

# The Political Determinants of Disaster Risk: Assessing the Unfolding Aftermath of Hurricane Maria for People with Disabilities in Puerto Rico

Zachary A. Morris, R. Anna Hayward, and Yamirelis Otero

## ABSTRACT

An environmental justice (EJ) framework identifies that the most vulnerable in society are also the most likely to be at risk to extreme weather events attributable to climate change. Among the populations frequently identified as disproportionately exposed to disaster risk are persons living with disabilities. In this article, we highlight three models for understanding the impact of extreme weather events on people with disabilities: a physical vulnerability model, a sociopolitical model, and an EJ model. Drawing from sociopolitical and EJ frameworks, we explore the increased disaster risk experienced by people with disabilities in Puerto Rico during Hurricane Maria. Our analysis serves to demonstrate the relevance of social and environmental protection as foundational elements for disaster risk mitigation and thus the political determinants of disaster risk.

**Keywords:** climate change, disability, social policy, disaster preparedness, social work

## INTRODUCTION

**N**EARLY 3 MONTHS after Hurricane Maria barreled through Puerto Rico on September 20, 2017, much of the island is still without electricity and the death toll is climbing. Although the official death count is 55, a spike in fatalities from “natural causes” suggests that the true death toll is far higher and perhaps >1000.<sup>1</sup> In this article, we focus on a segment of the population well known to be particularly at risk in a time of disaster: people with disabilities. Although it is too early to account for the full impact of Hurricane Maria on this population, the most recent reports suggest that people

with disabilities suffered enormously and many likely lost their lives.<sup>2</sup>

People with disabilities are frequently identified as a group needing specific attention in disaster planning and response. Disability, according to the widely adopted International Classification of Functioning, Disability and Health (ICF) framework of the World Health Organization, can be understood as the dynamic interaction between an individual’s health, including mental and physical chronic health conditions, and the contextual factors that limit an individual’s ability to participate fully in society.<sup>3</sup> What made people with disabilities especially vulnerable in Puerto Rico? We argue that focusing exclusively on the lack of mobility or poor health

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<sup>1</sup>Alexis Santos and Jeffrey T. Howard. “Estimates of Excess Deaths in Puerto Rico Following Hurricane Maria.” *SocArXiv* (2017). <<https://osf.io/preprints/socarxiv/s7dmu>>. Accessed March 15, 2018.

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<sup>2</sup>Ted Alcorn. “Puerto Rico’s Health System after Hurricane Maria.” *The Lancet* 390 (2017): e24; Charito Fraticelli. “Madre de Hombre Cuadrupléjico Clama por Ayuda.” *Telenoticias Video 2* (2017). <[https://www.telemundopr.com/noticias/destacados/Madre-de-hombre-cuadrupl\\_jico-clama-por-ayuda\\_TLMD—Puerto-Rico-458075653.html](https://www.telemundopr.com/noticias/destacados/Madre-de-hombre-cuadrupl_jico-clama-por-ayuda_TLMD—Puerto-Rico-458075653.html)>. Accessed March 15, 2018.

<sup>3</sup>*International Classification of Functioning, Disability and Health*. (World Health Organization, 2001). <[www.who.int/classifications/icf/en](http://www.who.int/classifications/icf/en)>. Accessed March 15, 2018.

can only provide an incomplete account of the disaster risk experienced. Missing from this usual explanation is an evaluation of the underlying causes of the vulnerability. Drawing from sociopolitical and environmental justice (EJ) frameworks, we argue that at the core of what made those with disabilities in Puerto Rico acutely susceptible to disaster risk was political. First, there was the history of environmental degradation in Puerto Rico that exposed many in the population to health hazards and that made people with disabilities at risk when disaster struck. Second, there was the failure to extend a modern safety net to the citizens of a U.S. territory that could protect against the most elementary forms of social risks, including those encountered by people with disabilities in a natural disaster. Thus, in our analysis, environmental and social protection go hand in hand in mitigating the risks encountered during disaster events.

