Home Health Hazards and Asthma

The Downstream Impacts on Youth in Southwest Latine and Indigenous Communities

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January 2021

The COVID-19 crisis has compounded racial and class inequities in housing and health. One result of this involves childhood asthma, which has been linked to exposure to substandard housing and is a specific cause for concern: key asthma predictors such as housing insecurity and concentrated poverty have been exacerbated during the pandemic, as school closures and social distancing recommendations have resulted in kids spending more time inside the home. Incorporating social determinants of health into philanthropic decisionmaking is an important and recognized component of improving health and reducing long-standing disparities in health and health care (Artiga and Hinton 2019).

This brief examines the relationship between the incidence of childhood asthma and substandard housing. We focus on two southwestern states, Arizona and New Mexico, to address the research gap pertaining to the relationship between childhood asthma and substandard housing among Latine and Indigenous youth.[1] The current federal, state, and tribal policy landscape demonstrates the political will to reduce disparities in asthma incidence at the state level in Arizona and New Mexico, and there is an opportunity for philanthropy to support community-led initiatives, build tenant support services, and leverage federal funding for local initiatives. Although there is substantial literature connecting substandard housing to asthma, and asthma to negative health outcomes, a better understanding of the welfare of Latine and Indigenous youth can inform a tailored philanthropic response in these and other similar states.

Background

In the United States, asthma is the most common chronic condition among children and has quadrupled in incidence in the past 20 years. It affects an estimated 6.1 million youth younger than 18 and in 2016 it was the third leading cause of hospitalization among youth younger than 15.[2] Moreover, the burden of asthma is borne disproportionately by Black people, Indigenous people, and other people of color, and by people with low incomes: in 2018, American Indian/Alaska Native (12 percent) and Black (10.9 percent) people had higher asthma rates than white (7.7 percent) and Latine (6.4 percent) people, and people with a family income below the poverty threshold (11 percent) had higher asthma rates than people with a family income above the poverty threshold (7 to 9 percent).[3]

Increased asthma rates among Black youth, Indigenous youth, and other youth of color in families with low incomes significantly worsen educational and behavioral outcomes. For example, in 2013, asthma accounted for an estimated 13.8 million lost school days among school-age children with an asthma flare-up in the previous year and was the third most common reason for absenteeism.[4] In a separate study, poor housing quality was the most consistent and strongest predictor of emotional and behavioral problems in children and youth with low incomes when compared with factors such as housing affordability, housing ownership, residential stability, and housing subsidy receipt.[5]

There is also research connecting substandard housing to adverse and detrimental asthma outcomes. An estimated 6 percent of households with children ages 0 to 17 live in inadequate housing with severe or moderate physical problems such as dust mites, cockroaches, rodents, molds, carbon monoxide, and nitrogen dioxide, all of which are very likely to cause higher asthma incidence and asthma morbidity.[6]

The disproportionate asthma rates among youth with low incomes and Black youth, Indigenous youth, and other youth of color are driven partly by greater exposure to substandard housing. Approximately 7.5 percent of non-Latine Black people live in substandard housing compared with only 2.8 percent of white people, a substantial disparity that has largely persisted because of systemic housing segregation (Jacobs 2011). In addition, children in rented homes (disproportionately Black children, Indigenous children, and other children of color) are more likely to be exposed to asthma triggers (Ganesh et al. 2015).

The good news is that as much as 40 percent of the risk of asthma in nonwhite children is attributable to exposure to residential allergens that can be reduced, if not eliminated (AAFA 2019). To fully address the downstream manifestations of asthma, we need a much clearer picture of how and where Black children, Indigenous children, and other children of color experience these disparities. Most childhood asthma studies, especially those tying the disease to substandard housing, have focused on urban youth; few data are available on contributors to asthma prevalence in rural contexts (Valet, Perry, and Hartert 2009). Furthermore, relatively little is known about the geographic variation and disparities in prevalence of asthma in southwestern states, which have large Latine and Indigenous populations (Lung-Chien and Alamgir 2020). This lack of information is concerning given that

Albuquerque, New Mexico, was the city with the highest estimated asthma prevalence in the nation (AAFA 2019).

Methodology and Findings

To understand the relationship between health and substandard housing, we used Comprehensive Housing Affordability Strategy housing data (2013 to 2017), which provide unique cross-tabulations of the American Community Survey. There are many ways to identify substandard housing, but for the purposes of this study we define substandard housing using the Comprehensive Housing Affordability Strategy definition of a "severe housing problem," which involves one or more of more of the following conditions: lack of complete plumbing or kitchen facilities, high housing costs as a percentage of income, and/or overcrowding.

