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## REVIEW ARTICLE

# The Relationship Between Housing Conditions and Social Vulnerabilities: A Literature Review

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## Abstract

The real estate market in the US has historically been shaped by social systems that influence economic foundations, political environments, and social norms, leading to socioeconomic inequality and segregation. Social vulnerabilities, rooted in these systems, result in unequal risk distributions across communities, particularly during disasters. Many case studies have highlighted how marginalized communities suffer disproportionately due to poor housing conditions. This disparity is compounded by historical policies such as the Indian Removal Act, Jim Crow Laws, and the Home Owners' Loan Corporation mapping system, which entrenched housing inequities. Addressing these vulnerabilities requires comprehensive housing policies, community-based initiatives, and interdisciplinary approaches that focus on equitable access to resources, improved housing quality, and resilience against natural hazards. By tackling the root causes of social inequalities, policymakers can foster more inclusive, sustainable, and healthy living environments, mitigating the impacts of disasters on vulnerable populations.

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## 1. Introduction

Based on the history of the real estate market in the US, the social systems have been a major factor in determining housing conditions. The term *Social Systems* is used to describe how societies organize themselves to facilitate survival

and prosperity (Meyer et al., 2015). If we look at communism, capitalism, feudalism, or socialism, we will see that economy was the core foundation of all of these social systems. With such power, economy ends up shaping our political environments, which determine the social norms and the dominating cultural values (Meyer et al., 2015). Unfortunately, socioeconomic inequality and segregation have been among the defining features of our social systems throughout history. This can especially be seen in the wealth and property distribution in our societies nowadays. Social vulnerabilities are not accidental; they are firmly rooted in everyday life, and they are better understood as a process unfolding over time rather than an invariant or inherent set of characteristics (Emrich & Cutter, 2011; Simms et al., 2013). Consequently, there has always been an unequal distribution of risks across communities in the US. For example, many catastrophic events related to natural hazards, such as Hurricane Katrina and Saragosa tornado, have shown how colored communities with poor housing conditions suffer the most from disasters (Uekusa, 2018; Méndez et al., 2020; Abukhalaf, 2021; Cohen et al., 2021). Social vulnerability has two main components: 1) exposure to the hazard, and 2) sensitivity or susceptibility to the hazard effects (Cutter, 1996; Emrich & Cutter, 2011; Birkmann et al., 2013). Exposure is the intersection of the hazard physical characteristics, such as wind speed, direction, size, and frequency, with people and the physical characteristics of their built environment, such as house age, size, the surrounding tree cover, quality of construction, and so on (Wisner et al., 2004; Morss et al., 2011; Birkmann et al., 2013; Cohen & Abukhalaf, 2021). On the other hand, sensitivity can be defined as the extent to which the house occupants are affected or harmed by the natural hazard (Morss et al., 2011; Birkmann et al., 2013), and this results from a complex interaction of political, social, economic, cultural, and psychological factors (Cutter, 1996; Wisner et al., 2004).

Social systems play a significant role in creating unequal distributions of risk across communities in natural hazard and disaster contexts in the US. The literature provides insights into how preexisting inequalities are socially distributed, leading to certain groups experiencing disproportionate impacts when hazardous events occur (Stough et al., 2018; Abukhalaf, 2022). This highlights how social disparities contribute to varying levels of vulnerability and resilience within communities, ultimately shaping the unequal distribution of risk. Additionally, the social construction of hazards and disaster susceptibility further exacerbates disparities, emphasizing the need to address the underlying social factors that influence risk exposure (Faas, 2016; Abukhalaf et al., 2023a). The unequal exposure to hazards and extreme natural events, as identified in vulnerability studies, underscores how social divisions within society contribute to disparities in risk distribution (Faas, 2016). This unequal exposure is often intertwined with the production and emergence of geographies of hazard exposures and social capacities, highlighting the complex interplay between social structures and disaster risk (Faas, 2016; Abukhalaf et al., 2023b; Cohen & Abukhalaf, 2022).

