurisdictions opt to include guidance on exposure to hazards through building, residential, and public health codes. Every jurisdiction has municipal codes that affect resident exposure to environmental health hazards. Building codes endeavor to protect public health, safety, and natural resources by setting minimum requirements for building design, construction, and operation.[221] The International Building Code (IBC) is in use or adopted in all fifty states as well as the District of Columbia and New York City.[222] The International Residential Code (IRC) is in use or adopted by forty-nine states and the District of Columbia.[223]

The purpose of both the IRB and IRC is to protect the public safety, health and general welfare.[224] Taken together, these Codes comprehensively govern the construction, alteration, relocation, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of all buildings and structures. This includes regulating exposure to environmental hazards such as pest infestation, factors that affect mold

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[219] CHI., ILL., MUN. CODE §7-4-030 (2016); CITY OF CHI., DEP'T OF PUB. HEALTH, CONTROL AND MITIGATION OF LEAD-BEARING SUBSTANCES, RULES AND REGULATIONS 1.1 (2008), http://www.cityofchicago.org/content/dam/city/depts/cdph/statistics_and_reports/SR_CntrlMitigationofLeadBearingSubstancesRegs.pdf [https://perma.cc/3U83-JMKK] ("Lead Poisoning [is defined as a] confirmed level of lead in human blood of greater than 5 mg/dL (five micrograms per deciliter)").

[220] 14 ME. REV. STAT. ANN. § 6021-A (2011).

[221] ELLEN VAUGHAN & JIM TURNER, ENVTL. & ENERGY STUDY INST., THE VALUE AND IMPACT OF BUILDING CODES (2014).

[222] INT'L CODE COUNCIL, INTERNATIONAL CODE ADOPTIONS, UNITED STATES USAGE OF THE I-CODES (2015).

[223] *Id.*

[224] *See* INT'L BUILDING CODE § 101.3 (INT'L CODE COUNCIL 2015); INT'L RESIDENTIAL CODE § 101.3 (INT'L CODE COUNCIL 2015). Though, notably, the purpose of the IBC is to "provide a reasonable level of safety, public health and general welfare," while the IRC does not use any qualification. *Id.*

growth such as ventilation and moisture accumulation, and other conditions that affect resident health.[225]

Similarly, to protect tenants from the harmful effects of exposure to health hazards, many states have adopted all or part of the provisions of the Uniform Residential Landlord Tenant Act (URLTA).[226] First promulgated in 1974, the URLTA imposes six duties on landlords that pertain to healthy housing: (1) comply with applicable building and house code requirements that affect health and safety; (2) make all repairs and do what is necessary to maintain the property in fit and habitable condition; (3) keep all common areas of the premises in a clean and safe condition; (4) maintain systems in good and safe working order; (5) provide and maintain appropriate receptacles for removal of trash and hazardous materials; and (6) supply running water, hot water, and reasonable amounts of heat.[227] In 2015, the Uniform Law Commission released the Revised Uniform Residential Landlord Tenant Act (RURLTA). RURLTA eliminates elements of common law, instead basing all provisions of the lease agreement on contract law doctrine.[228] RURLTA expands the duties of the landlord to maintain the premises.[229] For example, RURLTA explicitly requires a landlord to "have reasonable measures in place to control the presence of rodents, bedbugs, and other vermin and to prevent exposure to unsafe levels of radon, lead paint, asbestos, toxic mold, and other hazardous substances."[230] For tenants living in states that adopt RURLTA, these revisions expand the baseline standards for habitability in residential dwellings.

While regulations governing baseline habitability are critical to ensuring the health of residents, their effectiveness is limited without specific criteria and guidance.[231] For example, URLTA's requirement to "do what is necessary to maintain the property in fit and habitable condition," is ambiguous and does not adequately define what constitutes a "fit and habitable condition." In the absence of specific guidance, "property owners, residents,

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[225] *See generally* Int'l Building Code (Int'l Code Council 2015), https://codes.iccsafe.org/public/document/toc/542/ [https://perma.cc/Q4JK-WTXQ]; Int'l Residential Code (Int'l Code Council 2015), https://www.iccsafe.org/codes-tech-support/codes/2015-i-codes/irc/ [https://perma.cc/HUB5-GMTS].

[226] Adopted by the Uniform Law Commission in 1972, the URLTA set standards to govern the landlord and tenant relationship. Twenty-one states adopted the URLTA, with more influenced by particular sections. John Ahlen & Lynn Foster, *Uniform Residential Landlord-Tenant Law: Changes on the Way*, 28 Prob. & Prop. Mag. 4 (2014).

[227] Unif. Residential Landlord & Tenant Act § 2.104(a) (Nat'l Conference of Comm'rs of Unif. State Laws 1974).

[228] *See generally* Revised Unif. Residential Landlord & Tenant Act (Nat'l Conference of Comm'rs of Unif. State Laws 2015).

[229] *Id.* § 302 cmt. ("This section somewhat expands the provision of URLTA (1972) § 2.104 . . . . This section sets forth a landlord's duties to assure a rented dwelling unit is habitable . . . . Consistent with the practice of nearly every state, Section 302 recognizes that modern conditions require the proper maintenance and operation of rental housing.").

[230] *Id.* § 302(a)(7).

[231] Tom Neltner, *Adopt a Strong Housing Code*, *in* ChangeLab Solutions, Up to Code: Code Enforcement Strategies for Healthy Housing 4, 5 (2015), http://www.changelabsolutions.org/sites/default/files/Up-tp-Code_Enforcement_Guide_FINAL-20150527.pdf [https://perma.cc/9ADF-8XYQ].

and code enforcement officers can interpret housing codes differently, leaving compliance decisions subject to challenges and residents vulnerable."[232]

Robust enforcement is also necessary to protect health and well-being. Notably, for example, both the IBC and the IRC lack enforcement mechanisms. Instead, it is up to the individual jurisdictions that adopt these Codes to establish rights of parties, bases of liability, and remedies, in the event the outlined standards are not achieved. The most common enforcement mechanisms adopted by jurisdictions are administrative, civil, and criminal.[233] Enforcing regulations further requires comprehensively training inspection officers to identify health hazards.[234] If jurisdictions od not take additional steps to enforce these standards, residents will continue to experience harm resulting from exposure to health hazards.

E. Hazard Mitigation

If a hazard exists on a property, there are several steps parties must take in order to mitigate. First, parties must discover the hazard and determine liability. Depending on the jurisdiction, a resident may initiate discovery or the municipality itself may take proactive steps to identify threats to health and safety. After the discovery, the responsible party may apply for funds demarcated for hazard mitigation. Depending on the type and severity of the hazard, many jurisdictions require a licensed professional to perform the mitigation. In the event that the responsible party does not mitigate, or the resident suffers an injury from exposure to the hazard, various avenues of relief exist to recuperate damages.

1. Identification of, and Liability for, Environmental Health Hazards

The first step in hazard mitigation is identification. Traditionally, and in most jurisdictions, code enforcement relies on a complaint-based system.[235] Under this system, the onus is on occupants to identify and report environmental health hazards.[236] Once an occupant reports an issue, "a municipal

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[232] *Id.*

[233] ChangeLab Solutions, *Enforce the Local Housing Code*, *in* CHANGELAB SOLUTIONS, UP TO CODE: CODE ENFORCEMENT STRATEGIES FOR HEALTHY HOUSING 18, 19–20 (2015), http://www.changelabsolutions.org/sites/default/files/Up-tp-Code_Enforcement_Guide_FINAL-20150527.pdf [https://perma.cc/C8AE-WNWU].

[234] Larry Brooks, *Train Officers Comprehensively*, *in* CHANGELAB SOLUTIONS, UP TO CODE: CODE ENFORCEMENT STRATEGIES FOR HEALTHY HOUSING 8, 9 (2015), http://www.changelabsolutions.org/sites/default/files/Up-tp-Code_Enforcement_Guide_FINAL-20150527.pdf [https://perma.cc/5WEJ-Q53P] ("Effective code enforcement programs require well-trained code enforcement officers to enforce the local housing code.").

[235] *See* CHANGELAB SOLUTIONS, HEALTHY HOUSING THROUGH PROACTIVE RENTAL INSPECTION (2014).

[236] *See id.*

code enforcement officer conducts a housing inspection, and if the complaint is substantiated, the officer begins enforcement proceedings."[237]

This approach is problematic for multiple reasons. First, tenants, unlike trained personnel, do not have the expertise to identify all indoor environmental health hazards. By outsourcing the responsibility, some hazards, such as radon or asbestos, may not be identified until they cause an injury.

Second, tenants whose homes contain health hazards are poorly positioned, relative to a government entity, to initiate an adverse action against a landlord. As discussed, substandard housing conditions disproportionately affect low-income tenants as well as minority tenants. Tenants living in such conditions are nearly all low-income. As a result, there is a great imbalance of power between the tenant and the landlord. Many tenants are reluctant to report a problem for fear of being labeled a "troublemaker" or experiencing retaliation from the landlord.[238] In light of the current executive administration's immigration policies,[239] undocumented tenants, in particular, may be reluctant to report conditions to governmental entities for fear that it may result in deportation.