The Behavioral Risk Factor Surveillance System, which is the typical source of data on asthma prevalence in the US, does not report youth or county-by-county results, making it difficult to understand disparities in youth outcomes within states. Given this, we pulled the following health indicators from Arizona's and New Mexico's Environmental Public Health Tracking databases:[7]

- Arizona and New Mexico asthma hospitalizations per 10,000 residents
- Arizona carbon monoxide poisoning emergency department visits, crude rates per 100,000 population (nonfire related)
- New Mexico carbon monoxide exposures, poison and drug information center calls, crude rates per 100,000 population (nonfire related)

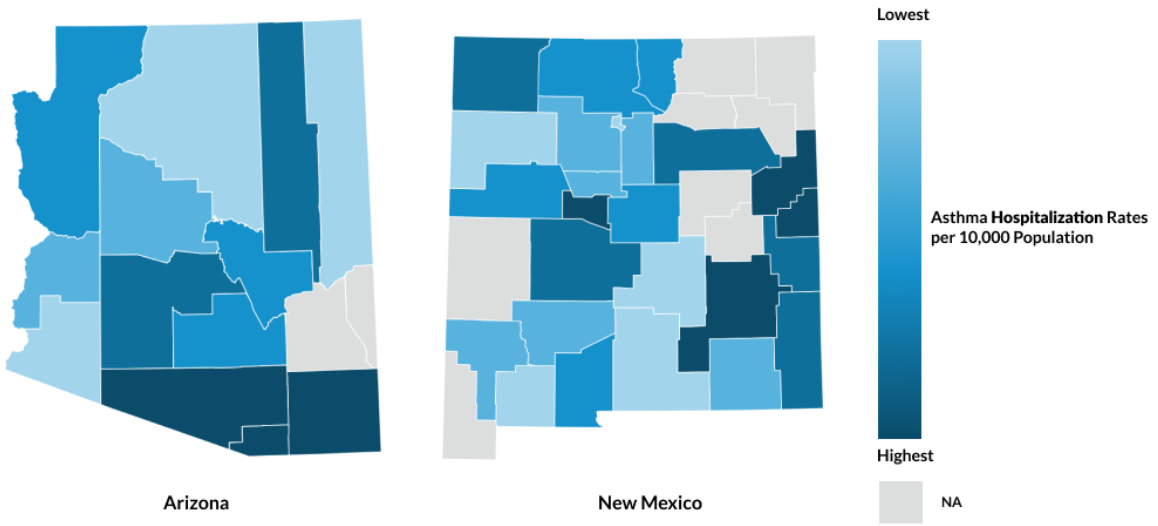
All of our data were joined together and with American Community Survey data (race, ethnicity, housing cost burden, population density, and year of housing construction). After all variables of interest were compiled at the county level, we set out to understand the relationship between substandard housing and health by mapping demographics, health, and housing. We also analyzed the correlation coefficients between key variables.[8]

We found that asthma hospitalization rates and total percentage of substandard homes trend in the same direction: for every one-unit increase in substandard rental housing there is a 0.29-unit increase in asthma hospitalizations across counties in both states. This correlation was more pronounced for Latine renter households, where for every one-percent increase of Latine households living in substandard rentals, there is a 0.32-percent increase in asthma hospitalizations. In Arizona, counties with the highest asthma hospitalization rates (75th percentile and above) are on average 14 percent Indigenous and 47 percent Latine, whereas the average county in the state is 2 percent Indigenous and 31 percent Latine. In New Mexico, counties with the highest substandard housing rates (75th percentile and above) are on average 14 percent Indigenous, whereas the average county is 8 percent Indigenous. In Arizona, counties with the highest substandard housing rates (75th percentile and above) are on average 41 percent Latine, whereas the state's average county is 31 percent Latine. Moreover, carbon monoxide hospitalizations in Arizona and total percentage of substandard homes move in the same direction: for

every one-unit increase in carbon monoxide hospitalization there is a 0.44-percent increase in the share of homes that are substandard across counties. Counties in New Mexico with Indigenous populations also saw high carbon monoxide exposure.[9]

FIGURE 1

Asthma Hospitalization Rates by County



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Source: Arizona's and New Mexico's State Environmental Public Health Tracking databases.

