Written Testimony of
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For a Hearing on
Ensuring Equity in Disaster Preparedness, Response, and Recovery

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Gratitude

Thank you Chairman Thompson, Ranking Member Katko, and members of the Committee on Homeland Security for inviting me to testify before you about equity in disaster preparedness, response, and recovery. This is a topic that I care deeply about, and I am so grateful that you have chosen to elevate the conversation in this way and at this crucial moment in our national history. As disaster losses mount and more Americans suffer the consequences of extreme events, the focus of this hearing is ever more urgent.

Introduction

I am a professor in the Department of Sociology and the director of the Natural Hazards Center at the University of Colorado Boulder. The Natural Hazards Center has long served as the nation's National Science Foundation-designated information clearinghouse for the societal dimensions of hazards and disasters. Our mission is to reduce disaster harm by:

- Translating and sharing hazards and disaster research and information;
- Building connections between researchers, nonprofit and private sector professionals, the media, policy makers, and local, state, and federal officials;
- Advancing social science and interdisciplinary knowledge, with a special emphasis on the most vulnerable populations and places; and
- Training and mentoring a diverse next generation of hazards and disaster professionals.[1]

I have studied the root causes and human consequences of disasters for more than 20 years now. During this time, I have conducted field research in the aftermath of several major events such as the 9/11 terrorist attacks, Hurricane Katrina, the Deepwater Horizon Oil Spill, the Joplin tornado, Superstorm Sandy, Hurricane Matthew, the Anchorage earthquake, and the Ridgecrest earthquake sequence. Much of my time in these places has been spent surveying and interviewing children, members of low-income families, women,

people of color, the elderly, and other people from socially disadvantaged communities. I have written extensively about the social and economic barriers that members of these groups face in preparing for, responding to, and recovering from disaster, while also acknowledging that all people have capacities and strengths that could contribute to reducing disaster risk.

Disasters as Shared Experience

According to SHELDUS—a spatial disaster loss database maintained by Arizona State University—the cumulative U.S. burden from natural hazards between 1960 and 2019 stands at more than $1.1 trillion in direct property and crop damage, 252,361 injuries, and 34,933 fatalities.[2] Most of the costliest disasters have occurred in the first two decades of this century, where "milestone events of catastrophic proportion" in terms of magnitude and/or impacts have set new damage records in rapid succession.[3] For example, in 2017, Hurricanes Harvey, Irma, and María and the California wildfires cost more than $300 billion, far surpassing the previous record of nearly $220 billion in losses set in 2005.[4] Moreover, the Federal Emergency Management Agency (FEMA) estimates that 25 million people were directly affected in these four major disasters in 2017—representing almost 8 percent of the United States population.[5]

Numbers related to escalating disaster impacts could stretch on for pages. But they can also be hard to take in because such news has a way of receding into a gray statistical blur. In addition, as disturbing as the trend lines are, most experts agree that the available data actually *underestimate* direct losses associated with natural hazards and largely *overlook* indirect losses due to a lack of documentation or quantification.[6]

What is important for our discussion today is to emphasize that *every county* (or county equivalent) in the United States has experienced some loss due to natural hazards during the time period from 1960 to 2019. While the damage varies widely across counties, ranging from $119 in recorded property damage in Mineral County, Colorado to $34.7 billion in Harris County, Texas, there is no county in the nation that has gone untouched by natural hazards since 1960.[7]

In addition, *every state* has been affected by at least one disaster with costs equaling or exceeding $1 billion in damages (adjusting for inflation) since 1980 (see Figure 1).[8] The record number of disasters that we are experiencing is creating more of what the National Oceanic and Atmospheric Administration (NOAA) has referred to as *compound extremes*, where multiple billion-dollar disaster events occur at the same time or in sequence.[9] This is further complicating already difficult response and recovery efforts and increasing levels of *cumulative disaster exposure*—defined here as multiple, acute onset, large-scale collective events that cause disruption for individuals, families, and entire communities.[10] Available research suggests that children and adults who experience greater numbers of these potentially traumatic community-level events are at risk of a variety of negative outcomes and ongoing stressors.