In contrast to complaint-based systems, some jurisdictions have adopted proactive rental inspection (PRI) programs. Under PRI, "rather than wait for a complaint to inspect housing, the locality inspects all covered rental housing on a periodic basis to ensure that all rental properties are safe and habitable."[240] This system shifts the burden of hazard identification and reporting from layperson occupants to trained experts. For example, numerous cities require pre-rental lead hazard inspections ranging from visual assessments, dust swipes, clearance testing, to risk assessments.[241]

Studies demonstrate the effectiveness of PRI programs. After the city of Sacramento, California adopted a citywide housing inspection program to address substandard conditions, dangerous housing and building cases dropped by twenty-two percent.[242] Similarly, the establishment by Los Angeles, California of a Systemic Code Enforcement Program has resulted in the inspection of over ninety percent of the city's multifamily housing accommodations and the correction "of more than one and half million habitability

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[237] *Id.* at 2.

[238] *See generally* Gold, *supra* note 178 (noting that a tenant who exercise her rights may be labeled as a troublemaker).

[239] *See generally* Michael D. Shear & Ron Nixon, *New Trump Deportation Rules Allow Far More Expulsions*, N.Y. Times, Feb. 21, 2017, at A1.

[240] ChangeLab Solutions, *supra* note 235, at 2.

[241] Detroit, Mich., City Code 9-1-82(d), 9-1-83; MD Code 6-815 (2017); Rochester Munc. Code 90-55; Phil. Munc. Code 6-803(3)(b); Grand Rapids, MI City Code 304.2.1; 1000.3; San Diego Munc. Code 54.1009; Toledo Munc. Code 1760.04(14); Burlington, VT Code 18-112(a)(2).

[242] City Council Report, *Ordinance Revisions to City Code Chapter 8.120 Relating to the Rental Housing Inspection Program*, City of Sacramento (May 28, 2013), http://sacramento.granicus.com/MetaViewer.php?view_id=22&clip_id=3277&meta_id=399614 [https://perma.cc/69AL-5FJM].

violations," resulting in the reinvestment of $1.3 billion in the city's housing supply.[243]

Landlords have challenged the legality of PRI systems. In 1997, the city of Pasco, Washington enacted an ordinance requiring all landlords to submit an inspection certificate every two years proving compliance with applicable health and safety standards.[244] A landlord disputed the legality of the ordinance, alleging a violation of state and federal privacy grounds as well as a violation of due process rights.[245] Ruling against the landlord, the court found that because the ordinance gives landlords the ability to hire an inspector and schedule the inspection at their convenience, it does not violate privacy rights.[246] Further, the court rejected the landlord's argument that the ordinance is vague, finding that it gives specific instruction on who is qualified to be an inspector and when inspections must be completed.[247]

While the court upheld the constitutionality of Pasco's PRI ordinance, the result does not address privacy concerns of tenants living in the property. As opposed to inspection only when a property is turned over, Pasco's ordinance mandates inspection every two years.[248] This frequency necessarily results in inspections of tenant-occupied property. For tenants who wish to minimize contacts with government officials, for example, due to deportation concerns, collateral consequences of frequent government contact may outweigh the benefit of proactive municipal inspection. PRI, when carried out in occupied properties, creates a tension between effectively uncovering unhealthy housing conditions and addressing other resident concerns. Lawmakers must be aware of, and sensitive to, this balance when adopting policy to achieve healthy communities and housing.

Once a code enforcement officer identifies a hazard, he typically issues a violation notice informing the property owner of his responsibility to remediate.[249] As discussed previously, the law establishes baseline habitability standards that property owners must follow, whether or not they plan to occupy the property themselves.[250] But there exists a liability exception if someone other than the homeowner caused the issue. For example, California law places responsibility for rental property maintenance on the land-

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[243] *Systemic Code Enforcement Program*, HARVARD KENNEDY SCH., ASH CTR. FOR DEMOCRATIC GOVERNANCE AND INNOVATION, GOVERNMENT INNOVATORS NETWORK, https://www.innovations.harvard.edu/systematic-code-enforcement-program [https://perma.cc/SG7K-TNGM].

[244] Pasco v. Bernard N. Shaw, 166 P.3d 1157, 1159 (Wash. 2007).

[245] *See id.* at 1160.

[246] *See id.* at 1163.

[247] *See id.*

[248] *Id.* at 1160.

[249] Larry Brooks, *Develop a Cooperative Compliance Model*, *in* CHANGELAB SOLUTIONS, UP TO CODE: CODE ENFORCEMENT STRATEGIES FOR HEALTHY HOUSING 15, 16 (2015), http://www.changelabsolutions.org/sites/default/files/Up-tp-Code_Enforcement_Guide_FINAL-20150527.pdf [https://perma.cc/4RNH-SRQ3].

[250] *See infra* Part II.D.

lord.[251] The landlord is discharged of his duty to repair defects, however, if the tenant negligently or deliberately causes the damage to the property.[252]

The traditional code enforcement practice may allow the owner "to do the bare minimum to correct the violation, often to avoid being fined and/or prosecuted."[253] In contrast, a cooperative compliance model promotes mutual cooperation between the enforcement officer and the liable party, typically the homeowner.[254] In this system, "the code enforcement officer works cooperatively with property owners to help them understand the elements of healthy housing, the importance of code compliance, and how to bring the property into compliance."[255] The cooperative approach may result in healthier housing stock, beyond what the baseline habitability standards require.[256]

2. Funding for Hazard Removal

Even after liability is established, mitigation of environmental health hazards can be cost prohibitive. According to Cooper Pest Solutions, a pest control company serving clients in Pennsylvania and New Jersey, the cost of bedbug remediation can range from one thousand to three thousand dollars.[257] Likewise, a survey conducted by HomeAdvisor.com found that the average self-reported cost of residential mold removal is $2,161.[258] If a property is experiencing several health hazards, the costs can quickly surpass the property owner's resources.

To address this issue, the federal government may make funds available to offset the cost of hazard remediation. For example, the Office of Lead Hazard Control and Health Housing provides grants for lead hazard remediation and under the State Indoor Radon Grant (SIRG), states and tribes can apply for funds to reduce and prevent instances of radon-related lung cancer.[259] Grantee jurisdictions may use SIRG funds to conduct radon surveys, develop public information and education materials, implement programs to control radon in existing as well as new structures,[260] purchase measurement equipment or devices and analytical equipment, train employees on aspects related to radon, program administration, data storage and

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[251] *See* CAL. CIV. CODE § 1941.1(a) (2013).
[252] *See id.* at § 1941.2(a).
[253] Larry Brooks, *supra* note 249, at 16.
[254] *Id.*
[255] *Id.*
[256] *Id.*
[257] Cooper Pest Solutions, *How Much Does a Bedbug Treatment Cost for My Home*?, (Dec. 9, 2016), http://www.cooperpest.com/blog/how-much-does-a-bed-bug-treatment-cost-for-my-home [https://perma.cc/93YQ-89TB].
[258] *How Much Does it Cost to Remove Mold and Toxic Materials?*, HOMEADVISOR, http://www.homeadvisor.com/cost/environmental-safety/remove-mold-and-toxic-materials/ [https://perma.cc/9VKY-5L35].
[259] *See generally* ENVTL. PROT. AGENCY, STATE INDOOR RADON GRANTS PROGRAM GUIDANCE AND HANDBOOK (2005).
[260] *See id.* at 14 ("The bulk of a SIRG recipient's radon program will be in this area, as implementation of radon control programs brings bottom-line risk reduction to the population.").

management, mitigation demonstrations, establishment of a radon hotline to provide information and technical assistance, and assistance to local government and agencies.[261] Individuals may not apply directly to the EPA for SIRG funds.[262] However, they may apply to their state or tribal organization to use funds to abate a radon hazard in their home. In 2016, the SIRG Program granted nearly eight million dollars to jurisdictions across the country.[263]

In addition to federal funding sources, many local jurisdictions have established their own programs to enable parties to effectively remove indoor environmental health hazards. For example, under the Comprehensive Education, Reduction, and Window Replacement Program Act, the Illinois Department of Public Health developed the CLEAR-WIN Program to help eliminate home-based lead hazards.[264] The legislature piloted the program in two communities: Peoria and Chicago's Englewood and West Englewood neighborhoods,[265] providing grants and loans to replace lead contaminated windows.[266] Similarly, several municipalities in New York offer home rehabilitation grants to address substandard housing conditions related to heating, plumbing electrical, roofing, carpentry, masonry, insulation, replacement windows and doors, and exterior paint, among others.[267]

However, the limited availability of such funding sources results in many properties that do not conform to applicable codes and statutes. In such instances, occupants may have little recourse to secure necessary repairs to attain healthy housing. This is particularly problematic for tenants, who have scant options if a landlord refuses to make repairs. Tenants may elect to pursue legal action to compel a landlord to remediate. This time consuming process often requires tenants to remain in the property during the pendency of the case, exposing the family to the underlying hazards. Furthermore, even if the tenant prevails, there is no guarantee that the landlord will have adequate resources to remediate the issue.

Even when the law allows tenants to reallocate rent monies to address substandard conditions, it is typically insufficient to fully address the issue. For example, the Chicago Residential Landlord Tenant Ordinance (RLTO) allows tenant to take remedial action if the home does not satisfy habitability standards.[268] In buildings to which the RLTO applies,[269] tenants may withhold or deduct rent, seek reimbursement, or terminate their lease early if

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[261] *See id.* at 16–22.

[262] *See id.* at 2.

[263] ENVTL. PROT. AGENCY, STATE INDOOR RADON GRANT (SIRG) PROGRAM (2016), https://www.epa.gov/radon/state-indoor-radon-grant-sirg-program [https://perma.cc/9MRN-A2TA].

