

RESPONSE AND RECOVERY AFTER MARÍA: LESSONS FOR DISASTER LAW AND POLICY

ARTICLE

DANIEL FARBER*

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INTRODUCTION

IN 2017, MAJOR HURRICANES IN TEXAS AND FLORIDA WERE FOLLOWED IN QUICK succession by Hurricane María, which devastated the island of Puerto Rico and the Virgin Islands. This article aims to inquire into what the field of Disaster Law can learn from the Puerto Rico experience. The lessons include disaster response, the initial provision of emergency aid and restoration of basic services, and disaster recovery through rebuilding and restoration.

A dozen years earlier, Hurricane Katrina had exposed deep flaws in disaster prevention and response.¹ Katrina and its aftermath dramatized the American legal system's inability to manage disaster risks, including bungled flood control, amplification of existing social injustices, exhaustion of compensation systems, and paralysis due to ambiguous division of responsibility between the state and

* Sho Sato Professor of Law, University of California, Berkeley. Erica Sun provided exceptional research assistance. Dianne Farber provided helpful comments.

¹ For a description and analysis of Hurricane Katrina's impact and the response effort, see DOUGLAS BRINKLEY, *THE GREAT DELUGE: HURRICANE KATRINA, NEW ORLEANS, AND THE MISSISSIPPI GULF COAST* (2006).

federal governments.² Since Katrina, there have been many efforts to improve disaster response and recovery. Hurricane María put those efforts to the test.

As we will see, the lessons are sobering. The federal response to María was slow, leaving much of the population of Puerto Rico without electricity, clean water, and medical services for extended periods. As a result, lives were lost. The federal government failed to rise to the challenges posed by logistical difficulties and strained agency resources due to prior disasters that same year. The government response was hindered by unrealistic planning, Puerto Rico's lack of political power in Washington D.C. and an inattentive presidential administration. The evidence supports *The Economist's* harsh assessment that while "[e]ven the most attentive government would have struggled with María",³ the response suffered further because "instead of strong leadership, to cut through the difficulties, Donald Trump provided little help."⁴ Recovery planning in Puerto Rico will have to contend with a weak economy and infrastructure, widespread destruction and the local government's fiscal crisis. It is by no means clear that the political will to overcome these problems exists, particularly in Washington. These lapses might be more understandable if Puerto Rico were a foreign country. But the Puerto Ricans who suffered in the aftermath of María are United States citizens to whom the federal government owed a duty of protection.

It is crucial to understand what went wrong and why, and how the federal response and recovery system can be improved. Hurricane María presented a severe challenge, given the extent of devastation, the major hurricanes that immediately preceded it, and logistical hurdles. The year 2017 was not even the worst-case scenario: Houston might have been hit by a major storm surge and heavier winds, and Hurricane Irma might not have swerved to avoid Miami. We cannot afford to view the failures of the María response as a one-off.

To address these issues and questions, the article is organized as follows. Part I introduces general aspects regarding Disaster Law that are necessary to understand the Puerto Rico experience, namely: (1) the disaster cycle, (2) the role of the Federal Emergency Management Agency's (FEMA) and (3) social vulnerability. A key point is that FEMA's central mission is to coordinate the efforts of federal agencies and state governments. This mission has inherent problems; it prevents those other agencies from prioritizing disaster response efforts and potentially weakened local governments from accepting FEMA's guidance.

Part II recounts the emergency response and early disaster recovery effort in Puerto Rico after María. The federal government's response was far slower than it had been for Houston after Hurricane Harvey, despite much greater needs in Puerto Rico. As a result, most island residents lost access to electricity, water and

² For a discussion of the broader lessons from the Katrina experience, see ROBERT R.M. VERCHICK, *FACING CATASTROPHE: ENVIRONMENTAL ACTION FOR A POST-KATRINA WORLD* (2010).

³ *After the Hurricane: America Has Let Down its Puerto Rican Citizens*, THE ECONOMIST (Apr. 14, 2018), <https://www.economist.com/news/briefing/21740394-islanders-must-look-themselves-salvage-their-fortunes-america-has-let-down-its-puerto>.

⁴ *Id.*

other basic necessities for an intolerable period, a precarious situation that produced a significant number of deaths.

Part III then analyzes the reasons why the federal response was markedly slower than in earlier major hurricanes the same year. In a situation where there was little support from the White House and the local government was mired in a deep fiscal crisis, FEMA's efforts were severely hampered. Providing aid to Puerto Rico was inevitably more difficult in terms of logistics than aiding mainland coastal cities, but that difficulty was obvious and should have been planned for. Part III also seeks to understand the implications for Disaster Law more generally.

For the benefit of the readers who are impatient for the takeaway points, here are nine key lessons derived from the analysis presented in this article:

1. The federal government needs greater surge capacity. It is likely that the federal government will face similar disaster clusters in the future and therefore needs to develop the ability to summon additional resources capable of meeting these challenges.

2. Presidential leadership is indispensable. Presidents must be held accountable for failed disaster response.

3. Media access is a key part of an effective response to catastrophic events, because only public awareness can create the necessary pressure on political actors to support extraordinary government action.

4. Planning must include realistic assessments of local resiliency and the capacity of response of the local government, utilities and other institutions. State and local governments differ widely in their capacities and it is foolish to pretend otherwise.

5. Disasters magnify existing inequalities. Those who are poor, politically powerless or physically vulnerable suffer the most during disasters and helping them often requires special efforts.

6. Resource allocation must consider the scale of need. It is not enough to devote equal resources to similar extreme events, especially when disaster impacts vary because of social conditions.

7. *Pay me now or pay me later* is a valid precept of disaster policy. Stinting on infrastructure resilience results in spending even more money on disaster response and recovery. Puerto Rico's electrical grid is a vivid illustration.

