

# Intersectional Trauma: COVID-19, the Psychosocial Contract, and America's Racialized Public Health Lineage

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This comparative review explores how, during COVID-19 and recent American public health disasters, including the water crisis in Flint, Michigan, Hurricane Katrina, and Hurricane Maria, early failures in public health communications, porous epidemiologic oversight, and lax crisis management created significant gaps in outreach and treatment for historically disenfranchised racial/ethnic minorities. In consideration of each event's broader specter in terms of population health inequities, a highly salient but underresearched dynamic emerges: the development of heightened psychological sequelae including depression, anxiety, and posttraumatic stress, factors linked to civic and health care system disengagement and poorer overall health. This excess mental illness morbidity can be said to fall under the umbrella of intersectional trauma, or psychological harm and psychosocial vulnerability produced through the accumulation of cultural, political, economic, and ecologic stressors tied to salient identity markers such as race or ethnicity. During COVID-19, reports have presaged race- and class-specific disparities in infections and mortality, with evidence highlighting adverse effects on the "psychosocial contract," public trust and faith in government and health care systems which is borne from relational experiences tied to one's identity markers. We discuss how COVID-19's kinetic and fluid political dynamics may add to the burden of mental illness and trauma in racial/ethnic minority communities in the United States and further entrench said disparities, closing with potential strategies for mitigation.

*Keywords:* environmental justice, health disparities, mental illness, public health, trauma

At the time of this writing, COVID-19 has claimed the lives of over 350,000 individuals in the United States (Centers for Disease Control, 2020), with racial/ethnic disparities shown to be persistently embedded. Compared to Whites (on average), Latinos have 1.7 as many COVID-19 cases, 4.1 times as many hospitalizations, and 2.8 times as many deaths, whereas Blacks have 1.4 times as many cases, 3.7 times as many hospitalizations, and 2.8 times as many deaths as Whites (Centers for Disease Control and Prevention, 2020). As COVID-19's transmission in America increasingly becomes a breathtaking example of public health mismanagement and dereliction in crisis governance (Rajan et al., 2020), to understand its disproportionate effects, it is helpful to consider other recent public health disasters with similar racially-forged causes and effects.

Following Hurricane Katrina in 2005, public health research on "natural" disasters began to shift away from a focus on the purely technical or technocratic aspects of crisis to one shaped around "... people's experiences with and reactions to an event" (Gill,

2007, p. 216). Under this new paradigm, the physical effects of a disaster—for example, bodily injury, property destruction, and so forth—are weighted in the context of their markedly social-psychological impacts. In this review, we explore the mental health disparities that COVID-19 has created and stands to further ensconce in the United States (Pfefferbaum & North, 2020; Saltzman et al., 2020). Using contemporary public health events, including the Flint Water Crisis, Hurricane Katrina, and Hurricane Maria, as comparative case studies, we attempt to show that the physical or bodily burden of crises such as COVID-19 cannot be adequately understood apart from their vigorous mental health inequities.

Rates of certain mental illnesses, particularly serious mental illnesses such as schizophrenia and bipolar disorder, are persistently higher among racial/ethnic minorities, including Blacks, Latinos, and Native Americans, in comparison to Whites (Garrett et al., 2015; Gómez, 2015; Maura & Weisman de Mamani, 2017). Furthermore, patterns of mental illness treatment for these groups are consistently diminished in contrast to Whites (Anastasia & Bridges, 2015; Cook et al., 2017). A spectrum of factors, ranging from limited awareness of symptoms and potential remedial resources to insurance and access barriers, contribute to this uneven landscape (Cook et al., 2017; Khan et al., 2017). Other factors such as cultural and in-group stigma against help-seeking, particularly among racial/ethnic minority men, and implicit biases

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among practitioners devaluing and mistreating mental illness in these populations further stymie engagement with mental health services (Diala et al., 2001; Parent et al., 2018; Shim et al., 2009).

Illuminating fault-lines in both the U.S. health care system and the country's social safety net, COVID-19 casts America's mental health inequities into especially sharp relief. Along these lines, COVID-19 is poised to be the signature mental health crisis of this generation for two reasons: (a) its heavy shading in mortality and morbidity toward racial/ethnic minorities and low-income individuals in America (Chowkwanyun & Reed, 2020) and (b) its continued rupturing of these individuals' "psychosocial contract," or their recurrent experiences with gaslighting, discrimination and marginalization by U.S. policymaking bodies and the American health care system. To this end, indeed, racial/ethnic minorities' historically entrenched experiences of institutional erasure and attendant feelings of devaluation and betrayal have effectively telegraphed much of what COVID-19 now lays bare in terms of intersectional trauma.