The case study on the 2006 Paso del Norte floods reveals how processes of facilitation and marginalization have created socially disparate flood-prone landscapes characterized by unequal risks (Collins, 2010). This demonstrates how uneven developments and sociospatial patterns of exposure to flood hazards are influenced by social dynamics, leading to differential levels of risk across communities. Similarly, the contested notions of disaster justice during the 2011 Bangkok floods highlight the importance of equitable distribution of disaster risk and compensation for damage to ensure a more just response to disasters (Marks et al., 2019). This underscores the need for inclusive decision-making processes that consider the diverse needs and vulnerabilities of communities to address unequal risk distributions effectively. In addition,

the study on the resilience of communities in Puerto Rico following Hurricane Maria emphasizes the importance of community-based preparedness and communication strategies in protecting vulnerable residents during disasters (Andrade et al., 2021). By leveraging community expertise and social networks, it is possible to enhance resilience and reduce the unequal impacts of disasters on different population groups. Similarly, the exploration of the tractability of the objectivist frame of disaster risk in policy implementation in Zimbabwe sheds light on the challenges of addressing disaster risk within existing policy frameworks (Chipangura et al., 2019). This highlights the need for more inclusive and context-specific approaches to disaster risk reduction that consider the social dimensions of vulnerability and resilience.

## 2. Literature review

Policies addressing deep-rooted development issues such as poverty, inequality, and access to quality housing have been shown to significantly lower vulnerability to climate-induced disasters, irrespective of variations in natural hazards (Rubin, 2014). This underscores the interconnected nature of social vulnerabilities and disaster risks, emphasizing the need for holistic approaches that address underlying social inequalities to reduce disparities in risk exposure. Additionally, the assessment of flood disaster risk in rural housing, as demonstrated in a case study in China, highlights the importance of understanding the exposure values of housing and property in assessing risk levels (Zhang et al., 2014). This approach showcases how social systems influence the built environment and housing conditions, ultimately impacting the vulnerability of communities to natural hazards. Spatial planning has also emerged as a critical tool in mitigating and reducing risks by discouraging settlements in hazard-prone areas, emphasizing the role of urban planning in shaping disaster risk distributions (Pamungkas, 2024).

Furthermore, a multi-hazard risk assessment model based on neural networks and fuzzy comprehensive evaluation reveals the complex interplay of environmental factors, historical impact, and infrastructure density in determining risk grades within a road network (Zhou, 2024). This model emphasizes the need to consider multiple variables and their interactions in assessing disaster risks, highlighting the intricate relationship between social systems, physical infrastructure, and risk exposure. Studies on the racially unequal impacts of disasters and federal recovery assistance shed light on how structural inequalities can influence local self-employment rates and recovery outcomes following natural hazards (Bento & Elliott, 2021). Research indicates that disaster characteristics, gender, and previous disaster experiences significantly influence individuals' attitudes toward disasters, underscoring the role of social factors in shaping risk perceptions (Ho et al., 2008). An interdisciplinary investigation into social and physical determinants of seismic risk also emphasizes the need to consider socioeconomic status and environmental factors in understanding vulnerability to natural hazards (Lin et al., 2015). This interdisciplinary approach highlights the complex web of social and environmental factors that contribute to unequal risk distributions across communities. Moreover, studies on short-term solutions to long-term disaster challenges emphasize the importance of rethinking disaster recovery planning to reduce vulnerabilities and inequities, particularly in socially vulnerable populations (Finucane et al., 2020). By addressing inequities in resource distribution and social opportunities, policymakers can work towards more equitable disaster recovery outcomes. Nature-based resilience strategies in South Asian cities underscore the importance of addressing urban infrastructure challenges

and population growth to reduce the risk of natural hazards (Mukherjee et al., 2022).