In highlighting these political determinants of disaster risk, we aim to demonstrate the relevance of EJ and social welfare policy as important factors in the protection against extreme weather events. Our analysis further suggests that there should be greater attention in the research literature on disaster risk that combines social policy and EJ perspectives. We approach this topic as scholars of the applied academic discipline of social work, which we think is particularly well suited for such interdisciplinary research. Drawing from a social justice perspective, social work scholars can provide a full picture of the disaster risk experienced by people with disabilities by integrating different fields of study, such as disability studies, social policy, and EJ.

#### UNDERSTANDING THE IMPACT OF EXTREME WEATHER EVENTS ON PERSONS WITH DISABILITIES

In this section, we discuss three models for understanding the risks for people with disability in the context of extreme weather events and natural disasters. The first is a physical vulnerability model that focuses on the deficiencies of individuals and their needs during a time of disaster. A second sociopolitical model acknowledges the political and social components of vulnerability and thus highlights the contextual barriers that people with disabilities experience in responding to a disaster, including poverty and the lack of adequate social protection. Finally, an EJ model addresses both the individual and societal causes of disaster risk experienced by people with disabilities and places them within a sociohistorical context. Specifically, an EJ framework emphasizes the role of systemic oppression, discrimination, and the benign neglect of population groups that receive minimal protection from environmental hazards.

##### *A physical vulnerability model*

A physical vulnerability model focuses on disability from a medical and charitable lens that is focused on individual deficiencies and needs. Two recent reports, from the U.S. Global Change Research Program (USGCRP) and the

United Nations Intergovernmental Panel on Climate Change (IPCC), assess climate change impacts and specifically identify persons with disabilities as needing particular attention in preparing for and responding to climate-related extreme weather events such as hurricanes, floods, and droughts. Analysis from the National Council on Disabilities (NCD) about the aftermath of hurricane Katrina serves as another example of this model.

In 2016, the USGCRP published a comprehensive study health study title *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*.<sup>4</sup> This assessment, subsequently published and shared by both the Environmental Protection Agency and the Center for Disease Control, focuses on the health risks from climate change on population groups in the United States. The report identifies people with disabilities as being at an increased risk to extreme weather events and coastal flooding because of their “specific access and functional needs,”<sup>5</sup> dependence on caregivers and others for assistance, and potential reliance on medical equipment that could be damaged or inoperable during power outages.<sup>6</sup> People with disabilities may also have difficulty following or accessing evacuation orders or be unable to understand warnings or communicate their needs. Hence, although social, political, and economic factors are acknowledged as furthering vulnerability to disaster risk, the most pressing concerns in the USGCRP report in terms of persons with disabilities are related to communication, transportation, and evacuation before and after extreme weather events or other climate-related disasters (fire, flooding, drought, or heat emergencies).

The IPCC presents a similar model of physical vulnerability but begins to address the sociopolitical drivers of climate change risk.<sup>7</sup> The report frames these risks in terms of vulnerability versus capacity, including the capacity to anticipate risk, respond to risk, and recover and change after an experienced hazard.<sup>8</sup> However, this capacity is driven by more than just individual physical vulnerability. In the context of recovery, for example, “capacity is driven by numerous factors, including mental and physical ability to recover, financial and environmental viability, and political will” (p. 75).

In the NCD report on the aftermath of hurricanes Katrina and Rita, people with disabilities are identified as

<sup>4</sup>Allison Crimmins, John Balbus, Janet L. Gamble, Charles B. Beard, Jesse E. Bell, Daniel Dodgen, Rebecca J. Eisen, Neal Fann, Michelle D. Hawkins, Stephanie C. Herring, Lesley Jantarasami, David M. Mills, Shubhayu Saha, Marcus C. Sarofim, Juli Trtanj, and Lewis Ziska. *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*. (U.S. Global Change Research Program, 2016).

<sup>5</sup>Ibid, 104.

<sup>6</sup>Ibid.

<sup>7</sup>Omar-Daria Cardona, Maarten K. van Aalst, Jörn Birkmann, Maureen Fordham, Glenn McGregor, and R. Mechler. *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. (Cambridge University Press, 2012), 65–108.