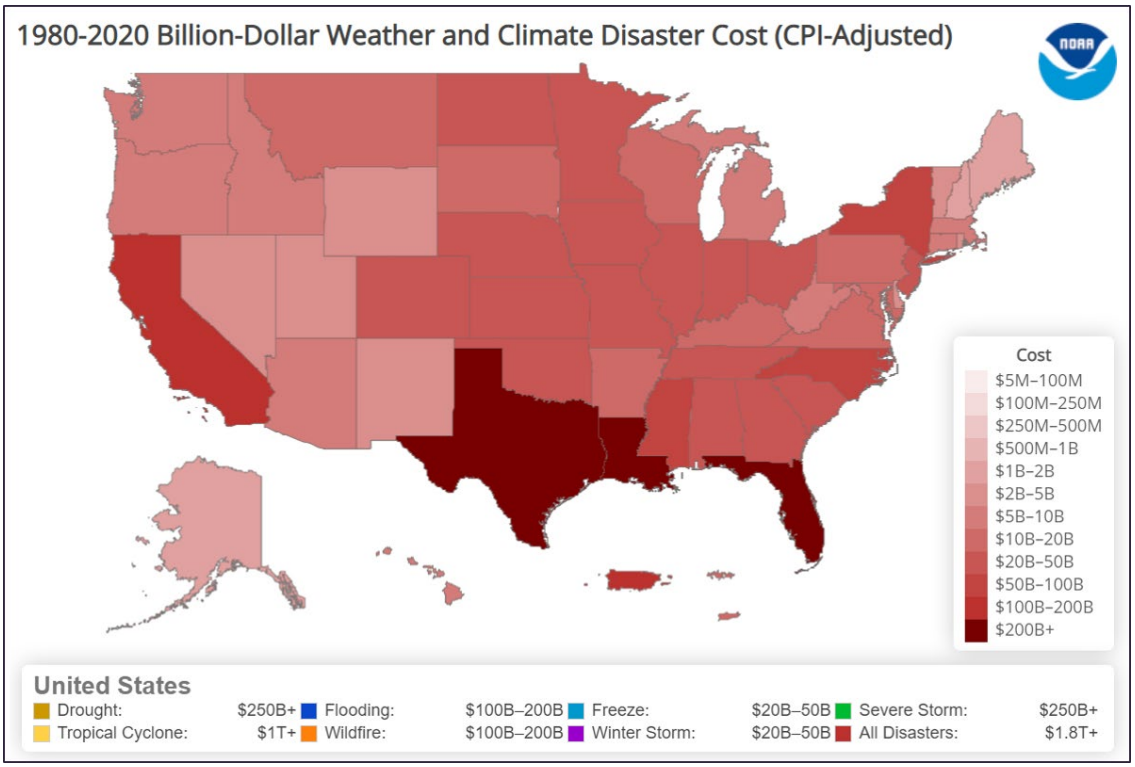

Figure 1: 1980-2020 Billion-Dollar Weather and Climate Disaster Cost (CPI-Adjusted).
Source: https://www.ncei.noaa.gov/news/calculating-cost-weather-and-climate-disasters.

Uneven Landscapes of Risk and Disproportionate Disaster Impacts

Recent major disasters sharply underscore that while we are all living at risk, these risks are not borne equally. Indeed, disaster risk is patterned in ways that reflect pre-existing social and economic inequalities. Groups that are marginalized have less power and fewer resources, and in turn, they often have the hardest time preparing for, responding to, and recovering from disaster. This means that disaster impacts tend to be distributed along the familiar and intersecting social fault lines of race, ethnicity, gender, social class, and age.[11] Indeed, decades of social science research has documented disaster-related disparities among women and men, the poor, people of color, the elderly, children, and persons with disabilities.[12] Research in this vein has repeatedly shown that those at the margins of society bear the heaviest environmental burdens,[13] are more likely to suffer severe physical and mental health outcomes after disaster,[14] more likely to be displaced,[15] and more likely to experience protracted and uneven recovery processes.[16]

The social patterns that disasters both reveal and reinforce are apparent in who lives and who dies in disaster events. For example, old age was the single most important factor in determining who died in Hurricane Katrina. Among the over 1,300 persons who perished in New Orleans, 67% were at least 65 years old, although this group represented only about 12% of the pre-storm population.[17] The 1995 Chicago heat wave claimed more than 700 lives, and 73% of the heat-related deaths were among persons over 65 years of age.[18] At the national level, our recent research drawing on the Centers for Disease Control and Prevention's WONDER database found that older adults have a 3.84-fold increase in mortality caused by all natural hazards compared to those under age 60. Among older adults, males have higher mortality rates than females. American Indians/Alaska Natives have the highest mortality rate of any racial/ethnic group and are particularly impacted by excessive cold. Mortality is also high among older Black males, especially in the context of cataclysmic storms.[19]