Housing physical characteristics in the US are significantly influenced by social systems, leading to disparities in environmental quality and health outcomes. In the absence of explicit discriminatory intent in housing siting, racial and ethnic minorities often find themselves trapped in polluted neighborhoods due to housing discrimination, resulting in environmental disparities that stem from racial discrimination (Mohai et al., 2009). This indicates that social systems play a crucial role in determining the environmental conditions in which different communities reside. Also, factors like racial concentration, age demographics, housing conditions, and economic inequality are closely linked to health risks, particularly cardiometabolic diseases, in various US cities (Fitzpatrick & Willis, 2020). These findings underscore the intricate connection between social systems, housing characteristics, and health outcomes, highlighting the pervasive influence of societal structures on living conditions and well-being. Moreover, the challenges associated with auditing neighborhood characteristics, emphasizing the importance of understanding how neighborhood conditions contribute to unequal outcomes for individuals and communities (Bader et al., 2016). This suggests that the physical attributes of neighborhoods, including housing quality and environmental factors, are integral to shaping social disparities and health risks. Also, this touches upon the impact of residential environments on cardiovascular risk, indicating that where individuals live can significantly influence their health outcomes (Roux, 2003). Therefore, housing physical characteristics, such as proximity to environmental hazards or access to green spaces, are not only reflective of social systems but also actively contribute to health disparities across different communities. In the context of unequal risk distributions across communities in the US, social systems play a pivotal role in exacerbating disparities. Urban neighborhoods with slums have been disproportionately affected by the spread of COVID-19, indicating that marginalized communities face higher risks during public health crises (Sahasranaman, 2021). This unequal distribution of risk is a direct consequence of social inequalities that limit access to healthcare, adequate housing, and other essential resources. In addition, the mental health implications of societal factors is another critical thing to consider as subjective assessments of distress are crucial indicators of mental well-being, with disparities persisting across different social groups (Fitzpatrick et al., 2020). This suggests that social systems not only create unequal distributions of physical health risks but also impact mental health outcomes, further widening disparities across communities.

If we look at the US, inequality in property distribution has roots dating back to the colonial times (Morrison, 2020). Historically, there have been several factors that have contributed to inequality of homeownership in the US, such as the Indian Removal Act (IRA), the Jim Crow Laws (JCLs), and the Home Owners' Loan Corporation (HOLC) mapping system. The IRA was put in place in order to give southern states the lands that belonged to the southern Native Americans (Wilson & Corwin, 1921). The IRA authorized Andrew Jackson to negotiate with southern Native American tribes their removal to federal territories west of the Mississippi River in exchange for giving their ancestral lands to new White settlements. The act was passed in 1830, but the dialogue between the federal government and Georgia about the act had been ongoing for thirty years (Lewey, 2004). With time, southern states started to speed up the process as they claimed that the deal between the federal government and Georgia was invalid and that the southern states could pass new laws extinguishing Indian titles themselves (Morrison, 2020). In response, the federal government passed the IRA on May 28, 1830, and President Andrew Jackson agreed to replace the land from which the tribes were removed by dividing

the US territory west of the Mississippi River into districts and giving it to them. The IRA was strongly enforced under Andrew Jackson's administration, and it was extended until 1841 under Martin Van Buren's administration (Lewey, 2004). The IRA was supported by northwestern and southern populations in the US but was opposed by the Whig Party and the Indian Native tribes. Some of the tribes worked hard to stop this unfair relocation, but they were unsuccessful, and they were forcibly removed by the US government. That march to the west was later named the Trail of Tears' genocide because 25% of the Native Americans who were forced to leave died during that removal (Wilson & Corwin, 1921). The IRA allowed European descendants to acquire most of the land in the south, while the Native Americans were relocated by force to inferior areas with low land value west of the Mississippi River (Morrison, 2020).

On the other hand, the JCLs were local and state laws that enforced many forms of racial segregation in the southern part of the US until 1965 (Parker & Towler, 2019). Other areas in the US were also affected by informal and formal policies of segregation; however, beginning in the late 19th century, many states outside the south of the US had adopted laws that tried to variously ban discrimination in voting and public accommodations (Heersink & Jenkins, 2020). In the late 19th and early 20th centuries, Southern laws were enacted by Democrat-dominated white Southern state legislatures to remove and disenfranchise economic and political gains made by African Americans during the Reconstruction period (Wolfley, 1991). In practice, the JCLs forced racial segregation in public facilities in the former Confederate States starting in the 1870s. The JCLs were upheld in 1896 when the Supreme Court laid out a legal doctrine called "separate but equal" for facilities for African Americans (Parker & Towler, 2019). Similarly, public education was segregated in most of the southern part of the US, after the Civil War (Heersink & Jenkins, 2020). The "separate but equal" doctrine was extended to transportation and public facilities too; nevertheless, facilities for black communities were consistently underfunded and inferior compared to facilities for white communities, and for some black communities, there were no facilities at all (Parker & Towler, 2019). The JCLs institutionalized political, economic, social, and educational disadvantages and second-class citizenship for black communities in the US. In 1909, the National Association for the Advancement of Colored People led a sustained public protest against the JCLs (Wolfley, 1991). The segregation of public schools was declared unconstitutional in 1954 by the US Supreme Court. However, it took years to implement this decision in some states. The remaining JCLs were overruled by the Civil Rights Act and the Voting Rights Act in 1964 and 1965, respectively (Parker & Towler, 2019). This has affected the Black community in the US and their wealth accumulation and prevented them from land ownership. The legacy of the JCLs is a major factor in why colored communities in the US are still facing barriers to finding affordable housing nowadays (Wolfley, 1991).

