



Working Paper Series

Survivors as Experts: A Community Evaluation of Disaster Recovery in Northeast Houston

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Abstract

Nearly four years after Hurricane Harvey struck Houston in 2017, thousands of Houstonians remain displaced or are still living in damaged homes that endanger their health. This working paper uses participatory action research to identify and analyze the barriers to recovery from the perspective of residents living in low income Black and Brown neighborhoods in Northeast (NE) Houston. Community-based research methodology is used here as an intervention to address the exclusion of disaster survivors and frontline communities from decision-making regarding disaster recovery processes and resource allocation. In order to expand their expertise beyond their own experience, five Hurricane Harvey survivors each interviewed four or five friends or neighbors and participated in subsequent focus groups. The findings from these conversations are complemented by the experience of staff members of West Street Recovery (WSR), a grassroots disaster recovery organization that has navigated the recovery process alongside NE Houston residents, rebuilt homes, and advocated for improvements in disaster preparedness and recovery governance.

Collectively this research group identified barriers to a just recovery, describing how existing inequities are reproduced and amplified within the stages of evacuation, provision of immediate needs, applications for aid, temporary housing, and home repair following Harvey. At the conclusion of each of these sections we recommend administrative, procedural, and cultural changes that could be made to improve recovery outcomes. The recommendations are separated by section to focus on the different actors and organizations responsible for various aspects of recovery at the various stages of disaster. The recommendations presented should be read as ways forward, not empirical findings on the recovery process as it now exists. In the discussion and conclusion, we move towards a broader understanding of just recovery at the neighborhood level, and discuss how barriers to recovery are not individual but rather part of a shared experience and history of discrimination among residents of marginalized neighborhoods, low-income people, and Black and Brown people. We explore the dramatic interventions necessary to reorient the disaster recovery apparatus towards justice and to catalyze structural transformations in the unjust class, race, and geographic systems that currently define recovery.

At each stage of research, community members and disaster survivors gave feedback to check that results were true to their experiences, that recommendations matched their wishes for improved recovery systems, and that the research method reflected their understanding of an inclusive investigatory process. Community researchers (CRs) both served as primary sources and took part in analyzing the evidence. This degree of iteration and integration is a unique contribution. This paper is a product of years of dialogue, collaboration, and collective ideation: in both methodology and purpose, it is inseparable from the work of material recovery, relationship building, and organizing that has been growing in NE Houston in the wake of Hurricane Harvey.

Keywords: participatory action research, Hurricane Harvey, disaster recovery, disaster justice, social vulnerability

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“Each disaster has its own recovery, but for some reason we never recover at the same rate as everyone else. There is no equity.”

-Doris Brown, Community Researcher (CR)

Introduction

On August 27, 2017, Hurricane Harvey hit Houston, Texas, flooded tens of thousands of homes in the city, and was, at the time, the most expensive disaster in American history (Fox, 2017). Nearly four years later, thousands of Houstonians are still living in damaged homes that endanger their health. Others remain displaced. As such, recovery from Harvey is far from complete (Kasakove, 2020) and will likely take a decade or more based on experiences from past disasters like Hurricane Katrina (Phillips, 2015). Due to direct damage and subsequent decay, houses' market values have fallen. While wealthy and white parts of the city have fully recovered, poor Black and Brown communities are still home to innumerable households that remain unrepaired. In Northeast (NE) Houston, where the authors of this paper live or work, the continued suffering is immense; homes are abandoned, health impacts persist, quality of life in neighborhoods has declined, the mental health of survivors is strained, and lives remain disrupted. Cumulatively these stresses and deprivations are a deadly expression of inequality materialized along racial lines; as the geographer Ruth Wilson Gilmore (2006, p. 28) explains, “Racism, specifically, is the state-sanctioned or extralegal production and exploitation of group-differentiated vulnerability to premature death.”

The pattern of uneven impact and recovery is not new or surprising. Especially since Hurricane Katrina—a storm that laid bare the systemic racism and injustice that characterizes the disaster recovery apparatus—scholars, organizers, advocates, and even lawmakers, have highlighted racial and class inequities in the recovery process after each disaster (Pastor et al., 2006; Muñiz, 2006; Trujillo-Pagán, 2007; Weber & Peek, 2012; David & Enarson, 2012). But the reality of life in NE Houston today shows that the tireless efforts of impacted communities and their allies have not been able to win the necessary changes to disaster preparedness and recovery governance that would enable a just recovery. In this paper, when we say “Just Recovery,” we mean a recovery process that works towards resolving historical injustices and deprivations as well as repairing direct damages from the disaster at hand. Together these efforts will both materially and politically build towards health, safety, and community self-realization, as well as mitigate the worst threats of future disasters.

Recent long-term analysis of disaster survivors' experiences shows the extreme material consequences of this injustice; white families that survived major disasters between 1999 and 2013 have seen their wealth increase by over \$125,000 on average, while Black and Latinx families lost an average of \$27,000 and \$29,000 in assets respectively (Howell & Elliott, 2018). The unevenness of disaster recovery is well understood, but the particular processes and dynamics that produce the inequality are less studied. Studies of recovery have historically been quantitative and macro in scale, and qualitative research has often relied on the perspective of large program administrators and office holders. After Katrina, however, this began to shift as scholars produced several long-term ethnographies that drew on the voices of child and adult survivors and centered the experiences of low-income African Americans who had directly experienced the storm (see, for example, Browne, 2015; Fothergill & Peek, 2015; Kroll-Smith,

Baxter, & Jenkins, 2015; Weber & Peek, 2012). We aim to build upon and contribute to this work.

In a 2006 report on Katrina recovery, Manuel Pastor, Robert Bullard, and a team of environmental health researchers compared disasters to “environmental injustice (EJ) in fast forward.” EJ organizers and experts believe that those most impacted by injustice should have the most power to shape the solutions to the problems they face. But this is impossible if the perspective of impacted communities is absent from the places where decisions about disaster recovery are made.

In order to begin to address this gap, this paper uses participatory action research to identify and analyze the barriers to recovery from the perspective of residents living in low-income Black and Brown communities in NE Houston. The findings presented here are based on the perspective of five Hurricane Harvey survivors who, in order to expand their expertise beyond their own experience, each interviewed four or five households of friends and neighbors. Their understanding is complemented by the experience of *West Street Recovery (WSR)* staff, who have navigated the recovery process alongside NE Houston residents, rebuilt homes, advocated for an improved recovery process, and organized with community members to demand justice. Collectively, this research group identified barriers to a just recovery and imagined dramatic changes to the current system that amplifies pre-existing inequities throughout the recovery process (Thomas et al., 2013).

To provide context for our conclusions, this paper provides a brief review of literature on disaster outcomes and injustice in recovery processes before presenting a demographic, economic, and environmental description of our study area. Because people do not experience their own lives from a 30,000-foot view, this description is followed by a first-person neighborhood history of one community researcher’s (CR) lifelong home, Scenic Woods. The first-person account of local manifestations of national trends such as white flight, disinvestment, and the War on Drugs gives cultural and political context to the study area in general. The *Methods* section outlines the participatory action research approach used to examine the disaster recovery process and apparatus. We begin our *Results* section by presenting the high-level long-term impacts of protracted and unjust recovery on people’s health and financial wellbeing. We then explore how inequity is produced within evacuation, provision of immediate needs, applications for aid, temporary housing, and home repair. For each of these stages of recovery, we identify actionable recommendations towards more just outcomes. Technical administrative adjustments, however, will not be sufficient. The section concludes with a discussion of how classism, racism, and geographic inequity shape recovery. Following the lead of participants, we explore place-based interventions that would both improve recovery and catalyze structural transformations. Finally, the *Discussion* section tackles the tensions within disaster recovery that present serious obstacles to making a just recovery possible, and attempts to connect a just recovery to a just society more broadly. A consolidated list of all recommendations can be found in *Appendix 1* at the end of the report.

Literature Review

Disaster Vulnerability and Environmental Justice History

None of this is new: even before Hurricane Katrina, low-income people of color were known to be more vulnerable to disasters (Peacock et al., 1997; Blaikie et al., 2004). Research has shown that disasters are not natural. They are the product of social, political, and economic environments as well as the variety of ways that these structure the lives of individuals (Thomas et al., 2013; Tierney et al., 2001; Blaikie et al., 2004). Disasters expose the social structures and amplify hierarchies that exist in the social order. Not understanding the *root causes* of how specific populations become vulnerable to disaster can lead to technical fixes for what are really social and economic problems (Peek et al., 2020). Therefore, we must address the deep-rooted issues, which serve as structural constraints to safe and stable livelihoods (Wisner et al., 2012), rather than attempting to control symptoms in order to fully prepare for, respond to, and recover from disasters (Tierney et al., 2001).

One way to address root causes of disasters is to engage with environmental justice (EJ) scholarship and activism. EJ traces its roots back to 1982 when civil right activists and Black leaders joined hands to protest the disposal of PCB-contaminated soil in Warren County, North Carolina (Schlosberg & Collins, 2014). The demonstrations and direct actions motivated the development of the U.S. General Accounting Office's 1983 report regarding the placement of toxic waste sites in communities of color (United States General Accounting Office, 1983). This was followed by the landmark United Church of Christ Commission for Racial Justice's 1987 study on the intersection of race and environmental hazards on a national level. It is important to note that communities of color had been organizing and advocating for decades before their concerns were addressed by the federal government.

With the start of the EJ movement in the 1980s and 1990s, a new wave of activists pushed back on the traditional Environmentalist definition of the environment as a "wilderness" or "nature" independent of human livelihood. Instead, EJ activists recognized the "environment" as the "shared space in which communities coexist" (Whyte, 2011). This shift towards a social conception of "environment" lay at the crux of environmental justice: it was not just a matter of preserving nature, it became a matter of preserving life, human and otherwise, in a manner that promoted community. Importantly, the definition also borrowed concepts from Indigenous peoples, as it focused on "the unity of life" and the "interdependency of all species" (Schlosberg & Collins, 2014). The "justice" portion of the term defined the marriage of environmental concerns and social justice. "Justice" meant that activists were analyzing how inequitable and unjust pollution and environmental destruction was and continues to be. EJ scholarship is vital to consider when discussing a move toward more equitable disaster recovery. As Pastor et al. (2006, p. 21) state, "environmental justice is about slow-motion disasters—and disasters reveal environmental injustice in a fast-forward mode. Both revolve around the axes of disparities of wealth and power."

Uneven Distribution of Risk

It is well known that pre-existing social inequalities have a significant impact on housing options (Tierney et al., 2001). In Houston, the extent of flooding after Hurricane Harvey was positively correlated with the proportion of Black and Latinx residents in a community, and negatively correlated to white populations (Chakraborty et al., 2019). This is consistent with a national trend: one of the main predictors of flooding vulnerability is race (Rodríguez et al., 2018; Thomas et al., 2013). Contrary to the implications of economic terminology such as “tradeoffs,” “optimization,” and “marginal utility,” Black and Brown homeowners have not simply chosen to move to areas more prone to flooding. This contrasts with white and wealthy communities impacted by coastal flooding due to property purchases in high-risk but high value areas. Black, Indigenous, and People of Color (BIPOC) households are more affected by inland flooding as a result of poor land use planning, housing segregation, and structural racism (Pastor et al., 2006). In other words, communities of color are not actively putting themselves at risk of flooding, rather systems of racism are endangering them and putting them in harm's way. Likewise, communities of color do not simply move to locations with high environmental health risks, but face environmental racism in the form of unequal siting of toxic waste sites in areas where they have been residing for decades (Taylor, 2014). For instance, Hendricks (2020, para. 10) states that “racial neighborhood composition is a strong predictor of the stormwater infrastructure available.” In other words, these marginalized communities are burdened with infrastructure systems that are less efficient and put them at greater risk of disaster. Further, residents face challenges in moving out of high-risk areas due to financial constraints (Taylor, 2014), leaving them with limited and often dangerous housing options. These factors are made worse in disaster response and recovery by ineffective organizational mobilization, decreased access to resources, and poor coordination and communication between communities and political leaders (Quarantelli, 1982).

Class is another factor that predicts flood risk: the five variables that make up socioeconomic deprivation¹ are all positively correlated with greater flooding exposure (Rodríguez et al., 2018; Thomas et al., 2013). However, class is not in opposition to or independent of race: wealth itself is also distributed along racial lines (Bhutta et al., 2020; Urban Institute, 2017). Due to racism within housing, education, employment, and access to wealth, Black and Latinx households are overrepresented among households experiencing socioeconomic deprivation, and as a result are most prone to flooding. As outlined by Pastor et al. (2006), “lack of wealth heightens the risks that individuals and communities face” for three particular reasons:

First, it limits the capacity of individuals to secure private alternatives to public provisions of a clean and safe environment for all. Second, it translates into less ability to withstand shocks (such as health bills and property damage) that wealth would cushion. Third, it translates through the “shadow prices” of cost benefit analysis into public policies that place a lower priority on protecting “less valuable” people and their assets. In the aftermath of Katrina, there is an

¹ Proportions of the population over the age of 25 years with no high school diploma; the population over the age of 5 with limited English language proficiency; households that are below the family poverty level; households with no vehicles; and unemployed individuals over the age of 16.

added risk that transfers² could turn New Orleans into little more than a theme park for affluent tourists. In the vicious circle of disaster vulnerability, those with less wealth face greater risks, and when disaster strikes, their wealth is further sapped. (p. 21)

Uneven risk and unequal response combine to make disasters a driver of difference and injustice at the intersections of race, class, immigration status, (dis)ability, language, and other axes of inequality. Following Katrina, New Orleans' police officers and sheriffs from white middle class neighborhoods physically stopped mostly low-income residents of color from evacuating out of New Orleans, forcing them to turn around back to danger (Trujillo-Pagán, 2007). After Harvey, immigrants avoided evacuating due to fear of coming across immigration checkpoints, which authorities indicated would remain open (Gilman & Steglich, 2017-2018). Due to their precarious legal status, Latinx immigrant workers face increased violations of their rights as workers during and after a disaster via threats of being deported, no protections against environmental hazards, and wage theft (Flaherty, 2011; Fussell et al., 2018; Horton, 2012; Méndez et al., 2020; Muñiz, 2006; Trujillo-Pagan, 2007).

Following cleanup efforts after Katrina, much of the debris and toxic waste was deposited near residents of minority communities (Harden et al., 2007). Two years after the storm, the soil at schools, playgrounds, and residential areas were still contaminated with hazardous levels of arsenic (Fields et al., 2007). Housing inequity was so drastic that Black Americans were forced to live in cardboard boxes while white families gained access to hotel rooms and cruise ships after Katrina (Bullard & Wright, 2009). Finding post-disaster housing for white families was two times easier than for Black families because agencies prioritized white families for opportunities (National Fair Housing Alliance, 2006).

Inequitable Disaster Recovery Outcomes

The impact of disasters such as Hurricane Andrew in 1992 and Hurricane Katrina in 2005 on people of color, particularly Black people, and low-income residents led to a flurry of research emphasizing how these populations had worse disaster recovery outcomes compared to wealthy, white individuals (Chakraborty et al., 2019; David & Enarson, 2012; Pastor et al., 2006; Peacock et al., 1997; Weber & Peek, 2012). This new wave of investigations highlighted the unjust process of disaster preparation and disaster relief recovery for African American and Latinx populations. For instance, only 17% of African Americans in New Orleans had cars when Katrina hit compared to 53% of white Americans. (Elliott & Pais, 2006; Pastor et al., 2006). Nonetheless, city evacuation plans relied on residents having a car. These uneven impacts are the direct result of planning that does not center equity.

Furthermore, wealthy, white populations are more likely than poor, racial, and ethnic minority communities to receive disaster relief assistance because they often have the knowledge, experience, and social capital to navigate disaster recovery programs (Browne, 2015; Fothergill, 2004; Grube, 2015). These economic and racial inequities are deeply intertwined: racial and ethnic minorities are more likely to be poor and to experience housing instability due to systemic racism (Elliott & Howell, 2017; Howell & Elliott, 2018, 2019; Pastor et al., 2006; Weber & Peek, 2012). Racial and ethnic minorities are also

² Transfers are purchases of lands, devalued through lack of protection and recovery funding, by mostly white investors. In this way the lack of protection can be said to be part of a cycle of what David Harvey calls "accumulation by dispossession" or "new primitive accumulation."

less likely to have insurance, financial savings, steady employment, or access to disaster communication channels and preparedness information (Peacock & Girard 1997; Peacock et al., 1997). For instance, one study found that Hispanic immigrants are more prone to damage from flooding due to inability to prepare for and respond to hurricanes as a result of lower socioeconomic status, gaps in hazard-specific knowledge amplified by language barriers, and being undocumented (Maldonado et al., 2016). Bolin and Bolton (1986) also found that lower income Black individuals received less disaster relief support from fewer sources and were less likely to receive small business administration (SBA) loans. Therefore, they recovered economically much slower than their white counterparts. Lack of transportation also makes it difficult for residents to make trips to disaster recovery organizations (Dash et al., 1997; Fothergill & Peek, 2004). Similarly, following Hurricane Irma in 2017, while service restoration was relatively fast in white neighborhoods, Black and Brown people were without electricity and clean water for long periods of time (Sovacool et al., 2020).

The slow speed of recovery is a marker of unfairness: some families in New Orleans never recovered and the Black population in the city has never rebounded to pre-storm numbers due to lack of job opportunities and affordable housing (Bullard & Wright, 2009; Weber & Peek, 2012). Financial assistance for housing recovery is largely reserved for homeowners (Jerolleman, 2019; Logan, 2008; Pastor et al., 2006). As such, renters on average lose wealth following a major disaster while homeowners gain wealth (Howell & Elliott, 2018). With America's racist history of redlining and denying Black Americans mortgages, Black families are more likely to rent. Even among homeowners, white homeowners are the main recipients of assistance, typically because they are identifiable and easy for authorities to contact (Logan, 2008). Additionally, lower-income families spend a greater proportion of their income on housing (McCoy & Dash, 2013). Therefore, while costs of a disaster for poor, Black families may be lower in absolute dollars compared to wealthy, white families, Black households lose more when measured proportionately (McCoy & Dash, 2013).³ Consequently, the lack of opportunities and resources serves to intensify pre-existing poverty and increase vulnerability to future disasters (Thomas et al., 2013).