8. Flood insurance does not meet the needs of the poor. They cannot afford premiums and may not be able to prove property title. Either the system must be reformed or another mechanism for restoring low-income homes is needed.

9. The need to prepare for catastrophic events is increased by climate change, which may well have contributed to the disastrous events of 2017. This point underlines the importance of the preceding eight points. The future is very likely to hold worse in store than the summer of 2017.

To the proverbial certainty of death and taxes, we might add another certitude: we have not seen the last catastrophic natural disaster in the United States. Hopefully, we can learn the lessons of Hurricane María and be better prepared in the future.

I. KEY ASPECTS OF DISASTER LAW

Before turning to Puerto Rico's experience after Hurricane María, it is important to provide some background on Disaster Law. The legal system plays a central role in disaster prevention, response, and management.⁵ A growing body of research addressing this topic has emerged since Hurricane Katrina under the rubric of Disaster Law.⁶ This emerging legal academic field encompasses a wide-ranging, interdisciplinary body of research that seeks to inform and improve disaster-related decision-making.⁷

This section will not attempt to cover all the complexities of Disaster Law. Instead, it will focus on three basic points. First, it will discuss the disaster cycle, a fundamental organizing principle of Disaster Law. Then, it will explain FEMA's role with regards to disaster response. Finally, it will explain how social vulnerability amplifies the effects of natural disasters.

A. Understanding the Disaster Management Cycle

Disaster Law is best characterized by the cycle of risk management: a set of strategies including "mitigation, emergency response, compensation, and rebuilding", with rebuilding completing the circle by including or failing to include mitigation measures.⁸ Understanding disaster-related activities as a cycle has two important implications. First, it emphasizes that disaster risks call for a series of interrelated responses. For instance, compensation for victims must be designed in a way that encourages precautions before the disaster event and risk mitigation in rebuilding. Second, although public attention to disasters focuses mostly on the dramatic events associated with disasters themselves and emergency response efforts, these are merely phases in the overall effort to cope with disaster risks.

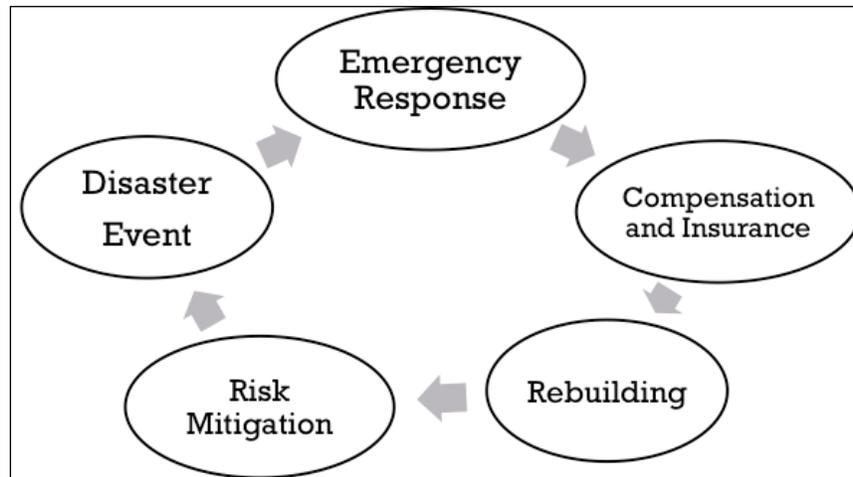
⁵ These issues are the subject of DANIEL A. FARBER ET AL., *DISASTER LAW AND POLICY* (3d ed. 2015).

⁶ The emergence of this community is reflected by the publication of books such as *RESEARCH HANDBOOK ON CLIMATE DISASTER LAW: BARRIERS AND OPPORTUNITIES* (Rosemary Lyster & Robert Verchick eds., 2018); NAN D. HUNTER, *THE LAW OF EMERGENCIES: PUBLIC HEALTH AND DISASTER MANAGEMENT* (2d ed. 2017); FARBER ET AL., *supra* note 5; *THE INTERNATIONAL LAW OF DISASTER RELIEF* (David D. Caron et al. eds., 2014); *DISASTER LAW* (Daniel A. Farber & Michael G. Faure eds., 2010); *LOSING GROUND: A NATION ON EDGE* (John Nolon & Daniel Rodriguez eds., 2007).

⁷ Disasters are also the subject of a robust body of work in economics and policy analysis. *See, e.g.*, NAT'L RESEARCH COUNCIL, *INCREASING NATIONAL RESILIENCE TO HAZARDS AND DISASTERS: THE PERSPECTIVE FROM THE GULF COAST OF LOUISIANA AND MISSISSIPPI: SUMMARY OF A WORKSHOP* (2011); ROBERT MEYER & HOWARD KUNREUTHER, *THE OSTRICH PARADOX: WHY WE UNDERPREPARE FOR DISASTERS* (2017); HOWARD KUNREUTHER & MICHAEL USEEM, *LEARNING FROM CATASTROPHES: STRATEGIES FOR REACTION AND RESPONSE* (2009); INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT, *NATURAL HAZARDS, UNNATURAL DISASTERS: THE ECONOMICS OF EFFECTIVE PREVENTION* (2010).

⁸ FARBER ET AL., *supra* note 5, at 4.

