

A Bioethical Perspective on the Preparedness and Response to the Devastation Hurricane Maria had on Puerto Rico

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Bioethics has an incredibly important role to play in guiding discussions surrounding the ethics involved in hurricane preparedness and response (HP&R). Both preparation for and response to natural disasters involves duties and corresponding obligations that are vital to protecting the public's health and safety. In addition to presenting acute dangers such as flooding and flying debris, large hurricanes also have long-lasting consequences on public health. The role of bioethics should be to assess the relation between health outcomes observed after hurricanes elicit their acute destruction with the ethical duties and obligations involved in HP&R. Why should public health challenges experienced after hurricanes be studied if what is found is not to be applied in assessing the ethics of how local, state, and federal governments prepare for and respond to devastating hurricanes? I argue that bioethics is well suited in this endeavor. In doing so, I will present my own assessment from a bioethical standpoint on the HP&R to Maria and with whom ethical accountability lies.

Why Bioethics?

Although the field of bioethics originates from medical ethics,^[1,2] it also encompasses the study of matters beyond medicine that affect the health and personhood of all members of a society. Such bioethical issues include the ethics of biomedical research, the ethics of the application of new technology in the life sciences, as well as government responsibilities intended to prevent public health disasters and respond ethically when they do inevitably occur.³ While the field of environmental ethics certainly addresses the ethical issues involved in the underlying cause(s) and appropriate response(s) to natural disasters, it does so from a grounding ecological philosophy concerned with the mutual interdependence of all life on earth. Thus, it is more equipped to deal with issues such as the rights of non-human life and policy on global warming.

Bioethics, in contrast, is grounded in moral theories concerned with the essence and dignity of personhood within liberal societies at the forefront of progress in medicine and the life sciences.⁴ Thus, bioethics focuses on ethical principles liberal societies are built upon, such as justice, respect for autonomy, and beneficence.⁵ Properly implementing and upholding these ethical principles and values within federal, state, and local governments tasked with emergency

¹ Albert R. Jonsen, *The Birth of Bioethics* (New York City, Oxford University Press, 1998). 3.

² George Annas, *Worst Case Bioethics: Death Disaster, and Public Health* (New York City: Oxford University Press, 2010), xviii.

³ George Annas, *Worst Case Bioethics: Death Disaster, and Public Health* (New York City: Oxford University Press, 2010), xix.

⁴ Takao Takahashi. "Bioethics and Environmental Ethics in the Age of Co-Disaster." *Eubios Journal of Asian and International Bioethics* 22, no. 1 (2012): 2-3.

⁵ Ibid, 2.

management and response is not only relevant, but integral to protecting human life and dignity during natural disasters. Because bioethics seeks to explore how human dignity can and should be valued and preserved, it is well suited to deal with questions of moral conduct on behalf of individual leaders and government institutions in preparation for and response to natural disasters.⁶

Hurricane Maria: Facts and Context

On September 20, 2017, Hurricane Maria made landfall in Puerto Rico.⁷ The storm levied 20-35 inches of rainfall within 24 hours causing catastrophic flooding and leaving 100% of the island without power.^[8,9] Puerto Rico's Department of Health initially reported the death toll of the storm to be 64, but subsequent studies suggested the actual death toll was much higher.¹⁰ A population survey-study by Harvard estimated there were 4,645 excess deaths from September 20 to December 31 in 2017 in comparison to the same period in 2016.¹¹ One-third of households interviewed attributed death of a member to delayed or interrupted medical care, reporting lack of access to medication(s), open medical facilities and doctors, and even 911 services.¹² A later study by George Washington University estimated excess mortality to be 2,975 by using census data from 2010 to 2017 to account for natural trends in population growth and post-hurricane population displacement.¹³

The reason the original death toll was so low was because death certificate reporting conventions only included classification of deaths that were directly caused by the storm, such as flying debris and drowning.¹⁴ This was largely due to physician unawareness about CDC-established death certificate practices after natural disasters and failure of the government of Puerto Rico to properly inform them in advance.¹⁵

The Federal Emergency Management Agency (FEMA) coordinates disaster response on behalf of the federal government. FEMA policy operates in accordance with the National Response Framework issued by the U.S. Department of Homeland Security (DHS), which describes the federal government's role in disaster response as supportive to state, municipal, and

⁶ Dónal O'Mathúna, Bert Gordijn, Mike Clark, *Disaster Bioethics: Normative Issues When Nothing Is Normal*, ed. Michael Selgelid (Dordrecht: Springer, 2014), 6.