Puerto Rico's neglect by the U.S. national government following Hurricanes Irma and Maria further illustrates the racist nature of government disaster recovery funding (Rodriguez-Diaz & Lewellen-Williams, 2020). Citing the multiple simultaneous disasters in California, Florida, Texas, along with Puerto Rico, the Federal Emergency Management Agency (FEMA) claimed that it was unable to properly provide funds for the American colony of Puerto Rico (Rodriguez-Diaz & Lewellen-Williams, 2020). This highlights the way that white citizens of America are valued over Brown colonized citizens (Rodriguez-Diaz & Lewellen-Williams, 2020). Former U.S. president Trump's statement that Puerto Ricans were lazy and "wanted everything done for them" echoes decades of racialized attacks against Black, Brown, and disenfranchised Americans demanding the fulfillment of basic human rights from their government (Negron-Muntaner, 2017). When FEMA aid eventually reached Puerto Ricans, it was again distributed to less affected, more affluent areas such as the Guaynabo municipality (Negron-Muntaner, 2017).

In sum, the way FEMA aid eligibility is structured and assistance funding is allotted is actively worsening wealth inequality along racial lines. The stress of trying to access aid in

³ Building off this understanding, Texas Housers, an organization that works closely with the authors of this report, recommended that damage should be measured proportionately.

these circumstances, and trying to recover within racist systems, is also likely to cause negative mental health symptoms (Fussell & Lowe, 2014).

Climate Crisis and Disaster Recovery

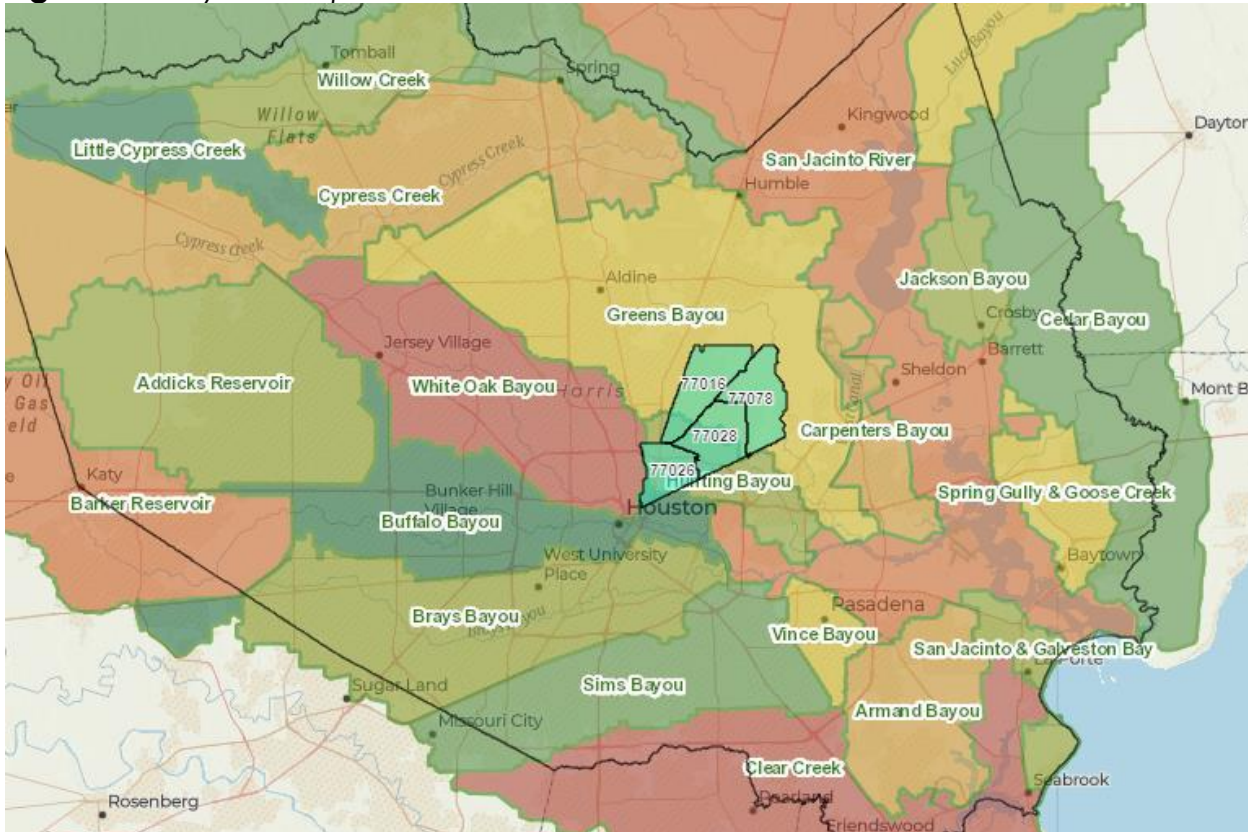
Climate change is increasing the frequency and intensity of disasters. In 2019, the United States experienced 14 billion-dollar disaster events, with the cumulative cost of these disasters reaching just above \$45 billion in total damages (Smith, 2020). According to the National Oceanic and Atmospheric Administration (2020), just one year later in 2020, the United States experienced 22 billion-dollar disaster events in the United States. This staggering financial toll should be viewed as just an indicator of profound societal devastation. Disasters affect individuals and social groups in numerous ways, including but not limited to death, injury, physical and emotional traumas, social and educational disruption, and displacement (Weber & Peek, 2012). All individuals benefit from efforts to reduce the disaster vulnerability of marginalized communities. As such, this white paper aims to provide a detailed account of disaster recovery at the individual- and community-level after Hurricane Harvey in Houston, Texas. By prioritizing the perspectives of community members and providing recommendations based on their personal experiences, we hope to encourage those involved in the disaster recovery apparatus to move toward more equitable practice and a justice-centered approach to disaster recovery overall.

Study Area

At the time of writing, WSR's work has been concentrated in four zip codes in NE Houston: 77016, 77026, 77028, and 77078.⁴ All CRs and respondents live in these zip codes. To help the reader understand the arc of disasters, injustices, and recovery in our study area, we first describe the demographics and environmental background of the area and then provide a personal neighborhood history which adds cultural and local perspective. Both backgrounds are critical to the historical perspective and social position of the people who participated in this study.

⁴ The neighborhoods in this area include: Liberty Gardens, Kashmere Gardens, Trinity Gardens, Lakewood, Scenicwoods/Fontaine, Settegast, Homestead/East Houston, and Rosewood. Different groups of people may use different names for the same areas.

Figure 1 Study area zip codes and watersheds



Baseline Conditions

The impact of repeated flooding events on our participants and their possible pathways to recovery must be understood at the intersection of both social and physical geographies. On the one hand, the distribution of money, relief, and infrastructure (both before and after the storm) is determined by governmental jurisdictional boundaries and race and class-determined neighborhood boundaries. Our study area is a high-poverty area with very low median incomes and home values (Table 1). The four zip codes are mostly populated by Black/African American households, have a large Latinx population, and very few white residents (Table 2). Decisions and programs related to flooding and infrastructure are carried out by a patchwork of organizations between the City of Houston, Harris County, state and national agencies, and extra-governmental aid groups.

The water itself cross-cuts these social geographies as it flows, floods, and drains through streets, bayous, and watersheds. Our study area is split between two watersheds--the Halls and Greens Bayou system runs through the northern section and Hunting Bayou runs through the southern portion (Figure 1). A combination of physical⁵ geography and centuries of irresponsible development practices (Bradley, 2016) puts NE Houston at extreme risk of flooding (Zhang et al., 2018). The past two decades have seen increasingly frequent and severe rainfall events, making household names out of Allison (2001), Ike (2008), Tax Day (2015), Memorial Day (2016), Harvey (2017), and Imelda (2019) (Blackburn,

⁵ The area of Houston was a swamp before settlement, but its flood-prone geography is intentionally described as “physical” and not “natural”. Settlers have iteratively engineered Houston’s physical landscape into a distinctly built environment, from the initial draining of the land in the 1800s to the Army Corps of Engineer’s straightening, stripping, and damming of Buffalo Bayou in the 1940s.

2017).⁶ Twenty years of persistent flooding have profoundly reshaped individuals' and communities' relationships to their homes.

Table 1 Poverty and Median Income by Zip Code

Area	Poverty Level	Median Household Income
USA	10.5%	\$68,703
Metro Houston	14.3%	\$69,193
77078	22.9%	\$32,040
77028	23.6%	\$29,272
77026	34.7%	\$25,354
77016	21.1%	\$31,949

Table 2 Racial Composition

Zip Code	Black	Hispanic	White Non-Hispanic
77078	64%	32%	3%
77028	73%	24%	2%
77026	58%	40%	2%
77016	70%	27%	2%

*Numbers do not sum due to 100% rounding and exclusion of groups under 1%.

During Harvey, despite the media focus on Buffalo Bayou and White Oak, which have watersheds populated by mostly affluent and white households, Hunting Bayou watershed had the highest proportion of housing units flooded, and Halls Green Bayou had the highest number of units flooded of any Bayou in Harris County (Lindner & Fitzgerald, 2018, p.14-15). Following Harvey, a total of 24,270 households in these four zip codes applied for assistance from FEMA. We know this is an undercount of how many households flooded for two reasons: 1) undocumented people are often afraid to apply for aid from the federal government or do not apply because they assume they are ineligible, and 2) many families have learned from past experience that the government is

⁶ In addition, Houston has been struck by extreme weather events that are not defined by flooding but by wind or cold, such as Hurricane Laura (2020), Tropical Storm Beta (2020), and Winter Storm Uri (2020).

unhelpful to them and don't apply because they anticipate rejection.⁷ For reasons explored throughout this report, a shockingly high proportion of residents who did apply for help from FEMA were deemed ineligible (Table 3). Reasons for ineligibility are usually unknown to applicants and can be hard to decipher for advocates as well; however, some of the main reasons given are insufficient damage, damages that pre-dated Harvey, or lack of proof of ownership. For an applicant it's opaque if they truly are ineligible or if they have been denied for a reason that can be overcome through appeals or correspondence with FEMA (a more thorough explanation is below in the section titled "Denials" p 32.)

Table 3 Applications and Eligibility by Zip Code

Zip Code	Total Applications	Total Eligible	Eligibility Rate
77078	7017	864	12.31%
77028	6407	1528	23.85%
77026	6097	1915	31.41%
77016	4749	1838	38.70%

In addition to the flood danger, the area's proximity to numerous hazardous facilities and emission sites results in significantly higher baseline health risks for residents. On the eastern boundary of the study area, the massive *McCarty Road Landfill*, looming high enough to give the illusion of geographic elevation, leaks cancer-causing PCB⁸ into the ground and toxic gases into the air (Harman, 2005). To the south, our study area overlaps with the deadly Fifth Ward and Kashmere Gardens cancer cluster. Creosote, a carcinogenic toxin, leaked from a *Union Pacific* railroad facility, has resulted in a drastically higher rate of adult respiratory cancers, adult leukemia, and childhood leukemia (Douglas, 2019). Local advocates give accounts of the toxin killing off entire families over the past few decades. In addition, there are a number of truck and railroad yards that residents report causing environmental damage and a history of sewer leaks recently confirmed by a consent decree between the City of Houston and the U.S. Environmental Protection Agency (EPA) (United States District Court, 2021).

The concentration of environmental toxins in our study area fits into decades of studies on environmental injustice and environmental racism that demonstrate how consistently both city-owned and private hazardous sites, from landfills to recycling facilities to chemical plants, end up in poor, Black and Brown neighborhoods (Figure 2) (Air Alliance Houston, 2019). Solid waste sites in Houston are not randomly scattered throughout the city but are instead overwhelmingly located in predominantly Black

⁷ An insignificant number of people who are not flooded apply for FEMA aid. See the report "Hurricanes Katrina and Rita Disaster Relief: Continued Findings of Fraud, Waste, and Abuse" by the U.S. Government Accountability Office. <https://www.gao.gov/products/gao-07-300> Relative to the total amount of recovery aid distributed, "fraud" is minimal. Additionally, many people that "commit fraud" simply do not understand what programs they are eligible (or ineligible) for.

⁸ Polychlorinated Biphenyls (PCBs) are industrial chemicals.

neighborhoods and near Black schools (Bullard, 1983). Race has been found to be the most powerful variable in predicting where commercial hazardous waste facilities are located in the U.S. (United Church of Christ, 1987). The EPA's EJ Index visualizes the disparity in exposure to environmental risks (such as PM 2.5, wastewater discharge, and ozone) among certain demographics compared to the national average, with stark results for Harris County (Figure 3). Notably, the EJ Index, developed in 1994, does not include natural hazard risk (including flood risk) as one of its environmental indicators. Contemporary understandings of Environmental Justice are more holistic and do incorporate natural hazard risk, but even without considering flooding risk, our study area is a textbook "EJ community."

Figure 2 EPA superfund, toxic release, and brownfield sites near the study area

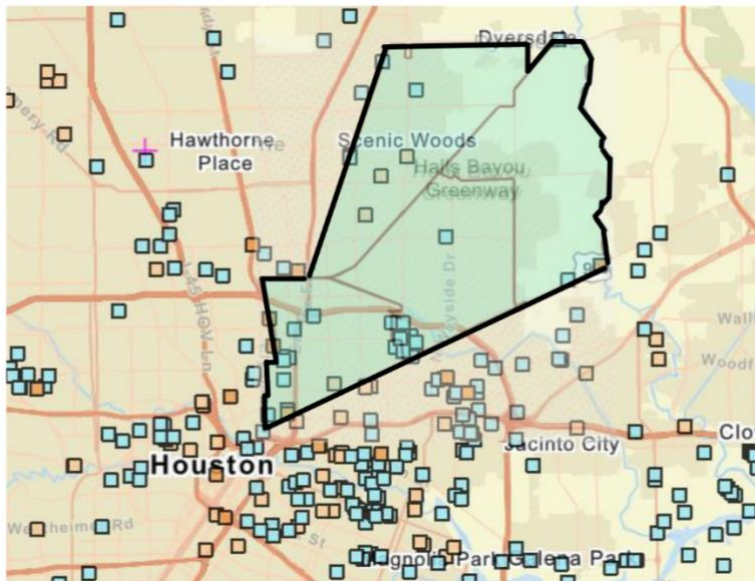
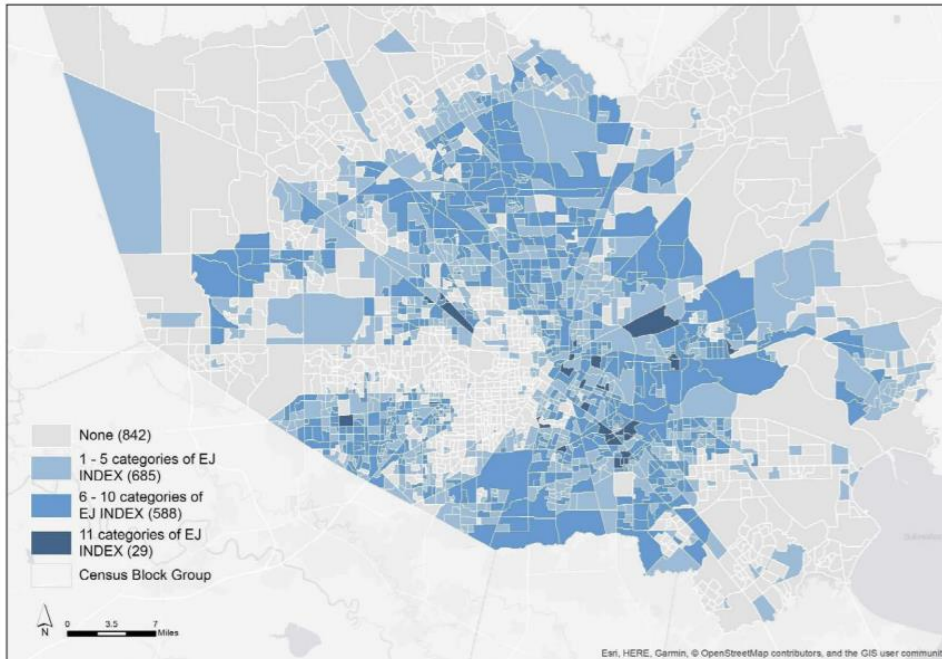


Figure 3 EPA EJ Screen EJ Index data for Harris County



The uneven distribution of environmental hazards is not only an effect of socioeconomic injustices, but in itself further exacerbates those inequities—toxic sites are followed by depressed property values and fewer public and private investments. Thus, the racial and economic components of place-based disparities are intertwined and cyclical, but in 21st century Houston, race is still a more powerful predictor of residential segregation than income (Sui & Wu, 2006). Present day inequalities have to be viewed in light of Houston's legacy of de jure and de facto segregation. Well into the 20th century, tools such as redlining and deed restrictions enabled systematic government and private housing discrimination against Black people, while facilitating white flight and disinvestment (Rogers, 2016).

The resulting health disparities in the study area are well documented (Figure 3). Direct health hazards posed by geographically specific environmental risks combine with the health impacts of unsafe housing, less access to healthy food,⁹ higher rates of incarceration, and under-resourced schools. The 2020 SocioNeeds Index, which measures socioeconomic need correlated with poor health outcomes, places all four zip codes in the top category of health risk for Harris County (Table 4). Age adjusted hospitalization rates from asthma, diabetes, and chronic obstructive pulmonary disorder (COPD) are around twice the Houston averages. Life expectancy, perhaps the most direct measure of health outcomes, is almost a decade less in each of the four represented zip codes than in the county overall (Air Alliance Houston, 2019).

⁹ For maps see the USDA Food Access Research Atlas.

Table 4 Health Indicators by Zip Code (rates per 10,000)

Zip Code	SocioNeeds Index*	Age-Adjusted Hospitalization Rate, Asthma**	Age-Adjusted Hospitalization Rate, Diabetes**	Age-Adjusted Hospitalization Rate, COPD**	Life Expectancy***
77078	96.2	46.6	6.1	22.5	71.5 (-7.4)
77028	96.8	40	5.5	25.3	71
77026	99.1	46.6	9	28.8	69.8
77016	97.1	45.4	8.4	27.4	70.2
Baseline	76.3 (Harris County median)	19.9 (Houston median)	3.5 (Houston median)	16.1 (Houston median)	78.9 (Harris County avg)

Sources for table:

*[2020 SocioNeeds Index](#), created by Conduent Healthy Communities Institute

**[Texas Department of State Health Services 2016-2018](#)

***[UT Southwestern Medical Center study](#) based on Texas Department of State Health Services (DSHS) Center for Health Statistics 2005-2014

Hopefully, this background makes clear the extreme difficulty of a just recovery in a neighborhood so thoroughly saturated with environmental injustice. Recent studies of disaster resilience best practices show that those who are medically vulnerable should be prioritized in response efforts (Tiernan, 2018). If this best practice was followed, our study area would have received a lion's share of resources and attention. It did not.