[264] 410 ILL. COMP. STAT. § 43/15 (2010).

[265] LEAD SAFE ILL., PREVENTION PROGRAMS (2017), http://www.leadsafeillinois.org/prevention/ [https://perma.cc/UC7L-X8DT].

[266] 410 ILL. COMP. STAT. § 43/15 (a); *see also* LEAD SAFE ILL., *supra* note 265.

[267] *See*, *e.g.*, CITY OF OSWEGO, HOUSING REHABILITATION PROGRAM (2017), http://www.oswegony.org/government/housing-rehabilitation-program [https://perma.cc/QM4M-FFLZ].

[268] CHI., ILL., MUN. CODE § 5-12-100, 110 (2016).

there is a violation of the warranty of habitability. However, the RLTO only permits tenants to deduct from the rent the cost of "minor repairs," defined as the greater of five hundred dollars or half the monthly rent.[270] As discussed, health hazards such as mold remediation, lead abatement, or radon remediation will quickly exceed allowable expenses, leaving tenants to choose between remaining in unsafe conditions or the difficult job of identifying healthy and affordable replacement housing.

3. Licensing of Mitigation Professionals

It is common for jurisdictions to adopt licensing standards for professionals who perform mitigation services. Louisiana's mold remediation laws typify the approach adopted by several states to regulate the hazard reduction. Recognizing that "it is in the best interest of the citizens of the state, to require the licensure and regulation of those persons who perform mold remediation,"[271] Louisiana requires the State Licensing Board for Contractors to license and regulate professionals who conduct mold remediation.[272] Likewise, jurisdictions commonly adopt licensing standards for professionals who address radon, lead, infestation, and other indoor environmental health hazards.[273]

Licensing is meant to ensure that hazard remediation itself does not inadvertently expose residents to harm, which may happen when laypersons with no training undertake efforts on their own. For example, the Health Justice Project represented a tenant whose children were lead poisoned after a landlord, who lacked certification and training in lead mitigation and abatement, performed removal of lead on the walls using an unsanctioned dry scraping method. Rather than reduce the hazard, the dry scraping spread lead dust throughout the home, which caused the children's blood lead levels to spike.[274] Had the landlord hired a licensed professional pursuant to federal and Illinois law,[275] the children would not have been exposed to the toxic hazard. However, as this case demonstrates, licensing requirements are only effective if they are followed. If landlords, through negligence or intentional disregard, fail to abide by the laws regarding licensing of mitigation professionals, individuals will continue to experience negative health consequences of exposure to indoor environmental hazards.

It is also important for lawmakers to revisit standards to ensure that approved hazard mitigation practices effectively protect the health of residents. If they are not consistently reviewed in light of advances in science

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[269] *See id.* § 5-12-020. The RLTO applies to all residential buildings excluding owner-occupied buildings with six or fewer units.

[270] *Id.* at § 5-12-010(c).

[271] LA. STAT. ANN. § 37:2181 (2017).

[272] *See id.* § 37:2181–2188.

[273] For example, Minnesota requires professionals who perform radon testing to be licensed annually. *See* MINN. STAT. § 144.4961 (2016).

[274] *See* Benfer, *Health Justice*, *supra* note 72, at 329.

[275] *See* 410 ILL. COMP. STAT. § 45/8.1 (2015); 40 C.F.R. § 745 (2016).

and medicine, approved interventions may cause greater health harms. As one study of pesticide use in low-income public housing found, use of conventional chemical-based applications for pest controls resulted in residual pesticide contamination for all participant families.[276] Most alarming, researchers found the greatest levels of contamination in the living room and children's bedrooms.[277] Similarly, EPA's current lead hazard standards are not aligned with science. For example, the current definition of lead paint as 5,000 parts per million does not capture lead content that would create a lead dust hazard if dry sanded.[278] In one study, dust-lead levels much lower than the current floor standard of 40 micrograms per square foot "were associated with a considerable excess risk of children having blood lead levels [greater than or equal to] 10 [micrograms per deciliter]."[279] In another, tests using the current residential floor standard failed to identify 85% of housing units of children who had a blood lead concentration of 10 micrograms per deciliter.[280] In response to a 2009 petition for rulemaking, EPA has acknowledged the need to update the standards for lead in dust and lead in paint and EPA's Science Advisory Board issued a final report that supported updated standards.[281] Despite these agency findings, citizen complaints, and litigation, the EPA has taken no action.[282] These studies demonstrate the necessity of frequent evaluation of standards to safeguard community health.

4. Remedies for Failure to Mitigate

When responsible parties fail to adequately remediate or prevent substandard housing conditions, they may be liable for damages that occur when occupants are exposed to hazards. This most commonly occurs when a landlord fails to mitigate a hazard, causing injury to a tenant. Though in instances of widespread hazard creation, a state's attorney general may initiate an action to vindicate the rights of a class of residents.

Hazard specific statutes rarely create a private right of action for tenants when a landlord fails to safeguard the health of residents. For example, the Illinois Lead Poisoning Prevention Act only provides recourse to "the State's Attorney of the county in which the violation occurred or the Attorney Gen-

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[276] Chensheng Lu et al., *Household Pesticide Contamination from Indoor Pest Control Applications in Urban Low-Income Public Housing Dwellings: A Community-Based Participatory Research*, 47 ENVTL. SCI. & TECH. 2018, 2023 (2013).

[277] *See id.*

[278] *See* 40 C.F.R. § 745.223 (2001); 24 C.F.R. § 35.86 (1999).

[279] Bruce Lanphear et al., *Screening Housing to Prevent Lead Toxicity in Children*, 120 PUB. HEALTH REP. 305, 308 (2005).

[280] *Id.*

[281] EPA Sci. Advisory Bd., *Lead Paint Hazard Standards for Residential Buildings, Public and Commercial Buildings, and Renovations of Exteriors of Public and Commercial Buildings*, UNITED STATES ENVTL. PROT. AGENCY (2012) https://yosemite.epa.gov/sab/sabproduct.nsf/0/9c733206a5d64257852576950004f0cb1!OpenDocument&TableRow=2.3#2 [https://perma.cc/6F37-RV7V].

[282] For a detailed discussion of the legislative history and current status of federal lead hazard standards, see Benfer, *Contaminated Childhood*, *supra* note 25.

eral shall bring such actions in the name of people" across the state.[283] Instead, tenants typically pursue recovery via contract and tort actions.

Tenants may be able to recover damages related to exposure to health hazards by pursuing an action for violations of the lease. Historically, there was no covenant or warranty that the leased premises would be fit or habitable.[284] However, over time, the law recognized that tenants did not contract for merely the right to occupy a certain area of land, but rather, they contracted for the right to live in the subject premises.[285] Reflecting this shift, many jurisdictions acknowledged an implied warranty of habitability present in all lease agreements. As the District of Columbia Court of Appeals found, "the old no-repair rule cannot coexist with the obligations imposed on the landlord by a typical modern housing code, and must be abandoned in favor of an implied warranty of habitability."[286] Tenants may successfully assert their rights under the implied warranty of habitability to remedy housing code violations such as "bug and rodent infestations, mold, lack of insulation, absences of heat and hot water, broken door locks, and defective appliances, among others."[287] Judicial recognition of the implied warranty of habitability gives tenants the ability to initiate an action for contract violation when a landlord refuses to address substandard housing conditions.

Tenants may also seek recourse through tort actions. For example, in *New Haverford Partnership v. Stroot*, the Supreme Court of Delaware considered an action tenants initiated against their landlord for failure to maintain the leased premises in a manner free from health hazards.[288] In holding for the tenants, the court held that "the [local] Landlord Tenant Code imposes a duty on landlords to maintain the leased premises in a safe, sanitary condition and that an injured tenant may recover for personal injuries sustained as a result of landlord's negligent failure to do so."[289]

While tenants have the right to bring such actions against their landlords, it may be difficult for a tenant to prevail on a negligence claim, limiting the utility of the remedy. For example, in *Beck v. J.J.A. Holding Corp.*,

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[283] 410 ILL. COMP. STAT. ANN. 45/12.2 (West, Westlaw through P.A. 99-983 of 2016 Reg. Sess.); *see also* Abbasi *ex rel.* Abbasi v. Paraskevoulakos, 718 N.E.2d 181, 186 (1999) ("In this case, both the common law and the Act itself provide incentives for plaintiffs to pursue remedies. We therefore conclude that a private right of action under the [Lead Poisoning Prevention] Act is not necessary to implement the public policy behind the Act, and that plaintiff has an adequate remedy without creation of a private cause of action under the Act.").

[284] Mark S. Dennison, *Landlord's Liability for Breach of Implied Warranty of Habitability*, 43 AM. JUR. 3D *Proof of Facts* § 3, at 329 (1997). This was based on the "common law rule of caveat emptor, as applied to lease transactions, [which] was predicated on the assumption that both landlord and tenant possessed equal knowledge of the condition of the land being leased." *Id.*

[285] *Id.*

[286] Javins v. First Nat'l Realty Corp., 428 F.2d 1071, 1076–77 (D.C. Cir. 1970); *see also* Jack Spring, Inc. v. Little, 280 N.E.2d 208 (Ill. 1972) (finding that there is an implied warranty of habitability in all leases, both written and oral, by looking to the earlier ruling in *Javins*).

[287] Paula A. Franzese et al., *The Implied Warranty of Habitability Lives: Making Real the Promise of Landlord-Tenant reform*, 29 RUTGERS U.L. REV. 1 (2017).