In the 1930s, the Great Depression led to a significant fall in house prices and a foreclosure crisis in the US (White, 2014). In order to address such a devastating economic situation, the government initiated several federal programs to alter the housing finance nature. These programs shifted mortgages in the US from short-duration loans with low-interest rates to long-duration loans with high-interest rates (Brueckner & Rosenthal, 2009). The Housing Administration in the federal government introduced mortgage insurance and the National Mortgage Agency created a secondary market for housing loans (Brueckner & Rosenthal, 2009). Additionally, The Home Loan Bank Board (HLBB) was created in 1932 by the federal government to oversee and charter loan associations and federal savings, and there were several agencies working under the HLBB, including HOLC. The HLBB was concerned about the lending industry and the long-term value

of properties owned back then by the federal government (Anders, 2019). In response to that, the HOLC completed around 5 million appraisals and drew residential “security” maps as part of the City Survey Program between 1935 and 1940. The HOLC wanted to document the lending riskiness across neighborhoods in 239 cities in the US. The appraisal and the mapping process were intended to ensure the continued stability of the US real estate values (Jackson, 1980). The maps were created using the input of hundreds, if not thousands, of local appraisers and brokers, in addition to surveys on economic characteristics, demographic, and housing markets. Neighborhoods in 239 cities were graded on a scale of A (most stable/least risky) to D (least stable/most risky). Neighborhoods should have been classified based on risk-based characteristics, such as housing price, age, and location; nevertheless, non-housing attributes including ethnicity, race, and immigration status were strong and influential factors in the process as well (Collins & Shester, 2013). Areas with a lower grade on the maps created by the HOLC faced worse housing market outcomes with regard to house values, homeownership, housing conditions, vacancy rates, and rents over the subsequent decades, and in the wake of the restricted and limited credit access, there was significant persistent housing disinvestment. The maps affected the degree of racial segregation, especially for the African American residents. Areas graded “D” (least stable) had poor housing conditions and were notably African American neighborhoods (Aaronson et al., 2021). The IRA, JCLs, and HOLC maps are strong proofs of how social systems can determine different aspects of social vulnerability, such as housing conditions, for groups and individuals in our societies. In disaster research, social vulnerability is defined as the result of many structural factors such as ethnicity, age, and socioeconomic status, which could compromise people’s ability to prepare for a natural hazard (Simms et al., 2013; Birkmann et al., 2013).

### 3. Discussion and recommendations

To address social vulnerabilities in our communities, a multifaceted approach is necessary. Firstly, there is a need to address systemic inequalities in housing policies and urban planning to ensure equitable access to safe and healthy living environments. This involves implementing measures to combat housing discrimination, improve housing quality in marginalized communities, and promote environmental justice initiatives (Mohai et al., 2009). Additionally, interventions aimed at reducing health disparities should focus on addressing the social determinants of health, including access to healthcare, education, and economic opportunities. Policies that target the root causes of unequal risk distributions, such as poverty and systemic racism, are essential in promoting health equity and mitigating disparities (Fitzpatrick & Willis, 2020; Abukhalaf et al., 2022). Furthermore, community-based initiatives that empower residents to advocate for their rights and participate in decision-making processes regarding housing and environmental issues can help foster social cohesion and resilience (Bader et al., 2016). By engaging communities in the planning and development of their neighborhoods, it is possible to create more inclusive and sustainable living environments that prioritize the well-being of all residents. Collaboration between policymakers, healthcare providers, community organizations, and residents is crucial in implementing comprehensive strategies that address the complex interplay between social systems, housing characteristics, and health outcomes. By adopting a holistic and collaborative approach, it is possible to work towards creating a more equitable society where housing physical characteristics are not predetermined by social systems but are instead reflective of a commitment to social justice and health equity.