Personal Neighborhood History of Scenic Woods

Doris Brown, who has lived in Scenic Woods for over 50 years, describes how her neighborhood has changed throughout her life. This history helps illuminate the context in which the recovery analyzed in this paper has played out. Doris is a lead CR on this project, and a life-long activist.

1967 - 1970

Scenic Woods, a neighborhood in NE Houston, has been my home for 53 years. My family moved here in June of 1967 when I was just 17. I hated moving but my mother and stepfather were tired of renting and, following the American Dream, wanted to own their own house. The nine of us spent the first week getting settled, mowing grass, painting, washing clothes, and getting to know the only other African American family in the neighborhood. Back then, Scenic Woods had immaculate manicured lawns full of flowers, but it was quiet, dark, and foreboding at night. The subdivision, built in 1960, was predominantly white and had stayed that way until 1967. We were perceived as invaders.

Around 2:00 am one night in July 1967, I heard noises outside. I went to the front door and a cross was burning on our lawn. I alerted the rest of my family and my brother and I used the water hose to put it out. When my mom called 911, the police took their time getting there, and never investigated what was clearly a hate crime. We became our own police after that. After that night, we couldn't go anywhere without at least three of us. My mother said it was safety in numbers.

Undeterred by this violence, more African Americans were moving into the neighborhood, maybe because Scenic Woods was thriving. We used to ride our bikes up to "the front," the name we used for Homestead Road where there was always something to do. When my family arrived, Homestead was lined with businesses. We also had two parks, one of which had bleachers, slides, swings, and a merry-go-round. But our biggest pleasure was the Tidwell Drive-In, with its dollar-a-carload Monday nights.

As a teenager, I was already becoming engaged in the struggle for human and civil rights. I grew up reading the sign "For Colored Only," and I hated that sign and what it stood for. By the time I was 15, I started playing hooky from school to take part in sit-ins at the segregated lunch counters. We got pelted with tomatoes, eggs, spit, and racial slurs. I wasn't even old enough to vote but I felt that it was my duty since a lot of the older people didn't want to jeopardize their jobs.

As I grew older, Scenic Woods began to struggle. White flight hit the neighborhood hard and over time businesses closed. Disinvestment and crime became a vicious cycle, and opportunities for youth were harder to find. Still, the neighborhood had its charms.

1970s - 1980s

The 70s brought big changes to our quiet, laid-back neighborhood. K U Davis, the big grocery store, went out of business. Like a number of other neighborhood businesses, they had been robbed. Scenic Woods was in bad shape and getting worse as drugs came to the area. Many stores like Bigger's, Gordon's Western Auto, Sinclair, and Gulf service stations left the area, and several public housing complexes were built on Homestead and Parker Rd. They opened up a welfare office where the K U Davis grocery store had been. Despite the lack of business during the day, the streets came alive at night. At the worst times, it seemed as though every night brought a stabbing, shooting, or overdose. But people kept fighting for our neighborhood. The civic club, still trying to keep the peace, held parades down Homestead Rd, and James Brown even rode in one around 1976-1977 with then Mayor Fred Hofheinz.

If the 70s were hard on Scenic Woods, the 80s devastated all the surrounding neighborhoods as well. Crack was like a wildfire and nobody was safe. Parents that had taken pride in their homes passed on and their children let houses deteriorate. Police came into the neighborhoods at night, two and three cars deep, but didn't protect any of us. Users would venture onto people's porches and steal potted plants and deck chairs, anything they could sell for a buck.

Grocers that sold healthy food closed and were replaced with convenience stores that stayed open all night. The mom-and-pop stores, whose owners didn't live in the area, took advantage of the elderly and disabled inhabitants without vehicles. They never put anything back into the already starving local economy and over-charged for products that sometimes had expired. Beautiful houses deteriorated and yards started looking like forests: abandoned and looted. Burglar bars sprung up over families' windows. Tree limbs covered streets and clogged up drains, blocking traffic and contributing to street flooding

during downpours. The city only provided basic services once in a blue moon. And the Civic Club struggled to keep up the work that had buoyed the area in the decades past.

1990s - 2000s

The 90s proved intriguing, and produced mixed results for Scenic Woods. Jobs failed to return to the area and streets remained in bad shape, but public transportation improved, which allowed residents to commute to work. Police returned and provided better public safety, and crime stabilized but didn't decline. Around this time, Hakeem Olujuwan and the Houston Rockets won their first NBA championship. Houston seemed to be moving forward, and a little bit of that positive energy came to Scenic Woods. Democratic Mayor Katherine Whitmire had two police substations built just outside the neighborhood. The city stepped up and cleaned drains, mowed medians and parks, and morale was high. The Civic Clubs, police, State Representative Senfronia Thompson, and District B Representative were all fighting for us, but they weren't able to turn the neighborhood around.

Scenic Woods and all the surrounding neighborhoods had been declared "At Risk," so we were supposed to receive more city investment, but it wasn't enough to counter the disinvestment of the private sector. The welfare office closed and moved into an old bank site off Laura Koppe. Homestead bank moved and a lot of businesses stood vacant and deserted as did the houses. K-Mart went out of business in 2002 and more and more convenience stores, gas stations, and abandoned buildings filled the area, which was now a food desert. Maybe in response, Community Multipurpose centers, operated by the city, sprang up. In the year 2001, a major sewer upgrade was announced. But on the flip side, rampant mold was found in the library, and apartment complexes were shuttered for health violations. The slum lords moved or put out the residents, patched over the insides, slapped a coat of paint on the outside, renamed the complexes, and continued to rake in profits.

As a last resort, Senfronia Thompson and the Civic Clubs petitioned the city officials about the conditions of the neighborhood. To everyone's surprise, a task force was formed. Street lights were installed. Streets got cleaned, police began to ride through the neighborhood, and law enforcement began to communicate with the community. But not all the interventions were helpful in the long run. Dead-end streets were continued on property that used to act as a buffer, soaking up rain water in our neighborhood. Scenic Woods had deed restrictions barring any new erecting of homes, but the city would not enforce the regulations, and failing to do so increased flood risk. We had to get lawyers and state officials involved to fight for our rights. This struggle raged on for years, and in the interim, abandoned houses and lots were bought up for little to nothing. Scenic Woods, which was about 90 percent African American in 2000, started to get more diverse. But some newcomers, maybe feeling unsafe in a Black neighborhood, put up gates which changed the friendly atmosphere.

In 2001, Hurricane Alison marked the new millennia and announced that our neighborhood's next years would be defined by storms. When Katrina hit a few years later, Scenic Woods was inundated with a mass migration of people from New Orleans who had lost everything. These traumatized newcomers brought exciting new culture, but the chaos also led to a renaissance of killings and drugs. Near the end of the decade, in 2008, Hurricane Ike pelted Houston. The streets were besieged with old furniture, trash bags full of junk, and litter was everywhere. Debris filled our drains, houses were broken into during

broad daylight, and streets eroded. People moved away, renting their homes or selling out.

Nobody seemed to notice but me that more and more service stations and Family Dollar stores were being built rapidly on every other corner. I took this information to our Civic Club and they investigated. In the meantime, realtors were buying up property outside of the subdivision and planning to build other subdivisions behind our neighborhood. Our experience in the early 2000s taught us that this would increase the risk of flooding. Since we had deed restrictions, we filed injunctions, but they had already extended Cheeves Street through to Little York and had started building new, more expensive single-family homes. We lost the battle and First America Homes started to build homes off Little York at a serious clip. Today they are paving over a forest north of my house that used to hold rainwater. The Town Park Village, with its newer streets, well-kept drains, and medians, was extended almost to Wayside. The library closed in 2010 because, once again, mold was discovered in the walls and it was coming from the A/C units. Someone stole the A/C units, and the city construction came to a halt citing money problems until 2018 because Hurricane Harvey flooded it out again in August of 2017.

Without a doubt, the lack of regulation and enforcement, informed by an attitude of placing profit over people, and decades of new housing development in my neighborhood made Harvey worse. Just as Scenic Woods was neglected since the 70s (despite occasional counter-efforts) we were neglected in the city's preparation for Harvey. As the rest of this paper shows, neighborhoods like mine are still being neglected in the recovery. Neighbors, as always, are pulling together, and community groups are doing their part. But it's not enough.

Methods

Participatory Action Research

This paper's community-based participatory action research approach is motivated by WSR's conviction that flood impacted communities and disaster survivors are best positioned to identify flaws in the current recovery process and propose the dramatic changes needed to make a just recovery possible. This approach strives to disrupt the pattern of extractive research that further burdens marginalized people while benefiting researchers (Reason & Bradbury, 2001). In taking community members on as full co-researchers, this project recognizes the knowledge of marginalized individuals, builds the skills of community leaders, and strengthens communal knowledge.

The conclusions of the report are supported by four types of evidence:

1. 21 interviews with disaster survivors,
2. Three focus groups attended by CRs upon completion of all 21 interviews, and
3. Reflections on four years of disaster recovery, organizing, and advocacy work from West Street Recovery staff, and
4. Data gathered by other sources relevant to this paper, including policy documents and statistical reports.

The final text is also informed by months of dialogue between CRs and WSR staff that built on four years of relationship building, home repair, and community organizing.

Given these unique methods, portions of this paper cannot be cleanly sorted into

the traditional divisions of results, recommendations, and discussion. In a traditional paper, results are presented and then analyzed to draw conclusions; here, many of the sources used include participants' own suggestions on how to make recovery more just and effective. In other words, the evidence is a combination of personal accounts of what happened and an analysis of why. Moreover, the authors both serve as primary sources and took part in analyzing the evidence. The five CRs were interviewed, conducted interviews, developed recommendations and conclusions during the focus groups, and wrote and edited parts of the paper. Analysis happened at every stage - the interviewees analyzed their own recovery during interviews, the focus groups were a discussion of this analysis, and the writing and subsequent discussions were an analysis of these analyses. The resulting conclusions of this paper cannot be attributed to one group within the authors but is instead the result of years of dialogue, collaboration, and collective ideation.¹⁰

Data Collection

Community Researchers Training and Script Development

The interviews that inform this report were conducted by five Hurricane Harvey Survivors: Doris Brown (70), Myrtala Tristan (61), Ann Weston (68), Hortencia Hurtado (42), and Mal Moses (64). Four of five CRs had worked with WSR for at least a year on community organizing and advocacy work, which helped build a mutual understanding of disaster recovery, political economy, and racial and environmental justice across the research team. The CRs were chosen to have a mix of language (English and Spanish), race (Black and Latinx), age, and documentation status that is fairly well aligned with NE Houston as a whole.

Based on two years of accompanying disaster survivors, WSR researchers developed research themes and questions, and drafted an interview script and worksheet. During two separate two-and-a-half hour sessions, CRs reviewed and revised the script, conducted practice interviews with each other, and developed optional follow-up questions. CRs were also trained to use recorders, and following the onset of COVID-19, video calls on the Zoom platform.

Interviews

Each CR conducted semi-structured interviews with people from four or five households including one interview with a fellow CR. In most cases, CRs were already friends or family with the participants. This helped to establish trust while discussing often traumatic and sensitive subjects. In total, 21 interviews were conducted with families that were flooded during Harvey. Each interview was structured into two parts: a worksheet and a semi-structured interview.

¹⁰ To add specificity, the WSR staff rebuilt houses of 3 researchers, one of whom is now WSR staff. 4 CRs have been organizing alongside WSR staff for over 3 years on issues of EJ, flooding, housing, racial justice, etc. WSR staff has supported 3 authors with accompaniment in legal, appeals, and getting aid. Some CRs interviewed friends and family whom they have been analyzing structural racism in America with for decades.

Worksheet
1) Demographics 2) Self-reported timelines from evacuation to recovery or the present 3) Aid applied for and received 4) Challenges
Longform Questions
<i>See Appendix 2</i>

Interviews ranged from 20 to 75 minutes and were conducted between February and May of 2020. The demographics of all participants are summarized in the table below:

Table 5 *Demographic information for interview participants*

Gender	17 Women 4 Men
Race	13 Black/African American 8 Latinx/Hispanic
Disability	11 People report having household members with a disability
Primary Language	14 English 7 Spanish
Age	Min. 26 Max. 79 Mean 56
Home Tenure	Homeowner 17 Renter 2 Live in family home 2

Focus Groups

Following the conclusion of the individual interviews, two focus groups were conducted with all five CRs, and an additional focus group was held after the first draft of the paper was finished. Each was held virtually through Zoom, and lasted just over two hours. The sessions were facilitated by two WSR researchers. During the session, CRs identified dominant themes from interviews, analyzed the connections between disaster recovery (DR), race, and class, and developed recommendations for actionable changes to the aid delivery process and government policy that would make DR more effective and just. The conversation, which took place at the peak of COVID-19 fatality in Texas, also explored the connections between the pandemic and DR in general.

WSR Experience

The community research recommendations are supplemented by the experience of WSR staff, who have worked with over 250 families as they sought to recover from Harvey. As stated in the introduction to this report, we have navigated the recovery process alongside NE Houston Residents, rebuilt homes, and advocated to government agencies and nonprofits to improve the recovery process. Recognizing the limits of advocacy, which seeks to change policy through channels created by those who already have authority and cannot fundamentally change the distribution of power, we have also organized with residents to demand justice and build community power.

The lessons that we have learned through accompaniment (the process of walking alongside people as they navigate systems where they are typically marginalized and oppressed), home repair, and organizing are woven throughout this report. And while we attempt to draw out the voices of CRs and interviewees through quotations, the perspective of our research team is the result of four years of dialogue between WSR staff and disaster survivors.

Analysis

Each interview was transcribed, and Spanish language interviews were translated into English. Transcripts were then coded, each by two researchers for consistency, using the software *Dedoose*. Codes were developed based on possible answers to interview questions and themes in the interviews, and were informed by the focus group discussions. They were then organized into a code tree structure, tested on several interviews by a group of four researchers, and iteratively edited. A final code tree was then used to analyze all transcripts.

Limitations

Our research method has several limitations. First, our subjects were not randomly selected, so our results are not generalizable. However, the results can be used to better understand the particularities and nuances of DR in NE Houston, and neighborhoods like it across the country. Second, because WSR has historically focused on home repairs, our data vastly underrepresents the perspective of renters. Renters are on average poorer than homeowners, although it should be noted that homes in NE Houston are very low compared to national levels or prices within the Houston metro area. The average price of a single-family home in Houston was \$298K in 2019 (Houston Association of Realtors, 2020) compared to just \$135K for the 4 zip codes in our study area (Zillow, 2021). Third, CRs were friends and family of participants. This helped to build trust, but may have also created distortions that we are not aware of. In addition, while native Spanish speakers conducted interviews, multiple translations between interviews, transcripts, focus groups, and then writing may have impacted our findings.

Finally, it is important to acknowledge that WSR staff selected quotes from interviews, created coding trees, and coded interviews without CR input. We believe that for our research team, this division of responsibilities was necessary to produce this report, that our choices in these processes were informed by four years of dialogue and reciprocal community building, and that our conclusions were affirmed by CRs.

Results: A Community Evaluation of Disaster Recovery¹¹

Harvey's persistence as an ongoing disaster for households in NE Houston is made clear by the testimony of the CRs and participants in this study. Three years after the storm when we collected our data, only six of the 21 people interviewed described themselves as "fully recovered." The inability to recover, the trauma of the storm and evacuation, and the feeling of abandonment have contributed to ongoing negative physical, mental, and emotional health impacts among participants. It has also damaged the financial standing of families in ways that may permanently reduce their levels of wealth for generations to come. The continued disruption to housing conditions and lowered quality of life indicate that the disaster recovery apparatus's response to the storm has been inadequate and reinforced pre-existing inequalities. Efforts to quantify the full impacts of stress and anxiety after disasters are unlikely to capture the compounding harms of lost sleep, living in construction zones, or breathing in dust every day. There is no part of life that is untouched by disaster, and the resulting impacts on health are felt for years after. Thus, our goal in this paper is not to quantify these impacts. If we believe people's accounts of their own lives, this study shows that we need to change disaster recovery and pre-existing living conditions immediately. The table below summarizes the severity of impacts on the participants in our studies.

Table 6 Summary of Impacts (Number of Participants out of 21 Total)

Not Yet Recovered	Lived in Damaged Home	Negative Mental Health Impacts	Negative Physical Health Impacts	Depleted Savings
17	17	19	13	18

Our interviews reveal the impacts that health and financial setbacks have caused throughout the timeline of recovery. We begin this section by first explaining the health and financial impacts of the hurricane that are summarized in the table above. Then, because different agencies and actors are responsible for different parts of response and recovery, and each stage of recovery presents unique challenges, the rest of our results section separates the causes of harm into the following stages: 1) Evacuation and Preparedness, 2) Immediate and Urgent Needs, 3) Assistance Application Process, 4) Temporary Housing, and 5) Home Repair. Using descriptive statistics from our research and thematic analysis of the interviews, and drawing on the expertise of the CRs and WSRs, each section below includes recommendations we believe would lead to more just and equitable results.

Health Impacts

"It made it worse, health-wise. They have diagnosed me now with other things. Every time you look around, I'm being tested for something different. I

¹¹ Unless stated otherwise, quotes are from interviews with respondents. CR quotations are attributed throughout.

don't know, mold was, you know [that] it was as devastating as it is. I guess if you already have a weakened immune system, it's kind of hard to fight."

People in NE Houston are experiencing sustained and severe physical and mental health impacts from Harvey. These long-term impacts are being ignored to the detriment of already marginalized disaster survivors. The design and implementation of preparedness systems, evacuation plans, and recovery programs can be transformed to produce better outcomes, but only if the full severity of long-term harms caused by Harvey are taken into account.

In our study, Harvey created sustained negative health effects for all but one of the 21 interviewees. Because of the storm, two respondents lost nuclear family members, one had a serious fall, one was diagnosed with diabetes, one had a stroke, six were hospitalized, and eight said they experienced depression. One respondent has since passed away due to declining health shortly after Winter Storm Uri in 2021.