⁷ Times Editors, "Hurricane Maria Slams Into Puerto Rico With Life-Threatening Winds of Up to 155 Miles Per Hour." *Time*. September 20, 2017.

⁸ Mark Osborne, Morgan Winsor, Julia Jacobo, "Hurricane Maria Leaves Trail of Death and Destruction in Puerto Rico." *ABC News*. September 22, 2017.

⁹ The New York Times, "Hurricane Maria Updates: In Puerto Rico, the Storm 'Destroyed Us.'" *New York Times*, September 21, 2017.

¹⁰ Gabe Gutierrez, Bianca Seward, "Puerto Rico 9 Months After Hurricane Maria: Questions Persist Over Death Toll, Closed Schools." *NBC News*. June 17, 2018.

¹¹ Nishant Kishore, Domingo Marques, Ayesha Mahmud, Mathew V. Kiang, Irmay Rodriguez, Arlan Fuller, Peggy Ebner, et al. 2018. "Mortality in Puerto Rico after Hurricane Maria." *The New England Journal of Medicine*, no. 2 (2018): 166.

¹² *Ibid*, 166-167.

¹³ George Washington University, in collaboration with the University of Puerto Rico Graduate School of Puerto Rico, *Ascertainment of the Estimated Excess Mortality from Hurricane Maria in Puerto Rico*, Project Report for the Governor of Puerto Rico, August 28, 2018. 9.

¹⁴ *Ibid*, 11.

¹⁵ *Ibid*, 12

territorial authorities, but in some cases, primarily responsible for leading responses in areas that are under federal jurisdiction or are federal property.¹⁶

The *Stafford Act* is the primary federal disaster law that provides the legal basis of the response, outlining how presidential declarations of emergency trigger physical and financial response cascades from FEMA.¹⁷ The law also is meant to hold state, local and municipal governments accountable in developing comprehensive preparation plans focused on communication and coordination among different agencies and departments involved in disaster response. The Post-Katrina Emergency Reform Act of 2006¹⁸ restructured FEMA to be a more autonomous, organized, and responsive agency in its capacity to acutely respond to disasters.¹⁹

Hurricane Maria was preceded by Hurricanes Harvey,^[20, 21] and Irma.^[22, 23] Collectively, these three storms caused roughly \$265 billion in damages, with all three individual storms ranking among the top five costliest storms on record.^[24, 25] Prior to the storm, FEMA pre-positioned commodities at its Distribution Center in San Juan.²⁶ FEMA's National Response Coordination Center was fully activated with all emergency support functions operational.²⁷ Other pre-landfall measures included the deployment of a Federal Coordination Officer, Incident Management Assistance Team, the U.S. Army Medical Company, U.S. Air Force Surgical Company, and four Urban Search and Rescue (US&R) Teams.²⁸ FEMA, in coordination with the Department of Defense (DoD), provided DoD Civil Authority Information Support and had supplied DoD ships strategically positioned near Puerto Rico but outside Maria's path.²⁹ President Trump declared Hurricane Maria an emergency on September 18, 2017, two days the

¹⁶ U.S. Department of Homeland Security, *National Response Framework* 1 (3rd ed. 2016), 16.

¹⁷ Robert T Stafford Disaster Relief and Emergency Assistance Act, Pub. L. No. 93-288 (codified as amended at 42 U.S.C. 5121-5204 (1988)).

¹⁸ Post-Katrina Emergency Management Reform Act of 2006, Pub. L. No. 109-295, 120 Stat. 1934 (2006)(codified in scattered sections of 6 U.S.C.).

¹⁹ Committee on Post-Disaster Recovery of a Community's Public Health, Medical, and Social Services; Board on Health Sciences Policy; Institute of Medicine. *Healthy, Resilient, and Sustainable Communities After Disasters: Strategies, Opportunities, and Planning for Recovery*. Washington (DC): National Academies Press (US); Sep 10, 2015.