[288] New Haverford P'ship v. Stroot, 772 A.2d 792 (Del. 2001).

[289] *Id.* at 794.

New York addressed the issue of whether a landlord is liable for injury resulting from exposure to toxic mold infestation following a flood in the leased premises.[290] As the court explained, for a tenant to prevail on a negligence claim, she must "first establish that the landlord either created or had actual or constructive notice of the hazardous condition which precipitated an injury."[291] Holding for the landlord, the court rejected the tenant's argument that mold is a foreseeable consequence of flooding in an apartment.[292]

States may also initiate a cause of action against parties for failure to remediate or prevent harm from exposure to health hazards. California and Rhode Island courts specifically examined the liability of paint manufacturers for lead poisoning in residential units under public nuisance doctrine. The plaintiff municipalities in *California v. Atlanta Richfield Company* alleged that the defendant paint manufacturers' sale of lead-based paint created a public nuisance.[293] As a result, plaintiffs argued, the defendants should incur the cost of abatement.[294] The California Court of Appeal found that the defendants were liable under public nuisance based on their promotion of lead paint for interior use coupled with their knowledge of the hazards that such use would create.[295] The court found that the defendants' advertising and publicity campaigns evidenced their promotion of hazards lead-based paint.[296] While the court found the paint manufacturers had actual knowledge of lead-based paint hazards, it stated that constructive notice alone is sufficient for public nuisance liability.[297]

However, in the case of *State v. Lead Industries*, the court arrived at a vastly different conclusion.[298] In Rhode Island, more than thirty thousand children experienced lead poisoning from exposure to toxic paint.[299] In response, the Rhode Island Attorney general brought a case against the paint manufacturers under public nuisance law.[300] At trial, the court found the manufacturers liable for obscuring the risk of lead paint.[301] However, on appeal, the Rhode Island Supreme Court reversed the decision, stating "public nuisance law simply does not provide a remedy for this harm . . . [T]he public nuisance claim should have been dismissed at the outset because the state has not and cannot allege that defendants' conduct interfered with a

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[290] Beck v. J.J.A. Holding Corp., 785 N.Y.S.2d 424 (2004).
[291] *Id.* at 425.
[292] *Id. But see* Brooks v. Lewin Realty III, Inc., 378 Md. 70, 72 (2003) ("[I]n the context of a tort action against a Baltimore City landlord, based upon a child's consumption of lead-based paint which was present in the form of flaking, loose, or peeling paint in the leased premises, in violation of the Housing Code, the [tenant] plaintiff does not have to show that the landlord had notice of the violation to establish a *prima facie* case.").
[293] Statement of Decision, *California v. Atl. Richfield Co.*, Case No. 1-00-CV-788657 (Super. Ct. Mar. 28, 2014).
[294] *Id*. at 7.
[295] *Id*. at 8–9; *California v. Atl. Richfield Co.* 2013 WL 6687953 (Sup. Ct. Dec. 16, 2013).
[296] Statement of Decision, *supra* note 293, at 8–9.
[297] *Id*.
[298] No. PC 99-5226, 2007 WL 711824, at *1 (R.I. Super. Ct. Feb. 26, 2007).
[299] *Id.*
[300] *Id.*
[301] Rhode Island v. Lead Indus. Ass'n, Inc., 951 A.2d 428, 434 (R.I. 2008).

public right or that defendants were in control of lead pigment at the time it caused harm to children in Rhode Island."[302]

As these cases illustrate, the ability of residents or localities to recoup damages from exposure to toxic health hazards varies by jurisdiction. While courts generally recognize an implied warranty of habitability, allowing tenants to pursue damages under breach of contract, variance in tort and public nuisance rulings creates uncertainty and limits avenues of relief. Moreover, even if the harm occurs in a jurisdiction that recognizes such causes of action, cases are time consuming, difficult to win, and ultimately only arise after a harm has occurred. Because residents must first suffer injury in order to have a viable cause of action, the available remedies fall short of preventing the consequences of exposure to health hazards.

F. Community Level Interventions

In addition to the home environment, conditions within the community affect residents' exposure to hazards. As such, community interventions have the potential to greatly influence health and well-being. There are three common approaches within the community intervention framework: community development, urban policy development, and community-based measures. These approaches address underlying causes of poverty as well as social determinants of health.

1. Community Development

Community development is an approach to eliminating poverty that typically includes "a range of efforts to improve the physical, economic, and social environment by promoting affordable housing, small-business development, job creation, and social cohesion in low-income neighborhoods."[303] The actors often include bankers, policy makers, entrepreneurs, real estate developers, financial institutions and other investors, community organizations, local governments, and other entities focused on improving low-income communities.[304] In the community development model, corporations and financial institutions secure capital, in the form of "government subsidies, foundation grants, bank loans, and investments, equity investments for tax credits—to revitalize neglected communities."[305] At the same time, ideally, the effort also strengthens "the social bonds within communities . . . by

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[302] *Id.* at 435, 443.

[303] *Community Development and Health*, HEALTH POLICY BRIEF (Health Affairs/ Robert Wood Johnson Found.), Nov. 10, 2011, at 1 [hereinafter HEALTH POLICY BRIEF] (stating that organizations promoting jobs, housing, and better conditions in low-income neighborhoods also focus on health).

[304] *See id.*; Sandra Braunstein & Risa Lavizzo-Mourey, *How the Health and Community Development Sectors are Combining Forces to Improve Health and Well-Being*, 30 HEALTH AFF. 11, at 2444–45 (2011).

[305] HEALTH POLICY BRIEF, *supra* note 303, at 2.

involving residents in the conceptualizing, designing, building, and operating stages of development."[306]

Although traditionally community development efforts are not explicitly connected to public health improvement initiatives, in effect, they target many of the root causes of social determinants of health. Typical activities usually include building affordable housing, supporting small businesses, and creating jobs.[307] For example, "[t]he community development network builds affordable housing that often includes social services on site; fosters small-business development; and finances buildings that address specific community needs such as child care centers, health clinics, and charter schools."[308]

This approach to poverty elimination is an outgrowth of the "War on Poverty."[309] In August 1964, Congress passed the Economic Opportunity Act,[310] which was amended in 1966 by adding the "Special Impact Program" to fund community development ventures in urban poverty areas, leading to the first community development corporation.[311] The Community Reinvestment Act of 1973 laid the foundation for the community development finance system by requiring banks to meet the credit needs of the low-income communities in which the bank operates.[312] The community development sector has leveraged the Low-Income Housing Tax Credit,[313] building more than 2.5 million homes for low-income families and financing over 126 million square feet of commercial space for small businesses in low-income neighborhoods since 1987.[314] Community development financial institutions (CDFI), which serve as nonprofit lending institutions, were first developed in 1994.[315] Today, there are over one thousand CDFIs with over twenty-five billion dollars in assets.[316]

The community development sector is a well-developed enterprise that has gained the attention of federal and foundation funders. The Ford Foundation and other investors provided funding for the Local Initiatives Support Corporation. Since its inception in 1980, Ford Foundation's Local Initiatives Support Corporation has invested $11.1 billion in community development, which contributed to $33.9 billion in total development of 277,000 affordable homes, in addition to retail and community space, such as schools, child care facilities, and children's playing fields.[317] Similarly, since 1982, Enter-

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[306] Braunstein & Lavizzo-Mourey, *supra* note 304, at 2444.
[307] HEALTH POLICY BRIEF, *supra* note 303, at 1.
[308] Braunstein & Lavizzo-Mourey, *supra* note 304, at 2444.
[309] Alexander von Hoffman, *The Past, Present, and Future of Community Development in the United States*, INVESTING IN WHAT WORKS FOR AMERICA'S COMMUNITIES 21 (2012).
[310] Economic Opportunity Act PL 88-452 (1964).
[311] *Id.* at 21–22.
[312] *See Community Reinvestment Act*, FED. FIN. INSTS. EXAMINATION COUNCIL, http://www.ffiec.gov/cra/ [https://perma.cc/R9EJ-9Q3V].
[313] 26 U.S.C. § 42 (2017); 26 CFR § 1.42 (2017).
[314] Braunstein & Lavizzo-Mourey, *supra* note 304, at 2044.
[315] *Id.*
[316] *Id.*
[317] Hoffman, *supra* note 309.

prise Community Partners has collected more than $11 billion in equity, grants, and loans to help build or preserve nearly 300,000 affordable rental and for sale homes and provide more than 410,000 jobs nationwide.[318] The Neighborhood Reinvestment Corporation, now known as NeighborWorks America, which grew out of a federal task force and evolved into the creation of a national housing network, reached an annual direct investment in economically distressed communities of $1 billion between 1978 and 2000.[319] Despite these efforts, community development efforts "address a relatively small proportion of the immense need to revitalize America's low-income neighborhoods."[320]

2. Urban Policy Development Approaches

In 2009, Executive Order 13503 established the White House Office of Urban Affairs to investigate and develop urban policy for cities and metropolitan areas.[321] The Office's Urban Policy Working Group engaged in four initiatives: place-based policy review, sustainable communities, regional innovations clusters, and neighborhood revitalization.[322] The Neighborhood Revitalization Initiative aimed to transform high-poverty communities by better aligning federal funds and recognizing interconnected problems and solutions.[323] The effort engaged the White House and a wide range of federal government agencies, including the Departments of Health and Human Services, Housing and Urban Development, Education, Justice, and the Treasury in support of local solutions to revitalize neighborhoods.[324] The strength of the program was its interagency collaboration.[325] For example, it served to align federal housing programs (e.g., Choice Neighborhoods) with education, health services, and public safety initiatives.[326] The goal of the initiative and reason for federal coordination was the creation of "neighborhoods of opportunity" that would maximize life outcomes for low-income children no matter where they live, from the inner city to struggling suburbs.[327]