Even before Harvey, poor health, high stress, and trauma were common issues in NE Houston. Of our 21 participants, 12 had pre-existing health issues and 11 lived in a household that included someone with a disability. Many experienced diabetes, high blood pressure, mobility disabilities, and respiratory conditions including asthma, Chronic Obstructive Pulmonary Disease (COPD), and chronic bronchitis. Interviewees also reported congestive heart failure, cancer, edema,¹² and arthritis.

Often, participants with pre-existing health conditions described a vicious cycle where the recovery process and displacement aggravated their conditions, which in turn made accessing aid more difficult.

"During that period of time my disability rate increased because of my mental condition, which I attributed to Harvey, and the inconsistency and lack of any kind of help. The condition was already there but it was aggravated by the Hurricane itself and then by FEMA and everything that happened afterwards."

Many also said that Harvey permanently damaged their health. CR Mal Moses gave an extreme example:

*"My mom, her health went down drastically, because she had to move out of her house, somewhere that she had spent over 50-some years in, and I had to go move her in with my sister somewhere she really didn't want to go. So, at that time, she just mentally and physically gave up. I mean, 'cause when she left here, she was walking, but when she got there, she didn't even want to walk no more, didn't want to eat. I mean, she was just, she was just— excuse my French, but— f***ed up. Yeah. So. And then, after they got the house basically done up until now, she moved back in. She lasted four days and then she passed away, after she moved back in. So, I attribute that to Harvey too."*

In focus groups, CRs were particularly concerned about Harvey's mental health impacts. And with good reason—19 described depression, anxiety, or recurring trauma, but only five said they received professional care. CR Ann Weston summarizes, "[we are]

¹² Edema is disorder that causes swelling of the legs at the knees and ankles.

emotionally still living with the disaster, forever." A 70-year-old woman's experience typifies the pattern:

"At the least, I've gotten worse. When all this happened to me, I was taken a hold of by depression and anxiety. There was too much to do right now. I'm going with a psychiatrist now [two years later]. But all of this, with my age, all of this affected me a lot and... I'm not the only one that's going through this, because it was horrible to see so much water. Truthfully, to see your reality, see your neighborhood flooded. So many people, right, that need help. So many kids that suffered because of all of this."

Some respondents talked openly about their mental health and sought medical care that they found helpful. Others hinted at mental health issues but struggled to share their troubles and seek help. One respondent explained that it was simply, *"because I'm not, I ain't never been that type of person...it's hard to admit to yourself when you're at that point. You don't want other folks to even recognize it's in you."* Other barriers to accessing care included having no time, lacking transportation, temporarily staying far from home, or not knowing how to access care. Some responded that their mental health had not worsened, but then went on to describe trauma, stress, and despair.

As shown here, many interviewees described the connection between mental and physical well-being and how physical health issues could worsen mental health and vice versa. In our study, participants described how stress led to both acute and chronic illness.

Participant: *"Yes, all that situation caused you stress. My husband, in those days, also [he has] diabetes so that stress, and they have high [blood] pressure, gave him...it was like a stroke. It wasn't a stroke, but it was like his face fell on one side. And they went to the doctor, and they said it was from the stress from everything that had happened in those days. From trying to get us out of George R. Brown [a convention center which served as a shelter], the night before trying to find a boat to get us out."*

Interviewer: *"Like the pressure accumulated."*

Participant: *"Yes. And me as well. I got sick in those days...I was feeling dizzy. I didn't want to eat. Around 2 weeks, I felt very ill. I got skinnier. So, I went to the doctor and they told me I also had diabetes."*

Harvey, which caused facilities to shutter and roads to close, disrupted some respondents' access to medication and ongoing medical care. But many more highlighted how they were easily able to access healthcare through programs they were already enrolled in such as Medicare and the Veterans Administration. One woman said, *"I didn't have that problem because I have Medicare. I would take my medicine and see the doctor. But I did go to the doctor more than usual."* Despite access, participants' health deteriorated. Doctor visits can only do so much for chronic conditions and can't address the root causes of unhealthy living conditions.

Financial Impacts

For many families in our study, Harvey had disastrous financial impacts. Families saw their main asset, their homes (sometimes built over generations), lose value rapidly. Costs of living increased at the same time as opportunities to earn income were limited by

sickness or increased distance from work. To add insult to injury, property taxes rose while homes fell apart, and contractors often overcharged or stole from Harvey victims.

In addition to the direct cost of repairs, the time it takes to do repairs often carries an opportunity cost as families prioritize working on their own home over earning income at work. CR Hortencia Hurtado explained, *“my husband had to stop working so he could help with the house with what he knew how to do himself.”* Others didn't feel comfortable forgoing any income, and instead split time between DIY repairs and employment: *“My husband worked some days and other days he didn't work. And he spent his time in the house building and it was him who constructed the most.”* Others couldn't go to work because they lost their cars. One domestic worker in our study explained, *“I was out of work because the family that I took care of, they had to move. Gas was too much; it didn't make sense.”* In combination, finding time to do repairs, losing transport, losing job opportunities, or falling ill or having mental health issues reduced the income of families at the same time that the cost of surviving rose.

Home repair is extremely expensive but changes in living situations squeezed families even further. Participants say that *“labor got very expensive”* because of the increase in demand for construction workers. One explained that, *“There were a lot of repairs that needed to be done and contractors and everything, and because they know that [everyone] was flooded, well, they charge more than they should be charging.”* The costs of home repair are compounded by the economic stressors of living away from home, or having to do things like buy bottled water because plumbing is broken. The domestic worker in our study described the multiple ways living in a hotel room increased costs of living:

“[The] hotel room that you're in is a small, [with a] compact refrigerator. You want to keep only so much food in it, so you eat out. You don't want to keep large amounts of cash on you, and you have to use your card at the ATM machines. I know I paid at least \$1,000 a year for ATM fees.”

To many respondents, the most galling increased cost was charged by the government itself in the form of property taxes.

“Harvey made everything worse because when Harvey came through, they came in and re-evaluated taxes, so they say, and everybody's taxes went up. I mean, you still got houses that still got mold and mildew and falling apart from Harvey right now, but the property value went up—how is this possible?”

For most families in our study, the only way to survive after a disaster was by draining savings, borrowing from family and friends, or taking on debt. Eighteen of 21 interviewees report depleting their savings or going into debt. For some, the impact was extreme: *“Did I spend any of my own money? Yes. I mean, I spent all of my own money!”* When asked what it was like to spend their own money, families expressed real pain and frustration, *“It hurt. But I still want to do the right thing to be done toward my house so me and my wife can move back in.”* Many people explained that borrowing money from relatives or friends left them feeling like a burden. Some even took the high-risk choice of taking out extra credit cards to avoid it. While borrowing money from friends is a useful survival tactic, it may cause strain on relationships or reduce the amount of money available to social networks in the future. Depressingly, many participants expressed fear that they would run out of savings by saying things like, *“But my fixed incomes. I be digging in my pocket real*

deep. *The pocket is wearing out!*” Another respondent who was also elderly echoed many others who indicated that they would never build their savings back up— *“How am I going to build them up! I am only getting social security.”*

Many systems aimed at helping the poor are inaccessible to the poorest. For example, one major source of post-disaster funding comes from the Department of Housing and Urban Development in the form of reimbursement for repairs. One respondent explained, *“From what I understood, we had [to] pay, and then they would reimburse us, and I didn’t have money for that.”* Furthermore, there is no path to compensate people for the time they take to repair their own homes. This, combined with a focus on reimbursement, is part of how the recovery apparatus perpetuates economic inequality.

The remainder of our results examine each stage of disaster response and suggest changes that would lead to more equal outcomes.

Evacuation and Preparedness

At the onset of this study, we aimed to focus on long term recovery and home repair, but evacuation and its consequences on physical and mental health arose as a dominant theme. Although evacuation lasted less than a week for the respondents in this study, the experience remains raw, and memories are triggered by every rain. In interview after interview, participants described how *“we all get into a panic,” “we get all worked up and scared thinking about it’s going to happen again, and we’re all terrified when it’s just simple thunder and lightning.”* The trauma experienced by participants in this study is not unique. Over 50% of Houstonians report experiencing *“severe emotional distress”* since Harvey (Russell & Hopkins, 2020). Participants consistently described the days of the storm as traumatic and dangerous, sometimes even resulting in death.

“We flooded up to our necks and swam with our hands because there were no resources or help to get us out of this place. The water was up to our necks and it was very dirty. Afterwards my husband started to get sick and he went to the doctor who told him he had a bacterial infection, but they never knew which bacteria exactly, and from there he went to the hospital and that was it for him.”

Unprecedented rain aside, this deadly experience was the result of both the government’s inability to effectively communicate with and prepare places like NE Houston for safe evacuation ahead of Harvey and enabled by society’s deficient investment in marginalized communities.

Communications

Leading up to the storm, interviewees described being unaware of the imminent danger. Local and state officials gave conflicting advice on evacuating, which caused distrust that the mayor *“wasn’t telling [people] anything because they didn’t want to cause panic”* and left people without enough information or time to make informed decisions. Residents explain that, *“if they had told us with time, we would have made arrangements to leave.”* Existing channels of information like the news and government emergency alert systems failed to properly inform everyone of potential danger. Study participants *“knew parts of Houston were flooding, [but] didn’t think it was going to get so*

ugly.” Several people were even asleep when water entered their home. One woman’s testimony captures that the warnings were insufficient.

“And I remember that it didn’t rain here. We even grilled meat outside ... Some people say that they did send a warning, but I would say that they didn’t. Because I was watching the news and all the warnings were for Corpus Christi. And well, us-nothing. I was calm: asleep. I didn’t even realize it.”

The most accurate information came from neighbors or family that ventured out to look at nearby roads or who were in contact with others nearby: One participant was woken by a friend yelling, *“Neighbor, Neighbor!... we all need to leave because we are going to flood.”* Without good information and support, almost everyone was caught *“trapped in the house”* and unable to drive. At the most critical point - when people realized they needed to evacuate - communication crumbled. One respondent explained that *“911 never answered me. I dialed many times and they never answered my call.”* Interviewees connected communication failures in the moment to more general government absence - *“There is no type of communication that allows them to know what happens to us.”*

Evacuation Preparation and Procedure

CRs pointed out that the communication breakdown was even more consequential because, from the perspective of CRs and interviewees, there was no effective city emergency or evacuation plan. Search and rescue efforts were hampered by road shutdowns and a drastic shortage, or perhaps mispositioning, of personnel and high-water rescue vehicles. A few respondents were rescued from their homes by civilian responders or family in boats or trucks, but most ended up wading through sewage and toxic chemical laden flood waters towards bigger roads trying to find higher ground and access to shelter or transportation (Centers for Disease Control and Prevention, 2019). Rescue pick-up points were not created in advance, leading to arduous evacuation journeys: *“we walked with my aunt, who cannot see, at night with large groups of people”* - which lasted days - *“first we slept at a church... No, we slept at Walmart. From Walmart we moved to a church.”* After reaching the main roads, people went through a maze of transport and shelter assisted along the way by civilian rescuers, designated first responders, neighbors, and shopkeepers. Many participants describe experiences like this:

“After we went out to Mesa [the main road], we saw some boats that were from the military. On that boat, they took us all the way to Dollar General. And at Dollar General, they put us in trucks. Those tipper trucks. All full of dirt. We waited at the Dollar General about half an hour. The trucks arrived, and from there they took us here to the Metro stop... There they were getting us on the Metro and they were taking them to George R. Brown [the mega shelter].”

Most in our study eventually found refuge with friends and family or at the George R. Brown Convention Center, the impromptu mega shelter run by the city and Baker Ripley¹³, which was over ten miles from NE Houston and quickly at double its intended capacity, with 10,000 evacuees packed into the arena for 22 days (Arell & Zavada, 2017).

Other families remained in their flooded homes through the entire disaster. For some, this was because they had no way to leave and could not contact help: *“no one [came]...no one help[ed] us get out. We don't leave here and we stay here trapped until Tuesday.”* Other families felt staying was safer, or that they could best minimize property damage if they stayed. Considering Houston is no stranger to flooding and disaster, most were outraged and felt abandoned; *“There should be things put in place for disasters. Say for instance, if we got a hurricane, we know what we need to do.”*

Left on their own during Harvey, residents depended on help from informal networks of neighbors, family, friends, and civilian responders. Relatives with big cars rescued families wading through the water, some shared their generators, and many gathered in the dry homes of friends and family. One participant explained:

“I went with the neighbor. And he was leaving with some friends that were over by Richmond. And they took us with them. And since the woman's house was elevated, well, the water didn't reach them.”

Recommendations

Governments and civil society in Houston need to confront the shortcomings of the evacuation system and move beyond the celebratory “Houston Strong” narrative in order to improve long term outcomes for marginalized people. CRs and WSR believe that communication as well as evacuation and rescue plans must be formulated and practiced before the moment of emergency, and that they must be highly adaptable to a range of disasters and possible complications, including lack of cell service, pandemic, moving water, high wind, and chemical fires. Additionally, for these plans to meet community needs, community members need to be at the center of making them. *“We need communities to come together and come up with a plan and submit it to the city.”* In addition, evacuation plans need to accommodate everyone. The families we interviewed included individuals that are elderly, disabled, pregnant, children, blind, and people that rely on electrical medical devices and refrigerated medicine. Everyone had unique needs that went unmet. Celebrating Harvey evacuation normalizes the idea that disaster is inevitable and that communities must simply deal with the extreme levels of risk created by such an event. It implies that in an emergency it's acceptable that elderly people will have to swim through toxic water.

Communication and evacuation protocols should build off the current decentralized community response by integrating with a large-scale government-led

¹³ Baker Ripley is a large non-profit organization in Houston that was a key participant in emergency response, client services and home repair. This work was coordinated and made known through the Harris County Long Term Recovery Committee.

response. CRs suggested emergency sirens coupled with neighbors and families spreading the word or coupling official news media with informally disseminating information through trusted sources like church networks or civic clubs. State-led communication systems will reach more people and be more adaptable if they integrate with community networks that already exist.

Preparedness means not just disseminating a clear plan, but also training communities to be able to adapt that plan as situations arise. CRs recommend that, to build this community response, communities should be given training and control of enough supplies to conduct safe evacuations. This includes boats, communication technology, high water vehicles, first aid, food, water, and clothing.

Interviewees were critical of how shelters were overcrowded, under-resourced, and far from NE Houston. They also pointed out the heightened risks of these conditions during COVID-19. Among participants there is a common demand *“to have an emergency rescue site in my area... More than one, because the north side, northeast side of town, is known to flood.”* CRs suggest a neighborhood evacuation shelter could double as headquarters for emergency operations and a training location for preparedness.

Finally, there needs to be support to individuals and families to protect themselves and prepare for sudden evacuation, because *“it’s a lot that you need to prepare- clothes- and you have to leave quickly. You need to fix medicines and look for where you need to go.”* Many respondents described changes they’ve already made to be better prepared like *“always try[ing] to see the news and be informed”, “always hav[ing] our important documents”,* developing their own evacuation plans, and practicing preparing their homes’ for flooding by *“put[ing] stuff up... taking stuff out of the closet, piling it on the bed.”*

For the residents in NE Houston, displacement, loss, and a feeling of being abandoned by government officials and Emergency Medical Services (EMS) agencies during evacuation were just a precursor to the systematic neglect shown during the long-term recovery process. But, CRs concluded that if the government increased their capacity and skill for emergency response, and created a highly adaptable and decentralized system in order to meet the specific needs of each neighborhood, disaster evacuation could be carried out more safely. The government must better disseminate resources to and support for communities in order for them to be able to better care for themselves, but they cannot pass off responsibility and place the burden of making a lifesaving decision onto individuals without adequate information or resources.

Emergency communications and evacuation plans should:

1. Eliminate the need for people to encounter grave health risks in order to evacuate.
2. Include the development of local disaster warning system, local shelters and neighborhood-based evacuation points and networks.
3. Be well-practiced, tailored to different types of events and have built in contingency.
4. Meet the needs of specific and vulnerable populations - elderly, disabled, medical needs, non-English speakers, limited access to tech, etc.¹⁴
5. Adapt to the specific needs of each neighborhood and build on the base of existing community assets.
6. Support communities and individuals to protect themselves in disaster.
 - a. Give clear and honest information - Honestly inform of the worst-case scenario so residents have the ability to prepare and give clear recommendations.
 - b. Fund trainings in emergency skills.
 - c. Equip communities and individuals with supplies like generators, boats, PPE, communications, high water vehicles, first aid, food, water, and clothing.

Immediate Needs

In the weeks after evacuation, Houston received national attention and supplies, and both volunteers and funds were plentiful. Yet, when WSR volunteers arrived in NE Houston we heard that the areas had seen little traffic from well-known agencies.¹⁵ While mountains of free or donated supplies accumulated downtown, participants in our study had difficulty accessing critical needs like food, clothing, cleaning supplies, and beds.¹⁶

Immediately after the disaster, residents we interviewed had to spend their own money to address urgent needs. One participant described buying cleaning supplies to protect her bed from mold. As described in the financial impacts section, these costs quickly add up particularly in the face of huge spending on home repair or temporary housing to come.

A more urgent issue was a general shortage of goods in NE Houston due to road closures and broken supply chains after Harvey. Interviewees were unable to find fresh food from supermarkets, or had to depend on friends who had stockpiled.

¹⁴ The Natural Hazards Center has several summary documents to improve risk communication for vulnerable populations. "Risk Communication and Social Vulnerability: Guidance for Practitioners." <https://hazards.colorado.edu/research-projects/risk-communication-and-social-vulnerability>.

¹⁵ Much to our surprise, and in some ways to the credit of these agencies, the Houston Food Bank and the Salvation Army came to visit the House on West Street in the first few weeks to learn about how we identified places to go and how we tracked donations. This was flattering and shows a commitment to community engagement, but that it was needed is still somewhat mystifying.

¹⁶ See West Street Recovery's Zine - A Window Propped Open: Issue 1.

<http://www.weststreetrecovery.org/wp-content/uploads/2017/10/West-Street-Recovery-Zine.pdf>.

"We couldn't find food in our area in our parts of town. You know, a lot of stores were broken into. You can hear the store alarms going off during the day and nighttime. Basically, we found junk food. No meat, no fruit and vegetables."

"I needed something to eat! And I was at their house. You know, so I was dependent on them. I don't know if you were here during Harvey or if you remember, but the freeway was shut down for three days."