<sup>8</sup>Ibid, 75.

a high-risk group for a variety of reasons, such as the inability to receive or respond to early alert systems, and contending with physical structures that are not responsive to their needs.<sup>9</sup> Both the NCD and IPCC reports begin to identify social causes of these risks, including lack of adequate support and transportation even in good times, as well as lack of financial and social support. However, in most of the discourse on climate change risk and disability, the focus remains on preparation and response around individual needs, including preparation for evacuation, communication, and accessibility for individuals with a variety of physical and mental impairments. Less attention has been paid to the causes of disadvantages within these already vulnerable groups and methods and mechanisms to address these before, during, and after disasters.

### *Sociopolitical models*

Over the past 30 years, disability rights scholars and advocates have advanced a social model of disability that views the participation barriers faced by people with disabilities as stemming not from their individual impairments but from social and environmental barriers.<sup>10</sup> Priestley and Hemingway review the literature on disaster recovery and argue for the incorporation of a social model of disability approach for understanding the disaster risk experienced by people with disabilities.<sup>11</sup> Unlike a physical vulnerability model, the social model of disability is more in line with the ICF definition of disability, in which it emphasizes that the disaster risk experienced by a person with disabilities stems primarily from the societal shortcomings in the predisaster societies.<sup>12</sup> In this light, high rates of poverty and low employment rates of people with disabilities are viewed as significant impediments to disaster resilience, and are themselves attributable to societal phenomena such as discrimination in the workplace, inadequate accommodations, and insufficient safety net programs.

The pressure and release model of disaster risk similarly seeks to highlight the underlying societal determinants of disaster risk.<sup>13</sup> This perspective views disaster risk as a product of both physical hazards, including the medical impairment, and social vulnerability caused by

socioeconomic factors. Social vulnerability to disaster risk, moreover, is understood as progressing from root causes that include economic and political systems, which creates social inequalities along familiar lines of gender, class, race, immigration status, and ability and, in turn, “determine unequal access to opportunities and unequal exposure to hazards.”<sup>14</sup>

### *An environmental justice model*

Like the sociopolitical model, an EJ model also acknowledges that an understanding of disaster risk cannot neglect the societal determinants of risk, including historic inequities in the distribution of environmental hazards, systemic oppression, and the disproportionate burden of environmental risk experienced in racial and ethnic minority communities. The EJ framework challenges the notion that “natural disasters” are intractable phenomena that cannot be prevented or mitigated.<sup>15</sup> Drawing attention to their man-made attributes, this perspective identifies how disasters are to varying degrees socially and politically produced.<sup>16</sup>

Understanding disaster risk through an EJ lens further identifies that those most at risk for bearing a disproportionate share of impacts from climate change-related impacts, (i.e., increased heat, rising sea levels, and extreme weather events) are persons living in poverty, racial minorities, and other marginalized populations, such as people with disabilities.<sup>17</sup> An EJ framework addresses unequal protection from environmental risks among vulnerable groups within political and ethical contexts.<sup>18</sup> In the case of extreme weather events such as hurricanes, mounting evidence suggests that environmental injustice provides an explanation for the impact of such events.<sup>19</sup> An EJ framework further highlights how disaster planning fails to consult with stakeholder groups, including people with disabilities.<sup>20</sup> Inequities related to EJ also impact resources available to respond to disasters, as well as rates of and responses to displacement.<sup>21</sup>

<sup>14</sup>Ibid, 3.

<sup>15</sup>Priestley and Hemingway, 2007.

<sup>16</sup>Social Science Research Council. “There’s no Such Thing as a Natural Disaster.” *Items* (2017). <<http://items.ssrc.org/theres-no-such-thing-as-a-natural-disaster>>. Accessed March 15, 2018.

<sup>17</sup>Robert D. Bullard. *The Quest for Environmental Justice: Human Rights and the Politics of Pollution*. (Sierra Club Books, 2008).

<sup>18</sup>Ibid, 25.