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[318] *Id.*
[319] *Id.* at 26, 49.
[320] *Id.*
[321] Exec. Order No. 13,503, 74 Fed. Reg. 8139 (Feb. 19, 2009). The website for the office no longer exists under the Trump administration and does not appear to be a priority. *Compare The Office of Urban Affairs*, THE WHITE HOUSE: PRESIDENT DONALD J. TRUMP, https://www.whitehouse.gov/administration/eop/oua [https://perma.cc/5C8C-KU4A], *with The Office of Urban Affairs*, THE WHITE HOUSE: OBAMA WHITE HOUSE ARCHIVES, https: //obamawhitehouse.archives.gov/urbanaffairs [https://perma.cc/RTC8-5862].
[322] *Urban Policy Working Grp.*, THE WHITE HOUSE: OBAMA WHITE HOUSE ARCHIVES, https://obamawhitehouse.archives.gov/administration/eop/oua/initiatives/working-groups [https://perma.cc/PMQ8-K2ME].
[323] The White House Neighborhood Revitalization Initiative, THE WHITE HOUSE: OBAMA WHITE HOUSE ARCHIVES, https://obamawhitehouse.archives.gov/sites/default/files/nri_description.pdf [https://perma.cc/HD32-GF8R].
[324] *Id.*
[325] *Id.*
[326] *Id.*
[327] *Id.*

At the same time, the initiative required a place-based policy review. "For the first time in decades, the Federal Government [analyzed]. . . how its policies impact[ed] the way urban and rural areas develop and how well those places support the people who live there, in all aspects of their lives—education, health, housing, energy, and transportation."[328] According to Obama White House archives, "[a]n effective place-based policy requires comprehensive interagency collaboration and investment that can ensure an increased impact of federal dollars and a greater return on federal investments." "A place-based policy is about finding the place-specific triggers not only to localized neighborhood and community growth but also to metropolitan and regional growth" and meeting urban and rural areas "where they are."[329]

3. Affordable Care Act and Community Based Measures

Under the Patient Protection and Affordable Care Act (ACA), nonprofit hospitals are required to regularly assess the social, economic, environmental, and health challenges facing their communities.[330] In the move from volume to value, prevention becomes the priority. Under the ACA, tax exempt hospitals are required to file community health needs assessment (CHNA) with the Internal Revenue Service.[331] The CHNA involves a comprehensive review of local health data and the community input. At the same time, the hospital must prepare an implementation strategy that shows how it will address prioritized health needs through the use of its charitable resources or community benefit.[332] In addition, the ACA authorizes a program of community transformation grants to public agencies and "community-based organizations for the implantation, evaluation, and dissemination of evidence-based community" prevention measures.[333] It also requires "15 billion dollars over ten years in mandatory spending under a Prevention and Public Health Fund to help reshape the physical and social environments of communities that face long-standing barriers to healthy living" and environments.[334]

G. Limitations of Current Approaches to Healthy Housing

While each approach has its own limitations, taken together they pose clear barriers to achieving healthy communities and housing. Current regulations and programs addressing environmental hazards are siloed, reaction-

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[328] Derek Douglas, *Place-Based Investments*, THE WHITE HOUSE: OBAMA WHITE HOUSE ARCHIVES (June 30, 2010), https://obamawhitehouse.archives.gov/blog/2010/06/30/place-based-investments [https://perma.cc/86XW-QRNR].

[329] *Id.*

[330] Norris & Howard, *supra* note 4.

[331] *Id.* at 13.

[332] *Id.*

[333] 42 U.S.C. § 300u-13(a) (2012).

[334] Miller et al., *Healthy Starts for All*, *supra* note 89, at S31.

ary, and under-resourced, which severely limits their ability to promote health and safety of residents.

1. Fragmented Responses to Healthy Communities and Homes

Departments tasked with achieving healthy communities and housing rarely coordinate their efforts, leading to disjointed, ineffective results. Each department has its own procedures to evaluate needs, applying interventions, and measuring outcomes.[335] Agencies typically operate on individualized timelines that do not align with those of other departments.[336] Perhaps most damaging, health, housing, environmental, and community development entities rarely coordinate efforts to address healthy communities and housing.

Individualized budget processes also present obstacles to collaboration. Funding for programs related to environmental hazards, such as health, housing, economic development, and community revitalization, is accomplished through different agencies and reviewed by different Congressional committees.[337] Moreover, budgets are scrutinized individually such that an expenditure by one agency that results in cost savings to a second agency is not recognized or appreciated.[338]

At the local level, fragmented policies make it difficult for residents to navigate the bureaucracy responsible for addressing an environmental health hazard.[339] For example, in Chicago, the Department of Buildings is responsible for home inspections to identify hazards such as cracks in the foundation, holes in the walls or floor, or lack of running water.[340] Noticeably absent from the Department of Buildings inspection protocol is a lead inspection. For that, Chicago residents must contact the Department of Public Health.[341]

Residents living in private property funded by the federal Housing Choice Voucher Program (HCVP) are also subject to disjointed inspection procedures. The local housing authority inspects all properties that receive HCVP funding to ensure compliance with HUD's Housing Quality Standards (HQS).[342] However, HQS does not require a lead hazard risk assess-

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[335] *See* HEALTH POLICY BRIEF, *supra* note 303, at 3–4.

[336] *See id.* at 3.

[337] *See id*. at 4.

[338] *See id.* ("For example, lower health costs associated with a program funded by the Department of Housing and Urban Development might not be identified as savings because those effects are seen in the jurisdiction of another agency or congressional committee.").

[339] Aaron Haier, *Promote Cross-Agency Coordination*, *in* CHANGELAB SOLUTIONS, UP TO CODE: CODE ENFORCEMENT STRATEGIES FOR HEALTHY HOUSING 13(2015), http://www.changelabsolutions.org/sites/default/files/Up-tp-Code_Enforcement_Guide_FINAL-20150527.pdf [https://perma.cc/PE5L-W5PE] ("Because responsibility for health and safety is usually divided among various city agencies or departments, intragovernmental communication and collaboration can help make code enforcement more efficient and effective, and less like a series of disjointed, isolated efforts.").

[340] Health Justice Project, *Reshaping the Regulatory Landscape* (2014).

[341] *Id.*

[342] DEP'T OF HOUS. & URBAN DEV., 7420.10G, HOUSING CHOICE VOUCHER PROGRAM GUIDEBOOK 10–1 (2001), https://portal.hud.gov/hudportal/documents/huddoc?id=DOC_11754.pdf ("The goal of the housing choice voucher program is to provide 'decent, safe, and sani-

ment.[343] Many, if not all, tenants are unaware of this omission, and understandably assume that an inspection includes all hazards. As a result, tenants move into these properties and only discover the presence of lead hazards after their children experience irreversible effects of poisoning.

Fragmented policies can result in a lack of responsibility. When multiple government agencies are implicated in a case involving environmental health hazards, it can be difficult to determine which department has authority and a duty to address the issue. Without a clear division of tasks and responsibility, it can be frustrating for both the occupants of unhealthy homes, who do not know where to turn, as well as government officials, who may feel unsure of what steps to take.

Additionally, when departments do not collaborate, it is difficult to pinpoint program deficiencies or gaps in policy, making it hard to improve upon the existing approaches. Moreover, current research on interventions "is frequently very limited for informing policy and programming decisions, underscoring the need to document pilot projects and to collect and analyze health outcomes data for small areas and for population subgroups."[344] Building a collaborative base of empirical evidence regarding the efficacy of interventions is critical for advancing healthy housing and communities.[345]

2. Reactive and Secondary Prevention Policy

One of the most pressing barriers is that current policies are not structured to adequately prevent exposure to health hazards. Regulations surrounding lead exposure and poisoning among children highlight the failure of reactive approaches. Owners of Chicago residential buildings are required to maintain their property "in such a manner so as to prevent the existence of a lead hazard."[346] However as discussed previously, the law does not recognize a private right of action and is haphazardly enforced. Thus, the child identifies the lead hazard with his or her rising blood lead levels and the resident is left to initiate a costly contract or tort action to recover damages after the child has already suffered irreversible neurological damage.

While baseline standards are intended to provide a foundation of healthy communities and families, the reality is that if they are not followed and enforced, residents have little recourse until injury occurs. This is an ineffective strategy that fails to prevent poor health outcomes or achieve primary prevention. Reactive, rather than preventive law amounts to secon-

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tary' housing at an affordable cost to low-income families. To accomplish this, program regulations set for basic housing quality standards (HQS) which all units must meet before assistance ban be paid on behalf of a family and at least annually throughout the term of the assisted tenancy. HQS defines 'standard housing' and establishes the minimum criteria necessary for the health and safety of program participants.").

[343] Benfer, *supra* note 2, at 40–41.

[344] Miller et al., *Healthy Homes and Communities*, *supra* note 15, at 491.

[345] *See generally* HEALTH POLICY BRIEF, *supra* note 303, at 4 ("[I]t will be critical to build a base of evidence demonstrating which interventions truly improve health outcomes.").