At the other end of the age spectrum, it is worth acknowledging that while children make up only a fraction of those who have died in the Covid-19 pandemic, the Centers for Disease Control and Prevention has identified gaping racial and ethnic disparities in terms of mortality[20] and morbidity rates[21] among child and youth populations. Black and Latino children are especially at risk for illness and death because they are more likely to live in households with adults who have been deemed essential workers—and are therefore more likely to be exposed by the virus being brought home from the workplace. These children are also more apt to reside in crowded living conditions, to experience food insecurity, to have limited or no access to computers or the internet, to miss or drop out of school, and to lack contact with supportive adults and peers outside the home.[22]

Additional examples of the unequal impacts of disasters could splash across page after page. The point here is to emphasize that it is *social forces* that turn natural hazards into human tragedies. When viewed through that lens, it is clear that the severity of a disaster is not simply determined by wind speeds, rainfall amounts, ground motions, or temperature extremes. It is the *interaction* between the natural hazard, the condition of the built environment, the history and status of the social structure, and the policy context that shapes the landscape of risk and determines whether a disaster will follow.

(In)Equity in Disaster Mitigation, Response, and Recovery Programs

In the hazards and disaster field, research has revealed that many government programs not only do not consider the principle of equity in providing aid, but these same programs may actually *deepen* pre-existing inequities in society and render already vulnerable people more at risk.[23] Below, I include a few examples from recent social science studies to illustrate this point.

- Research by Drakes and colleagues, which examined data from the contiguous 48 states from 2006 to 2018, found that FEMA's Individuals and Households Program (IHP) may not always be reaching those who need federal aid to manage the impacts of disasters. Specifically, their study revealed that there were low levels of IHP disbursement in places where households have high levels of social vulnerability related to race (Black, Asian), income (low income), homeownership status (renters), or marital status (unmarried). This means IHP may not adequately extend to the people in the areas with the most need. The authors' geographic analyses found that such places were mostly rural and clustered in Appalachia, the Mississippi Valley region, and the Southeastern United States. Conversely, places where socially vulnerable households received high levels of IHP disbursements—indicating overperformance—were usually urban and clustered in the Midwest and Northeast.[24]
- Domingue and Emrich analyzed FEMA's Public Assistance distribution at the county level following major disaster declarations involving 1,621 U.S. counties between 2012 and 2015, while controlling for damages sustained, population, household counts, and FEMA region. Their results indicate that FEMA's Public Assistance program generally operates as designed, whereas places with the highest losses receive the most funding. However, their research also underscored that that county social conditions related to socioeconomic characteristics and social vulnerability influenced funding receipt. The authors conclude that to determine Public Assistance "FEMA should consider a robust characterization of communities utilizing a suite of socioeconomic characteristics rather than depending only on one variable (losses)."[25]
- In their examination of 500 municipalities across the U.S. between 1990 and 2015, Elliott, Brown, and Loughran observed that flood damage is not the only predictor of where federal buyouts occur. As they write, racial composition matters too, with buyout programs targeting Whiter counties and neighborhoods in more urbanized areas. Although people of color are more likely to take advantage

of such programs, they receive disproportionately lower disbursements when compared to their White counterparts.[26]

- Drawing on a nationally representative sample from the Panel Study on Income Dynamics, Howell and Elliott discovered that as local hazard damages increase, so does wealth inequality, especially along the lines of race, education, and homeownership.[27] Specifically, their findings indicated that "holding disaster costs constant, the more Federal Emergency Management Agency money a county receives, the more Whites' wealth tends to grow, and the more Blacks' wealth tends to decline, all else equal. In other words, how federal assistance is currently administered seems to be exacerbating rather than ameliorating wealth inequalities that unfold after costly natural hazards" (see Figure 2).[28]