Changes in diet were compounded by poor sleep for many families who returned to a home in disarray. One resident tearfully reported that they slept on their kitchen countertop. Others describe sleeping with an entire family on one air mattress.

The outpouring of support after Harvey should have made resources available to everyone, but the participants in our study were unable to find what they needed. It should be noted that 211's¹⁷ job at this stage of a disaster is immensely complicated, but residents reported calling resulted in little more than chasing promises of support from place to place like mirages.

One approach to immediate needs that was universally celebrated in our study was cash distributions. The Red Cross's \$400 program, Walmart's \$400 gift cards, and Give Directly's \$1,200 checks were some of the most popular types of assistance. Cash aid gives residents autonomy, enables them to make purchases they need without any restrictions, and leaves community members feeling dignified compared to many other aid experiences.

Immediately after a disaster, disaster response personnel and resources such as food, cleaning supplies, medical treatment, heating and cooling, and PPE should:

1. Be deployed to the most vulnerable and most impacted neighborhoods.
2. Be easy to access at predefined, walkable locations, and available door-to-door to those unable to travel.
3. Require minimal or no application for access.

Application Experience

After years of looking for help, many in our study still have not received the recovery assistance they need, either because they could never find an organization giving the aid they needed or because they were repeatedly deemed ineligible and denied. Past studies of recovery show that access to aid varies drastically depending on race, immigration status, and class (Fothergill, 1999; Fothergill & Peek, 2004; Pastor et al., 2006; Peacock et al., 1997). The difficulties faced by the Black and Brown low-income people in our study, where 14 out of 21 interviewees found the numerous steps in the application process for various sources of aid frustrating or confusing, shows that this was also true after Harvey. The low levels of aid received by survivors from NE Houston is the result of inaccessibility, eligibility requirements, unclear expectation setting, excessive bureaucracy, and discriminatory or incompetent representatives.

¹⁷ 211 is a phone service meant to help community members find essential services.

Identifying Aid and Completing Applications

Families we interviewed lacked the technology, time, information, and social capital necessary to successfully complete applications for recovery aid. For some respondents, electricity and internet access was sporadic for months after Harvey. For others there was rarely time or energy leftover from addressing urgent needs to keep applying or to remain aware of every new opportunity. One participant explained how these two barriers combined to slow her recovery.

“At first, we didn't have time to even watch TV, there wasn't electricity, we were disconnected, just working ... Two or three weeks has passed by, that's when they started telling us, our neighbors, to apply, to look for help, but in reality, it was us working alone.”

While informal networks through schools, churches, and civic associations allow aid to reach people the government can't directly, often households who need the most help have low levels of “social capital”, such as new immigrants lacking strong community networks (Donner & Rodriguez, 2008). Keeping up with opportunities is especially difficult because disasters lead to isolation. Whether disconnected from the grid or displaced from unlivable homes, survivors are isolated within their immediate families and separated from their broader communities. One participant explained she was so busy that “[she wasn't] in the gossip that, ‘Hey, someone is at the school and is giving out so much.’ [hits table]” This respondent echoed a sentiment heard in many interviews that agencies must “call the people because we aren't aware of it. [hits table] We are living our lives.”

CR Hortencia Hurtado described both experiencing and hearing about further isolation generated by language barriers. She summarized the trend saying, “I interviewed Hispanic people and because of the language they were unable to apply.” People felt “insecurity” and “weren't sure how to get information or to get forms.” Immigration status also created exclusion through fear of disclosing status or sharing personal documents. It's true that undocumented people are ineligible for many aid programs, but Hortencia reflected that some missed out on aid they were eligible for because they “assumed that because of status they couldn't get help.”

After identifying a source for assistance, applicants then had to navigate excessive bureaucracy and complex paperwork. Because Black and Brown people receive smaller awards from each aid source and in turn have to apply to more sources of assistance, procedural impediments have a greater impact on the recovery of non-white households (Pastor, 2006). Flood victims have to prove an immense amount of things to receive assistance, and the burden of proof slows recovery:

“I know there is a process and there are protocols, but I think that the process and the protocols backed up things a lot. It's pure bureaucracy. They know I live here. They know that I flooded. They know what we need.”

Although it is standard practice, the requirement to provide proof of flooding was particularly grating to struggling residents often actively living in an abundance of proof—damaged appliances and destroyed homes. This feeling of not being believed is derived from the tiresome and repetitive processes that survivors have to endure to receive assistance and from the impracticality of documenting damage as your life falls apart. The respondent below articulates how agencies' demands to "pose the truth" prioritizes certain documented forms of truth, like photos, over the obvious material realities of survivors.

"A lot of agencies ask you: Well, you have any pictures? I was fighting for my life, I'm sorry I forgot to take a picture. You know what I'm saying? I'm sorry I forgot to take a picture of me in the water, in the dark. I'm sorry I forgot to take a picture of my wet car full of water. You know, this silly stuff. It's crazy. So, it was really something to have to pose the truth to these people, so that they would help you."

Many application processes failed to respect or accommodate the situations survivors were in and placed an overwhelming burden on applicants, making people wait in long lines, stay on the phone for hours, or travel across town to aid centers for appeals. This woman describes having to travel to her uninhabitable house repeatedly for more photos of the damage and more interviews:

"That's one thing I couldn't understand ... why can't you do it at the same time? Because that still means I have to travel from the southwest side over here! Because she said she had to take pictures [again]! I didn't understand why she had to come out here twice. To ...make sure everything was done right she told me."

The contrast between bureaucratic sluggishness and the urgency of need is shocking. Making it worse, many respondents explained that lack of communication on application status or timelines and long wait times left them overwhelmed by a feeling of not knowing when or if help would ever come: *"After like three months [FEMA] did answer, they went to our house and inspected and told us to wait and to keep waiting to see if we were able to qualify for help. So, we kept waiting."*

Wait times are long even for very small amounts of assistance. Discussing her experience applying to Harris County for help to paint her walls, one respondent explained, *"...we've gone to meetings and filled out more paperwork ... but now I'm talking about a year later and we still have no answer. Yes, or no?!"* As applicants wait, they must develop contingency plans, and rely on informal networks to survive, which leads to stress and frustration.

Because the application process is slow, complicated, and often results in rejection there is a high level of application fatigue. One source of exhaustion and stress was having to repeat Harvey stories again and again to what were sometimes apathetic administrators:

"I had to go and file appeals, and that was really demeaning. To keep asking for help when they told me I didn't get enough water on my street, when everybody else they help, you know I didn't understand that. And then when you go to places, there's people asking you to tell your story. Then you tell it

and they let you bring all of that stuff up, regurgitating it up. Then they say, well, we don't have no more funds."

Denials

Better processes could improve the application experience and reduce fatigue and indignity, but these shifts are not as significant as changing the eligibility criteria to ensure that fewer people are denied assistance. In our study, 17 households applied for FEMA aid, but only 10 were approved for any assistance. This low level of approval in our sample is actually well above the 25.3% approval rate in the four zip codes where participants lived (Adams, 2018). Four study participants didn't apply at all. They cited reasons such as knowing they weren't eligible due to the way their home was owned, past FEMA assistance, flood insurance status, or were afraid to apply because they were undocumented.¹⁸ While FEMA was not the only source of aid, many non-profits and voluntary organizations have intake guidelines that roughly mirror FEMA eligibility.¹⁹ Eligibility and damage assessments completed by FEMA inspectors also determined eligibility for governmental temporary housing and home repair programs (discussed in following sections), resulting in exclusions from those programs or an arduous appeal process. It is still unclear how damage assessments were conducted in order to determine the dollar amount total of damages. Homeowners were never able to access an itemized or detailed report.

Many participants in our study were denied by FEMA and NGOs alike because their houses were deemed "livable", or the damage was judged to predate Harvey. CR Mal Moses, citing his experience doing pre- Harvey maintenance on a home of a friend who denied after Harvey, argued that "pre-existing conditions" was an excuse for blanket denials of lower-income neighborhoods regardless of the home's condition. Either way denying families "deferred maintenance" effectively screens people out for not having the resources to upkeep their homes. This type of denial excludes the poorest home owners precisely because they are poor.

To interviewees the damage inspection process seemed to be nothing more than a formality. One participant said he was denied for what he called "*pre-existing conditions*" by an inspector who "*stayed on the porch and never even crossed through that door.*" Some CRs intuit that the decision to deny entire neighborhoods was made before inspectors even arrived. CR Doris Brown explained how she came to that feeling by remembering:

"Yeah, you know. He stayed there by the hour, walkin' around assessing this and assessing that and asking me all these questions and stuff and sit down and talk to me and prayed with me and then before even got out the door good he had denied me."

Some respondents thought they understood what had happened to them but many had no idea at all why they were denied. The lack of transparency limits people's ability to appeal decisions. It also created a sense of discontent between community members. Often, participants said that aid was distributed unfairly. One elderly and disabled

¹⁸ It is relevant that immigration raids and deportation, and fear surrounding these practices, was at a crisis point in Houston after Donald Trump's presidential victory.

¹⁹ This appears to be changing slightly as the recovery grows longer.

respondent felt that “*young people got more help than other people who needed it more.*” At the same time, single applicants felt that families or older people were being prioritized over them.

For many households, the way the title to their house is held prevents them from accessing home repair. 17 of 21 participants in our study identify themselves as homeowners, but only 6 of the 14 homeowners that answered this question said that they hold the deed to their home according to official records. The 8 who didn't formally hold the deed faced another eligibility barrier for FEMA and non-profit assistance, despite all paying their own property taxes and being identified by neighbors as homeowners. Only a few of the 8 were able to successfully appeal their denial. According to state and third sector agencies enforcing this barrier, the rules are motivated by the aim of preventing landlords from getting assistance to repair rental units.

This framework reflects a middle-class norm that title is assigned to one family member and that credit should be accessed through a formal financial instrument. This contradicts the ownership strategy for many Black families WSR has worked with whose homes are held in heirship where all siblings own a deceased parents' home in equal measure. Sometimes the family agrees that the sibling in the hardest circumstances, or the child who cared for an elder or provides childcare to a niece or nephew, should live in and care for the home. This may be an economic strategy born out of situations of declining wealth, or historical impediments to wealth accumulation. Or, it may be informed by a collective safety net strategy for families that have good reason to not trust the social safety net of the state. For Latinx families, particularly undocumented people, deeds may be held by a relative with legal status or by a lender themselves in what is called a “contract purchase.” According to the USDA, barriers around title holding resulted in property losses for 20,000 families after Katrina (Pippin, Jones, & Gaither, 2017). For both racial groups, the way land is owned on paper is distinct from how land is used, and the family is punished for deploying a collective economic strategy or circumventing the structural racism of the financial sector.

In the first year after the storm, before WSR was funded to repair homes, staff were somewhat successful in helping families apply to NGO programs that would then connect households to legal services to transfer titles or formalize holding and then provide home repair services. But even for families whose legal obstacles were resolved eventually, home repairs were delayed. Some WSR clients had to wait over three years for their cases to be heard in probate court.

Recommendations

Even if the application process is improved, there are simply not enough resources for everyone who needs it in neighborhoods like NE Houston. In general, the application process is designed to push people out because there aren't enough resources. The focus is on maximizing efficient distribution of limited resources rather than getting help to everyone who needs it. This results in strict criteria for eligibility and lengthy and costly review processes. For example, home ownership eligibility requirements are justified by the argument that someone who doesn't fully own their house due to deed issues or is behind on taxes or payments may lose their home. While this can seem rational, excluding these families from aid is not a solution. Instead, they should be eligible for all aid and should receive additional assistance to resolve those root issues. This is why those who need help the most are continuously excluded from receiving assistance. To improve the application process, we recommend:

The application process should:

1. Automatically approve baseline aid for those living in a flooded area.
2. Be simplified, more accessible and oriented towards the goal of including as many people as possible.
 - a. Incorporate avenues such as door-to-door outreach that don't depend on technological access or social network connection.
 - b. Require less information, fewer applications, and less duplication of work.
 - c. Use information the state already has on income, home ownership, and address rather than placing the burden of proof on applicants.
 - d. Give more aid at once rather than many smaller amounts.
 - e. Provide clear information, timelines, and updates.
 - f. Go beyond claiming universality to actively removing barriers including removing the presence of law enforcement parties.
3. Have intake staff and program managers understand the situations survivors are in by walking the streets and doing house visits.
4. Eliminate the main causes of denial by changing eligibility guidelines:
 - a. People with homes in heirship or with property debt should be made eligible for aid.
 - b. Aid must be given to people in the 100-year flood plain.
 - c. People should not be denied for deferred maintenance.
 - d. Aid must be accessible in any language and not require immigration status information.

Temporary Housing

“So many people didn't have a place to stay and that made matters worse. And that prolonged the time... that it took for people to get their houses fixed, because they didn't have anywhere to go to stay. And some of them tried to stay [in their damaged home] there you know? But it was just tough doing that. That is hard for me to explain. If I could have gotten a nice motel, I would have been happier because I would have been on my own.”

Participants in our study could not access reliable and healthy places to stay before their homes were repaired, which had severe financial, physical, and mental health consequences. For people in NE Houston there was an overall lack of temporary housing options, partly due to widespread destruction from the storm. The options that did exist were inaccessible or seriously flawed. As CR Doris Brown explains, the nature of home repair means that temporary housing is an unavoidable need following disaster.

“You could speed up the construction process but you always have to be ready for setbacks... there is no real rapid process if you're gonna do a thorough job. Because it's slow we need to prepare a better temporary [housing] solution.”

As interviewees waited for applications to be processed and homes to be repaired, they lived with friends and family, stayed in hotels or temporary apartments, or lived in their own badly damaged homes.²⁰ Each situation presented serious difficulties, including lack of privacy and independence, increased costs of living, exposure to mold and construction materials, distance from work and neighbors, fatigue from inadequate sleeping arrangements, and stress from constant uncertainty. This array of discomforts and health threats motivated many in our study to bounce from place to place, moving on when they lost access, were no longer welcome, or were just fed up with the challenges of that particular situation. One interviewee explained that the constant changes “took a toll on us. This was something we never experienced before, and we weren’t sure what our next move was going to be. It frustrated us a lot.”

Fourteen of 21 people we interviewed stayed with family or friends for some extended period between Harvey and our interview. Many expressed deep appreciation for the kin who gave them shelter. But they also explain that not having privacy and independence was stressful and exhausting. When living as a guest, they lacked control over their schedule and lifestyle:

“It just inconveniences you to not be able to be at your house and that causes a lot of stress. And it’s just so different when you stay with somebody else. I don’t care who it is. It’s just so different from you having your own house...because you need to obey other peoples’ rules. At my house, if I want to eat at 3:00 or 4:00 in the morning, I get up and fix myself. At other peoples’ houses you can’t do that.”

Many participants worried they were a burden. One interviewee who worked the night shift full time and was staying at a friend’s place explained, “I would get me a room on the weekend, because I’d be off and I just didn’t want to be laying around somewhere, for a little privacy.” Others slept at their family’s, but went to their damaged home for solitude, to cook, and to bathe. For elderly people and people with chronic health conditions, sleeping in groups, in a common space, or not on a bed made sleeping difficult and was harmful to their health.

Housing Vouchers

One sure way to get a bed was to stay in an apartment or hotel, but only 6 of 21 interviewees did so. All 6 paid for at least part of their stay themselves, and only 3 received help from non-profits or FEMA temporary housing vouchers. Many more were denied temporary housing assistance. Some were denied FEMA vouchers because they were told “their homes were fit to live in” and most non-profits only offered temporary housing to people already accepted to home repair rebuild programs.²¹

Denials explain only part of why people didn’t use temporary housing programs; at least 5 interviewees said they were offered assistance, but couldn’t find anywhere that

²⁰ In some ways it is strange to consider living at home a temporary housing option. But increasingly FEMA itself is moving in this direction, with programs like PREPS discussed later, and STEPS where families are asked to shelter in partially repaired homes. With this in mind we discuss the dangers of living in a construction site in this section.

²¹ For example, one participant received temporary housing from Catholic Charities but only after Team Rubicon, a nationwide disaster response home repair agency, agreed to repair her home. This makes sense as non-profits cannot commit to funding indefinite hotel stays.

would accept their voucher, or that was handicap-accessible, safe, or in a feasible location.

"First of all, I had to pay out of pocket because I couldn't find anywhere to accept the FEMA voucher. And then once this one place was ready to where I could use my voucher, I didn't like it. It was drug infested, it was rat and roach infested. But I cleaned my room, you know, to the best of my ability, disinfecting, cleaning, adding my own little touch, a homey touch to it."

Other programs had unclear requirements, placed too much burden on the recipient, were only available through reimbursement, or relied on communication with non-profits that faltered. CR Ann Weston recalled:

"Baker Ripley told someone: 'Find another apartment.' When they found it, they told them it was too much, they need to stay in the same area they got flooded in. They said they would keep in touch but they never did."

Even once in temporary housing, people described the continued risk of suddenly becoming homeless. FEMA vouchers didn't have clear timelines and were subject to sudden termination, often leaving people in a panic about where they were going to live. CR Mal Moses describes the consequences of being suddenly kicked out:

"So, we stayed in that motel for about 9 to 10 months until they called one more an hour before checkout time saying, 'y'all gotta check out, we're not paying for it no more.' And that was about an hour before it was time to check out... So, I had to come back to this house... And by the time I got back to this house, they were starting to do the repairs. So that means I was breathing in all this sheet rock dust, all this mold that was in the air. Which eventually sent me to the hospital with pneumonia."

This uncertainty was constant with formal housing vouchers, but living situations with relatives and friends also could have ended at any moment.

No matter the type, most temporary housing was far from home. This is partly explained by the widespread destruction in NE Houston, which damaged hotels and the homes of people respondents might have stayed with. But people needed to return to their own neighborhoods to work on their homes, go to school or work, and visit the doctor. Distance made this very inconvenient, stressful, and sometimes impossible. People faced added commute times often over 45 minutes each way, which increased gas costs or bus fare and ate away from time people could have used rebuilding their homes, earning money, or relaxing with their families. This woman describes how difficult it was to get her kids to school:

"We came back on the weekend before school started ... So, I had to [hits table] come back over here because a 40-minute commute was too much. And then Vanessa would go in at 12 noon and would get out at 3 in the afternoon. And Melvin would go in at 7 in the morning and would get out at 3:30... It was about 2-4 trips that I'd have to make. It wasn't reasonable."