²⁰ Nicole Chavez, Eric Levenson, Steve Almasy, "Powerful Hurricane Harvey makes landfall in Texas." *CNN*. August 25, 2017.

²¹ Maggie Gordon, "Harvey One Year Later: Then-and-Now Photos Show How Harvey Flooded Houston Neighborhoods." *The Houston Chronicle*, August 25, 2017.

²² Jason Samenow, Greg Porter, "Irma Makes Landfall in Florida Keys, Its Dangerous Brunt Next Targets Southwest Florida." *The Washington Post*. September 10, 2017.

²³ Perry Stein, Mark Berman, Wesley Lowery, "Hurricane Irma Makes Second Landfall in Florida and Will Roar Up the State's Gulf Coast." *The Washington Post*, September 10, 2017.

²⁴ U.S. Department of Homeland Security, Federal Emergency Management Agency, *2017 Hurricane Season FEMA After-Action Report*, 2018, 1.

²⁵ Doyle Rice, "2017's Three Monster Hurricanes - Harvey, Irma and Maria - Among Five Costliest Ever." *USA Today*. January 30, 2018.

²⁶ *Hurricane Maria Response and Relief Operations Underway*, FEMA (Sept 21, 2017), <https://www.fema.gov/news-release/2017/09/21/hurricane-maria-response-and-relief-operations-underway>

²⁷ FEMA Public Affairs, *Overview of Federal Efforts to Prepare for and Respond to Hurricane Maria*, FEMA, <https://www.fema.gov/blog/2017-09-29/overview-federal-efforts-prepare-and-respond-hurricane-maria>

²⁸ *Ibid*.

²⁹ FEMA Public Affairs, *Overview of Federal Efforts to Prepare for and Respond to Hurricane Maria*, FEMA, <https://www.fema.gov/blog/2017-09-29/overview-federal-efforts-prepare-and-respond-hurricane-maria>.

before the storm made landfall in Puerto Rico.³⁰ A public health emergency was declared by HHS on September 19, 2017,³¹ and one Disaster Medical Assistance Team was sent to Puerto Rico.

As of September 22, 2017, there were 280 FEMA officials, 700 National Guard service members, and 70 federal law enforcement officers on the ground in Puerto Rico.³² Further, by this time, FEMA US&R Teams had rescued 65 individuals, four additional Disaster Medical Assistance Teams had arrived, and the U.S. Army Corps of Engineers had completed several temporary power installs.³³ The DoD provided air support for US&R operations.³⁴ By December 20, 2017, FEMA had approved over \$53 million for debris removal and \$417 million for emergency protective measures.³⁵ Also by this time, FEMA had provided “more than 56 million liters of water and 48 million meals...making it the largest and longest commodity delivery mission in FEMA’s history.”³⁶ The biggest problem faced by FEMA was distributing relief services and commodities due to blocked roads, lack of drivers, and poor overall infrastructure.^[37, 38]

It is important to recognize that Puerto Rico’s frail infrastructure³⁹ limited emergency response capabilities⁴⁰ and impacted recovery outcomes.⁴¹ Puerto Rico’s current debt crisis is relevant to the poor condition of its infrastructure and is a consequence of fiscally irresponsible spending and borrowing by the government of Puerto Rico.^[42, 43] Inadequate management of the Puerto Rico Electric Power Authority’s (PREPA) financial condition was reported as being a

³⁰ White House Statements and Releases, “President Donald J. Trump Approves Puerto Rico Emergency Declaration.” *The White House*, September 18, 2017. <https://www.whitehouse.gov/briefings-statements/president-donald-j-trump-approves-puerto-rico-emergency-declaration-2/>

³¹ U.S. Department of Health and Human Services Press Office, “Secretary Price declares public health emergency in Puerto Rico and US Virgin Islands due to Hurricane Maria.” *U.S. Department of Health and Human Services*, September 19, 2017. <https://www.hhs.gov/about/news/2017/09/19/secretary-price-declares-public-health-emergency-puerto-rico-and-usvi-due-hurricane-maria.html>