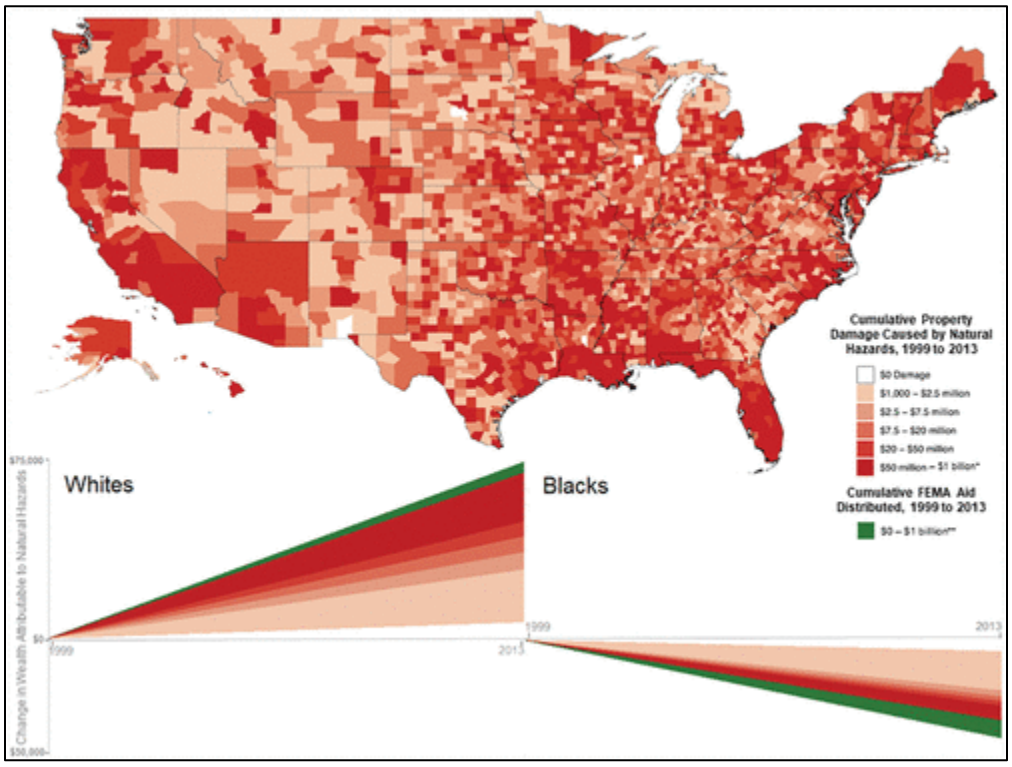

Figure 2: Cumulative Property Damage from Natural Hazards and Its Effects on Racial Wealth Gaps in the United States, 1999-2013.
Source: https://journals.sagepub.com/doi/full/10.1177/2378023118816795.

- In her thesis research, Carter reported that as of September 30, 2015, only 117 of the 566 federally recognized tribes in the FEMA database used for analysis had FEMA-approved disaster mitigation plans.[29] This means that at the time this research was conducted, more than three-quarters of all tribes would have been ineligible to apply for FEMA grants and therefore could not receive federal funding for disaster mitigation projects. In addition, the number of approved plans varied widely across FEMA regions, with FEMA Region I—which includes Connecticut, Maine, Massachusetts, and Rhode Island—having the highest proportion (66.7%, or 6 of 9 tribes) of approved mitigation plans. Conversely, in Region X—which spans Alaska, Idaho, Oregon, and Washington—only 24 of the 270 tribes (8.9%) had disaster mitigation plans in effect. In Alaska, the state with the largest number of tribes, FEMA reported that just 3 of the 228 tribes (1.31%) had approved disaster plans. With the rising number of climate-related disasters and the alarming toll of these events in vulnerable tribal areas, the need to tackle this escalating issue is more salient than ever. Yet, cost barriers, a lack of technical expertise, limited data availability, physical isolation, mistrust of government authorities,

and culturally-based communication challenges all serve as barriers to participation in FEMA mitigation programs.[30]

Many other case studies as well as national-level analyses conducted by hazards and disaster researchers have consistently shown that inequitable policies and practices—even when designed to provide needed relief and assistance—can become "a source of profound disorder and confusion, a kind of second disaster" that follows the first.[31] The research evidence is clear in this regard. What is less clear is how to develop policies and programs that can simultaneously address the grand environmental and social challenges that we currently face.

Figuring out a path forward will require leadership, bold new strategies, major investments of time and resources, and science-informed action. Right now, federal agencies are putting their programs and policies through an audit to advance racial equity and support for underserved communities. This is not happening by chance. It is happening by design,[32] and these audits are being influenced by research from the hazards and disaster community that has—for decades—pointed to inequitable, unjust, and unacceptable post-disaster outcomes that leave the most vulnerable even further behind. In response, FEMA has posed several crucial questions[33] and begun to advance new initiatives[34] related to how the agency can better structure its programs to meet the needs of the most vulnerable populations and to carefully consider what actions it can take to reduce barriers to assistance among the nation's most marginalized communities. Other scientific and hazards mission agencies are similarly moving forward in attempts to address rapidly rising hazards losses and ever widening social disparities.

