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Research Statement

Health disparities in the United States remain stark and persistent. Black and Hispanic infants are born preterm at substantially higher rates than their white counterparts, and asthma-related emergency visits are disproportionately concentrated in low-income communities of color. These patterns reflect decades of policy decisions that have shaped where people live, the quality of their housing, their exposure to environmental hazards, and their access to resources when disasters strike. My research broadly addresses environmental justice in a changing climate, organized around three aims: (a) characterizing how climate change, aging infrastructure, and the built environment create unequal environmental exposures; (b) quantifying the health consequences of these inequitable exposures; and (c) evaluating whether policies and interventions designed to reduce these burdens reach those who need them most. Across this work on power outages, indoor hazards such as mold, and air pollution I am committed to research that is directly usable by community partners and policymakers and attentive to how climate change is reshaping environmental health risks. As a Texan, I am motivated by the opportunity to bring this work home to a state facing significant and growing climate-related and environmental justice challenges.

Characterizing Environmental Inequities Across Multiple Exposures.

My path toward this focus began in the first year of my PhD at the Mailman School of Public Health at Columbia University, when Winter Storm Uri triggered the 2021 Texas Power Crisis. Watching millions of Texans—disproportionately Black and Hispanic—lose power for days, often without adequate preparation or support, raised urgent questions about who bears the costs of infrastructure failure. My doctoral research examined the distribution, duration, and equity dimensions of the crisis, finding that at its peak, nearly one-third of Texas customers lost power, but counties with higher proportions of Hispanic residents experienced more severe outages, and Black respondents were more likely to report longer disruptions (Flores et al., 2023). My colleagues and I extended this work nationally (Do, McBrien, Flores et al., 2023) and locally in New York City (Flores et al., 2024), consistently documenting that outage burden falls disproportionately on communities of color.

This work on infrastructure vulnerability expanded naturally into the broader built environment, particularly through my graduate research on the New York City Housing Authority (NYCHA), where historic underfunding leaves more than 300,000 predominantly Black, Hispanic, and low-income residents grappling with environmental hazards in their homes. When NYCHA began publicly reporting service interruptions, I scraped these records and, with WE ACT for Environmental Justice's NYCHA Working Group, built an interactive dashboard that let residents validate their lived experiences and advocate for improved conditions (Flores et al., 2024)—reinforcing my commitment to research with community partners rather than simply about them.

I also examined how climate-related disasters alter indoor environmental conditions: following Superstorm Sandy, widespread water intrusion left many New York City residents with persistent respiratory symptoms known locally as “Sandy cough,” and I found that this water intrusion produced fungal profile changes previously linked to asthma development and exacerbation (Flores et al., 2026). Together, these projects investigating overlapping infrastructure and climate-related vulnerability laid the foundation for my current research on how climate-sensitive exposures contribute to health inequities and how those inequities can be reduced.

Characterizing the Health Impacts of Environmental Exposures.

Characterizing inequities in exposure is only the first step; my research also asks how these exposures translate into adverse health outcomes. My initial work in this area focused on power outages, which I hypothesized represent more than a temporary loss of electricity, disrupting temperature regulation, increasing exposure to air pollution and other indoor hazards,

limiting access to medical equipment, and creating psychosocial stress. Using the NYCHA service interruption data I assembled, I led a case-crossover analysis demonstrating that power outages increased the risk of asthma-related emergency department visits, particularly during warmer months (Flores et al., 2026), and contributed to related studies linking outages to pediatric carbon monoxide poisoning (Northrop, Do, Flores et al., 2025) and injuries (Northrop, Flores et al., 2025). Together, this work helped establish power outages as a consequential environmental exposure with diverse health impacts. Beyond power outages, I have led or contributed to studies characterizing the health impacts of mold growth (Flores et al., 2026), extreme temperatures (Flores et al., 2023; McBrien, Catalano, Bruckner, and Flores et al., 2026), and wildfires (Casey, Gu, Schwarz, Frankland, Wilner, McBrien, and Flores et al., 2025).

Evaluating Policies and Interventions.

My research is ultimately motivated by the belief that documenting disparities should lead to action: after identifying who is exposed and how exposure affects health, I ask whether existing policies and interventions are actually reducing these inequities. During my doctoral work, I recognized a gap in my mentor's NIEHS-funded R01 evaluating Mold Busters, a system-wide mold intervention in NYCHA housing: resident experiences with the intervention varied widely, and my Sandy research underscored how central extreme precipitation is to household mold risk, yet the ongoing evaluation had not examined storm-related impacts or asked where it worked and for whom. I secured an NRSA F31 fellowship to expand the evaluation by centering equity and climate vulnerability. I found that while the intervention substantially reduced asthma-related emergency department visits overall, its magnitude depended on building- and neighborhood-level factors, and that mold complaints increased following heavy precipitation even with the intervention in place (Flores et al., 2026). These findings illustrate two frameworks that continue to guide my work: effective interventions exist, but their reach is not uniform, and effective interventions today may not remain effective in a changing climate. This work was published in the American Journal of Respiratory and Critical Care Medicine and received the American Thoracic Society's 2026 Assembly Award in Honor of Margaret Becklake.

Current Research and Building Toward Texas.

As a Postdoctoral Fellow at the Dell Medical School and School of Social Work at the University of Texas at Austin, I am deepening training in each component of my research program: building expertise in extreme heat as an environmental exposure and strengthening my grounding in perinatal epidemiology through a project on heat metrics and adverse birth outcomes with climate scientists at the Jackson School of Geosciences; extending my work on respiratory health through a study of pollen exposure and COPD exacerbations across Texas; and learning the Texas policy landscape through collaborations with clinicians, community partners, and city planners. Beyond the findings of any single study, this postdoctoral training is building the content expertise, methodological range, and local relationships necessary for the independent, Texas-based research program in environmental justice I am working toward.

Future Directions.

My long-term goal is to lead an independent research program in Texas on the health consequences of environmental exposures at the intersection of climate change, housing quality, and structural inequality, in partnership with the community-based organizations and collaborators I am building here. In the near term, I plan to pursue K99/R00 funding to expand my training into intervention design and testing, pairing the large-scale analyses I currently conduct with community-driven strategies to mitigate their health impacts. Ultimately, I hope this program of research advances environmental justice, strengthens climate adaptation, and improves public health for communities that have historically borne the greatest environmental burdens, generating knowledge that communities, advocates, and policymakers can use to build a more equitable, climate-resilient future.