³² FEMA Public Affairs, *Overview of Federal Efforts to Prepare for and Respond to Hurricane Maria*, FEMA, <https://www.fema.gov/blog/2017-09-29/overview-federal-efforts-prepare-and-respond-hurricane-maria> (last updated October 31, 2017)

³³ *Ibid.*

³⁴ *Ibid.*

³⁵ *Disaster Assistance in Puerto Rico 90 Days After Hurricane Maria*, FEMA, <https://www.fema.gov/news-release/2017/12/20/disaster-assistance-puerto-rico-90-days-after-hurricane-maria> (Dec. 20, 2017)

³⁶ *Ibid.*

³⁷ Jack Healy, Frances Robles, Ron Nixon. “Aid Is Getting to Puerto Rico. Distributing It Remains a Challenge.” *New York Times*. October 3, 2017.

³⁸ Riding Around Puerto Rico with a Truck Driver, *The Economist*, October 7, 2017.

³⁹ Erin Dooley, “Puerto Rico Warned Power Grid ‘Literally Falling Apart’ before Maria Hit.” *ABC News*, October 18, 2017.

⁴⁰ George Washington University, in collaboration with the University of Puerto Rico Graduate School of Puerto Rico, *Ascertainment of the Estimated Excess Mortality from Hurricane Maria in Puerto Rico*, Project Report for the Governor of Puerto Rico, August 28, 2018. 18.

⁴¹ Nishant Kishore, Domingo Marques, Ayesha Mahmud, Mathew V. Kiang, Irmay Rodriguez, Arlan Fuller, Peggy Ebner, et al. 2018. “Mortality in Puerto Rico after Hurricane Maria.” *The New England Journal of Medicine*, no. 2 (2018): 165-167.

⁴² U.S. Government Accountability Office, *Puerto Rico: Factors Contributing to the Debt Crisis and Potential Federal Actions to Address Them*, GAO-18-387, Washington, DC, 2018. 22.

⁴³ Ben Popken, “Did Puerto Rico’s Failed Economy Play a Role in Its Devastation?” *NBC News*. September 27, 2017.

factor contributing to the debt crisis.⁴⁴ In a scathing 2016 study⁴⁵, PREPA is described as “running on fumes” and desperately requiring an influx of monetary, human, and intellectual capital.^[46, 47] Inadequate resilience of infrastructure in smaller developing economies is known to have potentially devastating impacts in extreme weather events.⁴⁸

Severely weakened infrastructure caused serious problems for recovery efforts on behalf of Puerto Rican emergency response services.⁴⁹ Further complicating the territory’s response was the destruction of the headquarters for the Puerto Rico Emergency Management Agency.⁵⁰ These problems hindered local authorities from effectively performing the roles that are expected of them according to FEMA hurricane response protocols.⁵¹ This problem was not observed in the aftermath of Hurricane Harvey and Irma.⁵² Infrastructure problems, however, do not account for the government of Puerto Rico’s underwhelming preparation of emergency management and response services. The study by George Washington University found that emergency and crisis communication plans for agencies under the umbrella of the Puerto Rican Departments of Health and Public Safety (i.e. Emergency Management Bureau, Police and Fire Departments, and Medical Emergency Corps) were neither up to date with established World Health Organization and FEMA guidelines, nor were they coordinated.⁵³

Bioethical Assessment and Discussion

Before assessing the moral accountability of agents involved in any HP&R case, one must recognize the underpinning bioethical principles at play; justice, respect for autonomy, and beneficence. Justice, as a concept, is concerned with fair, equitable, and appropriate treatment respective to what is due or owed to persons.⁵⁴ HP&R is predominantly judged on whether it provided fair, equitable, and appropriate treatment to populations with respect to their level of need. Another reason why inadequate HP&R is troubling is because it can render certain

⁴⁴ U.S. Government Accountability Office, *Puerto Rico: Factors Contributing to the Debt Crisis and Potential Federal Actions to Address Them*, GAO-18-387, Washington, DC, 2018. 22.

⁴⁵ Commonwealth of Puerto Rico, Puerto Rico Energy Commission, *In Re: Review of Rates of the Puerto Rico Electric Power Authority*, a report prepared by Jeremy I. Fischer and Ariel I. Horowitz, Synapse Energy Associates, 2016.