Intersectional trauma refers to the psychosocial marginalization of individuals across multiple axes of identity, including race, ethnicity, gender, nativity status, religion, sexual orientation, mental health status, and so forth (Di-Capua, 2015). This comparative review for a broadening of this construct, one which is inclusive of how other fundamentally social phenomenon, such as public health disasters, formatively influence one's wellbeing, place, and identity and effectively reshape one's cultural health capital (Shim, 2010).

### The Flint Water Crisis

Similar to COVID-19, the specter of the Flint Water Crisis, which began in April 2014, was initially downplayed, and public officials demurred and deflected as grave concerns mounted among rank-and-file employees over the city's worsening water quality (Krings et al., 2019). This was until a pediatrician in Flint, Dr. Mona Hanna-Attisha, released searing evidence indicating that blood lead (Pb) levels among Flint's predominantly Black and low-income children had significantly risen since the then-recent switch of its water source from Lake Huron to the Flint River. The switch, of note, was part of a series of austerity measures greenlit by Flint's unelected "emergency manager" (Hanna-Attisha et al., 2016). Due to intransigence of the kind witnessed in the denialism and handwringing of the Trump administration and state and local governments across the U.S. regarding COVID-19 mitigation strategies (Adolph et al., 2020; Ansell et al., 2020), official government reports on Flint's water issues did not surface until roughly a year and a half after the water source switch (Butler et al., 2016; Peplow, 2018). Thus, in the interim, many Flint residents had potentially been continuously consuming contaminated tap water wholly unaware of its likely hazardous content (Krings et al., 2019), which included not just elevated levels of lead, but other heavy metals, trihalomethanes, and the bacteria legionella which led to roughly 100 "excess" fatal cases of Legionnaires' disease in the city (Binney et al., 2019; Masten et al., 2016).

Hanna-Attisha's research further demonstrated that some of the most outsized increases of lead, an invisible, odorless neurotoxin which has consistently been shown to be associated with cognitive and developmental disability among children exposed in utero and in early age (Needleman, 2004) had occurred in Flint's most

socioeconomically deprived, predominantly Black neighborhoods (Hanna-Attisha et al., 2016). This geographic stratification mirrored those increasingly observed with COVID-19, which has aggressively struck densely populated racial minority communities and ethnic enclaves (Sun et al., 2020; Zhang & Schwartz, 2020).

Likely attributable in part to its depressed socioeconomic milieu and meso-level stressors including consistently high crime rates (Kruger et al., 2016), data from the 500 Cities project from the Centers for Disease Control and Prevention found that 18.2% of Flint residents described their mental health as "not good," compared to 11.9% of the overall United States population (Centers for Disease Control and Prevention, 2016). In view of the proposed expanded definition of intersectional trauma, the water crisis represents a likely accelerant to existing mental illness in the city (Cuthbertson et al., 2016; Kruger et al., 2017; Sneed et al., 2020), as COVID-19 is poised to exacerbate patterns of mental illness among those with preexisting mental health disorders (Purtle, 2020).

In the months after the water source switch, Flint residents took to Facebook and other digital channels to document concerns over discolored, odorous water flowing from their faucets, and began attending local town hall meetings to show public officials their brown jugs of water, their skin rashes and their balding scalps (Krings et al., 2019)—all suspected consequences of the abrasive water they were not only drinking, but cooking with, washing their hands with, and showering and bathing in (Craft-Blacksheare, 2017; Masten et al., 2016). In turn, Flint residents were intermittently ignored and belittled (Levengood, 2017; Morckel & Terzano, 2019)—as processes of psychological gaslighting (Davis & Ernst, 2019)—by state and local media and politicians and indeed their own health care providers (Hanna-Attisha, 2019). Contentious beliefs about the water being effectively "poisoned" and the water source switch being a plot for racial or class genocide in Flint have further contributed to residents' unease and civic distrust (Morckel & Terzano, 2019; Muhammad et al., 2018). Likewise, the inconsistent, often contradictory, messages regarding individual-level risk factors, and the approaches and efficacy for mask-wearing and social distancing, has presented an obstacle in terms of rallying support to mitigate COVID-19's spread (Klest et al., 2020). Collectively, such dynamics are likely to foment challenges to COVID-19 vaccine adoption, particularly among Blacks and Latinos (Jaklevic, 2020; Kreps et al., 2020).