<sup>19</sup>Reilly Morse. *Environmental Justice Through the Eye of Hurricane Katrina*. (Joint Center for Political and Economic Studies Health Policy Institute, 2008); Patrick Sharkey. “Survival and Death in New Orleans: An Empirical Look at the Human Impact of Katrina.” *Journal of Black Studies* 37 (2007): 482–501.

<sup>20</sup>David Abbott and Sue Porter. “Environmental Hazard and Disabled People: From Vulnerable to Expert to Interconnected.” *Disability & Society* 28 (2013): 839–852.

<sup>21</sup>Isabel Mota Borges. “Environmental Displacement and John Rawls ‘General Conception’ of Justice.” *Environmental Justice* 9 (2016): 77–84.

<sup>9</sup>Lex Frieden. *The Impact of Hurricanes Katrina and Rita on People with Disabilities: A Look Back and Remaining Challenges*. (National Council on Disability, 2006).

<sup>10</sup>Mike Oliver. “The Social Model of Disability: Thirty Years on.” *Disability & Society* 28 (2013): 1024–1026.

<sup>11</sup>Mark Priestley and Laura Hemingway. “Disability and Disaster Recovery: A Tale of Two Cities?” *Journal of Social Work in Disability & Rehabilitation* 5 (2007): 23–42.

<sup>12</sup>Diane E. Brandt, Andrew J. Houtenville, Minh T. Huynh, Leighton Chan, and Elizabeth K. Rasch. “Connecting Contemporary Paradigms to the Social Security Administration’s Disability Evaluation Process.” *Journal of Disability Policy Studies* 22 (2011): 116–128.

<sup>13</sup>Ben Wisner, Piers Blaikie, Terry Cannon, and Ian Davis. *At Risk Second Edition: Natural Hazards, People’s Vulnerability and Disasters*. (2003). <[www.preventionweb.net/files/670\\_72351.pdf](http://www.preventionweb.net/files/670_72351.pdf)>. Accessed March 15, 2018.

## THE CUMULATIVE DISADVANTAGE OF PEOPLE WITH DISABILITIES IN PUERTO RICO

Drawing from sociopolitical and EJ frameworks, this section aims to illustrate the root causes of the disaster risk experienced by people with disabilities in Puerto Rico. We specifically draw on two major historical patterns that accumulated over time and increased the underlying risk experienced and can thus be understood as possible root causes for the vulnerability: a history of environmental colonialism and a history of welfare state neglect.

### *Environmental colonialism*

This history of disaster vulnerability in Puerto Rico cannot be understood outside of >500 years of colonialism, which has resulted in significant resource depletion and under development across all basic services, including access to water, infrastructure, food and delivery systems, housing, and waste management systems.<sup>22</sup> Puerto Rico has a history of experience with environmental injustice resulting from colonial and postcolonial development.<sup>23</sup> Development and privatization of coasts and beaches, military contamination with limited clean up (most notably on the island of Vieques), and planned and sanctioned extraction and exploitation of natural resources have been linked to advocacy efforts that are anticolonial and emancipatory.<sup>24</sup> In addition to the overall vulnerability of the island as a whole, there is also uneven distribution of environmental hazards and pollutants across the island.<sup>25</sup>

There are two mechanisms through which environmental degradation influences the disaster risk experienced by people living with disabilities in Puerto Rico. The first concerns the history of environmental injustice as a determinant of poor health. For example, in Vieques, a former U.S. military test site, women of childbearing age were found to have sufficient mercury to cause neurological damage in their unborn babies.<sup>26</sup> In comparison with the rest of the island, those living in Vieques

also are shown to have an increased risk for hypertension, asthma, diabetes, heart disease, and some cancers.<sup>27</sup> Improper disposal of toxic waste has further resulted in the identification of dangerous pollutants in the groundwater largely attributable to the 18 Superfund sites in Puerto Rico.<sup>28</sup> Processing of coal and unregulated disposal of coal ash are additional sources of pollution shown to affect the health of Puerto Rican residents.<sup>29</sup> Insofar as the physical and mental health of a person affects the ability to adapt to a disaster (e.g., the physical vulnerability model), environmental degradation can be understood as a significant cause of vulnerability.