To address the complex issues of housing physical characteristics determined by social systems and the unequal distributions of risk across communities in the US, a range of solutions can be considered based on the existing literature as well. One potential avenue is to focus on housing policies that not only manage shrinkage but also aim to meet the housing needs of current residents to create more equitable social outcomes (Hoekstra et al., 2018). By shifting the focus from mere management to proactive intervention, policies can be designed to ensure that housing solutions are tailored to the specific needs of communities, thereby reducing disparities in housing quality and environmental conditions.

Moreover, interventions that target specific housing characteristics associated with early childhood development outcomes can play a crucial role in reducing inequities in health and well-being (Villanueva et al., 2019). By examining key features of neighborhood housing that impact early childhood development, policymakers can implement strategies to improve housing quality and stability, ultimately fostering healthier outcomes for children in disadvantaged communities. This approach highlights the importance of addressing housing conditions as a social determinant of health, particularly in vulnerable populations. Additionally, understanding tenant concerns regarding property habitability and the implementation of habitability laws can inform rental housing policies to promote healthy homes and improve health outcomes in communities burdened by poor housing conditions (Marquez et al., 2022). By actively involving tenants in the policy-making process and ensuring the enforcement of habitability laws, policymakers can work towards creating safer and more equitable living environments for all residents. This approach emphasizes the need for tenant-centered solutions that prioritize the well-being of individuals and families affected by substandard housing.

Furthermore, addressing systemic inequalities in indoor air pollution exposure through improvements in housing quality can have significant implications for population health and well-being (Ferguson et al., 2021). By reducing the risk of home environmental exposures, policies can not only improve health outcomes but also contribute to meeting broader sustainability goals and reducing inequality. This underscores the interconnected nature of housing quality, environmental health, and social disparities, highlighting the importance of holistic approaches to addressing housing-related challenges. In the realm of urbanism, housing policies have the potential to play a transformative role in reducing economic, social, and political inequalities (Cociña, 2018). By implementing measures such as housing allowances, tax incentives for affordable housing, policymakers can work towards creating more inclusive and equitable communities. These policy interventions aim to address the root causes of housing inequality and promote social justice through targeted strategies that prioritize marginalized populations. Moreover, public policies that focus on housing as a social and economic asset can contribute to reducing inequalities and promoting social value in housing markets (Chapelle, 2023). By recognizing housing as a fundamental right and implementing policies that support access to secure and adequate housing, governments can improve the health and well-being of populations affected by housing instability. This approach underscores the importance of viewing housing as a critical component of social policy and economic development.

In conclusion, the solutions to addressing the unequal distributions of risk across communities in the US are multifaceted and require a comprehensive approach. By implementing targeted housing policies that prioritize equity, health, and social justice, policymakers can work towards creating more inclusive and sustainable communities. Through collaborative efforts between government agencies, community organizations, and residents, it is possible to enact meaningful change that addresses the root causes of housing disparities and promotes well-being for all individuals and families.