Policy Landscape

In planning a philanthropic intervention, it is important to bear in mind the policy landscape at all levels, which are as follows:

- **The federal level.** In 1999, the US Department of Housing and Urban Development launched its Healthy Homes Initiative to protect children and their families from housing-related health and safety hazards through two grants: the Healthy Homes Demonstration Program and the Healthy Homes Technical Studies.[10]
- **The state level in New Mexico.** The Centers for Disease Control and Prevention National Center for Environmental Health funded the New Mexico Asthma Control Program from 2014 to 2019 to develop strategies for communities and health systems to work together to reach comprehensive asthma control services. They produced a series of videos in English, Spanish, and Navajo in 2017 with health care workers to model asthma action plans and appropriate use of medication devices.[11]

- **The state level in Arizona.** The Arizona Department of Health Services has asthma programming, an online network supported by the US Environmental Protection Agency, the Robert Wood Johnson foundation, and the Merck Company Foundation that provides the space for sharing best practices for programs working in asthma prevention.[12]
- **The tribal level.** The Department of Housing and Urban Development has the Healthy Homes Production Grant Program for Tribal Housing, which provides 12 yearly grants for tribes to retrofit their existing housing stock to improve environmental health conditions in homes.[13]

In many respects, asthma advocacy parallels comprehensive efforts to mitigate child lead poisoning; there is scientific consensus on the link between childhood asthma and indoor pollutants and there are federal programs prepared to support ongoing local campaigns. Efforts to mitigate lead poisoning have shown that coordinated public policy and philanthropic response can have an impact and had decreased childhood lead poisoning by 75 percent over 20 years.[14] No education campaign will lower the price of housing or ensure that unwilling landlords protect tenants, which means effective interventions must focus on multicomponent and multitrigger approaches (Krieger 2010). By following the success of lead mitigation campaigns and adapting culturally competent and equity-centered initiatives, philanthropy can support local efforts to build comprehensive solutions to complex problems.

Recommendations

The ongoing health and housing crisis exacerbated by the COVID-19 pandemic calls for urgent action to address substandard housing to reduce childhood asthma prevalence and emergency room visits for Latine and Indigenous youth. Philanthropy is uniquely positioned to build coalitions to mitigate the negative health outcomes of substandard housing on child well-being. Regional philanthropy that brings together larger metropolitan and smaller rural entities is best positioned to implement the recommendations that follow.

Guiding principles for such efforts include the following:

- **Community-led research and programs:** program and funding are developed in consultation and collaboration with community leadership and follow the lead of community and youth advisory boards.
- **Cross-sector collaboration:** wraparound services are created that combine the expertise of doctors, nurses, community health workers, teachers, housing attorneys, and housing advocates. These kinds of medical-legal interventions at the city and county levels have proven effective at reducing asthma hospitalizations in other regions (O'Sullivan et al. 2012).
- **Cultural competence and a focus on equity:**
    - » **Build racially equitable and data-informed programs.** Prioritize Black communities, Indigenous communities, and other communities of color experiencing high rates of substandard housing when implementing programs leveraging Healthy Homes funding. According to our analysis, these communities include Chaves, Curry, and San Juan (Dine' or

Navajo Nation) Counties in New Mexico, and Pima (Tohono O'odham Nation) and Santa Cruz Counties in Arizona.

- » **Tailor programs for rural conditions**. Rural children are likely to live in older single-family homes and rental properties and often have fewer local resources allocated to housing programs (Hughes et al. 2017). In addition, despite the evidence supporting combined medical-legal interventions, few programs currently target rural Indigenous communities (National Center for Medical Legal Partnership 2014).[15]
- » **Build and earn trust.** Trusted partners are particularly important when dealing with households with undocumented residents who may be more wary of seeking government support and of reporting requirements involving personal identification. Reflective awareness, empathy, active listening techniques, and demonstrating a long-term commitment to eliminating disparities are all crucial.

Moreover, programmatic recommendations for such efforts include the following:

- **Coordinate tenant services and outreach.** With local government support, create and house home health hazard resource centers and hotlines in local organizations, and fund them through philanthropy. Outreach to tenants with low incomes should be done through trusted partnerships such as legal-aid organizations and service providers. These resource centers will provide culturally relevant information to help tenants identify asthma triggers and/or will provide home inspections, report hazards, and provide legal support so tenants know how to identify and report a hazard and what a landlord's obligations are after a hazard is reported.
  - » This outreach is reliant upon strong partnerships with legal-aid services and primary care providers. Legal support is important because fear of landlord retaliation (such as eviction) is a primary factor that deters tenants from reporting home health hazards. Health partnerships are necessary because they can identify children with asthma and refer them to resources.[16]
- **Provide funding for remediation.** Create funds, administered by local organizations and funded by philanthropy, that provide home loans and grants to property owners who lack the resources to address hazards. This conditional funding promotes a sense of accountability and requires landlords to agree to terms that would not displace current residents or be subject to inspection upon project completion. It is important for this funding to be conditional, to require that landlords not retaliate or displace tenants, and to ensure hazards are fully remediated.
- **Build data infrastructure.** Push for state legislation that includes asthma triggers in rental certification processes. Make county-level data disaggregated by race available for children and youth ages 0 to 17. Such data, in tandem with local input, should form the basis of strategic prioritization plans. Pediatricians have backed the idea of including information on housing code violations in children's medical files as a way to improve health outcomes, but to do this, these data must be accurate and accessible (Beck et al. 2014).