FIGURE 1. THE DISASTER MANAGEMENT CYCLE



Using the disaster management cycle as a framework helps put the emergency response, which usually gets the lion's share of attention, into context. Each stage of the cycle —mitigation, emergency response, insurance/liability compensation, rebuilding— is part of society's risk management portfolio.⁹ Also, the cycle highlights the interdependence between risk management strategies. Failures to mitigate risk "often contribute to the impact of the later disaster, turning an otherwise manageable event into a more serious risk to life or property, or amplifying what would otherwise be a less significant risk to calamitous proportions."¹⁰ Post-disaster compensation mechanisms and the rebuilding stage are as important as the emergency response in determining the severity of the impact on numerous victims. Disaster response, risk reduction, financial compensation and rebuilding may involve diverse institutions and procedures. But none of them can be considered in isolation from the others in planning disaster management strategies.¹¹

Victim compensation is a central focus of Disaster Law, because compensation is crucial to disaster recovery. Post-emergency compensation to disaster victims generally takes one of three forms: private insurance, litigation or government programs.¹² Each of these methods has its limitations. The unavailability of private insurance for many catastrophic risks (due to expense or underwriting risks), the exclusion of disaster risks by contract and the difficulty of handling large numbers of claims create significant hurdles in this regard. The second

⁹ Daniel A. Farber, *International Law and the Disaster Cycle*, in *THE INTERNATIONAL LAW OF DISASTER RELIEF*, *supra* note 6, at 9.

¹⁰ *Id.*

¹¹ *Id.* at 10.

¹² *Id.* at 17.

method of compensation, litigation, also has its limitations, such as the need for proof of negligence or other basis for liability. The third possibility is obtaining compensation from the government through *ad hoc* government funding statutes or through more general forms of disaster relief.¹³ As we will see, for most Puerto Ricans, only the third method (government funding) is a realistic possibility.

Rebuilding is also a key part of Disaster Law. The process can be difficult and lengthy. A decade after a major earthquake, recovery in Kobe, Japan was still incomplete.¹⁴ Recovery from Hurricane Katrina in New Orleans was also a complex and protracted process.¹⁵ Moreover, recovery sets the stage for some later date on which the cycle will begin again, since unfortunately there is never such a thing as the final time disaster strikes in a given location. Thus, a crucial question about recovery is the extent to which steps will be taken to mitigate the harm that will be inflicted eventually by future disasters. Puerto Rico's rebuilding process is still in its early stages, and history suggests that it will take at least a decade to complete.

B. FEMA's roles and responsibilities

Federal disaster response pivots around FEMA. When people think of FEMA, they envision rescuers finding victims and taking them to safety. FEMA does provide emergency assistance, temporary housing and other services. But its main job is to coordinate the emergency response of the many agencies of the federal government. And the federal government's role itself is mostly supportive, with the main responsibility of carrying out emergency response operations falling squarely on the shoulders of state and local governments.

President Jimmy Carter created FEMA in 1979 by combining the functions of several different government agencies.¹⁶ Today, its work is governed by the *Post-Katrina Emergency Management Reform Act of 2006*.¹⁷ This Act charged FEMA

¹³ In a sense, it is a mistake to speak of a "system" of compensation for catastrophic losses. Instead, our society has a makeshift assembly of jerry-rigged components:

In the final analysis, the U.S. has what might well be termed a patchwork system for providing financial compensation for catastrophic loss. . . . Inevitably, in such a multifaceted milieu, where the tendency has been to develop discrete schemes in response to particularized categories of disasters (or rely on general welfare schemes that were enacted without disaster relief in mind), there will be ongoing fine-tuning of the system and a continuing dialogue over the efficacy of the measures in place.

Robert L. Rabin & Suzanne A. Bratis, *United States*, in FINANCIAL COMPENSATION FOR VICTIMS OF CATASTROPHES: A COMPARATIVE LEGAL APPROACH 303, 356 (Michael Faure & Tom Hartlief eds., 2006).

¹⁴ See FARBER ET AL., *supra* note 5, at 422-27.

¹⁵ See *id.* at 427-31.

¹⁶ For an account of the formation and evolution of FEMA, see JAMES F. MISKEL, DISASTER RESPONSE AND HOMELAND SECURITY: WHAT WORKS, WHAT DOESN'T 67-74 (2008).

¹⁷ Post-Katrina Emergency Management Reform Act of 2006, Pub. L. No. 109-295, 120 Stat. 1394 (2006) (codified in scattered sections of 6 U.S.C.).

with assisting the President in carrying out his functions under the core of federal disaster law,¹⁸ the *Stafford Act*.¹⁹ FEMA is also responsible for “leading and supporting the Nation in a risk-based, comprehensive emergency management system.”²⁰ FEMA follows a National Response Framework (“NRF”) issued in 2013.²¹ The framework emphasizes that disaster response requires “[l]ayered, mutually supporting capabilities of individuals, communities, the private sector, NGOs, and governments at all levels.”²² Efforts are coordinated through the Incident Command System, including multiple agencies.²³ There are no fewer than fourteen agencies that can be involved in post-disaster response.

First responders rarely consist of federal personnel; instead, they are state and local personnel who are already on the scene. When the National Guard is deployed to the scene, it too is often under state rather than federal control. Private entities like utility companies also play an essential role in restoring power, water and communications in the aftermath of a disaster.²⁴

FEMA’s performance in the immediate aftermath of Hurricane Katrina was widely considered a fiasco.²⁵ Several reforms ensued, resulting in much improved performance by the time Superstorm Sandy hit the Northeast. Post-mortems on that performance led to additional recommendations for improvement. FEMA’s assessment after Sandy indicated areas of strength and weakness.²⁶ The Govern-

¹⁸ According to the Act:

The primary mission of the Agency [FEMA] is to reduce the loss of life and property and protect the Nation from all hazards, including natural disasters, acts of terrorism, and other man-made disasters, by leading and supporting the Nation in a risk-based, comprehensive emergency management system of preparedness, protection, response, recovery, and mitigation.

6 U.S.C. § 313(b)(1) (2012).

¹⁹ 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)).