## References

- Aaronson, D., Hartley, D., and Mazumder, B. (2021). The effects of the 1930s HOLC "redlining" maps. *American Economic Journal: Economic Policy*, 13(4), 355-92.
- Abukhalaf, A. H. I. (2021). The risk behind communicating to people in their second language during the hurricane season. *Academia Letters*. <https://doi.org/10.20935/AL3572>
- Abukhalaf, A. H. I. (2022). Improving Crisis Management in the United States by Eliminating Disaster Language-Based Discrimination from Local Emergency Communication. *ACAD Letters*. <https://doi.org/10.20935/AL4999>
- Abukhalaf, A. H. I., Naser, A. Y., Cohen, S. L., Von Meding, J., & Abusal, D. M. (2023a). Evaluating the mental health of international students in the U.S. during the COVID-19 outbreak: The case of University of Florida. *Journal of American College Health*, 1–10. <https://doi.org/10.1080/07448481.2023.2168547>
- Abukhalaf, A. H. I., Okhai, R., Naser, A. Y., Von Meding, J., Cohen, S. L., Mehdipour, H., & Abusal, D. M. (2023b). COVID-19 outbreak impact on the wellbeing of migrants in U.S. college towns: The case of Gainesville, Florida. *International Journal of Disaster Risk Reduction*, 96, 103973. <https://doi.org/10.1016/j.ijdr.2023.103973>
- Abukhalaf, A. H. I., von Meding, J., Dooling, J., & Abusal, D. (2022). Assessing international students' vulnerability to hurricanes: University of Florida case study. *International Journal of Disaster Risk Reduction*, 55, 102812. <https://doi.org/10.1016/j.ijdr.2022.102812>
- Anders, P. (2019). "The Long Run Effects of Transformational Federal Policies: Redlining, the Affordable Care Act and Head Start," Dissertation, Texas A&M University.
- Andrade, E., Barrett, N., Edberg, M., Seeger, M. W., & Santos-Burgoa, C. (2021). Resilience of Communities in Puerto Rico Following Hurricane Maria: Community-Based Preparedness and Communication Strategies. *Disaster Medicine and Public Health Preparedness*, 17. <https://doi.org/10.1017/dmp.2021.306>
- Bader, M., Mooney, S. J., Bennett, B., & Rundle, A. (2016). The Promise, Practicalities, and Perils of Virtually Auditing Neighborhoods Using Google Street View. *The Annals of the American Academy of Political and Social Science*, 669(1), 18-40. <https://doi.org/10.1177/0002716216681488>
- Bento, A., & Elliott, J. R. (2021). The Racially Unequal Impacts of Disasters and Federal Recovery Assistance on Local Self-Employment Rates. *Social Currents*, 9(2), 118-138. <https://doi.org/10.1177/23294965211028841>
- Birkmann, J., Cardona, O. D., Carreno, M. L., Barbat, A. H., Pelling, M., Schneiderbauer, S., et al. (2013). Framing vulnerability, risk and societal responses: The MOVE framework. *Natural Hazards*, 67(2), 193–211.
- Brueckner, J. and Rosenthal, S. (2009). "Gentrification and Neighborhood Housing Cycles: Will America's Future Downtowns be Rich?" *The Review of Economics and Statistics* 91(4), 725-743.
- Chapelle, G. (2023). Housing, Neighborhoods, and Inequality. 1-35. [https://doi.org/10.1007/978-3-319-57365-6\\_424-2](https://doi.org/10.1007/978-3-319-57365-6_424-2)
- Chipangura, P., Niekerk, D. v., & Waldt, G. V. d. (2019). An Exploration of the Tractability of the Objectivist Frame of Disaster Risk in Policy Implementation in Zimbabwe. *Jàmbá Journal of Disaster Risk Studies*, 11(1). <https://doi.org/10.4102/jamba.v11i1.604>
- Cociña, C. (2018). Housing as Urbanism: The Role of Housing Policies in Reducing Inequalities. Lessons From Puente Alto, Chile. *Housing Studies*, 36(9), 1490-1512. <https://doi.org/10.1080/02673037.2018.1543797>