⁴⁶ Ruben Vives, Molly Hennessey-Fiske, “Puerto Rico’s Debt-Plagued Power Grid Was On Life Support Long Before Hurricanes Wiped It Out.” *Nation. Los Angeles Times*, September 28, 2017.

⁴⁷ Erin Dooley, “Puerto Rico Warned Power Grid ‘Literally Falling Apart’ Before Maria Hit.” *ABC News*. October 18, 2017.

⁴⁸ Zumar M.A. Bundhooa, Kalim U. Shahb, Dinesh Surroopa, “Climate Proofing Island Energy Infrastructure Systems: Framing Resilience Based Policy Interventions.” *Utilities Policy* 55 (2018): 49-50.

⁴⁹ Laurel Wamsley, “Puerto Rico’s Weak Infrastructure Creates Big Challenges For Recovery.” *NPR*. September 22, 2017

⁵⁰ U.S. Center for Army Lessons Learned, *News From the Front: Hurricane Maria Relief Operations*, a report by George Chigi and Donald Haus, prepared for the U.S. Army Secretary. January 5, 2018.

⁵¹ Daniel A. Farber. “Response and Recovery after Maria: Lessons for Disaster Law and Policy.” *UC Berkeley Public Law & Legal Theory Series* (2018). 771.

⁵² Daniel A. Farber. “Response and Recovery after Maria: Lessons for Disaster Law and Policy.” *UC Berkeley Public Law & Legal Theory Series* (2018). 766.

⁵³ George Washington University, in collaboration with the University of Puerto Rico Graduate School of Puerto Rico, *Ascertainment of the Estimated Excess Mortality from Hurricane Maria in Puerto Rico*, Project Report for the Governor of Puerto Rico, August 28, 2018. 25.

⁵⁴ Tom L. Beauchamp, James F. Childress, *Principles of Biomedical Ethics* (7th ed.)(New York City: Oxford University Press, 2013), 250.

populations obsolete for prolonged periods of time. In the case of Hurricane Maria, on average, households went 84 days without electricity, 68 days without water, and 41 days without cellular telephone coverage.⁵⁵ From a bioethical standpoint, these conditions impeded the capacity of citizens within these remote populations to act autonomously, which can be understood as the capacity to act on the basis of one's own desires and plans.⁵⁶ Finally, the principle of beneficence, which can be conceptualized as the moral obligation to act in the benefit of others,⁵⁷ is also foundational to assessing the ethics of HP&R. The duty to rescue is itself a form of obligatory beneficence.⁵⁸

The federal government's HP&R in Puerto Rico has been condemned by many people in the media and politics as being unjust.^[59, 60, 61] Despite it being the largest and longest commodity delivery operation in FEMA's history, the scope and scale of the response was not proportionate to Puerto Rico's level of need.⁶² While its relief efforts for Hurricane Maria were equivalent in scope and scale to those for Hurricanes Harvey and Irma, FEMA should have better foreseen factors and challenges that made Puerto Rico much more vulnerable than Florida and Texas and prepared accordingly.⁶³ A federal report⁶⁴ found that in addition to the federal response suffering from staff shortages and lack of trained personnel, it more damagingly failed to realize it would have to assume much of the responsibilities normally expected of local governments in natural disaster events.⁶⁵

Many critics of the federal response attribute the disproportionality, in respect to need, of FEMA's HP&R to the perception of Puerto Ricans as second-class citizens and President Trump's inattentiveness to the needs of Puerto Ricans and their welfare.⁶⁶ It is important to remember that Puerto Rico is neither a sovereign government nor a municipality, but rather, a quasi-sovereign government with uncertain legal powers and obligations.⁶⁷ While Puerto Ricans are U.S. citizens, they have significantly less representation in the U.S. federal government in

⁵⁵ Nishant Kishore, Domingo Marques, Ayesha Mahmud, Mathew V. Kiang, Irmay Rodriguez, Arlan Fuller, Peggy Ebner, et al. 2018. "Mortality in Puerto Rico after Hurricane Maria." *The New England Journal of Medicine*, no. 2 (2018): 165-166.