²⁰ 6 U.S.C. § 314(a)(9) (2012).

²¹ U.S. DEPARTMENT OF HOMELAND SECURITY, NATIONAL RESPONSE FRAMEWORK 1 (3d ed. 2016), https://www.fema.gov/media-library-data/1466014682982-9bcf8245ba4c60c120aa915abe74e15d/National_Response_Framework3rd.pdf.

²² *Id.* at 6.

²³ *Id.* at 6, 40.

²⁴ MISKEL, *supra* note 16, at 84-85.

²⁵ For a summary of the shortcomings of the Katrina responses and resulting changes in response strategy, see Aileen M. Marty, *Hurricane Katrina: A Deadly Warning Mandating Improvement to the National Response to Disasters*, 31 NOVA L. REV. 423 (2007).

²⁶ FEMA, HURRICANE SANDY FEMA AFTER-ACTION REPORT (2013), https://www.fema.gov/media-library-data/20130726-1923-25045-7442/sandy_fema_aar.pdf. On the positive side, FEMA said:

The Agency pre-positioned commodities and assets, activated response centers, and deployed over 900 personnel ahead of Sandy’s landfall. . . . As recovery efforts began, FEMA

ment Accountability Office (GAO), which audits government performance on behalf of Congress, reached the same conclusion.²⁷ In particular, GAO raised questions about whether the agency had followed up on past indications of gaps in the response capabilities of some agencies or had sufficiently improved logistics such as its ability to track the location of supplies.²⁸ GAO also found room for improvement in several areas such as coordination of federal senior leadership, implementing the Incident Management System and connecting planning efforts with operational decision-making.²⁹

In disaster recovery, FEMA plays yet another important role through its management of the federal flood insurance program and federal disaster payments. The flood insurance program, as currently designed, provides subsidies that allow many property owners to develop or maintain structures in unsafe areas and encompasses the recovery activities of land use management, insurance and public disclosure.³⁰ FEMA also has the task of aiding in the rebuilding phase, through requirements imposed on local governments and property owners in return for disaster funding.

Congress has taken a few halting steps to address the need to strengthen infrastructure in the context of its 2018 budget legislation. In reauthorizing FEMA's National Flood Insurance Program until July 1, 2018, Congress attempted to improve the resilience of local public infrastructure.³¹

For instance, in Puerto Rico and the [U.S.] Virgin Islands, FEMA's Public Assistance (PA) program will pay for public facility and infrastructure repairs up to current nationally-accepted codes and standards regardless of local codes at the

continued to work with its partners to assist survivors and their communities. The Agency executed one of the largest deployments of personnel in its history, delivered over \$1.2 billion in housing assistance to more than 174,000 survivors, and obligated over \$800 million for debris removal and infrastructure restoration.

Id. at iii.

But there were also shortcomings, with the agency pointing out that “[d]ifficulties with issuing timely mission assignments, the implementation of incident management structures, and meeting survivor needs early in the response phase are examples of challenges that emerged during Sandy.” *Id.* In particular, the agency pointed to the need to improve its efforts at coordinating restoration of electrical power, transportation systems, and housing.

Id. at 1.

²⁷ U.S. Gov't Accountability Office, GAO-16-90T, FEMA Has Made Progress since Hurricanes Katrina and Sandy, but Challenges Remain (2015), <https://www.gao.gov/assets/680/673279.pdf>.

²⁸ *Id.* at 4-7.

²⁹ *Id.*

³⁰ See FARBER ET AL., *supra* note 5, at 331, 353-60.

³¹ See *National Flood Insurance Program: Reauthorization*, FEMA (Mar. 23, 2018, 4:45 PM), <https://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-reauthorization-guidance>.

time of the storm. Also, the *Stafford Act* will now include incentives for communities to increase the federal share of disaster funding from [seventy-five] percent to [eighty-five] percent if they take steps to plan for and mitigate against future disasters.³²

C. Disaster Inequality

The effects of disasters fall unevenly on different sectors of society.³³ This was brought home vividly to anyone who watched the news during Hurricane Katrina. Consider the New Orleans Superdome, which offered shelter of last resort: “The Dome was a brewing public health disaster The number of people inside had doubled in twenty-four hours, becoming a virtual city of twenty-thousand, overwhelmingly poor and African American.”³⁴ For days it was “clear to anyone watching television that the majority of people trapped in New Orleans were African Americans, most from the low end of the income spectrum.”³⁵ This because “much of New Orleans’ white population had departed before the storm hit, while the remainder lived in areas closer to dry land and found it easier to escape.”³⁶ Ultimately, the Congressional Research Service found that “an estimated 272,000 black people were displaced by flooding or damage, accounting for seventy three percent of the population affected by the storm in the parish.”³⁷

The connection of race and poverty with evacuation rates was not unique to Katrina. As the National Research Council found:

[R]esearch has shown that different racial, ethnic, income, and special needs groups respond in different ways to warning information and evacuation orders. . . . Lower-income groups, inner-city residents, and elderly persons are more likely

³² Ari Renoni, *With the Bipartisan Budget Bill, Congress Missed Its Chance to Reform FEMA for the Future*, HAGERTY (Feb. 11, 2018, 9:46 AM), <http://hagertyconsulting.com/about-us/blog/bipartisan-budget-bill-congress-missed-chance-reform-fema-future/>.