- Cohen, S., & Abukhalaf, A.H.I. (2021). COVID-19's Negative Mental Health Impact Goes Well Beyond Standard At-Risk Populations: Action Needs To Be Taken to Combat Long-term Nationwide Emotional Disruption. *Academia Letters*, Article 3621. <https://doi.org/10.20935/AL3621>
- Cohen, S., Abukhalaf, A.H.I. (2022). The Growing Mental Health Crisis Among America's Children, Adolescents, and Young Adults. *Academia Letters*, Article 4903. <https://doi.org/10.20935/AL4903>
- Cohen, S., von Meding, D., Abukhalaf, A.H.I. (2021). Successful Pandemic and Disaster Mental Health Preparedness Requires Widespread Community Collaboration. *ACAD Letters*, Article 3987. <https://doi.org/10.20935/AL3987>
- Collins, T. W. (2010). Marginalization, Facilitation, and the Production of Unequal Risk: The 2006 Paso Del Norte Floods. *Antipode*, 42(2), 258-288. <https://doi.org/10.1111/j.1467-8330.2009.00755.x>
- Collins, W. and Shester, K. (2013). "Slum Clearance and Urban Renewal in the United States," *American Economic Journal: Applied Economics* 2013, 5(1): 239–273
- Cutter, S. L. (1996). Vulnerability to environmental hazards. *Progress in Human Geography*, 20(4), 529–539.
- Emrich, C. T., & Cutter, S. L. (2011). Social Vulnerability to Climate-Sensitive Hazards in the Southern United States. *Weather, Climate, and Society*, 3(3), 193–208.
- Faas, A. J. (2016). Disaster Vulnerability in Anthropological Perspective. *Annals of Anthropological Practice*, 40(1), 14-27. <https://doi.org/10.1111/napa.12084>
- Ferguson, L., Taylor, J., Shrubsole, C., Symonds, P., Davies, M., & Dimitroulopoulou, S. (2021). Systemic Inequalities in Indoor Air Pollution Exposure in London, UK. *Buildings and Cities*, 2(1), 425. <https://doi.org/10.5334/bc.100>
- Finucane, M. L., Acosta, J. D., Wicker, A., & Whipkey, K. (2020). Short-Term Solutions to a Long-Term Challenge: Rethinking Disaster Recovery Planning to Reduce Vulnerabilities and Inequities. *International Journal of Environmental Research and Public Health*, 17(2), 482. <https://doi.org/10.3390/ijerph17020482>
- Fitzpatrick, K. M., Drawve, G., & Harris, C. T. (2020). Facing New Fears During the COVID-19 Pandemic: The State of America's Mental Health. *Journal of Anxiety Disorders*, 75, 102291. <https://doi.org/10.1016/j.janxdis.2020.102291>
- Fitzpatrick, K. M., & Willis, D. (2020). Chronic Disease, the Built Environment, and Unequal Health Risks in the 500 Largest U.S. Cities. *International Journal of Environmental Research and Public Health*, 17(8), 2961. <https://doi.org/10.3390/ijerph17082961>
- Ho, M.-C., Shaw, D., Lin, S., & Chiu, Y.-C. (2008). How Do Disaster Characteristics Influence Risk Perception? *Risk Analysis*, 28(3), 635-643. <https://doi.org/10.1111/j.1539-6924.2008.01040.x>
- Hoekstra, M., Hochstenbach, C., Bontje, M., & Musterd, S. (2018). Shrinkage and Housing Inequality: Policy Responses to Population Decline and Class Change. *Journal of Urban Affairs*, 42(3), 333-350. <https://doi.org/10.1080/07352166.2018.1457407>
- Jackson, K. (1980). "Race, Ethnicity, and Real Estate Appraisal: The Home Owners Loan Corporation and the Federal Housing Administration," *Journal of Urban History* 6(4), 419-452.
- Lewey, G. (2004). "Were American Indians the Victims of Genocide?". The History News Network. Retrieved from <https://www.commentary.org/articles/guenter-lewy/were-american-indians-the-victims-of-genocide/> March 8, 2017.
- Lin, K. C., Chang, Y.-C., Liu, G. Y., Chan, C.-H., Lin, T. H., & Yeh, C.-P. (2015). An Interdisciplinary Perspective on Social and Physical Determinants of Seismic Risk. <https://doi.org/10.5194/nhessd-3-761-2015>