Cities like Rochester, New York, that have undertaken strategies similar to those recommended above have seen reductions in lead poisoning of more than 90 percent.[17] Although more research is needed to fill gaps in data and knowledge about associations between childhood asthma and substandard housing in the southwestern United States and other regions, the positive impact philanthropy can have in this space is clear. Addressing and preventing home health hazards is an upstream approach that can significantly improve the well-being of Latine children, Indigenous children, and other children of color by decreasing asthma hospitalization and chronic absenteeism (among other outcomes). What is needed to achieve this is a coordinated effort of partners committed to addressing disparities in social determinants of health for these youth.

Notes

1 For the purposes of this brief, the authors identify Latinx, Latino, Latina, and Hispanic people and households as Latine in order to inclusively refer to people of Latine origin of all gender identities. We choose this term because it aligns most closely with existing gender-neutral terms in Spanish, but we acknowledge that not all Latine people use the term. The research team is committed to the use of inclusive language wherever possible.

2 "Asthma and Children Fact Sheet," American Lung Association, October 23, 2020, https://www.lung.org/lung-health-diseases/lung-disease-lookup/asthma/learn-about-asthma/asthma-children-facts-sheet.

3 "Current Asthma Demographics," American Lung Association, last updated July 6, 2020, https://www.lung.org/research/trends-in-lung-disease/asthma-trends-brief/current-demographics.

4 "Asthma and Children Fact Sheet," American Lung Association.

5 Boston College, "For low-income families, substandard housing takes toll on children," ScienceDaily, October 22, 2013, www.sciencedaily.com/releases/2013/10/131022132145.htm.

6 "America's Children: Key National Indicators of Well-Being," Federal Interagency Forum on Child and Family Statistics, 2013, https://www.childstats.gov/pdf/ac2013/ac_13.pdf.

7 Although much of these data are technically available on the state websites, county-level data on children ages 5 to 14 are suppressed in many counties, which left us reliant on asthma hospitalizations across all age groups, instead of childhood hospitalizations, which we hoped to use. Although these datasets are two to three years out of date, the data do not show major deviation year over year, and neither Arizona nor New Mexico has implemented major housing policy changes that would impact health or substandard housing data and reporting. Given this, we believe that these data are just as relevant during a pandemic when existing inequities have been exacerbated. In addition, not all counties had asthma hospitalization rates or carbon monoxide exposure/hospitalization rates, and only New Mexico had data available that were disaggregated by race and ethnicity. This meant that we replaced any missing values with 0 values.

8 It is important to note that correlation is not causation, and just because there are correlations between housing and health outcomes, that does not mean that housing caused those health outcomes (though it is important to understand that relationship).

9 Although we felt that these were substantive findings that show a relationship between asthma, substandard housing, and race/ethnicity, these correlations do not directly line up on a county-level map.

10 "The Healthy Homes Program," US Department of Housing and Urban Development, accessed January 7, 2021, https://www.hud.gov/program_offices/healthy_homes/hhi.

11 "Asthma Control Program," New Mexico Department of Health, accessed January 7, 2021, https://www.nmhealth.org/about/erd/eheb/ap/; "New Mexico Environmental Public Health Tracking," New Mexico Department of Health, accessed January 7, 2021, https://nmtracking.org/dataportal/query/Index.html.

[12] "Who We Are," Asthma Community Network, accessed January 7, 2021, https://www.asthmacommunitynetwork.org/about/whoweare.

[13] "Tribal Indoor Air Funding Directory," US Department of Housing and Urban Development, accessed January 11, 2021, https://tribalindoorairfunding.org/agency/us-department-of-housing-and-urban-development-hud.

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[15] "Meeting focuses on bridging health and legal care for Native Americans," National Center for Medical Legal Partnership, May 29, 2014, https://medical-legalpartnership.org/meeting-focuses-bridging-health-legal-care-native-americans/.

[16] Steve Orr and Meaghan M. McDermott, "Lead poisoning still an issue in Rochester," *Democrat & Chronicle*, February 5, 2016, https://www.democratandchronicle.com/story/news/2016/02/05/rochester-still-has-lead-issues/79704096/.

[17] Orr and McDermott, "Lead poisoning still an issue in Rochester."

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Acknowledgments

This brief was funded by the Urban Institute. The views expressed are those of the authors and should not be attributed to the Urban Institute, its trustees, or its funders. Funders do not determine research findings or the insights and recommendations of Urban experts. Further information on the Urban Institute's funding principles is available at urban.org/fundingprinciples.

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