³³ For background on this problem, see FARBER ET AL., *supra* note 6, at 227-82; Robert R.M. Verchick, *Disaster Justice: The Geography of Human Capability*, 23 DUKE ENVTL. L. & POL’Y F. 23, 25 (2012). As the National Research Council (“NRC”) observes, some “population segments are more likely to experience casualties, property damage, psychological impacts, demographic impacts, economic impacts, or political impacts—as direct, indirect, or informational effects.” NAT’L RESEARCH COUNCIL, *FACING HAZARDS AND DISASTERS: UNDERSTANDING HUMAN DIMENSIONS* 73 (2006). The NRC refers to this phenomenon as “social vulnerability.” *Id.*

³⁴ JOHN MCQUAID & MARK SCHLEIFSTEIN, *PATH OF DESTRUCTION: THE DEVASTATION OF NEW ORLEANS AND THE COMING AGE OF SUPERSTORMS* 235 (2006). The authors were two New Orleans newspaper reporters who covered the disaster firsthand.

³⁵ *Id.* at 300. Outside the city, in St. Bernard parish, whites were more heavily impacted; many died. *Id.*

³⁶ *Id.*

³⁷ THOMAS GABE, GENE FALK & MAGGIE MCCARTY, CONG. RESEARCH SERV., *RL33141, HURRICANE KATRINA: SOCIAL-DEMOGRAPHIC CHARACTERISTICS OF IMPACTED AREAS* 16 (2005).

to have to rely on public transportation, rather than personal vehicles, in order to evacuate.³⁸

Both globally and within the United States, social vulnerability—including inequalities stemming from race, gender, class, age and disability—amplifies the impacts of disasters and the difficulty of recovery.³⁹ The relationship between race, poverty and disaster risk can be complex. In 1995, over seven hundred Chicago residents died in a week-long heat wave.⁴⁰ African Americans were the group most at risk, being 1.5 times more likely to die than White Americans.⁴¹ But Hispanics were the least likely of any group to be victims. Despite their “overall level of poverty placed them at a heightened risk of mortality, [they] experienced a surprisingly low death rate.”⁴² The reason for the contrast between the African American and Hispanic risk levels may be related to the social ecology of the neighborhoods where they live, with Hispanic neighborhoods being more likely to encourage the elderly to get out and connect with others.⁴³ Along with age, social isolation is a critical risk factor during heat waves and other disasters.⁴⁴

The elderly are also exposed to special risks. In the 1995 Chicago heat wave, almost three quarters of the victims were over sixty-five years of age.⁴⁵ Also, they are at higher risk from hurricanes:

During Hurricane Katrina the elderly and disabled died in the Convention Center and in their homes throughout the city of the symptoms of diseases such as asthma, diabetes, and high blood pressure that are easily managed under normal conditions but that become lethal when access to medicine and treatment is cut off.⁴⁶

Nearly half of the elderly living in the impact zone of Katrina reported having at least one disability, and one-quarter reported that their disability impaired their ability to leave their dwellings unassisted.⁴⁷ Unsurprisingly, nearly forty percent of

³⁸ NAT'L RESEARCH COUNCIL, *supra* note 33, at 129. In particular, “[l]ack of financial resources may leave less-well-off segments of the population less able to take time off from work when disasters threaten, to travel long distances to avoid danger, or to pay for emergency lodging.” *Id.*

³⁹ For discussion and a compilation of relevant materials, see FARBER ET AL., *supra* note 5, at 227-82.

⁴⁰ See ERIC KLINENBERG, *HEAT WAVE: A SOCIAL AUTOPSY OF DISASTER IN CHICAGO* 9 (2002).

⁴¹ *Id.* at 18.

⁴² *Id.* at 19.

⁴³ *Id.* at 34, 117.

⁴⁴ *Id.* at 45-46.

⁴⁵ *Id.* at 18-19.

⁴⁶ Elizabeth Fussell, *Leaving New Orleans: Social Stratification, Networks, and Hurricane Evacuation*, in UNDERSTANDING KATRINA: PERSPECTIVES FROM THE SOCIAL SCIENCES, SOCIAL SCIENCE RESEARCH COUNCIL (Jun. 11, 2006), <http://understandingkatrina.ssrc.org/Fussell/>.

⁴⁷ FARBER ET AL., *supra* note 5, at 265.

the dead were identified as over seventy-one years old.⁴⁸ Death rates among the elderly were particularly high after Hurricane María as well.⁴⁹

As we will see, Puerto Rico, as a whole, fits the definition of a vulnerable group, lacking almost completely in political power and far poorer than the mainland United States. Moreover, many of the most impacted were poor communities living in *informal* housing built without obtaining permits or complying with building codes.

II. RESPONSE AND RECOVERY AFTER HURRICANE MARÍA

With this background on Disaster Law in hand, we turn to Hurricane María and its aftermath. Part II's discussion is divided into two sections. Section A discusses the first stages of the disaster cycle: the impact and emergency response phases. Section B discusses the subsequent phases, which encompass the compensation and recovery phases.

A. *The Impact and Emergency Response Phases in Puerto Rico*

Hurricane María, a Category Four storm, hit Puerto Rico on September 20, 2017.⁵⁰ The hurricane was “the strongest hurricane to hit Puerto Rico in more than eighty years.”⁵¹ The official death toll for Hurricane María's effect on Puerto Rico is sixty-four,⁵² but that figure only accounts for those directly killed during the storm. However, taking into account those who died later, CNN estimated that there have been 499 deaths (an estimate that only counts death that occurred until the middle of October 2017); the Center for Investigative Journalism estimated 985 fatalities; *The New York Times* estimated 1,052 deaths; another study estimated

⁴⁸ Audie Cornish, *Katrina Took Deadly Toll on Elderly*, NPR (Mar. 5, 2006, 12:04 PM), <http://www.npr.org/templates/story/story.php?storyId=5242064>.