[346] CHI., ILL., MUN. CODE § 7-4-030.

dary prevention and is further problematic given that such policies wait until the hazard has grown to such a scale that it is often difficult and costly to remediate the situation.

3. Inadequate Resources

Programs to achieve healthy communities and housing require adequate funding in order to be successful.[347] Resource limitations severely constrain the ability of agencies to implement projects. In a 2014 survey conducted by the Health Justice Project, Illinois stakeholders stated that difficulty obtaining the resources, staff, funding, and technology needed to establish and enforce regulations were the principal obstacles to achieving healthy communities and housing.[348] For example, stakeholders in the Cook County Department of Public Health (CDPH) reported that limited resources coupled with responsibility for an expansive jurisdiction that includes unincorporated area severely hampered their ability to enforce regulations and provide effective interventions.[349] As a result, CDPH is only able to provide educational resources and consultations, rather than more resource-demanding active services, to unincorporated parts of the county.[350] Other county stakeholders across Illinois reported the same issue: lack of resources prevented departments from adequately addressing issues related to healthy communities and housing.[351]

The budget proposed by the Trump administration[352] will exacerbate these limitations. If enacted, it will impose deep cuts—over six billion dollars—on HUD,[353] affecting rental assistance and eliminating aid for utilities like heating and air conditioning, among others.[354] The budget would also eliminate the Community Development Block Grant Program,[355] which pro-

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[347] ChangeLab Solutions, *Fund the Code Enforcement Program Sufficiently*, *in* CHANGELAB SOLUTIONS, UP TO CODE: CODE ENFORCEMENT STRATEGIES FOR HEALTHY HOUSING 6, 7 (2015), http://www.changelabsolutions.org/sites/default/files/Up-tp-Code_Enforcement_Guide_FINAL-20150527.pdf [https://perma.cc/43CX-N22X("Sufficient funding is key to the success of a code enforcement program, granting communities the resources to maintain valuable housing stock and ensure residents live in safe and healthy homes.").

[348] Health Justice Project, *supra* note 340, at 9.

[349] *Id.*

[350] *Id.*

[351] *Id.*

[352] OFFICE OF MGMT. & BUDGET, AMERICA FIRST: A BUDGET BLUEPRINT TO MAKE AMERICA GREAT AGAIN (2017) [hereinafter BUDGET BLUEPRINT], https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/budget/fy2018/2018_blueprint.pdf [https://perma.cc/MM94-HXMP].

[353] *See* Jose A. DelReal, *Trump Budget Asks for $6 Billion in HUD Cuts, Drops Development Grants*, WASH. POST (Mar. 16, 2017), https://www.washingtonpost.com/politics/trump-budget-asks-for-6-billion-in-hud-cuts-drops-development-grants/2017/03/15/1b157338-09a0-11e7-b77c-0047d15a24e0_story.html?utm_term=.C778d8c869e1 [https://perma.cc/4CN4-45KH].

[354] *See* Yamiche Alcindor, *In Ohio County that Backed Trump, Word of Housing Cuts Stirs Fear*, N.Y. TIMES (Apr. 2, 2017), https://www.nytimes.com/2017/04/02/us/politics/trump-housing-budget-cuts.html?emc=eta1&_r=0 [https://perma.cc/X36Y-9X9S].

[355] *See* DelReal, *supra* note 353.

vides grants to 1,209 state and local governments to address issues such as decent affordable housing, community development, neighborhood rehabilitation and stabilization, and more.[356] In addition to housing programs, the proposed budget contemplates significant cuts to environmental and health programs.[357] Adequate funding is necessary to achieve healthy communities and housing. Until agencies have the resources they need to implement programs, residents will continue to be exposed to toxic health hazards and stakeholders will need to narrow their focus in order to align resources with others.

III. Recommendations

The previous parts documented several threats to health experienced disproportionately by low-income individuals and minority communities, and provided examples of the current approaches that fall short of addressing home and environmental health hazards. This part discusses some of the most successful approaches to creating healthier environments, including advancing health justice, coordination among disciplines and the elimination of silos, engaging the community in the development and implementation of any response or intervention, and increasing funding and dedicated research to inform public policy.

A. Advancing Health Justice

It is critical to advance health justice in order to improve health outcomes, especially among low-income and minority communities. The principle of health justice requires that all persons "have the same chance to be free from hazards that jeopardize health, fully participate in society, and access opportunity."[358] Health justice can only be realized when barriers to personal freedoms and the social determinants of health, from environmental hazards to policy decision that impact health outcomes, are addressed.[359] "Health justice requires a regulatory and jurisprudential approach that consistently and reliably considers the health ramifications of judicial and legis-

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[356] Dep't. Hous. & Urban Dev., *Community Development Block Grant Program-CDBG*, HUD.GOV, https://portal.hud.gov/hudportal/HUD?src=/Program_offices/comm_planning/communitydevelopment/programs [https://perma.cc/64FD-33PZ].

[357] *See* Budget Blueprint, *supra* note 352, at 21, 41; *see also* Brett Theodos et al., Urban Inst., Taking Stock of The Community Development Block Grant (2017), http://www.urban.org/research/publication/taking-stock-community-development-block-grant [https://perma.cc/64PM-ULY8] ("For many jurisdictions, [Community Development Block Grants are] a steady source of funding benefiting low-income individuals and communities, which allows them to focus on implementation rather than fundraising. [The program's] flexibility also allows localities to tailor solutions to their own needs and fund a wide range of activities, from providing housing loan counseling to supporting local attractions that generate economic activity.").

[358] Benfer, *Health Justice*, *supra* note 72, at 277–78.

[359] *See generally id.*

lative decisionmaking."[360] It envisions the integration of the knowledge of social determinants of health into policies, laws, legal systems, social structures, and funding rubrics.[361] Health justice encompasses principles of health equity, health in all policies, and the capabilities approach.[362]

The health equity approach to health care integrates health-promoting community assets, such as healthy food, safe housing, and transportation, into the health care services delivery system.[363] Health in all policies is premised in the understanding that, to address the social determinants of health, policy makers engage in various interventions, many of which involve law.[364] Health in all policies is an "approach that integrates health considerations into non-health sectors; it recognizes that 'corporate boardrooms, legislatures, and executive branches' make choices that profoundly impact health."[365] For example, in 2011, the Obama Administration released an action plan that included a "health in all policies" approach to considering the impact of health inequalities of policy and program decisions beyond the health sector with the goal of identifying possible health consequences.[366] The Institute of Medicine recommends that governments engage in health in all policies examination when considering "major legislation, regulations, and other policies that could potentially have a major impact on public health."[367] Greater and mandatory collaboration across sectors is necessary to fully realize the aims of this approach.

The Health Impact Assessment (HIA) emerged in the public health field as a systematic approach to analyzing potential health consequences of an intervention or policy.[368] HIA is "a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population."[369] The approach originated and was widely adopted in Europe and other developed nations.[370] It has increased in application in the United States over the last decade with Robert Wood Johnson Foundation's and Pew Charitable Trusts's launch of a capacity-building program to support the development of HIAs at local, regional, and national levels.[371] The HIA may be applied to policies that include land use, zoning, transportation, building developments, paid sick days, prison reform, utility usage,

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[360] *Id.* at 337.
[361] *Id.*
[362] *Id.*
[363] *See* NORRIS & HOWARD, *supra* note 4, at 10–11.
[364] Maxim Gakh, *Law, the Health in All Policies Approach, and Cross-Sector Collaboration*, 130 PUB. HEALTH REPS. 96, 96 (2015).
[365] *Id.*
[366] AMANDA CASSIDY, HEALTH AFFAIRS, HEALTH POLICY BRIEF: COMMUNITY DEVELOPMENT AND HEALTH 3 (2011).
[367] Gakh, *supra* note 364, at 96.
[368] CASSIDY, *supra* note 366, at 2–3.
[369] *Id.*
[370] Miller et al., *Healthy Homes and Communities*, *supra* note 15, at S51–53; *see also HIA Case Stories*, HUMAN IMPACT PARTNERS, http://www.humanimpact.org/projects/hia-case-stories/ [https://perma.cc/YW5L-D7GA].
[371] CASSIDY, *supra* note 366, at 3.

among others.[372] For example, the HIA could be used to examine the application of building code requirements for new construction to older homes.[373] Ideally, the HIA will highlight health-related issues that should be considered during policy planning and implementation and create incentives for positive health impacts.[374]

The HIA is an example of how to apply and consolidate existing tools and literature on health to anticipate the potential impact of policies on health disparities.[375] Thus, the reliability of the HIA is dependent upon a strong evidence base from which to draw information.[376] Where there is a gap in research, it may be challenging to identify the actual scope of health impacts.[377] Thus the recommendation below to increase ongoing research is critical to its accuracy and utility.

Other tools include the Community Health Needs Assessment, used by hospital organizations and public health agencies to assess community health needs; the Social Impact Calculator that measures the financial aspect of economic, health, and social impacts of a community development intervention; and Success Measures Data System, developed by NeighborWorks America, which is comprised of 250 data collection tools that can measure effectiveness of health-related interventions.[378] To be holistic and wide-reaching, interventions should engage in an assessment framework that combines multiple tools, including health status of the population, neighborhood influences, building design, community engagement, and capacity-building activities.[379]

B. Coordination, Eliminating Silos, and Engaging the Hospital as a Partner in Community Development

There is growing recognition that the community development and public health fields have similar objectives, targets, and challenges,[380] and national momentum towards cross-sector collaboration is increasing.[381] In the same way that law should be examined for health consequences, it can also be used to require collaboration and prescribe collaborative processes to coordinate efforts and foster partnerships.[382] This requires an understanding of

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[372] Miller et al., *Healthy Homes and Communities*, *supra* note 15, at S51–53; *see also HIA Case Stories*, *supra* note 370.