The distance cut survivors off from friends and community and left them far from the homes they were trying to put back together. An elderly woman who cannot drive explains, *"I felt isolated. I felt displaced. Lonely. And that it wasn't a good experience."* Consistently, families had to balance the risks of long commutes, dangerous living conditions, isolation and missing work, school, and doctors. It is also very difficult to be involved in the reconstruction of your house and ensure high quality of work without being on site. One interviewee reflected, *"You know, that was one reason the house became so bad. I couldn't come over here to be with the contractor or anything, because that was just too far for us to be driving every day."*

Living in Damaged Homes

The lack of viable temporary housing options also means that families spend significant amounts of time living in seriously damaged or dangerous homes. Seventeen of 21 respondents lived in their unsafe, flooded homes for some period as they worked to rebuild. Exposure to mold, flood-soaked materials, and construction dust and chemicals had severe health consequences, especially for those already with chronic conditions. CR Doris Brown describes her experience moving home to an unrepaired house after months of couch hopping.

"I think it aggravated my COPD and my asthma. I didn't really know what mold was or how it really smelt and I was staying in there with it. And it made my breathing much more difficult. I was using my inhalers much more. I sleep on the sleep apnea machine because I have sleep apnea, too. It made me a little weaker."

Over a third of respondents described a decline in respiratory health and many more described a decline in overall health. CR Mal Moses describes his experience after going to the hospital with pneumonia as described earlier.

"And I stayed in the hospital for about two months. And then by the time I came back, they was uh... They'd cleared out everything in the house and were putting it back together. Which didn't do me no good really because I was still sucking in all this sheetrock dust and the paint smell, and the, you know, the glues and all the different materials they were using, I was sucking it into my lungs... which, that was really, that was a bad experience. At the same time, you know, but... grateful that there was somebody trying to help me."

In addition to dangerous air quality, WSR has seen families living in damaged homes that are structurally unstable, have exposed nails and splinters, damaged electrical systems, or with open and spilling sewage. Many families returned to homes with limited or no utilities. This pregnant mother and her children lived in a home without electricity, a toilet, or running water:

"It was really difficult at first because we didn't have utilities. When we were working on the house, we had to go to the store to use the restroom, or with a friend who lived nearby. We had to get bottled water to drink."

Others had gas and water but not power, or had flooded water heaters, which left them in the dangerous situation of boiling large quantities of water to bathe. Families with utilities often still couldn't cook, because flood waters damaged ovens, stoves, and refrigerators. Since most furniture was destroyed in the flooding, many survivors were left to sleep on flooded mattresses, or blow-up mattresses or, "on the ground with blankets."

Living in an active construction zone meant constant stress and no relaxation. This mother describes the strain of essentially camping in her own home.

"What we did was that our room - the biggest one - that was the first room we put the sheetrock in. Just the sheet rock. The closet was really clean, and there we stuck the inflatable mattresses at night. ...And it was hard to get up. Well, we'd leave the school clothes ready. Get up... And put away all the mattresses. Deflate them, because they were going to be working and they would be covered in dust."

Some interviewees lived through this for over two years. In addition, and with a significant impact on their rest and well-being, many lost access to small pleasures like television, clothes organized in a closet, or comfortable places to sit.

Beyond fatigue and stress, many described experiencing depression related to living in their destroyed homes:

"It was kind of crushing and kind of defeating—you know every time I walked in through the living room and saw the big hole in the ceiling and stuff. Yeah. I didn't even have the care to first to clean up the mess that had fallen from the roof and stuff. Eventually I used the back end of my house and I just lived in three rooms. The bathroom, my bedroom and kitchen. Yea.... Yeah. I felt hopeless.... Yeah. I mean you know what... What's the use? Nobody was trying to help me, you know. I'm out here on my own tryna get it done."

Recommendations

From a public health perspective, it is unacceptable that living with mold, in open construction, in only one room, or without utilities is normalized in poor neighborhoods post disaster. Although middle class people may have to deal with the hassle and stress of construction for discrete periods after disasters only the poorest people are expected to live in dangerous conditions for extended periods of indeterminate length without complaint. This practice should be eliminated through expansions of viable temporary housing and improvement of the home repair process, to be discussed next.

Temporary housing should:

1. Be pre-planned, safe, dignified, accessible, and keep people close to their homes.
2. Not place the burden of locating housing on applicants; voucher systems must only exist if sufficient housing is available.
3. Be available until repairs are complete.
4. Avoid partial repairs unless they limit further structural damage. Partial repairs are an inadequate substitute for temporary housing.

Home Repair

For most families living in America, the home is a place of refuge and comfort as well as their main financial asset. The slow pace of recovery both reduces the functionality of the house, and allows the structure to decay in ways that diminish its market value. Our study found that 15 of 21 residents considered their home not yet complete, and that some families are still living in badly damaged homes.

Interviewer: *“And can you tell me, how much time did this take to finish the restoration?”*

Participant: *“We still haven’t finished. It is not finished, framing is missing, I’m missing... many things are missing.”*

Living in an unfinished home while navigating a never-ending repair process caused a serious emotional toll for many of our participants. One respondent recalled, *“I said it will be ready for Christmas.... No, for the next Christmas, and it never was finished, completely finished. 100 percent? No.”* Many others reported depression, stress, anxiety, or even trauma caused by seeing their home in disarray and having no known path to complete it.

“... my husband despaired and despaired.”

“I couldn’t sleep a lot and my sister told me she felt like every time I would come over here to look at this house... [that night] I would talk in my sleep. I don’t know if that was true or not. But she felt like seeing the house, that was what caused that.”

After Harvey, many families were enrolled in the state of Texas’s Partial Repairs and Essential Power for Sheltering (PREPS) program. PREPS’s stated goal was to perform partial repairs on damaged homes to make them fit to live in so that people could return to their neighborhood (Texas General Land Office, 2017). Once the PREPS scope of work was completed, FEMA vouchers for staying in hotels were terminated. In the experience of residents and service providers across NE Houston, and in contrast to a 2020 op-ed by Texas Land Commissioner George P. Bush heralding the program as a success (Bush, 2020), PREPS failed to make homes safe (Morris, 2018). For instance, in CR Ann Weston’s house, PREPS contractors installed a kitchen cabinet but failed to remove the flooded sheetrock behind it. Four months later, her new cabinet was moldy and the air in her kitchen was dangerous to breathe.

In early 2018, WSR worked with 20 families enrolled in PREPS and in nearly every case found serious safety concerns including visible mold in homes, dangerous structural and electrical issues, and plumbing deficiencies causing sewage leaks (West Street Recovery, 2018). Owners had little power to intervene when contractors didn’t take mold seriously, and had no effective system for reporting low quality or dangerous work. Most firms didn’t provide residents with scopes of work, and the few residents who did receive paper documentation were not informed of the option to opt out. Construction workers showed up at the residents’ homes unannounced but expecting to do work. Many times, families’ concerns were dismissed because contractors had followed scopes of work created by the Texas General Land Office (GLO). CR Ann Weston’s testimony demonstrates the impression common among community members that the program did more harm than good and that they had little power to stop them. *“They came in like a wrecking ball. They used foul language, and basically, I felt really disrespected.”*

Homes were only eligible for PREPS if the FEMA assessment of damages (FEMA verified loss) was under \$17,000, yet the budget per home was up to \$20,000 even though the program wasn't intended to fully repair homes and was far from fixing all damages. Homes with a higher damage assessment were eligible for a different program, Direct Assistance for Limited Home Repair (DAHLR), for permanent repairs up to \$60,000 but very few families were deemed eligible (FEMA, 2017); WSR only encountered two families who were. PREPS was justified as an intermediary step to recovery that would be followed by a complete repair or rebuild through a government or non-profit program. However, despite being promoted as a temporary housing program, the cost of PREPS work was counted against total money put into a home, including reimbursements and home repair, to avoid "Duplication of Benefits" (City of Houston, 2021). To residents there was no evidence of continuity or coordination in repair stages between different authorities. For many, the follow-up never came. In December 2018, HUD approved \$392.7 million to the City of Houston Homeowner Assistance Program for repairs, rebuilds, and reimbursements to single family homes (Texas General Land Office, 2018). Nonetheless, in August 2020, 3 years after Harvey, only 79 homes had been repaired or rebuilt by the Houston Housing Department (City of Houston, 2020). Homeowners experienced long wait times, confusing feedback on their status in the program, and being passed back and forth between different case managers, eligibility specialists, inspectors, and contractors (Orduña and Hirsch, 2020).

In October 2020, with the passage of "Amendment 7", GLO forcibly took control of the City of Houston's CDBG-DR funds (Texas General Land Office, 2020). The transition was heavily contested with resources and time spent on arguments between local and state governments rather than on helping homeowners recover. Many residents who had already been waiting for years were forced to restart the application process. Since the takeover, the rate of home repairs and rebuilds has increased (GLO reports full repair of 182 homes as of October 2021²²) but still leaves many families waiting with homes in disrepair. After the takeover the City of Houston continued repairs on a subset of homes and has since completed 266²³ (City of Houston, 2021). The fact that in the four years after Harvey less than 450 homes total have been repaired by the official government program shows how the government let down those in need after the storm.

While PREPS was a prime example of governmental recovery programs denying homeowners agency and a lack of accountability, local Houston nonprofits sometimes demonstrated similar dynamics to a lesser degree. One participant explained she was assigned to two different agencies, one managing her case and a different one repairing her house. She says she "*was blessed to meet the folks at Baker Ripley,*" but was frustrated that she could not communicate to the people doing work on her house directly:

*"[The home repair agency] looked through my house and told me all they were going to do, and told me it was free. But then I couldn't reach them. Not being able to contact my construction team caused me great anxiety, the workers couldn't tell me nothing... **Once they took over my house it wasn't mine no more.** I was left out of the loop. I did sign the papers for them to fix it, because what was I going to do? I had little choice, I even had to do a*

²² See the Housing Assistance Program (HAP) Application Pipeline: <https://recovery.texas.gov/files/programs/hap/glo-hap-report.pdf>.

²³ This total includes the 79 homes repaired or rebuilt prior to the GLO takeover.

video in my house for one of their sponsors! I felt used by that. I'm sick and tired, and I'm being put on an ad, but I feel obligated."

Although partial repairs can be cost-effective in the short-term, it is extremely difficult to carry them out in a way that minimizes cost in the long-term and protects a resident's health. If lower-cost repairs are rushed to get a family back in a house, but serious problems with framing, foundations, water and sewage systems, extensive mold, or electric work are unaddressed, the home is likely not safe to live in and. As CR Ann Weston noted about her house, "the temporary stuff all ha[s] to get torn out" anyway. Furthermore, interviewees believe that piecemeal repairs taken on by multiple actors and funded by multiple agencies are more complicated, and increase the likelihood of missed steps and low-quality work.

Self-help and mutual aid²⁴ within families and neighborhoods is a critical part of how families did construction on their homes following Hurricane Harvey. Quickly removing flooded furniture, belongings, walls, and other porous materials—often called "mucking"—can drastically reduce total damage. The quote below shows that this is well understood by Houston residents, most of whom have personal or familial experience with flooding:

Participant: "Well, as soon as the water started going down, I immediately got in there with my things. bleaching. I didn't wait for it to settle and start, you know, forming the mold, which it eventually did. There was still some water underneath the baseboards that I didn't get to... but I immediately got in there as soon as I could and got the bleach in there, 'cause I know what mold can do... but after a few days I... started smelling it. That's when I realized I needed to get underneath the baseboards, so."

Interviewer: "Yeah. So, it was kind of messing with your breathing there for a minute?"

Participant: "Yeah, just for a minute."

While there were organizations that assisted with mucking, the work was mostly taken on by households and their close networks. Mold remediation is challenging since moisture and mold are often trapped between surfaces and common cleaners like bleach cannot treat porous materials so large portions of the house must be demolished and replaced. WSR has learned through accompaniment that financial impediments often restrict families from thoroughly completing a mucking job and adequately addressing mold. For example, many families do not remove flooded walls, despite the high risk of mold, because they are aware that assistance to replace them is in no way guaranteed. This poses a serious risk to respiratory health.

After mucking, neighbors helped each other with repairs. Sometimes this came in terms of sharing materials to be used for the most essential repairs. One respondent reported "A coworker of my husband came and he gave him 20 sheets of sheetrock....at least to cover the bedroom to be there for the time being." Neighbors describe patterns of what Putnam (2000) described as "generalized reciprocity" which is key to developing "social capital."²⁵

²⁴ Defined by Marriam Webster as reciprocal aid and cooperation as among people in social groups. First used by anarchist theorist Peter Kropotkin in 1902.

²⁵ While we recognize the utility of the term here, some of this paper's authors disagree with the term social capital. Friendships, bonds of trust, and love should not be reconceptualized as capital as a way of asserting

“All of the neighbors were here, we all supported each other. ‘How are you? What are you missing? Look neighbor, come help me take this out? Sure, neighbor.’ It’s something very beautiful. And like that, my neighbor told me they took her food. ‘Look, they brought me, I’m bringing you some.’ And that’s how it went.”

While self-help and mutual aid are proof of communities' resilience, they should not be romanticized. For some respondents the effort of rebuilding their own homes had dangerous mental and physical health impacts. One elderly respondent explained:

“Oh well we started to clean. Because I had fallen, I couldn’t walk that well... It got worse because like I told you, me with the diabetes, high pressure, cholesterol, then waist surgery, and surgery on hip. It was difficult for us, um, to go through all this after Harvey. Then to try and fix the house which was really a lot, right? It did feel like a lot of pressure, right? Because seeing how I was in my sickness and seeing that you don’t have a house is difficult.”

Families that pay contractors for repairs are eligible for reimbursement via CDBG-DR²⁶ funds, but people who didn't have enough cash on hand to enter a formal contract are ineligible. Despite the widespread celebration of “social capital” in debates around resilience, families who use their social capital to repair homes are forced to further deplete their scant savings.

their value. Furthermore, the labor of others does not produce rewards for those with social capital, so it cannot properly be understood as capital in an economic sense.

²⁶ Community Development Block Grant Disaster Recovery program, the City of Houston's Hurricane Harvey housing recovery program.

Recommendations

To improve health and economic outcomes, the post-disaster home repair methodology must be reconfigured to drastically reduce the time between flooding and returning to a safe and dignified home. It should expand mucking and mold remediation, address unsafe living conditions that preceded disasters (which are extremely common in NE Houston), increase the agency of homeowners, and more effectively coordinate the stages of construction.

In regard to the strategy of partial repairs, CRs supported the idea of partial rebuilds that are coordinated with temporary housing and part of a committed plan to fully rebuild. Doris reflected that, *“it’s nice to see some progress at least.”* Partial repairs that limit further damage, such as replacing roofs, eliminating mold, or repairing pipes, are efficient and can be permanent. But, many partial repairs such as those through PREPS described earlier cannot be permanent, and only led to increased costs and health dangers for residents down the line.

For any of this to be possible, the disaster recovery sector must vet contractors before each storm and set up accountability processes that can be used by homeowners who are unsatisfied or confused by the work. Though beyond the scope of this section, ultimately home repair programs must be given the mandate and funding to address dangerous housing conditions even if they predated the storm.

Increasing resources for government and agency repair programs should be in parallel with funding self-help and mutual aid carried out by residents themselves. Particularly in the early stages post-disaster, when rapid action is critical for minimizing long-term damage, a coordinated effort to empower residents to muck could include funding, training, tool provision, and distribution of PPE. This would lower the overall cost of repairs, improve health outcomes, and support long-term resiliency.

The home repair process should:

1. Make mucking and mold remediation services available quickly and coordinate with case management services such as home repair intake.
2. Always be coordinated with temporary housing
3. Strive for a one-stage rebuild process rather than partial rebuilds.
 - a. Do partial repairs when they limit further damage or improve health
4. Address issues predating the disaster
5. Be part of ongoing governmental home repair and maintenance programs.
6. Allow homeowners agency in the decision-making process.
7. Hold builders and program managers accountable by including a system for intaking and accommodating homeowner feedback.
8. Support the local economy through hiring from the neighborhood and buying from small, local businesses.
9. Provide funding from HUD programs for self-repair and hiring outside contractors, prioritizing up-front payment over reimbursement models.

Discussion: Structural Barriers to Recovery

Though each set of the above recommendations would go some way in improving recovery at the household level, our research team asserts that the inequality reproduced by the recovery apparatus is best understood at the scale of the neighborhood. Participants and CRs expressed an acute awareness that their post-disaster struggles were not individual, but rather part of a shared experience and history of discrimination among residents of marginalized neighborhoods, low-income people, and Black and Brown people. Age, language, and gender all impacted recovery, but the dominant barriers identified in our study were class, race, immigration status, and neighborhood. Any effort to create a more just recovery must address these dynamics directly. Participants and CRs articulated solutions focused on real investment at a neighborhood scale to break past historical patterns of marginalization, disinvestment, and discrimination.

Inequities of Class, Race, and Geography

*“You think that for some reason the government does not help us?
God knows why. Maybe because we have dark skin.”*

“Sometimes I do feel like they pushed the low-income clients, I mean, you know, low class, working class or Black... that they pushed them to the back. That is my belief and I will always feel that way.”

Many participants felt that denials of assistance, neglect of neighborhoods, and even mistreatment by recovery professionals were rooted in their low income and wealth, a lack of formal education, or low social status—all characteristics best described as social class. Respondents, like the one quoted below, said that officials did not communicate well with people that are thought to be of lower socioeconomic status:

“-Yeah, and. So, the response was just bad...”

“-Yeah. Especially in low income to no income areas.”

“-Right, we were left in the dark.”

When people were able to access agency representatives they felt “*pushed to the back*” or talked down to. One participant illustrated the assumed connection between limited economic resources and intelligence by saying, “*They [NGO case worker] said, ‘Well, looks like ‘so and so and such thing.’ You know talking down to me like I am stupid. I ain’t stupid. I know what I need. I need some help. I just need some finances.*” Other respondents were more certain that low levels of education were an impediment, not because they didn’t understand the process, but because of the way they were treated:

Interviewer: “*So you think that they dismissed you because of your race, your age, wealth, migratory status, or your level of education?*”

Participant: “*They did it to me because of my level of education. Because one came and nothing. ‘We’ll come tomorrow,’ and we went to [unclear location] and there they didn’t help us with anything... Yes, they dismissed us. And we went twice. ‘Come tomorrow.’ No, they didn’t help there.”*

While income and education are measurable, other interviewees used more nebulous descriptions of status saying, for example, *“They passed us up to get to the big timers out there.”* Social status, derived from professional standing or family reputation, shapes a household’s recovery.