A second mechanism that influences the disaster risk of people with disabilities is the environmental degradation that reduces the protection from storms that the natural ecosystem would have otherwise provided and thereby increases vulnerability to extreme weather events. Dietrich and colleagues note that the unregulated construction along the coast damaged the ecosystems that could have provided greater protection from the storm.<sup>30</sup> Given that people with disabilities are already disproportionately impacted by extreme weather events, the reduced protection only enhances the risk. Recent media reports suggest that many individuals with chronic health issues were unable to access needed health services and clean water due to the lack of electricity and poor quality of the infrastructure in Puerto Rico.<sup>31</sup> For example, it is estimated that 6000 Puerto Ricans with kidney failure depend on regular dialysis treatment. Yet, many of the territory's dialysis centers were closed after Hurricane Maria.<sup>32</sup> Local news organizations have further highlighted the extreme vulnerability experienced by people with disabilities

<sup>27</sup>*An Evaluation of Environmental, Biological, and Health Data from the Island of Vieques, Puerto Rico.* (U.S. Department of Health and Human Services, 2013). <[www.atsdr.cdc.gov/hac/pha/vieques/Vieques\\_Summary\\_Final\\_Report\\_English\\_2013.pdf](http://www.atsdr.cdc.gov/hac/pha/vieques/Vieques_Summary_Final_Report_English_2013.pdf)>. Accessed March 15, 2018. It is important to note that the report was inconclusive on the connection between military bombing and elevated health risks, although this relationship remains in dispute.

<sup>28</sup>John M. Hunter and Sonia I. Arbona. "Paradise Lost: An Introduction to the Geography of Water Pollution in Puerto Rico." *Social Science & Medicine* 40 (1995): 1331–1355; Xue Yu, Reza Ghasemzadeh, Ingrid Padilla, Celys Irizarry, David Kaelic, and Akram Alshawabkeh. "Spatiotemporal Changes of CVOC Concentrations in Karst Aquifers: Analysis of Three Decades of Data from Puerto Rico." *Science of the Total Environment* 511 (2015): 1–10; *National Priorities List (NPL) Sites - by State.* (United States Environmental Protection Agency, 2017). <[www.epa.gov/superfund/national-priorities-list-npl-sites-state#PR](http://www.epa.gov/superfund/national-priorities-list-npl-sites-state#PR)>. Accessed March 15, 2018.

<sup>29</sup>*Ibid*; Dietrich et al., 2017.

<sup>30</sup>Dietrich et al., 2017.

<sup>31</sup>Ivan Watson, Jo Shelley, and Patrick Gillespie. "Cut off After Bridge Collapsed, Puerto Ricans Cross River with Cable." *CNN* (2017). <[www.cnn.com/2017/09/28/americas/puerto-rican-lorenzo/index.html](http://www.cnn.com/2017/09/28/americas/puerto-rican-lorenzo/index.html)>; Ruffy Rivera. "¿Quién Ayuda a los Discapacitados en Puerto Rico en la Emergencia por María?" *CNN Video* 2 (2017). <<https://www.edition.cnn.com/videos/spanish/2017/10/12/cnnee-pkg-ruffy-rivera-huracan-maria-discapacitados-urgencia-pedido-eeuu-ayuda.cnn>>. Accessed March 15, 2018.

<sup>32</sup>Alcor, 2017.

<sup>22</sup>Alexa Dietrich, Adriana María Garriga-López, and Claudia Sofía Garriga-López. "Hurricane Maria Exposes Puerto Rico's Stark Environmental and Health Inequalities." *Items* (2017). <<http://items.ssrc.org/hurricane-maria-exposes-puerto-ricos-stark-environmental-and-health-inequalities>>. Accessed March 15, 2018.