⁵⁶ Tom L. Beauchamp, James F. Childress, *Principles of Biomedical Ethics* (7th ed.)(New York City: Oxford University Press, 2013), 101-102.

⁵⁷ Ibid, 203

⁵⁸ Ibid, 206

⁵⁹ Emily Birnbaum, "Protesters mobilize for week of action to 'demand justice' for Puerto Rico." News. *The Hill*. September 17, 2018.

⁶⁰ The Washington Post Editorial Board, "The U.S. Government Failed Puerto Rico. Nearly 3,000 Lost Lives Proves It." Opinion. *The Washington Post*. September 1, 2018.

⁶¹ Richard Wolffe, "The Forgotten Scandal In The Trump Administration: Hurricane Maria." Opinion. *The Guardian*. September 11, 2018.

⁶² Daniel A. Farber. "Response and Recovery after Maria: Lessons for Disaster Law and Policy." *UC Berkeley Public Law & Legal Theory Series* (2018). 769.

⁶³ Daniel A. Farber. "Response and Recovery after Maria: Lessons for Disaster Law and Policy." *UC Berkeley Public Law & Legal Theory Series* (2018). 763.

⁶⁴ U.S. Government Accountability Office, *2017 Hurricanes and Wildfires: Initial Observations on the Federal Response and Key Recovery Challenges*, GAO-18-472, Washington, DC, 2018, 1-125, <https://www.gao.gov/assets/700/694231.pdf>

⁶⁵ Danica Coto, "US Report Criticizes FEMA Response to Maria in Puerto Rico." Civic. *U.S. News*. September 4, 2018.

⁶⁶ Daniel A. Farber. "Response and Recovery after Maria: Lessons for Disaster Law and Policy." *UC Berkeley Public Law & Legal Theory Series* (2018). 744.

⁶⁷ Park, Stephen Kim, and Tim R Samples. 2017. "Puerto Rico's Debt Dilemma and Pathways Toward Sovereign Solvency." *American Business Law Journal* 54 (1): 2.

comparison to U.S. citizens who live in states.⁶⁸ A 2017 poll showed that nearly half of U.S. citizens did not know Puerto Ricans were also U.S. citizens.⁶⁹ These facts have led many to believe that Puerto Rico's diminished political importance in the eyes of Congress and President Trump was a predominant factor in the HP&R inadequacies observed.⁷⁰

These criticisms, from a bioethical standpoint, speak to the issue of moral status. Theories of moral status are concerned with questions of whom obligations are owed and why.⁷¹ The moral status of vulnerable populations are of special concern as they are negatively impacted by natural disasters to a significantly greater extent.⁷² Were the inadequate aspects of the federal government's response a product of a perceived lower moral status of Puerto Ricans on behalf of Congress, President Trump and those he appointed to run FEMA? While this issue is certainly relevant to why the people of Puerto Rico suffered from Maria's aftermath, I argue that this problem is not specific to President Trump and his administration.

The federal government was aware of Puerto Rico's frail infrastructure well-before President Trump assumed office, as reporting from 2014,⁷³ 2015,⁷⁴ and 2016⁷⁵ indicated the infrastructure's dire condition could lead to a humanitarian crisis, even in the absence of an extreme weather event. Yet nothing was done. Is it fair to only blame the current administration because the consequences of years of federal neglect happened to culminate under its watch? Solely blaming the Trump administration neglects to consider the inaction of previous administrations and Congress in addressing Puerto Rico's crippling debt crisis and crumbling infrastructure.

HP&R on behalf of the government of Puerto Rico was also problematic from a bioethical perspective. From the ethical duty to rescue arises a correlating duty to take rescue precautions.⁷⁶ Public health experts agree that local governments, in addition to the federal government, have a duty to plan for disasters in coordination with health systems and relevant community entities.⁷⁷ Failing to do so undercuts the duty to rescue because it hinders those tasked with response, such as health systems, in the duty to provide the best care achievable under non-optimal circumstances.⁷⁸ As mentioned in the previous section, the government of

⁶⁸ Ibid, 2.

⁶⁹ Kyle Dropp, Brendan Nyhan, "Nearly Half of Americans Don't Know Puerto Ricans Are Fellow Citizens." *New York Times*. September 26, 2017.