### Hurricane Katrina, and Hurricane Maria

Depression, anxiety, and trauma, have been observed to sharply increase in the aftermath of extreme weather or natural events, like hurricanes, tsunamis, and tornadoes (Rataj et al., 2016; Shukla, 2013), a lineage which COVID-19, as a spatially fluid, mobile phenomenon, could be said to squarely fit within. The effects of such events often disproportionately impact historically marginalized racial groups, as part of a fissioning of race, segregation, and environmental justice situating these populations in positions of heightened geographic vulnerability and network fragmentation (Shimmin et al., 2017). Such place-based traumas amplify political and institutional misgivings, stirring disillusionment about recurrence and the prospect of "future-proofing" (Conner et al., 2014; LeBouthillier et al., 2015).

Hurricane Katrina, a seismic Category 5 hurricane that made landfall in the United States in late August 2005, battered the Gulf Coast up through the early weeks of September 2005. The hurricane caused unprecedented levels of property and infrastructure destruction, paralyzing much of Louisiana (Brunkard et al., 2008; Bullard & Wright, 2009). The brunt of the hurricane's destruction, however, fell on the topographically unique city of New Orleans, which saw tremendous inland flooding and mass resident displacement after levees were breached in the city's low-lying, predominantly Black areas (Bullard & Wright, 2009). Through the end of the winter 2016, an estimated 1,600 deaths had mounted from the immediate and more latent impacts of the hurricane, with causes ranging from drowning and cardiac arrest to heat exhaustion (Brunkard et al., 2008; Stephens et al., 2007). As during COVID-19, the disaster response during Hurricane Katrina—largely led by the Federal Emergency Management Agency (FEMA)—was belatedly scaffolded at two levels: (a) primary prevention focused on attenuating the would-be disaster before it took hold and (b) secondary prevention involved in responding to the excess damage wrought from the inability to contain the initial impacts. The mental health consequences of these lapses were stark.

In one study of predominantly Black, low-income mothers, researchers found that the prevalence of probable serious mental illness doubled post-Katrina, and roughly 48% of participants exhibited probable posttraumatic stress disorder (Rhodes et al., 2010). The authors further determined that level of property damage was predictive of PTSD and the number of hurricane-related stressors was associated with having more diagnosed medical conditions (Rhodes et al., 2010). Further, in a longitudinal analysis of a sample predominantly composed of Black youth, a population often overlooked in the study of the mental health impacts of public health disaster, PTSD rates were elevated and found to persist post-Katrina, especially among girls and those whose homes remained damaged from the hurricane (Weems et al., 2010).

Mirroring perspectives in Flint, attitudes on the maligned response to Hurricane Katrina were frequently racialized, focused on beliefs that New Orleans' levees had been blown up by the government and the hurricane waters diverted to protect White property holdings and/or deliberately destroy the city's Black neighborhoods (Adams et al., 2006; Davis et al., 2018). Rather than reflecting paranoia, however, researchers have urged caution in dismissing such perspectives as these as conspiratorial and rather as manifestations of intergenerational trauma fueled by the recognition of real, historical acts of sociomedical oppression and structural violence, such as the Tuskegee syphilis trials (Davis et al., 2018; Heller, 2015). Views on COVID-19 being a tool of sociopolitical suppression, and the forthcoming vaccines being purposefully harmful or laden with side effects, have similarly flavored public opinion on the pandemic (Earnshaw et al., 2020; Jaiswal et al., 2020).