- Marks, D., Connell, J., & Ferrara, F. (2019). Contested Notions of Disaster Justice During the 2011 Bangkok Floods: Unequal Risk, Unrest and Claims to the City. *Asia Pacific Viewpoint*, 61(1), 19-36. <https://doi.org/10.1111/apv.12250>
- Marquez, E., Coughenour, C., Gakh, M., Tu, T., Usufzy, P., & Gerstenberger, S. (2022). A Mixed-Methods Assessment of Residential Housing Tenants' Concerns About Property Habitability and the Implementation of Habitability Laws in Southern Nevada. *International Journal of Environmental Research and Public Health*, 19(14), 8537. <https://doi.org/10.3390/ijerph19148537>
- Méndez, M., Flores-Haro, G., & Zucker, L. (2020). The (in) visible victims of disaster: Understanding the vulnerability of undocumented Latino/a and indigenous immigrants. *Geoforum*, 116, 50-62. doi:10.1016/j.geoforum.2020.07.007
- Meyer, S., Gibson, B., Ward, P. (2015). Niklas Luhmann: Social Systems Theory and the Translation of Public Health Research. In: Collyer, F. (eds) *The Palgrave Handbook of Social Theory in Health, Illness and Medicine*. Palgrave Macmillan, London. [https://doi.org/10.1057/9781137355621\\_22](https://doi.org/10.1057/9781137355621_22)
- Mohai, P., Pellow, D. N., & Roberts, J. T. (2009). Environmental Justice. *Annual Review of Environment and Resources*, 34(1), 405-430. <https://doi.org/10.1146/annurev-environ-082508-094348>
- Morrison, T. (2020). *Aracism in America*. Harvard University Press ISBN 978-0-674-25165-6. Retrieved from <https://www.hup.harvard.edu/features/racism-in-america/9780674251656-Harvard-University-Press-Racism-in-America-A-Reader.pdf>
- Morss, R. E., Wilhelmi, O. V., Meehl, G. A., & Dilling, L. (2011). Improving societal outcomes of extreme weather in a changing climate: An integrated perspective. *Annual Review of Environment and Resources*, 36(1), 1–25.
- Mukherjee, M., Wickramasinghe, D., Chowdhoree, I., Chimi, C., Poudel, S., Mishra, B.,...Shaw, R. (2022). Nature-Based Resilience: Experiences of Five Cities From South Asia. *International Journal of Environmental Research and Public Health*, 19(19), 11846. <https://doi.org/10.3390/ijerph191911846>
- Pamungkas, A. (2024). Risk Reduction Through Spatial Plan: A Case Study From Surabaya, Indonesia. *Iop Conference Series Earth and Environmental Science*, 1353(1), 012001. <https://doi.org/10.1088/1755-1315/1353/1/012001>
- Parker, C. and Towler, C. (2019). Race and Authoritarianism in American Politics. *Annual Review of Political Science*. <https://doi.org/10.1146/annurev-polisci-050317-064519>
- Roux, A. V. D. (2003). Residential Environments and Cardiovascular Risk. *Journal of Urban Health*, 80(4), 569-589. <https://doi.org/10.1093/jurban/jtg065>
- Rubin, O. (2014). Social Vulnerability to Climate-induced Natural Disasters: Cross-provincial Evidence From Vietnam. *Asia Pacific Viewpoint*, 55(1), 67-80. <https://doi.org/10.1111/apv.12037>
- Sahasranaman, A. (2021). Spread of COVID-19 in Urban Neighbourhoods and Slums of the Developing World. *Journal of the Royal Society Interface*, 18(174), 20200599. <https://doi.org/10.1098/rsif.2020.0599>
- Simms, J. L., Kusenbach, M., & Tobin, G. A. (2013). *Equally unprepared: Assessing the hurricane vulnerability of undergraduate students* SelectedWorks. Retrieved from <https://works.bepress.com/jlsimms/2>
- Stough, L. M., Kang, D., & Lee, S. (2018). Seven School-Related Disasters: Lessons for Policymakers and School Personnel. *Education Policy Analysis Archives*, 26, 100. <https://doi.org/10.14507/epaa.26.3698>
- Uekusa, S. (2018). Social vulnerability, resilience and capital in disasters: Immigrants, refugees and linguistic minorities

in the 2010-2011 Canterbury and Tohoku disasters. Retrieved from

<https://researchspace.auckland.ac.nz/handle/2292/45091>

- Villanueva, K., Badland, H., Tanton, R., Katz, I., Brinkman, S., Lee, J.-L.,...Goldfeld, S. (2019). Local Housing Characteristics Associated With Early Childhood Development Outcomes in Australian Disadvantaged Communities. *International Journal of Environmental Research and Public Health*, 16(10), 1719. <https://doi.org/10.3390/ijerph16101719>
- Wilson, W and Corwin, E. (1921). *Division and reunion*. New York Longmans. Retrieved from <https://archive.org/details/divisionandreun00corwgoog>
- Wisner, B., Blaikie, P., Cannon, T., & Davis, I. (2004). *At risk: Natural hazards, people's vulnerability and disasters*. New York: Routledge.
- White, E. (2014). "Lessons from the Great American Real Estate Boom and Bust of the 1920s," in *Housing and Mortgage Markets in Historical Perspective*, edited by Eugene White, Kenneth Snowden, and Price Fishback, NBER Conference volume, Chicago: University of Chicago Press.
- Wolfley, J. (1991). *Jim Crow, Indian Style: The Disenfranchisement of Native Americans*. *American Indian Law Review*, 16(1), 167–202. <https://doi.org/10.2307/20068694>
- Zhang, Q., Zhang, J., Jiang, L., Liu, X., & Tong, Z. (2014). Flood Disaster Risk Assessment of Rural Housings — A Case Study of Kouqian Town in China. *International Journal of Environmental Research and Public Health*, 11(4), 3787-3802. <https://doi.org/10.3390/ijerph110403787>
- Zhou, C. (2024). A Multi-Hazard Risk Assessment Model for a Road Network Based on Neural Networks and Fuzzy Comprehensive Evaluation. *Sustainability*, 16(6), 2429. <https://doi.org/10.3390/su16062429>