In Closing

The idea that natural hazards losses are inextricably linked to social and economic inequality is now widely accepted. This growing body of work acknowledges that our environmental suffering is connected to and worsened by our social suffering. The logical extension of this insight is that if we want to reduce natural hazards losses we must work just as fervently to reduce economic and social inequality in all of its forms. To make these changes will take sound science and a strong moral imagination. This is our opportunity to envision new possibilities that can come from investing in equitable solutions to mitigating hazards loss.

Thank you again for the opportunity to testify. I look forward to hearing from the other witnesses and to your questions and the discussion to follow.

References

[1] Natural Hazards Center. 2021. "Our Vision and Mission." Available at: https://hazards.colorado.edu/about/history-and-mission. Accessed on October 20, 2021.
[2] SHELDUS. 2019. "U.S. Hazard Losses: SHELDUS v19 Summary of Losses, 1960-2019." Available at: https://cemhs.asu.edu/sheldus/reports#Losses. Accessed on October 21, 2021.
[3] Gall, Melanie. 2019. "Loss Reduction and Sustainability." Pp. 209-232 in *From Disaster to Catastrophe: U.S. Emergency Management in the 21st Century,* edited by C. Rubin and S. L. Cutter. New York, NY: Routledge, p. 219.
[4] Ibid., p. 209.
[5] Federal Emergency Management Agency (FEMA). 2018. FEMA Strategic Plan, 2018-2022. Washington, DC: FEMA, p. 18.
[6] Gall, Melanie, Kevin A. Borden, and Susan L. Cutter. 2009. "When Do Losses Count? Six Fallacies of Natural Hazards Loss Data." *Bulletin of the American Meteorological Society* 90(6): 799-809.
[7] SHELDUS. 2020. SHELDUS Version 19.0. Available at: https://cemhs.asu.edu/sheldus. Accessed on October 22, 2021.
[8] National Centers for Environmental Information (NCEI), National Oceanic and Atmospheric Administration (NOAA). 2021. "Seven Things to Know about NCEI's U.S. Billion-Dollar Disasters Data." Available at: https://www.ncei.noaa.gov/news/calculating-cost-weather-and-climate-disasters. Accessed on October 22, 2021.
[9] National Centers for Environmental Information (NCEI), National Oceanic and Atmospheric Administration (NOAA). 2021. "Billion-Dollar Weather and Climate Disasters: Overview." Available at: https://www.ncdc.noaa.gov/billions/. Accessed on October 24, 2021.
[10] Mohammad, Lubna and Lori Peek. 2019. "Exposure Outliers: Children, Mothers, and Cumulative Disaster Exposure in Louisiana." *Journal of Family Strengths* 19(1): Article 4, https://digitalcommons.library.tmc.edu/jfs/vol19/iss1/4.
[11] Peek, Lori, Tricia Wachtendorf, and Michelle Annette Meyer. 2021. "Sociology of Disasters." Chapter 11 in the *Handbook of Environmental Sociology,* edited by B. S. Caniglia, A. Jorgenson, S. A. Malin, L. Peek, D. N. Pellow, and X. Huang. Cham, Switzerland: Springer.
[12] Bullard, Robert. 2008. "Differential Vulnerabilities: Environmental and Economic Inequality and Government Response to Unnatural Disasters." *Social Research* 75(3): 753-784, p. 757.
[13] Peek, Lori. 2019. "The Vulnerability Bearers." *Director's Corner*, December 12. Boulder, CO: Natural Hazards Center, University of Colorado Boulder. https://hazards.colorado.edu/news/director/the-vulnerability-bearers.
[14] Thomas, Deborah S. K., Brenda D. Phillips, William E. Lovekamp, and Alice Fothergill, eds. 2013. *Social Vulnerability to Disasters, 2nd Edition*. Boca Raton, FL: CRC Press.
[15] Weber, Lynn and Lori Peek, eds. 2012. *Displaced: Life in the Katrina Diaspora.* Austin: University of Texas Press.
[16] Cutter, Susan L., Ronald L. Schumann III, and Christopher T. Emrich. 2014. "Exposure, Social Vulnerability, and Recovery Disparities in New Jersey after Hurricane Sandy." *Journal of Extreme Events* 1(1): 1450002; Finch, Christina, Christopher T. Emrich, and Susan L. Cutter. 2010. "Disaster Disparities and Differential Recovery in New Orleans." *Population and Environment* 31: 179-202.
[17] Sharkey, Patrick. 2007. "Survival and Death in New Orleans: An Empirical Look at the Human Impact of Katrina." *Journal of Black Studies* 37(4): 482-501.
[18] Klinenberg, Eric. 2002. *Heat Wave: A Social Autopsy of Disaster in Chicago.* Chicago: University of Chicago Press.
[19] Adams, Rachel M., Candace M. Evans, Mason Mathews, Amy Wolkin, and Lori Peek. 2020. "Mortality by Forces of Nature Among Older Adults by Race/Ethnicity and Gender." *Journal of Applied Gerontology,* 10.1177/0733464820954676.