⁴⁹ Omayra Sosa Pascual, *Nearly 1,000 More People Died in Puerto Rico After Hurricane María*, CENTER FOR INVESTIGATIVE JOURNALISM (Dec. 7, 2017), <http://periodismoinvestigativo.com/2017/12/se-disparan-en-casi-mil-las-muertes-tras-maria/> translated in Julio Ricardo Varela, *Nearly 1,000 More People Died in Puerto Rico After Hurricane María*, LATINO USA (Dec. 7, 2017), <http://latinousa.org/2017/12/07/nearly-1000-people-died-puerto-rico-hurricane-maria/>.

⁵⁰ *Hurricane Maria: Facts, F.A.Q.s, and How to Help*, WORLD VISION, <https://www.worldvision.org/disaster-relief-news-stories/hurricane-maria-facts> (last updated Feb. 14, 2018).

⁵¹ *Id.* (citing Danica Coto, *Maria Destroys Homes, Triggers Flooding in Puerto Rico*, ASSOCIATED PRESS (Sept. 21, 2017), <https://apnews.com/5f2002103e2f42e4916efeda88doe511/Hurricane-Maria-hits-Puerto-Rico,-heavy-flooding-reported>).

⁵² WORLD VISION, *supra* note 50 (citing Ann M. Simmons & Milton Carrero Galarza, *Four Months after Hurricane Maria, Puerto Rico Struggles with Lack of Electricity, Food and Water*, L.A. TIMES (Jan. 30, 2018), <http://www.latimes.com/nation/la-na-puerto-rico-aid-20180130-story.html>).

1085 fatalities;⁵³ and a more recent Harvard study estimated 4645.⁵⁴ The average of these estimates is 1820 deaths. As of January 2018, around “450,000 of Puerto Rico’s 1.5 million electricity customers [were] still without power, and those who [did] have electricity suffer frequent blackouts.”⁵⁵ The damages caused by Hurricane María “resulted in a cascade of further problems, including job losses, foreclosures, a decrease in neighborhood police presence and a resulting increase in violent crimes.”⁵⁶

As of the day after María struck, Urban Search & Rescue (US&R) operations began with initial damage assessments and intelligence reports, with four task forces stationed in the area and another eight waiting for airports to reopen.⁵⁷ “FEMA-loaded vessels with more than 1.3 million meals, 2 million liters of water, 30 generators and 6,000 cots [were] en route to St. Thomas, awaiting port opening and clearance” and “FEMA [had] also pre-positioned commodities at its Distribution Center and Warehouse in San Juan, Puerto Rico.”⁵⁸ As of September 22, 2017, FEMA US&R rescued over sixty individuals and searched over forty-five structures.⁵⁹ Even though aid was being shipped into Puerto Rico, distributing the relief remained difficult after the storm due to a lack of trucks in some areas and road

⁵³ Alexis R. Santos-Lozada, *Why Puerto Rico’s Death Toll from Hurricane Maria is so Much Higher than Officials Thought*, THE CONVERSATION (Jan. 3, 2018, 6:54 AM), <http://theconversation.com/why-puerto-ricos-death-toll-from-hurricane-maria-is-so-much-higher-than-officials-thought-89349>. A reason for this discrepancy in the number of deaths calculated is that “[i]n Puerto Rico, deaths are recorded using international classifications” that do not “capture all of the circumstances surrounding a death that happens following a natural disaster.” *Id.* As a result:

Under the international system, a death resulting from circumstances [like having a cell-phone tower unable to function because of the Hurricane, thereby preventing a 911 call from going through to save a person suffering from a heart attack] would be classified as [the] result of a cardiovascular conditions, and would not be attributed to the hurricane either.

Id.

⁵⁴ Nishant Kishore et al., *Mortality in Puerto Rico After Hurricane Maria*, NEW ENGL. J. MED. (May 2018), available at <https://www.nejm.org/doi/full/10.1056/NEJMsa1803972>.

⁵⁵ Alan Taylor, *After Four Months, Much of Puerto Rico Still Dark and Damaged*, ATLANTIC (Jan. 29, 2018), <https://www.theatlantic.com/photo/2018/01/after-four-months-much-of-puerto-rico-still-dark-and-damaged/551756> (citing Erin Dooley, *4 Months after Maria, 450K Residents of Puerto Rico Still Without Power*, ABC NEWS (Jan. 24, 2018, 3:18 PM), <http://abcnews.go.com/US/months-maria-450k-residents-puerto-rico-power/story?id=52585227>).

⁵⁶ *Id.*

⁵⁷ *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#>.

⁵⁸ *Id.*

⁵⁹ 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 Oct. 31, 2017, 16:50) (this website provides an overview of federal efforts in anticipation of and in immediate response to Hurricane María).

closures.⁶⁰ In contrast, roads were more readily accessible after the hurricanes in Texas and Florida.⁶¹

As FEMA itself admitted, “Puerto Rico and the Virgin Islands [had] seen much fewer personnel since Hurricane María hit.”⁶² FEMA stated that over “10,000 federal staff were on the ground in Puerto Rico and the Virgin Islands assisting search and rescue and recovery efforts.”⁶³ President Trump had declared that recovery efforts were harder in Puerto Rico because Puerto Rico “is an island sitting in the middle of an ocean, and it’s a big ocean.”⁶⁴ Although he was undoubtedly right about the logistical issues, these challenges obviously were known well before the disaster.

According to World Vision, “Puerto Rican authorities . . . requested \$94 billion to cover damages from Hurricane María. Congress approved \$5 billion in the fall of 2017 as part of an overall federal aid package of more than \$36 billion allotted for hurricanes María, Harvey, and Irma.”⁶⁵ FEMA approved “more than \$53 million for debris removal and \$417 million for emergency protective measures.”⁶⁶ FEMA delivered “[m]ore than 56 million liters of water and 48 million meals . . . making it the largest and longest commodity delivery mission in FEMA’s history.”⁶⁷ FEMA also gave more than 120,000 tarps to municipalities on the island for use as roof covers.⁶⁸ Through its Transitional Shelter Assistance program, FEMA housed

⁶⁰ Jack Healy, Frances Robles & Ron Nixon, *Aid Is Getting to Puerto Rico. Distributing It Remains a Challenge*, N.Y. TIMES (Oct. 3, 2017), <https://www.nytimes.com/2017/10/03/us/puerto-rico-aid-fema-maria.html>.