[373] *See infra* Part II.

[374] CASSIDY, *supra* note 366, at 3.

[375] Miller et al., *Healthy Homes and Communities*, *supra* note 15, at S53.

[376] *Id.* at S48.

[377] *Id.* at S49.

[378] *See* Ctr. on Social Disparities in Health et al., Making the Case for Linking Community Development and Health 34 (2015).

[379] *See* Bethany Rogerson et al., *A Simplified Framework for Incorporating Health Into Community Development Initiatives*, 33 HEALTH AFF. 1028, 1028 (2014).

[380] *Id.*

[381] Paul Mattessich & Ela Rausch, *Cross-Sector Collaboration to Improve Community Health: A View Of The Current Landscape*, 33 HEALTH AFF. 1968, 1968 (2014).

[382] Gakh, *supra* note 364, at 98.

the various legal tools, from legislation to executive orders to court procedures.[383] Resolving the social determinants of health in the home and community requires the removal of structural barriers that complicate cross-sector and -system initiatives and creating incentives or mandates for increasing collaboration.[384] For example, at the federal level, identifying, designing, and implementing health-based solutions would require multiple entities, including the Departments of Health and Human Services, Education, Agriculture, Housing, Transportation, and the Internal Revenue Service, Environmental Protection Agency (EPA). Yet, each department and agency has different deadlines, evaluation systems, and reporting requirements, complicating partnerships. The Partnership for Sustainable Communities is an example of a successful interagency program between HUD, Department of Transportation, and the EPA to coordinate resources and achieve agency mission.[385] Similar and more expansive partnerships and resource sharing are critical to addressing the health of low-income communities.

In 2015, HUD promulgated the Affirmatively Furthering Fair Housing (AFFH) Rule, directing program participants to take "significant actions to overcome historic patterns of segregation."[386] "This is not only a mandate to refrain from discrimination but also a mandate to take the type of actions that undo historic patterns of segregation and other types of discrimination and afford access to opportunity that has long been denied."[387] The AFFH Rule, which is designed to address entrenched segregation and its consequences, provides a framework for coordinated, cross-agency consultation and planning.[388] It requires that participants examine barriers to fair housing, including environmental hazards, using HUD's Environmental Health Index.[389] The AFFH Rule is a critically important public health tool because it both facilitates cross-agency and sector collaboration and targets residential segregation, which is the underlying cause of health disparities among minorities.[390]

On the community level, numerous organizations and community development agents have worked to improve the physical and economic design of low-income neighborhoods with the goal of eliminating poverty. At the same time the public health and medical fields focus on improving the health of low-income populations through community investment and healthy

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[383] *Id.*

[384] Miller et al., *Healthy Starts for All*, *supra* note 89, at S30.

[385] *See* Ctr. on Soc. Disparities in Health et al., *supra* note 378, at 25.

[386] 80 Fed. Reg. 42,272 (July 16, 2015).

[387] 80 Fed. Reg. 42,274 (July 16, 2015).

[388] 24 CFR 5.154 (2017).

[389] 24 CFR 5.150-5.168 (2017); Poverty and Race Research Council, Comment Letter on Environmental Protection Agency Draft EJ 2020 Action Agenda (Jul. 28, 2016), http://prrac.org/pdf/EPA_2020_AFFH_letter.pdf [https://perma.cc/9RLP-UTNR].

[390] Brian D. Smedley & Philip Tegler, *"Affirmatively Furthering Fair Housing": A Platform for Public Health Advocates*, AJPH PLACE BASED INTERVENTIONS, http://prrac.org/pdf/place_based_interventions.pdf [https://perma.cc/U3TZ-C8U5].

homes approaches.[391] These entities are often working in the same communities without coordination of efforts.[392] As David Erickson, the Director of the Center for Community Development Initiatives at the Federal Reserve Bank of San Francisco said:

> There is an entire industry—community development—with annual resources in the tens of billions of dollars that is in the 'ZIP-code- improving' business. And in the health field, there is increasing recognition of the need to act on the social determinants of health. The time to merge these two approaches—improving health by addressing its social determinants and revitalizing low-income neighborhoods—is now.[393]

Hospitals and health systems must identify ways to collaborate and utilize their resources to measure and achieve health communities. In the long run, it will benefit the health system through lower readmission rates and better health outcomes. Together, the community development and health sectors can design holistic interventions to improve the health and environment of the community.[394]

In practice, the health care entity should regard the entire neighborhood, and not just the individual, as the patient.[395] Hospitals spend more than $340 billion each year on goods and services.[396] "Redirecting even a small portion of that spending could have a tremendous impact on helping to restore local economic vitality, providing jobs for hard-to-employ people, and rebuilding urban fabrics and rural value chains."[397] In a high impact approach, "hospitals and integrated health systems are increasingly stepping outside of their walls to address social, economic and environmental conditions that contribute to poor health outcomes, shortened lives, and higher costs in the first place."[398] For their efforts to be effective, cross-sector collaboration is critical.

Numerous elements are necessary to plan and execute cross-sector initiatives. For example, vision, leadership, and mutual understanding are essential, as is strong leadership and community engagement techniques.[399] In one study, the leadership attributes of local actors were central to major place-based health initiatives and the most successful interventions involved

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[391] David Zuckerman, HOSPITALS BUILDING HEALTHIER COMMUNITIES: EMBRACING THE ANCHOR MISSION, 1 (Mar. 2013), http://community-wealth.org/sites/clone.community-wealth.org/files/downloads/Zuckerman-HBHC-2013.pdf [https://perma.cc/2EM3-TX7V].

[392] CASSIDY, *supra* note 366, at 4.

[393] CTR. ON SOC. DISPARITIES IN HEALTH ET AL., *supra* note 378, at 2.

[394] *Id.* at 15.

[395] Matthew E. Dupre et al., *Place-Based Initiatives to Improve Health in Disadvantaged Communities: Cross-Sector Characteristics and Networks of Local Actors in North Carolina*, 106 AM. J. PUB. HEALTH 1548, 1548 (2016).

[396] *See* NORRIS & HOWARD, *supra* note 4, at 2.

[397] *Id.* at 13.

[398] *Id.* at 1.

[399] *See* Ctr. on Social Disparities in Health et al., *supra* note 378, at 29.

collaboration with community health sector.[400] The approach requires working with a variety of stakeholders to identify community needs and interests before the design of any solutions.[401] By taking a "collective impact" approach, actors from numerous sectors can collaborate under a common goal and shared infrastructure for solving a complex social problem.[402]

Ultimately, the revitalization of low-income communities is critical to improving and promoting health and healthy homes, community development, public health, medical, design, and other fields are all critical to improving health outcomes.[403] Neither field will be successful without collaboration. At the same time, as cross-sector efforts increase across the United States, it is critical to assess the impacts of these health improvements.[404]

C. Engaging the Community in the Response

The success and sustainability of community-based interventions are dependent upon community engagement in identifying and defining the problems as well as setting and achieving goals for improvement.[405] The community-based participatory approach allows the members of the community to develop strategies that will address social determinants of poor health and is well suited to public health interventions.[406] Participatory approaches are instrumental in poverty reduction strategies and improve health outcomes by: (1) recognizing the community as a unit of identity; (2) building on strengths and resources within the community; (3) facilitating a collaborative, equitable partnership that increases community ownership and control; (4) integrating knowledge and action for mutual benefit of all partners; (5) promoting a co-learning and empowering process that attends to social inequalities; and (6) disseminating findings and knowledge gained to all partners.[407] In order to successfully engage disadvantaged communities, it is critical to provide technical and material support as well as the transfer of expertise, equal decision-making authority, and the ownership of the research.[408] "Participating in and sharing control of important events affecting their lives might be especially key for socially disadvantaged individuals, who have few opportunities to weigh in on such matters and often cannot prevent undesirable events or bring about good things."[409] Community based approaches that empower community members may also lead to increased

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[400] *See* Matthew E. Dupre et al., *supra* note 395, at 1554.
[401] *See* Ctr. on Social Disparities in Health et al., *supra* note 378, at 34.
[402] *Id.* at 29.
[403] CASSIDY, *supra* note 366, at 1–3.
[404] *See* Mattessich & Rausch, *supra* note 381, at 1968.
[405] *See* Miller et al., *Healthy Homes and Communities*, *supra* note 15, at S49.
[406] Benfer, *Health Justice*, *supra* note 72, at 346.
[407] *See* Barbara A. Israel et al., *Review of Community-Based Research: Assessing Partnership Approaches to Improve Public Health*, 19 ANN. REV. PUB. HEALTH 173, 178–80 (1998).
[408] Miller et al., *Healthy Homes and Communities*, *supra* note 15, at S49.
[409] *Id.*

political and community participation, which can result in the reduction of social inequity and improved community health common in bonded communities.[410]

D. Dedicating Funding and Increasing Research

Achieving healthy communities and homes requires additional investment into funding and research. Increased investments in housing as well as spending to address other social determinants correlate with improvements to resident health.[411] This funding should target several spheres related to exposure to health hazards, including housing stock, community resources, and entities that provide health interventions. For example, research consistently shows that increasing funds to create affordable housing improves health outcomes of residents.[412] These resources must be purposefully directed to projects that will protect and improve resident health, not concentrate low-income and minority residents in high poverty, hazardous communities.