<sup>23</sup>José M. Atilés-Osoria. "Environmental Colonialism, Criminalization and Resistance: Puerto Rican Mobilizations for Environmental Justice in the 21st Century." *RCCS Annual Review* 6 (2014): 3–21.

<sup>24</sup>Katherine T. McCaffrey. "The Struggle for Environmental Justice in Vieques, Puerto Rico." In: David V. Carruthers (ed). *Environmental Justice in Latin America: Problems, Promise, and Practice* (The MIT Press, 2008); Atilés-Osoria, 2014.

<sup>25</sup>Shanshan Wu and Matthew T. Heberling. "The Distribution of Pollution and Environmental Justice in Puerto Rico: A Quantitative Analysis." *Population and Environment* 35 (2013): 113–132.

<sup>26</sup>Carmen Ortiz-Roque and Yadiris López-Rivera. "Mercury Contamination in Reproductive Age Women in a Caribbean Island: Vieques." *Journal of Epidemiology & Community Health* 58 (2004): 756–757.

during the storm. A quadriplegic man who relies on a ventilator and a young boy with brittle bone disease who uses a machine to help him breathe are both shown to be fighting for their lives without access to electricity and the personal funds needed to adapt to the crisis.<sup>33</sup> The severe impact of the storm can thus be understood as a consequence of unregulated construction that is part of a larger arc of colonial oppression experienced by the people of Puerto Rico.

#### *The neglected welfare state in Puerto Rico*

In comparison with other advanced economic countries, the United States is generally viewed as providing fewer protections against major social risks, such as unemployment, sickness, and old age.<sup>34</sup> However, looking within the federal and territorial United States, one finds wide variation with some states providing more generous social assistance benefits (Temporary Assistance for Needy Families) and others greater access to medical assistance (Medicaid) for the poor.<sup>35</sup> Yet, even when taking into account the wide discrepancies in risk protection, the meager basket of social welfare programs available to those in Puerto Rico stands out, particularly for those with disabilities. The lack of adequate social assistance and access to medical care, in particular, decreases the ability of people with disabilities to cope with and recover from disasters. The bare bones social welfare system in Puerto Rico can also be understood as a consequence of the island's colonial status. Unlike other U.S. states, Puerto Ricans have no direct voting representation in the U.S. Congress. This structural disadvantage reduces the power and influence over the policymaking processes relevant to those with disabilities on the island.

The Supplemental Security Income (SSI) is arguably the single most important safety net program in the United States. SSI provides a guaranteed income to those of low means who are aged 65 or older or who are blind or disabled adults and children. As of 2015, 8.3 million people in the United States received SSI payments, which average about \$541 a month.<sup>36</sup> SSI is an essential safety net program for those with disabilities, which comprise >85% of SSI recipients.<sup>37</sup> Yet, Puerto Ricans are unable to access SSI benefits. SSI was created in 1971 and ex-

panded upon the previous aged, blind, and disabled (ABD) program. But the SSI program was not made available in the U.S. territories, including Puerto Rico. As a result, Puerto Rico still provides the original ABD program, which has considerably less generous benefits (\$75 a month vs. \$541) than the modern SSI safety net for those with disabilities.<sup>38</sup> Congress, recognizing this wide discrepancy in benefit levels, has many times considered expanding the SSI program to the territories, but expansion has, nevertheless, failed to pass both chambers of Congress.<sup>39</sup> This policy leaves those with disabilities extremely economically vulnerable and thus less able to cope with and recover from disasters. This is especially stark when one considers that Puerto Rico has the highest rate of disabled adults living in poverty in the United States.<sup>40</sup>

In addition to the lack of SSI, Puerto Rico also receives a lower share of Medicaid funding from the federal government than other U.S. states. Nearly half of all Puerto Ricans receive health insurance through the Medicaid program.<sup>41</sup> Yet, unlike the 50 states and the District of Columbia, federal funding for Puerto Rico's Medicaid program is capped at an annual amount rather than through cost sharing with the federal government like the other U.S. states.<sup>42</sup> This means that if the island requires additional funds for low-income healthcare programs, it must use its own territorial funds, which is itself hampered by the general fiscal crisis on the island and the imposition of wide ranging austerity measures.<sup>43</sup> This structural inequity has created an enormous fiscal strain on the healthcare system in Puerto Rico and limits its ability to provide much needed care after the storm.<sup>44</sup>