⁷⁰ Daniel A. Farber. "Response and Recovery after Maria: Lessons for Disaster Law and Policy." *UC Berkeley Public Law & Legal Theory Series* (2018). 767.

⁷¹ Tom L. Beauchamp, James F. Childress, *Principles of Biomedical Ethics* (7th ed.)(New York City: Oxford University Press, 2013), 62.

⁷² Stephanie Kayden. "Humanitarian Response and Ethics." *Japan Medical Association Journal* 56, no. 1 (2013): 12-13.

⁷³ Luciana Lopez, "Puerto Rico Keeps the Lights On, But Debt Crisis Far From Over." Special Reports. *Reuters*, August 14, 2014

⁷⁴ Fred Imbert, "Infrastructure: Another Problem Puerto Rico Doesn't Need." *Economy*. *CNBC*, August 3, 2015.

⁷⁵ Vann R. Newkirk, "Will Puerto Rico's Debt Crisis Spark a Humanitarian Disaster?" *Politics*. *The Atlantic*. May 13, 2016.

⁷⁶ Rulli, Tina, and David Wendler. 2016. "The Duty to Take Rescue Precautions." *Journal of Applied Philosophy* 33 (3): 243.

⁷⁷ Jonathon P. Leider, Debra DeBruin, Nicole Reynolds, Angelica Koch, and Judy Seaberg. 2017. "Ethical Guidance for Disaster Response, Specifically Around Crisis Standards of Care: A Systematic Review." *American Journal of Public Health* 107, no. 9 (2017): e6.

⁷⁸ Jonathon P. Leider, Debra DeBruin, Nicole Reynolds, Angelica Koch, and Judy Seaberg. 2017. "Ethical Guidance for Disaster Response, Specifically Around Crisis Standards of Care: A Systematic Review." *American Journal of Public Health* 107, no. 9 (2017): e6.

Puerto Rico was quite unprepared in terms of its crisis and emergency communication plans and should unquestionably be held accountable in this failure. Inadequate government services are deleterious to the poorest and least advantaged citizens as they are the ones who depend on them most.⁷⁹ However, to only blame the corruption and mismanagement by the government of Puerto Rico would be to ignore the federal government's contribution to the problems that plague the island's current fiscal state and consequently, the quality and resiliency of its infrastructure. The federal government arguably compounded Puerto Rico's debt crisis by enabling predatory lending practices.^[80, 81]

Overall, HP&R to Maria was impacted by a culmination of political and economic factors that went unattended by the U.S. federal government and the government of Puerto Rico for many years. If the purpose of assigning accountability from a bioethical approach is to better value and preserve the dignity of the lives of the people of Puerto Rico, then blaming a single entity only ignores the plurality and temporality of underlying factors that contributed to the degradation of human dignity witnessed in the wake of Hurricane Maria's destruction.

Conclusion

The field of bioethics has a responsibility to ground public discourse over the ethics of HP&R in empirical fact rather than partisan narratives and sentiments. The destructive consequences hurricanes have on individuals, families, and communities are unquestionably heart-breaking and understandably elicit passion from those who have experienced them. These emotions, however, are unfortunately too often exploited by politicians, the media, and special interest groups in furthering their partisan agendas. One of the most important undertakings bioethics has in its endeavor to assess the ethical issues involved in HP&R, in my opinion, is to ground the significance of personal experience in empirical fact and data. This may be the most significant motivating factor that has led me to want to write on this topic. So many people have strong opinions about what occurred in Puerto Rico following the destruction caused by Hurricane Maria. The role of bioethics should be to ground debate over HP&R to Maria in objectivity, rather than partisan sentiments and narratives trying to dominate and polarize the public discourse.

⁷⁹ Kevin Wm. Wildes. "The Rebirth of a City: Social Justice, Ethics, and New Orleans." *Loyola Law Review* 61, no. 3 (2015): 468-469.

⁸⁰ Ivan Rivera, "Let's Stop the Predatory Lenders From Draining Puerto Rico Even Further." Opinion. *The Hill*. December 20, 2016.

⁸¹ Daniel Maran, "Puerto Rico Is In Serious Trouble. Here's What You Need To Know." Politics. *Huffington Post*. January 2, 2016.