⁶¹ *Id.* For more about the problems facing the trucks, including difficulty in obtaining fuel, see Alex Figueroa Cancel, *Miles de Vagones con Mercancía Permanecen en los Muelles*, EL NUEVO DÍA (Sept. 25, 2017), <https://www.elnuevodia.com/noticias/locales/nota/milesdevagonesconmercanciapermanecenlosmuelles-2360301/>; Gloria Ruiz Kuilan, *Fema Admite que el Sistema de Transporte es Inadecuado*, EL NUEVO DÍA (Sept. 27, 2017), <https://www.elnuevodia.com/noticias/locales/nota/femaadmitequeelsistemadetransporteessinadecuado-2360941/>.

⁶² Eric Levenson, *3 Storms, 3 Responses: Comparing Harvey, Irma and Maria*, CNN (Sept. 27, 2017), <https://edition.cnn.com/2017/09/26/us/response-harvey-irma-maria/index.html>.

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ WORLD VISION, *supra* note 50 (citing Erik Wasson, *Trump \$44 Billion Aid Request Puts Off Puerto Rico Demands*, BLOOMBERG (Nov. 17, 2017, 11:28 AM), <https://www.bloomberg.com/news/articles/2017-11-17/trump-disaster-request-said-to-fall-short-of-puerto-rico-request>; and Lisa Mascaro, *Congress Approves \$36.5-billion Disaster Aid for Puerto Rico, Wildfires and Hurricane Relief*, L.A. TIMES (Oct. 24, 2017, 1:35 PM), <http://www.latimes.com/politics/washington/la-na-pol-essential-washington-updates-congress-approves-36-5-billion-1508860506-htmllstory.html>).

⁶⁶ *Disaster Assistance in Puerto Rico 90 Days After Hurricane Maria*, FEMA (Dec. 20, 2017), <https://www.fema.gov/news-release/2017/12/20/disaster-assistance-puerto-rico-90-days-after-hurricane-maria>.

⁶⁷ *Id.*

⁶⁸ *Id.*

nearly ten thousand survivors in Puerto Rico and the mainland.⁶⁹ The Small Business Administration (“SBA”) and FEMA employed over 1300 island residents during their recovery efforts.⁷⁰

Two months after the disaster, the Red Cross reported that conditions remained very difficult, especially in rural areas.⁷¹ Residents were “still dealing with a lack of water and electricity and the struggle to find food. . . . Despite some improvement in urban areas, lack of access to water, electricity and food is a major problem for hundreds of thousands of families.”⁷²

B. Funding and Reconstruction in Puerto Rico

Disaster recovery after the hurricane faced formidable challenges. Because of Hurricane María, according to FEMA:

Puerto Rico was left without potable running water. Waist-deep flooding, mudslides and winds powerful enough to uproot the concrete foundations of metal utility poles, impacted more than 80 percent of the Island’s power grid. In addition, the existing infrastructure for cellular and wireless service was rendered virtually useless further hampering communications.⁷³

In late January 2018, nearly half a million customers still lacked electricity.⁷⁴ However, FEMA, working with the Puerto Rico Electric Power Authority (“PREPA”) and the U.S. Army Corps of Engineers, had restored power for a million customers.⁷⁵ But four months after the disaster, a quarter of Puerto Ricans still

⁶⁹ *Id.*

⁷⁰ *Id.*; see also *Fact Sheet: Why You Should Complete the SBA Disaster Loan Application*, FEMA (Oct. 10, 2017), <https://www.fema.gov/news-release/2017/10/10/fact-sheet-why-you-should-complete-sba-disaster-loan-application> (discussing the process of the SBA disaster loan application).

⁷¹ *Puerto Rico: Many Still Without Basic Necessities*, AMERICAN NATIONAL RED CROSS (Nov. 20, 2017), <http://www.redcross.org/news/article/Puerto-Rico-Many-Still-Without-Basic-Necessities>.

⁷² *Id.*

⁷³ *Hurricane Maria Update*, FEMA (Oct. 19, 2017), <https://www.fema.gov/news-release/2017/10/19/4339/hurricane-maria-update>.

⁷⁴ Erin Dooley, *4 Months after Maria, 450K Residents of Puerto Rico Still Without Power*, ABC NEWS (Jan. 24, 2018, 3:18 PM), <http://abcnews.go.com/US/months-maria-450k-residents-puerto-rico-power/story?id=52585227>. For a discussion of the weaknesses of the Puerto Rican electrical power system prior to Maria and the shortcomings of the reconstruction efforts, see James Glanz & Frances Robles, *How Storms, Missteps and an Ailing Grid Left Puerto Rico in the Dark*, N.Y. TIMES (May 6, 2018), available at <https://www.nytimes.com/interactive/2018/05/06/us/puerto-rico-power-grid-hurricanes.html>.