## CONCLUSION

Our work is in the spirit of Mason and colleagues who point to the need for environmental social work research to refocus efforts from descriptive analyses to research that explicates the social, political, and environmental drivers of health and well-being in vulnerable populations.<sup>45</sup> The literature on disaster risk typically focuses on the physical vulnerability of people with disabilities

<sup>33</sup>Fratelli, 2017.

<sup>34</sup>Gosta Esping-Andersen. *The Three Worlds of Welfare Capitalism*. (John Wiley & Sons, 2013); Bruce Jansson. *The Reluctant Welfare State: American Social Welfare Policies Past, Present and Future*. (Brooks/Cole Publishing, 2004).

<sup>35</sup>"State TANF Spending in FY 2015." *Office of Family Assistance* (2017). <[www.acf.hhs.gov/ofa/resource/state-tanf-spending-2015-factsheet](http://www.acf.hhs.gov/ofa/resource/state-tanf-spending-2015-factsheet)>; Rachel Garfield and Anthony Damico. "The Coverage Gap: Uninsured Poor Adults in States that do not Expand Medicaid." *KFF.org* (2017). <[www.kff.org/uninsured/issue-brief/the-coverage-gap-uninsured-poor-adults-in-states-that-do-not-expand-medicaid](http://www.kff.org/uninsured/issue-brief/the-coverage-gap-uninsured-poor-adults-in-states-that-do-not-expand-medicaid)>. Accessed March 15, 2018.

<sup>36</sup>"Fast Facts & Figures About Social Security, 2016." *Social Security Office of Retirement and Disability Policy* (2016). <[www.ssa.gov/policy/docs/chartbooks/fast\\_facts/2016/fast\\_facts16.html?src=org\\_fb\\_ssdi](http://www.ssa.gov/policy/docs/chartbooks/fast_facts/2016/fast_facts16.html?src=org_fb_ssdi)>. Accessed March 15, 2018.

<sup>37</sup>Ibid.

<sup>38</sup>William R. Morton. "Cash Assistance for the Aged, Blind, and Disabled in Puerto Rico." *Congressional Research Service* (2016). <<https://fas.org/sgp/crs/row/cash-aged-pr.pdf>>. Accessed March 15, 2018.

<sup>39</sup>Ibid.

<sup>40</sup>Erickson et al., 2017.

<sup>41</sup>"Puerto Rico: Fast Facts." *KFF.org* (2017). <[www.kff.org/disparities-policy/fact-sheet/puerto-rico-fast-facts](http://www.kff.org/disparities-policy/fact-sheet/puerto-rico-fast-facts)>. Accessed March 15, 2018.

<sup>42</sup>Ibid.

<sup>43</sup>Carlos E. Rodríguez-Díaz. "Maria in Puerto Rico: Natural Disaster in a Colonial Archipelago." *American Public Health Association* 108 (2018): 30–32.

<sup>44</sup>Ibid.

<sup>45</sup>Lisa Reyes Mason, Mary Katherine Shires, Catherine Arwood, and Abigail Borst. "Social Work Research and Global Environmental Change." *Journal of the Society for Social Work and Research* 8 (Winter 2017): 645–672.

during a crisis, while neglecting the underlying causes of vulnerability, including the political and policy factors that increase risk exposure. In our analysis, environmental protection and welfare state programs are viewed as protective factors against related disaster shocks. Disaster recovery costs could feasibly be lessened and lives saved had Puerto Ricans been better protected against basic social and environmental risks. Future research should examine the recovery of people with disabilities in Puerto Rico over time, explore the effects of the disaster, and their relationship with environmental and social protection, and do so through an interdisciplinary lens within an EJ framework.

#### AUTHOR DISCLOSURE STATEMENT

The authors have no conflicts of interest or financial ties to disclose.

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