The sociostructural blueprint of Hurricane Katrina was similarly mapped roughly a decade later in Hurricane Maria, a Category 4 hurricane that struck during mid-September 2017 in Puerto Rico. In sharp contrast to even America's most disenfranchised mainland cities, roughly 44% of Puerto Rico's residents live in poverty and around 75% have a high school degree or less (United States Census Bureau, 2019). Having been struck by Hurricane Irma just 2 weeks earlier, Puerto Rico, a U.S. territory populated with

roughly 3.2 million individuals who, although American citizens, cannot vote and maintain no Congressional representation (Joseph et al., 2020), was especially ill-prepared for Maria. Due to infrastructure cleavages, choppy communication, and tepid relief efforts coordinated by FEMA, Hurricane Maria led to the deaths of roughly 3,000 Puerto Rico residents, also creating prolonged periods of power outages (up to 8 months for many parts of the territory), and food and water insecurity, while temporarily sidelining much of territory's health care system (Alcorn, 2017; Joseph et al., 2020; Kwasinski et al., 2019).

Multiple reports published in the years after and a half after Hurricane Maria pointed to heightened levels of mental illness and distress among adults and children in Puerto Rico and indeed among Puerto Ricans living in the mainland United States (Carolina Scaramutti et al., 2019; Macias et al., 2020; Orengo-Aguayo et al., 2019; Rodríguez-Díaz, 2018). Viewed as a colonial artifact, the excess vulnerability experienced by Puerto Ricans' during Hurricane Maria merely bespoke their ongoing sociopolitical marginalization and "second-class citizenship" (Joseph et al., 2020), both products of powerlessness forged through America's imperialism in Puerto Rico a century earlier. However, this vulnerability was also stirred as a consequence of more situational policy-making, namely as evoked through the *Puerto Rico Oversight, Management, and Economic Stability Act* (PROMESA).

Similar to Flint during its crisis, Puerto Rico was also under the thumb of an unelected, deliberative body that was charged with helping the island navigate and tame its soaring debt (Rodríguez-Díaz, 2018). PROMESA, codified in law by President Barack Obama, undervalued and undercut health care system and infrastructure maintenance plans and disaster preparedness capacity in Puerto Rico and thereby clipped broader recovery efforts in the territory in Hurricane Irma and Maria's wake (de Onís, 2018). Hence, policies like PROMESA that destabilize the democratic process, recalling the historical trauma of political exclusion which racial/ethnic minorities in the United States have experienced, have the dual effect of weakening community capacity to proactively deal with public health disasters—similar to COVID-19, which has ravaged Puerto Rico's population health and its already-fledgling economy (García et al., 2020)—while also instilling feelings of insecurity, anger, and despair in the populace (Garriga-López, 2020; Moulton & Machado, 2019).

### Civic Distrust as a Fundamental Cause of Mental Health Disparities

Seminal theory posits that there are "fundamental causes" associated with the wide and persistent gap in physical and mental health outcomes observed across race and class (Link & Phelan, 1995). As Phelan and colleagues explain, "An important reason that [socioeconomic status] is related to multiple disease outcomes through multiple pathways that change over time is that individuals and groups deploy resources to avoid risks and adopt protective strategies." (Phelan et al., 2010, p. S29). These same forces predispose certain groups to mental illness and trauma. Most salient to this dynamic—in considering how Americans with high socioeconomic status have substantially lower odds of adverse COVID-19-related impacts (both in terms of infection or relative risk of negative socioeconomic impact; Wanberg et al., 2020)—is the authors' prescient observation that, "If the problem is cholera,

for example, a person with greater resources is better able to avoid areas where the disease is rampant, and highly resourced communities are better able to prohibit entry of infected persons” (Phelan et al., 2010, p. S29). In short, resources mediate risks.

Table 1 provides a contextual overview of key selected touchpoints of each public health event highlighted in this review. Similar to the Flint Water Crisis and Hurricane Katrina and Maria, COVID-19 is as much an indictment of America’s fragmented public health and health care systems as it is of the country’s long-abraded and unequal political system, one which frequently privileges White race and economic wellbeing over physical—and especially mental—well-being. In focusing on the precarity associated with being a racial/ethnic minority during a public health crisis like COVID-19, culturally sensitive communication is essential in facilitating mitigation (i.e., by limiting the severity of the crisis’ disproportionate effects), and buffering negative experiences, such as mental illness and trauma, which amass *postcrisis*.