It is exceptionally difficult to determine if individual case workers treated individuals with disdain because of their race or class. But it is true that in certain circumstances poor people are excluded from aid. In a 2018 investigation of FEMA eligibility after Harvey, Texas Housers found that 46% of households earning under \$15,000 annually were denied assistance (Adams, 2018). In contrast, only 15% of households earning between \$60,000-75,000 annually do not receive assistance (Adams, 2018).²⁷ Denial codes are obscure and ever shifting, but past studies have shown that “deferred maintenance,” or what many in NE Houston call “pre-existing conditions,”²⁸ are a major source of FEMA denials.

Despite the ways in which class and race are intertwined and mutually reinforcing, respondents reported that they faced barriers driven by racism specifically.

“I just gave up on them. Because a lot of them people -- one lady interviewed me and she acted like she was the one giving me the money the way she just talking and I, you know I ain’t got time for this black lady.”

This analysis was echoed by CR Ann Weston who argued that *“The system is racist because people running the system are racist.”* This statement is supported by the National Low Income Housing Collaborative 2019 study showing that Black and Brown people face discrimination in the recovery process.²⁹

CR Myrtala Tristan proposed a profoundly simple solution to improving the equity of recovery: *“Everyone should have the same rights regardless of race. ...everyone should have the right; everyone should be helped the same.”* In Houston, race is a more powerful predictor of residential segregation than income (Sui & Wu, 2006). And therefore, no matter what determines differential recovery between neighborhoods after a disaster, flood risk in Houston can be at its root attributed, in part, to racial and economic disparities. Personal discrimination due to race is compounded by both institutional and cultural exclusion for undocumented survivors. Despite proclamations of universal eligibility, charities often ask for driver’s licenses, tax forms, and other documents that people without legal status are less likely to have. CR Hortencia Hurtado explained that undocumented people *“had to spend so much time getting assistance but they got less because they didn’t know how. Also, they assumed that because of status they couldn’t get help.”*

Participants didn’t always emphasize interpersonal discrimination; in fact, when residents answered questions about how race, age, class, and education impacted recovery they often used place-based explanations like, *“in these areas,” “over here”* and in *“neighborhoods like this.”* One participant directly stated, *“It’s hard for me to separate location and race because they’re one and the same the way I look at it.”* And while this

²⁷ Median incomes for zip codes in the study area range from \$24,000 to \$28,000.

²⁸ Fascinatingly this term is not used to FEMA or repair agencies and appears to be borrowed from the healthcare debate

²⁹ See [https://nlihc.org/sites/default/files/Fixing-Americas-Broken-Disaster-Housing-Recovery-System_P2.pdf?utm_source=NLIHC+All+Subscribers&utm_campaign=5d47ac0f42-DHRC-Coronavirus-9.4.2020&utm_medium=email&utm_term=0_e090383b5e-5d47ac0f42-293269837&ct=t\(DHRC-Coronavirus-9.4.2020\)](https://nlihc.org/sites/default/files/Fixing-Americas-Broken-Disaster-Housing-Recovery-System_P2.pdf?utm_source=NLIHC+All+Subscribers&utm_campaign=5d47ac0f42-DHRC-Coronavirus-9.4.2020&utm_medium=email&utm_term=0_e090383b5e-5d47ac0f42-293269837&ct=t(DHRC-Coronavirus-9.4.2020)).

was the most direct expression of the idea, many participants explained that discrimination, related to both race and class, was geographic. One interview explained, *"I feel these areas are very neglected because, as is a fact for most of us living here; well, we are not rich, and I believe because of that they are not paying attention to us."*

When asked why participants focused on geographic and not personal discrimination, Doris Brown explained,

"Historically [discrimination has] happened at the neighborhood level. These neighborhoods are structurally vulnerable. They've contained us in different neighborhoods. They know these neighborhoods need help, but do nothing but collect taxes. Our neighborhoods flood every time." (Emphasis added)

The theme of containment was echoed by CR Mal Moses who connected current patterns of segregation to "slave quarters," "Jim Crow," and "redlining." At their most emotional, interviewees describe feeling their neighborhood was invisible, saying things like, *"they passed us by like we weren't there."* Other participants echoed the scholarly concepts of "sacrifice zones"³⁰ and "disposable populations" when they described the slow recovery in their neighborhood:

"It was like, you know... We're living in a throw away zone.... The area I stay in is like, you know, everybody's expendable. But everybody, you know, can't be just swept under the carpet without, you know, nothing being said or done about it."

These quotes describe a dark reality of navigating recovery in a low-income neighborhood where the vast majority of people are Black and Brown. The focus on neighborhood suggests that anti-discrimination training or diversity and inclusion workshops for agency staff will not resolve the inequity without policy that intervenes at the neighborhood scale.

³⁰ To our knowledge this term was first used by Native American environmental activists in the four corners region. Today the groups who continue this fight can be found at http://www.honorearth.org/no_coal_goal_past. In addition, the first popular use of the term may have been the article about these activists in Scientific American 1975. See <https://www.scientificamerican.com/article/the-strip-mining-of-western-coal/>.

The recovery apparatus should adopt an affirmative anti-racism and anti-poverty framework to address historical and racial inequities using the financial capital made available in disaster recovery:

1. Deliver more aid to poor and low-income people & and do so more quickly.
2. Be part of improving quality of life, home, and environment in low-income neighborhoods and eliminating 'sacrifice zones'
 - a. Build trust in disaster systems through more regular and open communication and support between governments and residents in non-disaster times.
 - b. Improve deteriorated housing stock and infrastructure degraded through disinvestment.
 - c. Remove environmental hazards.
 - d. Determine funding by accounting for historic inequity and concentration of risk in marginalized areas.
 - e. Create funding by holding industries responsible for causing disasters accountable and spending a larger portion of government and tax money in (Low- to Moderate-Income) LMI areas.

Place-Based Solutions

"The neighborhood as a whole should have got disaster assistance as a neighborhood because we were declared a disaster area. So, yeah, there was supposed to be money poured into this neighborhood ... for the rebuild effort, to help people recover. As of yet, we're still waiting on that money. You know what I'm saying, they say they got it... but we can't wait."

CRs argue that assistance at the scale of households alone cannot address long term vulnerability. Instead, creating a complementary neighborhood-based investment strategy would mitigate the impact of future disasters, improve resilience, and form the foundation of a more just recovery process. Respondents desire immediate and significant investment in drainage and flood mitigation infrastructure, placement of rescue equipment close by, government funding, and technical assistance to create local evacuation and disaster preparedness centers. Most of all, residents want "boots on the ground."

The visible presence of workers tasked with improving local living conditions would communicate respect, build trust, and improve resilience. Local hiring would reduce cultural misunderstanding, increase accountability for recovery organizations, and boost local incomes. The high rates of denial and long application times could be reduced if FEMA, case management, and home repair agencies hired people to conduct client services in the areas they live. One participant explained that "intake staff from the neighborhood... [who] have local knowledge to understand barriers" would improve the way applications are managed and reduce discrimination. This would also build trust in

the recovery system, which would reduce hesitance to muck homes and increase the number of people who apply for assistance. This all comes with a critical caveat: for hiring local staff with place-specific knowledge to be effective, they must be empowered to adjust local processes and push agencies toward expanded eligibility and increased aid.

CRs also argued that home repair staff should be hired from the neighborhood.³¹ CR Mal Moses explained:

“Not only would hiring locals build the small businesses up, but it helps build up the whole economy in the neighborhood. The same contractors that do the repairs will spend money right here for materials, or buying lunch. The same money will recirculate in our area. At the same time if they are local, we can trust them better, we have seen their work before and we can trust them. We can always go locate them if we need to, you know, we know where they are staying. Another thing is, if you hire locals, they will do better work.”

One respondent emphasized trash removal and how it could improve community-state relations:

“I think they should treat us just like all the other neighborhoods. Why? Why do we pay taxes just like all the other neighborhoods, and here they throw trash anywhere? Why doesn't the city put any effort into helping... here? To protect us against so much grime.... But no, no, they don't do that.”

A lack of trash removal is linked to flooding: *“clean the neighborhood, ... our ditches get clogged from the amount of trash that we have.”*

The perception of neglect or even disdain is grounded in the reality that major flooding will recur (it already has since Harvey across NE Houston during Tropical Storms Imelda and Beta). And, in between major flooding events, frequent street flooding is getting worse every year.

“In front of my house, every time we have a hard rain it's like a river floating down the street... It's at least once a month, and that's being generous... If you have somewhere to get to, or if you have an appointment, and you know it's going to rain you'll have to leave 2 or 3 hours early so you don't get blocked in or ruin your transmission.”

In some areas dirty and smelly standing water lasts for days, even forcing children to wade through it to catch the school bus.

There is a gnawing sense that *“if this same thing happens again, basically, the results will be the same.”* Describing poor infrastructure and seeing everyone around him still struggling to recover, one man articulated a common feeling,

“I think that if those problems were addressed then maybe, you know, I wouldn't be as apprehensive as I am that if this thing should happen again. I

³¹ See Browne, K.E. (2015). *Standing in the Need: Culture, Comfort, and Coming Home after Katrina*. Austin, TX: University of Texas Press for a similar argument.

don't really see that anybody has solved the problem. They treated symptoms, but not the problem."

But "addressing the problem" will require "a lot of work. Especially in the low-income areas" and serious investment in infrastructure in communities of color where antiquated "open ditch drainage systems" are concentrated (Hendricks, 2017; Rosales, 2018). The fastest way to begin investment would probably be to dramatically improve monitoring and maintenance; as respondents explained, "*they should have a system in place where they check the drainage on a constant basis.*" But community efforts to advocate for better maintenance over the last two years have revealed that maintenance is not enough; construction of new drains, re-grading the streets, and new infrastructure is necessary.³² Without major investment, the flooding that occurs even during minor storms will continue. Over time frequent minor floods degrade the condition of some houses, and communicates a feeling of disregard for residents at the neighborhood scale.

In addition to street drainage infrastructure, Harris County's flooding mitigation infrastructure requires large-scale upgrades and the Flood Control District must prioritize protecting low-income neighborhoods.³³ Many interviewees said that right now the bayous near their homes "*are very dirty*" and "*so small that they fill up with water quickly.*" They call for the government to enlarge the channels surrounding their neighborhoods. Further, many credited worsening flooding to rampant development and lack of policy enforcement: "*Houston has a very bad drainage system due to the fact that they are doing all this construction. We never had no flooding till they started doing all this construction and stuff.*" During Tropical Storm Imelda, WSR met residents on several streets that had never flooded before and who pointed to adjacent new development that changed land contour and permeability.

Research shows these anecdotes are examples of a widespread issue. As Zhang (2018) explained, "For every new roadway poured and for every new high-rise erected, there is an increased risk for more adverse rainfall and flooding, and that's certainly something that city officials and residents should consider when they contemplate future growth." Zhang's study revealed Houston's risk for extreme flooding during Harvey was 21 times greater due to urbanization. Despite this risk, Houston led the nation in the number of residential building permits issued to developers in 2019, issuing nearly *20 times* the U.S. average at 36,073 permits (Apartment Guide, 2019). Beyond failing to regulate private sector development, the government is also aggravating flood risk by expanding freeways. Consistent with the dark history of highway expansions splitting up and endangering neighborhoods of color across the nation, the Texas Department of Transit is close to approving massive expansion of I-45 which planners themselves acknowledge will increase flood risk and will displace and break up communities of color. Beyond directly increasing flood risk, local historian and community leader Keith Downey explains that each freeway expansion destroyed a Black business district, hurting incomes and eroding community fabric, both of which help communities recover (Downey, 2021).

³² CRs Doris Brown, Ann Weston, and Myrtala Tristan are also members of the Northeast Action Collective, a group who have organized and advocated for improved infrastructure in the Lakewood Subdivision since late 2018.

³³ The 2018 flood bond that funded flood mitigation improvements required "geographic equity" but as of writing it has resulted in no major infrastructure projects in the neighborhoods where we work. These projects may still be built, but community members are increasingly worried that they will not.

Similarly, polluting industries continue to be unzoned and poorly regulated, increasing the dangers from flooding, causing other disasters like chemical fires, and contributing to climate change. CR Doris Brown explains that while Harris County Flood Control District makes 10-year infrastructure plans, *“marshland and forest are being removed to build new neighborhoods.”* At the moment, mitigation plans would not prevent another storm of Harvey’s size from having a similar impact and development is increasing flood risk. Houston must take a more holistic approach to flood control and not just invest in improving infrastructure but must act to stop worsening flooding and compounding dangers.

Buy-outs

One response to the risk of flooding is that homes should not be repaired, and instead residents or entire communities should be bought out and relocated. However, many residents want to stay put. Despite almost universal acknowledgement amongst respondents that future flooding is likely, around half of the people in our study said they do not want to move. Many expressed that their home means too much to them and is part of who they are -- *“No I wouldn’t want to move. I’ve been here too long. It’s my home.” “I have built a foundation right there with my house.” “I like my little spot. I really do, you know.”* Others expressed the need to preserve their community and tied the question to gentrification and the displacement of black residents:

“No, I’m not going nowhere, they not fitting to run me outta here, they’ve been trying to run everybody off anyway around here. They already run the folks outta the Third Ward and Fourth Ward. They not fitting at getting me.”

As described above, there is a perception that no real effort has gone into improving and protecting their neighborhoods so it’s hard for residents to believe that relocations are the only viable solution. It is a common desire to improve quality of life without sacrificing their history, home, and community. As this woman says, she feels, like her ancestors, attached to the place - *“they couldn’t just uproot and leave! They worked too hard for that. So, they had to start all over, and that’s the same situation that I’m feeling here.”* This attachment to place, or the deep connection between where one lives and who one is, does not jibe with colonial or normative conceptions of property as an asset that can be treated as a commodity. Disaster recovery planners must acknowledge that our conceptual separation of land and “meaning making” is part of the underlying logic that has led to these inequitable processes. Disaster recovery planners and managers must adapt more multifaceted understandings that demand sympathy to the rooted perspective of survivors.

Many who were open to moving felt that it was impossible -- *“I have thought about it because it’s really hard to think this could happen to us again. If I had the opportunity I would do it, but at the moment we don’t. So here we are.”* Some said their age and mobility made the idea of a move daunting: *“you know maybe, maybe not. That’s a hard question because I’m at 69 years old now. To go and try to put up in a new place somewhere else would be a challenge.”* Most said they couldn’t move because of their financial situation, *“Ain’t nowhere I’m fitting to go at my age and start paying a housing loan all over again.”* Without a buyout program their homes are not worth enough and their income is too low to afford a move.

“Well, I don’t see no where I could go for whatever they give me for this little house. I couldn’t go buy another one for it. I really would like to move, but my house is paid for. And I don’t, we don’t want to get in, you know we in our sixties, seventies, we don’t want to get in no debt.”

Finally, CRs know that funded home elevation or buyouts are not available on the scale that is needed. Most complete home rebuilds (where the home is torn down and a new structure is built) funded by CDBG-DR monies do include elevation, but again, as of September 2021, 4 years after Harvey, under 450 homes had been completed. Furthermore, maps of Harris County mandatory and voluntary buyout areas do not include any areas within the zip codes where WSR works (Harris County Flood Control District, 2021). The City of Houston is not even conducting any buyouts of single-family homes³⁴. WSR has worked with hundreds of families that were inundated with over three feet of water, and for these reasons relocating even one of these households is not in the cards. The efficacy of relocating at all is muddled in a city with no zoning and where development on the periphery continues to endanger previously safe areas (Dulin, 2021).

CR’s explain that truly caring for their neighborhoods means this work cannot wait. Five- and 10-year plans will not help anyone during the hurricane seasons between now and then. Plans for improvement need to be accelerated, new development restricted and developers who skirt mitigation requirements stopped and held responsible. In the meantime, neighborhoods must be properly equipped to respond to large rainfall events because in all likelihood it will flood before these changes are able to protect communities.

Place-based Solutions:

1. Investment and care at a neighborhood level must start immediately with “boots on the ground” work, regular services, and tangible results such as weekly, satisfactory trash pickup.
2. A just recovery requires flood prevention and risk reduction. Beginning at the scale of the neighborhood we should:
 - a. Improve and maintain street drains and ditches
 - b. Improve and maintain bayous and flood water retention systems
 - c. Stop development that worsens flooding and contributes to climate change
 - d. Remove sources of pollution and dangerous industry
 - e. Clean the land, air, and water of past pollution
3. Recovery apparatus staff should live in or have a long running connection to the neighborhood in which they work in order to better understand applicant needs and experiences.
4. Locally hired staff must be empowered to reduce racial biases and lack of accountability in mass denials.
5. Buyouts should be used only after mitigation strategies have been fully explored. Buyout strategies need to be shaped by community members.

³⁴ The City of Houston is only conducting buyouts of multifamily developments and has only purchased two properties thus far. See Harvey Buyout Program: <https://recovery.houstontx.gov/buyout/>.

6. Determine funding by accounting for historic disinvestment, lack of services, and placement of risk. Create funding by holding industries responsible for causing disasters accountable and spending a larger portion of government and tax money in LMI areas.

It is important to note that these place-based solutions were given as ways to improve recovery. For participants, improving recovery and increasing resilience at the neighborhood scale are seen as one and the same. Similarly, the insight that local hiring would boost incomes and in turn increase households' ability to recover shows that the recovery process cannot be thought of as separate from the economic and ecological context in which they play out. To have a more just recovery, we need a more just world.

Conclusion: Together, Towards a Just Recovery

"-And, then like I say, my mindset, it changes all that about, you know, how the government treats people and, I mean, how the government looks at certain individuals and certain neighborhoods the way they do."

"-Yes."

"-I mean, you know, it's eye opening, but at the same time it's enough to just make ya mad because... you know, if you don't fit into a certain criterion, you mean nothing to the government."

"-Right. It devalues you."

"-Yeah, uh huh. So that then don't help your self-esteem none whatsoever knowing that no matter what you do, you're still going to be considered nothing or expendable by the government. So, you know, it's like, you know why believe in America? America don't believe in me."