[20] Danae Bixler et al. 2020. "SARS-CoV-2–Associated Deaths Among Persons Aged <21 Years—United States, February 12–July 31, 2020." *Morbidity and Mortality Weekly Report* 69(37): 1324–1329.
[21] Leeb, Rebecca T., Sandy Price, Sarah Sliwa, Anne Kimball, Leigh Szucs, Elise Caruso, Shana Godfred-Cato, and Matthew Lozier. 2020. "COVID-19 Trends Among School-Aged Children—United States, March 1-September 19, 2020." *Morbidity and Mortality Weekly Report* 69(39): 1410–1415.
[22] Peek, Lori and Alice Fothergill. 2021. "What Kids Can Do: Paying Attention to Children's Capacities in the Pandemic." New York: Social Science Research Council *Items* Series. Available at: https://items.ssrc.org/covid-19-and-the-social-sciences/disaster-studies/what-kids-can-do-paying-attention-to-childrens-capacities-in-the-pandemic/. Accessed on October 24, 2021.
[23] National Advisory Council. 2020. "Report to the FEMA Administrator." Washington, DC: FEMA. Available at: https://www.fema.gov/sites/default/files/documents/fema_nac-report_11-2020.pdf. Accessed on October 24, 2021.
[24] Findings quoted in: Drakes, Oronde, Eric Tate, Jayton Rainey, and Sam Brody. 2021. "Beyond Damages: Social Equity in Allocating Disaster Assistance." *Research Counts*, Special Collection on Mass Sheltering and Disasters. 3(14). Boulder, CO: Natural Hazards Center, University of Colorado Boulder. Available at: https://hazards.colorado.edu/news/research-counts/beyond-damages-social-equity-in-allocating-disaster-assistance. Accessed on October 23, 2021.
[25] Simone J. Domingue and Christopher Emrich. 2019. "Social Vulnerability and Procedural Equity: Exploring the Distribution of Disaster Aid Across Counties in the United States." *The American Review of Public Administration* 49(8): 897-913, p. 909.
[26] Elliott, James R., Phylicia Lee Brown, and Kevin Loughran. 2020. "Racial Inequities in the Federal Buyout of Flood-Prone Homes: A Nationwide Assessment of Environmental Adaptation." *Socius,* https://doi.org/10.1177/2378023120905439.
[27] Howell, Junia and James R. Elliott. 2019. "Damages Done: The Longitudinal Impacts of Natural Hazards on Wealth Inequality in the United States." *Social Problems* 66: 448-467.
[28] Howell, Junia and James R. Elliott. 2018. "As Disaster Costs Rise, So Does Inequality." *Socius* 4: 1-3, p. 1.
[29] Carter, Lucy. 2016. "An Investigation of United States Federal Policy Attempts to Reduce American Indian and Alaska Native Disaster Vulnerability" Master's Thesis, Department of Sociology, Colorado State University.
[30] Carter, Lucy and Lori Peek. 2016. "Participation Please: Barriers to Tribal Disaster Mitigation Planning." *Natural Hazards Observer* 40(4). Boulder, CO: Natural Hazards Center, University of Colorado Boulder. Available at: https://hazards.colorado.edu/article/participation-please-barriers-to-tribal-mitigation-planning. Accessed on October 25, 2021.
[31] Kroll-Smith, Steve, Vern Baxter, and Pam Jenkins. 2015. *Left to Chance: Hurricane Katrina and the Story of Two New Orleans Neighborhoods*. Austin: University of Texas Press, p. 82**.**
[32] The White House. 2021. "Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government." Available at: https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/. Accessed on October 25, 2021.
[33] National Advisory Council. 2020. "Report to the FEMA Administrator." Washington, DC: FEMA. Available at: https://www.fema.gov/sites/default/files/documents/fema_nac-report_11-2020.pdf. Accessed on October 24, 2021.
[34] Federal Emergency Management Agency (FEMA). 2021. "Equity." Available at: https://www.fema.gov/emergency-managers/national-preparedness/equity. Accessed on October 25, 2021.