Along these lines, health literacy predominates among racial/ethnic minorities as a barrier to seeking mental health care (Coles & Coleman, 2010). In view of this, improving the trustworthiness, good faith, and clarity of messaging around COVID-19 risks and its mental health sequelae is essential. Given the vast amount of disinformation and the simultaneous suppression of accurate information on COVID-19 (Jaiswal et al., 2020), it is critical that individuals, particularly those in communities of color where fatalistic views may be high (Bell & Hetterly, 2014) and social support low (Song et al., 2011), are provided precise and up-to-date information on the threat posed by COVID-19. To this end, it is important these individuals be given prompting and encouragement from valued community stakeholders—faith-based organizations, nonprofit and “mom-and-pop shop” business leaders, and so on—to seek mental health care, or social network support (e.g., to preempt isolation), where appropriate.

Continuing government and health care institutions play a key role in negotiating individuals’ mental well-being by the policies they create and how they articulate the purpose of these policies and subsequently enforce them (Verhaeghe & Bracke, 2011). As the public health disasters cited here illustrate, ambiguity and inconsistency in these iterative acts contribute to increased distress, anxiety, and sense of alienation. Rumination over the ongoing uncertainty that COVID-19 poses as well as *toxic certainty*—that is, the deeply embedded, compulsive belief that something bad is likely to happen to oneself (e.g., getting COVID-19, losing one’s job or home due to COVID-19, etc.)—is a hallmark of trauma (van der Kolk, 1994). A lack of clarity on risks can reproduce feelings of both collective (intergenerational) and micro-level betrayal and exclusion from vital information and health-promoting resources.

In communities of color and lower-income spaces where government and health care system distrust is functionally endemic, COVID-19’s proposed acts of redress must correspond to demonstrated population health *and* community-level needs and be *tangibly* demonstrated as efficacious to be adopted in meaningful numbers. If not, these fixes, are likely to be met with deep misgivings and result in further erosion of the psychosocial contract, and, in turn, mental health disparities.

## Decoupling Traumatic Paradigms From Public Policy

COVID-19, similar to the Flint Water Crisis and Hurricane Katrina and Maria before it, will soon embed itself in the annals of epidemiologic history as a landmark health disparities event, and indeed one with wholly preventable dimensions. Tending to this requires a reckoning with the fundamental causes of mental health and a concomitant focus on reorganizing systems and structures which have helped generate and sustain high levels of racial/ethnic and social inequity in America (Link & Phelan, 1995). Consideration of where this effort can begin, focusing on nuanced, culturally sensitive public health and public policy responses that can replenish the psychosocial contract, may be instructive.

As epistemological extensions of racial capitalism (Pirtle, 2020), COVID-19 has done nothing if not demonstrate that the distinction between “essential” and “non-essential” people is highly situational (Hawkins, 2020). Black, Latino, and lower-income people disproportionately fill positions in the service industry (United States Bureau of Labor Statistics, 2020) and represent the face of the burgeoning “gig economy,” individuals who, during COVID-19, have been called on via apps to chauffeur patrons to and fro and ferry takeout food, groceries and housewares directly to customers’ doors. Service industry workers’ inequitable exposure to health risks as part of a low-wage job often lacking health insurance benefits or hazard pay. Paradoxically, such “essential” workers frequently serve “non-essential” people who have disproportionately higher salaries and levels of social and political capital, contributing to dissociative trauma as part of a broader “othering” process (Link & Phelan, 2001). Further workplace protections must be extended to frontline populations and gig economy workers to reduce their risk of adverse exposures. Moreover, deeper, more action-oriented policy dialogue must be had on mandatory healthcare benefits, and what constitutes a livable wage and how this is associated with risk-taking and premature morbidity and mortality.

Expanding workplace protections to low-wage, at-risk populations also necessitate the protection of worker’s families, which will contribute to meso and family-level resilience against mental distress and trauma. During Hurricane Katrina and the water crisis in Flint, churches and the local public schooling system provided clean drinking water and meals, and acted as information centers and health referral hubs (Craft-Blacksheare, 2019; Rose & O’Malley, 2020). During COVID-19, these community institutions can be critical partners in local capacity-building. As an example, with the limiting of in-person learning in many K-12 schools, many racial/ethnic minority families, who rely on the public schooling more than Whites, will now confront the added stressors of providing adequate childcare with limited resources, including computing equipment and Internet access needed for online learning (National Academies of Sciences and Medicine, 2020). Parents/guardians may also be forced to work in-person and thus need to send their children to in-person classes, or need to concurrently undertake work-from-home duties and childcare, creating a potentially traumatic, Faustian bargain. Moreover, in the intermediate and long-term, children in racial/ethnic minority communities may lose the foundational education and socialization that is crucial to their intellectual, emotional, and psychological development (Singh et al., 2020). Predominantly White school systems are more likely to mediate these effects by leveraging