Recent litigation highlights this issue in the context of the Low Income Housing Tax Credits (LIHTC) program. LIHTC, regarded as "the most important resource for creating affordable housing in the United States today," provides state and local agencies with nearly $8 billion each year to "issue tax credits for the acquisition, rehabilitation, or new construction of rental housing targeted to low-income households."[413] In 2008, the Inclusive Communities Project (ICP) brought an action against the Texas Department of Housing and Community Affairs[414] (TDHCA), stating "two decades of racially discriminatory allocation decisions had placed 94% of the 18,710 9% and 4% LIHTC families in the City of Dallas in predominantly minority locations as of 2008."[415] Many of the housing accommodations were sited in distressed neighborhoods containing environmental health hazards including "industrial uses and obnoxious facilities such as illegal landfills."[416] ICP's

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[410] Benfer, *Health Justice*, *supra* note 72, at 347.

[411] Nancy E. Adler, *Assessing Health Effects of Community Development*, INVESTING IN WHAT WORKS FOR AMERICA'S COMMUNITIES 275, 277 (2012) ("This interpretation is consistent with findings from a number of U.S. studies linking specific aspects of housing and other community factors with health outcomes.").

[412] NABIHAH MAQBOOL ET AL., CTR. FOR HOUS. POLICY, THE IMPACTS OF AFFORDABLE HOUSING ON HEALTH: A RESEARCH SUMMARY 2 (2015).

[413] Office of Policy Dev. & Research, *Low-Income Housing Tax Credits*, U.S. DEP'T OF HOUS. AND URBAN DEV., https://www.huduser.gov/portal/datasets/lihtc.html [https://perma.cc/T87F-FWE3].

[414] Inclusive Cmtys. Project, Inc. v. Texas Dept. of Hous. and Cmty. Affairs, No. 3:08-CV-0546-D., 2008 U.S. Dist. WL 5191935, at *1 (N.D. Tex., Dec. 11, 2008).

[415] *Big Results for D/FW from ICP v. TDHCA Litigation: Increase in Housing Access Outside Racially Segregated Areas & Reformed 9% LIHTC Allocation Process*, INCLUSIVE CMTYS. PROJECT (2016), http://www.inclusivecommunities.net/wp/wp-content/uploads/2016/12/Big-Results-from-ICP-v-TDHCA-BLOG-POST.pdf [https://perma.cc/Z8R9-ESXH].

[416] Complaint at 10, Inclusive Cmtys. Project, Inc. v. Texas Dept. of Hous. and Cmty. Affairs, 3:08-cv-00546-D (N.D. Tex., Mar. 3, 2008), https://www.clearinghouse.net/chDocs/public/PH-TX-0004-0002.pdf [https://perma.cc/E4F9-2HPB].

litigation ultimately resulted in adoption of new policies to increase housing opportunities for low-income, minority residents.[417] As this case illustrates, it is not enough to create a funding supply; resources must be used in such a way as to promote health and well being.[418]

While the government traditionally funds these types of programs,[419] financial support may come from private entities. For example, recognizing the outsized effect that homes have on resident health, UnitedHealth invested fifty million dollars to construct low-income housing units in Minnesota and the Upper Midwest.[420] Similarly, public-private partnerships offer opportunities to increase resources within communities. Community Development Financial Institutions Fund invests federal and private sector capital to promote growth in low-income communities.[421]

In addition to funding, "[r]igorous evaluation of emerging models is essential. As communities across the country develop their own population health coalitions, research can and should be called upon to evaluate the efficacy of a range of governance models in real time."[422] Research and evaluation are critical to "generate strong evidence of impact in order to guide policy and secure future investments."[423] For example, researchers suspect that issues related to building size and public housing may be crucial to reduce asthma morbidity.[424] However, additional research on policies related

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[417] INCLUSIVE CMTYS. PROJECT, *supra* 415. *But cf.* CHANGELAB SOLUTIONS, A PRIMER ON QUALIFIED ALLOCATION PLANS LINKING PUBLIC HEALTH & AFFORDABLE HOUSING 4 (2015), http://kresge.org/sites/default/files/Primer-Public-Health-Affordable-Housing2015.pdf [https://perma.cc/A6EW-7CZE] ("The government awards financial benefits (tax credits) as part of the LIHTC program. In order to decide who receives these benefits each year, states revise and finalize their Qualified Allocation Plans (QAPs).").

[418] After satisfying minimum requirements, states have broad discretion in formulating QAPs, which may include incentives to develop housing in healthier areas. "QAPs can ensure that affordable housing is constructed with public health issues in mind, and health-promoting QAP criteria can result in healthier places to live for low-income residents." CHANGELAB SOLUTIONS, *supra* note 417, at 4.

[419] For example, "the community development field acquires nearly $16 billion each year in federal government subsidies. These subsidies and additional funds from state and local governments and foundations serve as seed capital to attract market-rate capital from insurance companies, pension funds, and social investors." For an overview of federally funded community development sources, *see* Ctr. on Soc. Disparities in Health et al., *supra* note 378, at 14–15.

[420] Jackie Crosby, *UnitedHealth Invests $50 million in Low-Income Rental Housing*, MINNEAPOLIS STAR TRIB. (Nov. 14, 2013), http://www.startribune.com/unitedhealth-invests-50-million-in-low-income-rental-housing/231933561/ [https://perma.cc/NS3F-GBAD].

[421] *See What Does The CDFI Fund Do?*, U.S. DEP'T OF THE TREASURY: COMMUNITY DEV. FIN. INSTITUTIONS FUND (Apr. 9, 2017, 11:28 PM), https://www.cdfifund.gov/Pages/default.aspx [https://perma.cc/ND3H-JF6H]; *see also* Miller, *Healthy Homes and Communities*, *supra* note 15, at S53 ("Another strategy for securing ongoing support for place-based demonstrations is to engage community development financial institutions (CDFIs).").

[422] Lauren Taylor et al., *Defining the Health Care System's Role in Addressing Social Determinants and Population Health*, HEALTH AFF. BLOG (Nov. 17, 2016), http://healthaffairs.org/blog/2016/11/17/defining-the-health-care-systems-role-in-addressing-social-determinants-and-population-health/ [https://perma.cc/MD8L-BRFG].

[423] Miller et al., *Healthy Homes and Communities*, *supra* note 15, at S48.

[424] Lindsay Rosenfeld et al., *Are Building-Level Characteristics Associated with Indoor Allergens in the Household?*, 88 J. URB. HEALTH: BULL. N.Y. ACAD. MED. 14, 15 (2011).

to amending the building code, violations adherence, building design standards, and landlord incentives are essential to better understand the issue.[425] Such research has the potential to provide lawmakers with necessary data to incorporate health into public and private policies and programs.[426]

The utility of increased research will be limited if the results are not routinely included in the policymaking process. The lack of investment in "translation and dissemination of research and evaluation" prevents decision makers from incorporating findings into improved policies.[427] However, as data is better integrated into policymaking, "health services researchers should be careful about importing their expectations of bio-medical interventions into the realm of organizational and social change."[428] Finally, the relationship between research and funding is circular. As research proves the efficacy of particular interventions, resources must be available to fund replication of these programs in local communities.[429] Sustainability measures must be part of any approach.[430] Doing so will achieve long lasting healthy communities and homes, thereby improving the health of residents.

Conclusion

As described herein, it is well-known that factors beyond access to health care influence health outcomes. Where we live impacts our health and our ability to access opportunity throughout our lives. This is particularly true with regard to housing conditions and community factors. At the same time, policies and lack of coordination between sectors can create barriers to addressing the social determinants of health and poverty on the community and environmental levels. In recognition of these facts, decision makers must implement processes to connect the evidence, increase collaboration between traditionally siloed sectors, and engage in health justice policy making. As diverse sectors increasingly recognize the relationship between poverty and poor health outcomes, it is of paramount importance that our policies foster and support collaboration. This type of action and the adoption of multi-faceted, comprehensive approaches are necessary to address the challenging, complex, interrelated issues of poverty reduction, eliminating racial disparities, and increasing health among all populations. The problem of poverty and social determinants of health are human constructs that society can solve with a coordinated, resourced, and determined effort. But it

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[425] *Id.*

[426] Miller et al., *Healthy Homes and Communities*, *supra* note 15, at S51.

[427] Miller et al., *Healthy Starts for All*, *supra* note 89, at S30.

[428] Taylor et al., *supra* note 422.

[429] Miller et al., *Healthy Starts for All*, *supra* note 89, at S30 ("Despite an abundance of evidence on interventions that are effective in improving the social conditions of children and their families, investments in replicating these strategies in local communities or states have been modest to date.").

[430] Meghan Hazer, *Sea View Community in New York City Ties Sustainability to Human Health*, U.S. Green Bldg. Council (Mar. 28, 2017), http://www.usgbc.org/articles/sea-view-community-new-york-city-ties-sustainability-human-health [https://perma.cc/8Z6U-2GJR].

will require our best assets and skills and unwavering collective commitment. When interprofessional partnership is commonplace, when the community is seen as an indispensable partner, and the evidence is targeted, poverty and the social determinants of health will be eliminated, human beings will have the ability to flourish in good health, and health justice will be achieved.