A just recovery means making America both believe, and believe in, these communities. It means making America acknowledge marginalized people's ability for self-discovery, determination, and leadership. After four years of working on the Harvey recovery, as survivors, and as organizers and disaster recovery professionals, our most fundamental conclusion is that it is impossible for a just recovery to play out within an unjust society. But the steps taken to help communities recover from specific storms can be the building blocks to a more just society that would make events like Harvey less dangerous and reduce the inequity of their impact. Just recovery is not merely a conceptual framework; it is a set of material outcomes that can only be reached through new processes within the disaster recovery apparatus, and which can only be won through pressure applied by new and renewed coalitions committed to environmental justice and anti-racism, and which takes place within a more just and democratic society writ large.

A just recovery would rebuild neighborhoods free of pollution with clean air, earth, and water, and provide homes that protect community members instead of endangering their lungs and elevating their stress levels. Justice-driven home repair programs will require changing eligibility standards, so that Black and Brown people are not further marginalized through the legalese echoes of historical race-based exclusion, and where dignified housing is prioritized above ruthless efficiency or "pre-storm conditions." Building healthy and dignified neighborhoods will guarantee access to healthy and culturally

appropriate food and create job opportunities that are fulfilling and attainable. These future neighborhoods must include gathering spaces, and locally owned businesses and institutions that anchor neighborhood life and where intergenerational exchange of knowledge, traditions, and skills can flourish. A just recovery requires expanding our collective imagination to believe that the world we want to live in is possible.

As CR Doris Brown says, "I want to be able to look up and teach my great grandsons the constellations; and I want to take their hands and walk down the street. All these buildings that used to be full of happiness are boarded up and deserted like a ghost town. I want to turn these abandoned buildings into beautiful housing, move the petroleum units and *Family Dollars* out, and turn it all to green. We have to teach each other about the beloved community and help the younger generation believe it's possible."

It is sobering but necessary to accept how very far we are from the recovery we know we need. Marginalized survivors are well aware of the structural inequality the recovery apparatus currently reflects and reproduces, and reference well known Houston neighborhoods to articulate how policies amplify the racial wealth gap:

"Be fair. I mean, don't go to Memorial area and rebuild them five-, six-hundred-thousand-dollar homes that people already got insurance on, that people are already making money off of, and neglect the people that are living here from day to day."

This quote adds geographic specificity to Howell and Elliott's (2018) conclusion that disaster recovery funds amplify the racial wealth gap. The increased wealth levels of white communities found in their work debunks the idea that poor neighborhoods struggle to recover because the total pot of recovery money is insufficient. Instead, it indicates that Disaster Recovery is a terrain in which white supremacy, in this case materialized in housing stock and economic wealth, is fortified and entrenched. For people in NE Houston and other neighborhoods like it, disasters do not represent a cataclysmic disjuncture but an inflection within previously established arcs of injustice.

To stop this trend and build the foundations of a just recovery we must immediately begin enacting the here-and-now solutions that marginalized disaster survivors have laid out in this project. As these changes are made, the recovery apparatus should always ask the structural questions: Are we making changes that undo institutionalized racism and counteract the anti-poor biases that characterize recovery? Are we centering the needs of impacted persons or the momentum of bureaucracy and institutions? If we do not reflect on our own processes and their impacts with radical honesty we will, as one respondent said, continue to *"treat the symptoms but not the problems."*

Participants and CRs in our study are living in an ongoing disaster. Unfortunately, disaster recovery as a profession and set of programs does not yet accommodate this interpretation. The unwillingness to do so is captured in standards of "pre-storm conditions" which assume previous conditions were acceptable or what residents "deserve", and rightful ownership eligibility standards that create barriers for families who hold property in ways that do not reflect white middle class norms. The story arc of a "sudden" event and recovery that frames the recovery apparatus doesn't match the reality of long running neglect, constant environmental risk, health stress and financial pressure that characterize people's lives. As CR Doris Brown explains,

“We’re living in disaster all the time. We have learned how to exist in disaster. We never really recover. Pollution, methane gas. It’s gonna take a lot for us to ever ‘recover,’ to have a more equitable community. We need to solve those underlying problems.”

Because communities like NE Houston cannot recover through the set of programs and within the time frame created by “disaster recovery”, we need to adopt a different approach that integrates disaster recovery into a broad array of ongoing services and efforts to build community power.

This conclusion is supported by our interviews, which show that while Harvey seriously impacted people’s health, those who had access to consistent medical services preceding the disaster were able to keep in touch with caretakers and had better health outcomes because of it. This approach could be adopted to address other consequences of disasters. For example, a just society would have programs to support dignified housing all of the time, and after a disaster a program such as this could be intensified and build on long running relationships of trust to assist survivors. This type of intervention would speed repair efforts and make disaster recovery more manageable since housing would start from better overall condition. The stories of families evacuating through toxic water that eventually kills them, shows that a just recovery also requires improving environmental quality — eliminating the sources of risk by closing dangerous facilities and more effectively regulating pollution. It also requires reducing flood risk by improving drainage and flood mitigation infrastructure and controlling development. Laying the foundation for a just recovery also demands addressing the rapidly worsening climate catastrophe. Luckily the type of work, and jobs suggested by CRs and participants as the building blocks of a just recovery, are entirely compatible with a just transition away from fossil fuels.

It will take years to build a just economy and eliminate climate injustice, but beginning work right away will demonstrate that the state and society writ large care about the wellbeing of the poor and communities of color. Our research team believes this demonstration of care will go some way to address the widespread mental health crises that Harvey has caused. CR Ann Weston said that she and her neighbors were *“emotionally still living with the disaster. Forever.”* National health experts fear that the toll of increasing disasters might lead to a national mental health crisis (Russell & Hopkins, 2020). The damage of past disasters and subsequent neglect cannot be erased, but the lack of response or systemic change continues to cause harm. If the city, state, and civil society were more honest about the horrors of evacuation, widespread destruction, and dangerous living conditions that have persisted for years, maybe the political will could be generated to change these conditions, improving lives and limiting future injury through investment and programming.

This vision of ongoing social supports relies on imagining an effective, well financed, democratically accountable and caring set of authorities from the government, non-profit sector, and civil society more generally, but little evidence from survivors’ experiences indicates that this is imminent. As CR Myrtala Tristan explained, *“we can’t depend on the city because they are never going to pay attention to us.”* The government and non-profit authorities are inaccessible, out of touch and illegible; as Mal Moses explained, *“most people I interviewed have no idea of working with the government or city or non-profits, of how things are organized. They actually don’t know.”* The only way to change this dynamic is for the government to be in ongoing reciprocal conversation with their

constituents and to adopt policies or create programs that ensure a baseline of health and stability. This will ensure that all people can pursue fulfilling and meaningful lives free from systemic risk. This tension between the need for a massive increase in social programs and government support, and the lack of belief that this can ever occur on the part of survivors, is one that we cannot brush away and one that needs to be addressed through consistent reciprocal communication.

Another tension is between centralization and decentralization. Centralization of recovery coordination, risk assessment and mitigation, and regulation is clearly needed. Decentralization is the only viable way to increase responsiveness and program design specificity, but in no way guarantees sharing power. Decentralization through privatization reduces the (albeit limited) capacity to hold leadership accountable through elections or even public pressure. Community control is more promising, but most people do not belong to only one community and it's unclear how the boundaries of community would be drawn and enforced. In this regard Karen Bakker (2007) argues that "community requires exclusion". We conclude that we need both central and diffuse processes that lead to community control in the long run. As CR Doris Brown argued, *"If communities had our own supplies and own tools, we could take care of ourselves. People know what we need. If the city did their job, we'd be able to do ours."*³⁵ We cannot squirm away from these contradictions. It is important to not try to immediately resolve these tensions as we seek to help families recover and as we try to organize a more just recovery for the storms that are sure to come. A set of systems that eliminate sacrifice zones in disaster and that show, through mutual care, that none among us are disposable will resolve these tensions in the long term.

Disaster survivors know that all sectors of society will need to join in a broad coalition to build a just recovery. Because "there are no easy grounds for solidarity," building alliances rests on open dialogue, trust, and iterative improvement (Tsing, 2021). As Ruth Wilson Gilmore says, "solidarity is something we must do again and again." Business leaders, nonprofits and governments all have a role to play, but communities must be given the power to shape recovery. This is why, as we build towards the just world we envision, survivors argue that it is strategic to fight to improve each agency, program, process, and department as much as possible and through whatever political and cultural tactics available. Focusing on the broader goal of eliminating disposability and building communities of mutual care will ensure that we are making these piecemeal changes in a way that aligns with fostering an overall just recovery from disasters. In other words, we believe that piecemeal changes to disaster recovery that enable neighborhood-based systems and include more and more community members can build our collective capacity for, and broader application of, democratic governance and cooperative economic and care systems.

It is clear that these solutions will not occur without massive moral and cultural transformations. It is our belief that the best path towards these transformations is to give community members more power to envision and control recovery programs and then enact the dramatic changes they recommend, from closure of toxic plants to reparations. Following the recommendations of our CRs, we should begin enacting these new strategies immediately, iteratively and at the greatest scale our capacity can

³⁵ From a just recovery perspective, the city's (which here stands in for governments in general) job is to protect communities and fund community efforts to take care of themselves and shape their worlds.

accommodate as a way to build our societal ability to enact a just recovery on the scale which is truly needed now and in the future.

Appendix 1: Recommendations

Evacuation and Preparedness

Emergency communications and evacuation plans should:

1. Eliminate the need for people to encounter grave health risks in order to evacuate.
2. Include the development of local disaster warning system, local shelters and neighborhood-based evacuation points and networks.
3. Be well-practiced, tailored to different types of events and have built in contingency.
4. Meet the needs of specific and vulnerable populations - elderly, disabled, medical needs, non-English speakers, limited access to tech, etc.³⁶
5. Adapt to the specific needs of each neighborhood and build on the base of existing community assets.
6. Support communities and individuals to protect themselves in disaster.
 - a. Give clear and honest information - Honestly inform of the worst-case scenario so residents have the ability to prepare and give clear recommendations.
 - b. Fund trainings in emergency skills.
 - c. Equip communities and individuals with supplies like generators, boats, PPE, communications, high water vehicles, first aid, food, water, and clothing.

Immediate Needs

Immediately after a disaster, disaster response personnel and resources such as food, cleaning supplies, medical treatment, heating and cooling, and PPE should:

1. Be deployed to the most vulnerable and most impacted neighborhoods.
2. Be easy to access at predefined, walkable locations, and available door-to-door to those unable to travel.
3. Require minimal or no application for access.

Application Experience

The application process should:

1. Automatically approve baseline aid for those living in a flooded area.
2. Be simplified, more accessible and oriented towards the goal of including as many people as possible.
 - a. Incorporate avenues such as door-to-door outreach that don't depend on technological access or social network connection.
 - b. Require less information, fewer applications, and less duplication of work.
 - c. Use information the state already has on income, home ownership, and address rather than placing the burden of proof on applicants.
 - d. Give more aid at once rather than many smaller amounts.
 - e. Provide clear information, timelines, and updates.
 - f. Go beyond claiming universality to actively removing barriers including removing the presence of law enforcement parties.

³⁶ The Natural Hazards Center has several summary documents to improve risk communication for vulnerable populations. See, for example: "Risk Communication and Social Vulnerability: Guidance for Practitioners." <https://hazards.colorado.edu/research-projects/risk-communication-and-social-vulnerability>.

3. Have intake staff and program managers understand the situations survivors are in by walking the streets and doing house visits.
4. Eliminate the main causes of denial by changing eligibility guidelines:
 - a. People with homes in heirship or with property debt should be made eligible for aid.
 - b. Aid must be given to people in the 100-year flood plain.
 - c. People should not be denied for deferred maintenance.
 - d. Aid must be accessible in any language and not require immigration status information.

Temporary Housing

Temporary housing should:

1. Be pre-planned, safe, dignified, accessible, and keep people close to their homes.
2. Not place the burden of locating housing on applicants; voucher systems must only exist if sufficient housing is available.
3. Be available until repairs are complete.
4. Avoid partial repairs unless they limit further structural damage. Partial repairs are an inadequate substitute for temporary housing.

Home Repair

The home repair process should:

1. Make mucking and mold remediation services available quickly and coordinate with case management services such as home repair intake.
2. Always be coordinated with temporary housing
3. Strive for a one-stage rebuild process rather than partial rebuilds.
 - a. Do partial repairs when they limit further damage or improve health
4. Address issues predating the disaster
5. Be part of ongoing governmental home repair and maintenance programs.
6. Allow homeowners agency in the decision-making process.
7. Hold builders and program managers accountable by including a system for intaking and accommodating homeowner feedback.
8. Support the local economy through hiring from the neighborhood and buying from small, local businesses.
9. Provide funding from HUD programs for self-repair and hiring outside contractors, prioritizing up-front payment over reimbursement models.

Structural Barriers to Recovery: Class, Race, and Geography

The recovery apparatus should adopt an affirmative anti-racism and anti-poverty framework to address historical and racial inequities using the financial capital made available in disaster recovery:

1. Deliver more aid to poor and low-income people & and do so more quickly.
2. Be part of improving quality of life, home, and environment in low-income neighborhoods and eliminating 'sacrifice zones'
 - a. Build trust in disaster systems through more regular and open communication and support between governments and residents in non-disaster times.
 - b. Improve deteriorated housing stock and infrastructure degraded through disinvestment.
 - c. Remove environmental hazards.

- d. Determine funding by accounting for historic inequity and concentration of risk in marginalized areas.
- e. Create funding by holding industries responsible for causing disasters accountable and spending a larger portion of government and tax money in (Low- to Moderate-Income) LMI areas.

Place-Based Solutions

1. Investment and care at a neighborhood level must start immediately with “boots on the ground” work, regular services, and tangible results such as weekly, satisfactory trash pickup.
2. A just recovery requires flood prevention and risk reduction. Beginning at the scale of the neighborhood we should:
 - a. Improve and maintain street drains and ditches
 - b. Improve and maintain bayous and flood water retention systems
 - c. Stop development that worsens flooding and contributes to climate change
 - d. Remove sources of pollution and dangerous industry
 - e. Clean the land, air, and water of past pollution
3. Recovery apparatus staff should live in or have a long running connection to the neighborhood in which they work in order to better understand applicant needs and experiences.
4. Locally hired staff must be empowered to reduce racial biases and lack of accountability in mass denials.
5. Buyouts should be used only after mitigation strategies have been fully explored. Buyout strategies need to be shaped by community members.
6. Determine funding by accounting for historic disinvestment, lack of services, and placement of risk. Create funding by holding industries responsible for causing disasters accountable and spending a larger portion of government and tax money in LMI areas.

Appendix 2: Longform Interview Questions

1. Let's start with taking the next five minutes or so for you to talk about your overall experience after Harvey. Then we're going to go through some more specific questions, so you don't need to say all the details here.

2. Now, I will ask about your living situation since Hurricane Harvey

a. Tell me about all the places you lived since Harvey and what each of them was like and how you felt about them.

- *Did you stay with relatives?*
- *Did you ever go to a hotel?*
- *Did you have to stay in your car?*
- *Did an organization help you out with temporary housing?*
- *Did you sleep on a bed? A couch? A floor? Your own room?*
- *Were you in and out of your house?*

b. Do you feel like your home is complete now? Is there anything your house still needs?

3. Recovery Assistance

a. What was your experience applying for assistance?

Tell me about...

- *Applications - location, length, personal information, 211...*
- *Was it easy to learn about the status of your application?*
- *Did you have a reliable point of contact at the places you were applying?*
- *Did it take a long time to hear back from organizations you were asking for help?*

b. Did you receive assistance? If you were denied, do you know why? Or do you think you may know?

- *If yes, did the assistance help? Was it enough?*
- *What do you think about this reason (was it accurate? Fair?)*
- *Were there some programs you were accepted into and others you weren't?*

c. Which programs or agencies did you receive help from, and what did they do for you? How was your experience?

- *Was there anything really great or really frustrating about the groups?*
- *Are there groups that you thought you could work with but they never came back, or you never were admitted?*

- *Were there things that you needed but never got?*

d. Did you spend any of your own money or the money of friends or family? Did you receive any cash assistance (like FEMA award) where you got to (or had to) choose how to spend the money? What did you spend the money on and how was that experience deciding what to buy and managing work?

- *What did it feel like to use your savings or to ask friends and family?*
- *Do you think you will be able to build savings back up?*
- *What was nice about choosing how to spend money?*
- *What was challenging?*
- *(If applicable) Did you feel more comfortable managing your own money or with organizations spending for you?*

4. Health and Well-Being

First, I'm going to ask about you and your family's physical health and then their mental health:

a. Did your or your family's physical health change during and after Harvey? What experiences or conditions helped you stay healthy or made you feel sick? Did Harvey aggravate your chronic health conditions? Do you think it caused acute illness?

- *Did you get sick more than normal after Harvey? Is that still happening?*
- *Did you feel really tired after Harvey?*
- *Do you think being worn out may have made your health worse?*
- *Were you able to see a doctor when you needed to?*
- *Did you have trouble paying for medicine or doctors?*
- *Did you miss work because of your health?*

b. Did your or your family's mental health change during and after Harvey? What experiences or conditions helped or harmed?

- *Do you find it uncomfortable to talk about mental health?*
- *Is it hard to tell mental and physical ailments apart?*
- *Did you have access to mental health care?*

5. Other Challenges

a. What issues were you already facing before Harvey that Harvey made worse?

b. Do you think that your race, age, wealth level, immigration status, sexuality, or education level changed the way recovery was for you?

c. Did you get any assistance that helped with those issues?
c. Were there any other side effects from the disaster and recovery we haven't talked about? Is there anything you are still worried about? Do you think that the disaster stacked problems on top of each other in a way that made them worse?
<ul style="list-style-type: none"> • <i>How did Harvey affect your: work, car, school, relationships, diet?</i>
6. A Better Recovery
a. If you can imagine a better recovery, what would it look like? What would have helped you most?
b. What could be done now to help prevent future flooding or make future recovery easier?
c. Would you want to move if you could? Why and where?
d. Would you elevate your house if it was funded?
e. Right now, everything about disaster recovery is based on the household, you apply as households and receive help as a household. Do you think your neighborhood could have gotten help as an entire area? Do you think that individuals inside of the household could have gotten help as people instead of families receiving aid as a unit?
7. Is there anything else you want to tell me about your recovery?
8. What would you like people to know about what you're still going through?

*Italicized text statements are optional follow-up prompts for the interviewer.

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