**Table 1**  
*A Breakdown of Key Dynamics and Consequences of COVID-19 and Other Recent Public Health Disasters in the United States*

Outcomes	COVID-19, United States	Water Crisis, Flint, MI	Hurricane Katrina, New Orleans, LA	Hurricane Maria, Puerto Rico
Period of primary impacts	2020–current	2014–2016	2005–2006	2017–2018
Approximate time to widespread mitigation or recovery efforts following event initiation	1 month	14 months	1 week	3 weeks
Number of people potentially exposed (per U.S. census estimates during period of primary impact; United States Census Bureau, 2020) <sup>a</sup>	Approx. 328,239,523 per the Census (United States Census Bureau, 2020)	Approx. 98,565	Approx. 454,845	Approx. 3,325,286
Percent of population Black and/or Latino/Hispanic at time of event (United States Census Bureau, 2020)	13.4% Black (alone), 18.5% Latino/Hispanic	57.0% Black	66.0% Black	98.9% Latino/Hispanic
Key physical health sequelae	Acute respiratory syndrome, myocarditis, renal failure	Lead poisoning, Legionnaires' disease, trihalomethanes exposure, female reproductive issues, skin rashes	Drowning, cardiovascular disease (including cardiac arrest), food and water insecurity, heat exhaustion	Drowning; cardiovascular disease (including cardiac arrest), food and water insecurity
Key mental health dynamics and consequences	Social isolation, family separation, network fragmentation, systemic betrayal; PTSD, depression, anxiety	Systemic betrayal; PTSD, depression, anxiety	Systemic betrayal, family separation, network fragmentation; PTSD, depression, anxiety	Systemic betrayal, family separation, network fragmentation; PTSD, depression, anxiety
Key drivers of mental health disparities	Physical health sequelae, Distrust in government and health-care system, Economic and employment impacts	Physical health sequelae, Distrust in government and healthcare system, City under control of a state-appointed "emergency manager," diminished tap water quality and access	Physical health sequelae, property destruction, distrust in government, property damage, displacement and employment impacts	Physical health sequelae, property destruction, distrust in government, property damage, displacement, power outages, territory under the control of an unelected governing body (PROMESA), Economic and employment impacts, diminished tap water quality and access

*Note.* PTSD = posttraumatic stress disorder; PROMESA = Puerto Rico Oversight, Management, and Economic Stability Act.

virtual learning platforms and at-home extracurricular programming services (National Academies of Sciences and Medicine, 2020), thereby maintaining and in many cases likely exacerbating disparities in developmental outcomes, including mental wellness and socioemotional growth, between these populations. Therefore, special attention must be directed toward filling the void of the school as a stabilizing and informative resource in times of public health crisis.

Also, as morbidity and mortality rates from COVID-19 rise, commensurate attention must be paid to the impact of COVID-19 on mental health in specific regard to how it is likely to diminish and fray help-seeking and health care system engagement. Given that social and environmental stressors are already high in many communities of color (Matthews & Yang, 2010), COVID-19, as it has been argued here, will likely compound not just existing mental health disparities but disparities in mental health care engagement. Indeed, irrespective of ostensible culpability, COVID-19's impacts will congeal and ossify in the psyches of many of those who are directly impacted and feel they or their communities were targeted or neglected by their government and health care providers. These communities will be justifiably reluctant to (re)enlist these institutions in their recovery.

In closing, COVID-19 is positioned to recontour the world order and the everyday functioning of contemporary society, shifting economic prerogatives in the United States and abroad and further winnowing the psychosocial contract and social safety net. While it is not possible to reverse the damage that COVID-19 has caused in terms of morbidity and mortality, mental health providers can forge a path moving forward in better recognizing, affirming, and responding to specific mental health needs of socially and medically vulnerable groups, both now and prior to public health calamities. Such efforts, in addition to curating clear, consistent, and actionable information, will better insulate historically disenfranchised racial/ethnic minority populations from the primary and secondary impacts of the health crises that can be expected to continue to surface, and potentially grow in intensity and frequency due to forces such as climate change and resource depletion, as we move through this new decade.

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