⁷⁵ Ray Sanchez, *Nearly Half a Million in Puerto Rico Still in the Dark 4 Months after Hurricane Maria*, CNN (Jan. 25, 2018, 17:20 GMT), <https://edition.cnn.com/2018/01/25/us/puerto-rico-hurricane-maria-power/index.html>.

lacked electricity.⁷⁶ Recovery was slow and uneven. By mid-April, over ninety-five percent of Puerto Ricans had power, but more than fifty thousand still did not.⁷⁷

By April, FEMA's federal coordinating officer in Puerto Rico, Mike Byrne, held that "he [was] working with the U.S. territory's government to determine how federal funds [would] be used to identify priorities and rebuild damaged infrastructure."⁷⁸ He explained that "some of the money [would] go toward strengthening the island's power grid since the storm destroyed two-thirds of its distribution system."⁷⁹ FEMA's administrator, Brock Long, stated that Puerto Rico needed around \$50 billion to rebuild in the aftermath of Hurricane María.⁸⁰ Long said that "[we are] running out of time" and that "[w]e have a long way to go," noting that the next hurricane season starts on June 1.⁸¹ These remarks rightly underline the risk of a further disaster. In anticipation of such an event, FEMA and local government officials have stockpiled food and water in five warehouses across the island as a precaution.⁸² Also, FEMA will remain in Puerto Rico for a few years in order to assist in the rebuilding phase.⁸³ But, Long also said "FEMA cannot be directly responsible for all of the response and recovery."⁸⁴ He indicated that "the private sector should ensure that communication systems become more resistant" in conjunction with the public sector.⁸⁵

The U.S. Army Corps of Engineers announced that its work restoring the power system would be completed on May 18, 2018, leaving behind only a transition team.⁸⁶ Power had been restored to ninety-six percent of the island's residents, although 50,000 still lacked electricity.⁸⁷ In terms of the number of hours of customer service lost, Puerto Rico had suffered the largest power interruption in U.S. history, three times the amount of the nearest runner-up.⁸⁸ Although the

⁷⁶ Patricia Mazzei, *What Puerto Rico Is, and Isn't, Getting in Disaster Relief*, N.Y. TIMES (Feb. 8, 2018), <https://www.nytimes.com/2018/02/08/us/puerto-rico-disaster-relief.html>.

⁷⁷ Rhodium Group, *The World's Second Largest Blackout* (April 12, 2008), available at <https://rhg.com/research/puerto-rico-hurricane-maria-worlds-second-largest-blackout/>.

⁷⁸ Danica Coto, *FEMA: Puerto Rico Running Out of Time as Storm Season Nears*, ASSOCIATED PRESS (Apr. 6, 2018), <https://www.apnews.com/7c238de9e23a4c41b2f557e671e5a12d/FEMA:-Puerto-Rico-running-out-of-time-as-storm-season-nears>.

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² *Id.*

⁸³ *Id.*

⁸⁴ *Id.*

⁸⁵ *Id.*

⁸⁶ Robert Walton, *Federal Agencies Prepare to Wind Down Puerto Rico Power Restoration in May*, UTILITY DIVE (Apr. 12, 2018), <https://www.utilitydive.com/news/federal-agencies-prepare-to-wind-down-puerto-rico-power-restoration-in-may/521135/>.

⁸⁷ *Id.*

⁸⁸ *Id.*

Corps were unable to make major changes in the grid, partly due to the local power company's lack of a system model, they had set everything to code, including transmission lines and poles.⁸⁹ Future upgrades were subject to issue about statutory authorization and whether the utility would have to cover ten percent of the cost, which it could ill-afford.⁹⁰

The continuing fragility of the power system was dramatized on April 12, 2018, the same day *Utility Dive* published an article about the near completion of the Corps' work.⁹¹ As crews were clearing land in Cayey, a mountain town, as part of the power-restoration effort, a tree fell on the main power line serving San Juan.⁹² The result was a blackout that temporarily left over 840,000 people without power.⁹³

After the first phases of the emergence response, the need for additional federal assistance was clear. The congressional budget bill passed in early 2018 included \$4.8 billion for Medicaid on the island to deal with its funding crisis, \$2 billion to restore the power grid and \$9 billion for housing and urban development in Puerto Rico.⁹⁴ The bill waived the government of Puerto Rico's contributions for Army Corps of Engineers and federal highway funds and provided \$14 million for USDA food assistance.⁹⁵ The Medicaid assistance was especially important because it affects forty percent of Puerto Ricans and the island "receives less in matching funds than mainland states to help cover Medicaid costs."⁹⁶

III. LEARNING FROM PUERTO RICO'S MARÍA EXPERIENCE

In thinking about Puerto Rico's experience in the wake of Hurricane María, first we need to understand why the federal response has been slow and incom-

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ *See id.*

⁹² Marwa Eltagouri, *Another Power Outage Hits Puerto Rico, Leaving About 840,000 in the Dark, Officials Say*, WASH. POST (Apr. 12, 2018), https://www.washingtonpost.com/news/post-nation/wp/2018/04/12/another-power-outage-hits-puerto-rico-leaving-about-840000-in-the-dark-officials-say/?utm_term=.172d31c2493c&wpisrc=nl_energy202&wpm=1.

⁹³ *Id.* An additional blackout occurred a week later. See Gavin Bade, *Line Fault Again Plunges Puerto Rico into Blackout*, UTILITY DIVE (April 18, 2018), <https://www.utilitydive.com/news/line-fault-again-plunges-puerto-rico-into-blackout/521651/>. For a discussion of future prospects for the grid, including privatization, see David Ferris, *How Puerto Rico's New Grid Could Go Wrong*, E&E NEWS (May 7, 2018), <https://www.eenews.net/stories/1060080949>.

⁹⁴ Mazzei, *supra* note 76.

⁹⁵ Kathya Severino, *How Latest Federal Appropriations for Disaster Relief Help Puerto Rico*, CENTER FOR PUERTO RICAN STUDIES (Feb. 15, 2018, 5:30 PM), <https://centropr.hunter.cuny.edu/events-news/puerto-rico-news/congress/how-latest-federal-appropriations-disaster-relief-help-puerto>.

⁹⁶ John Bresnahan & Heather Caygle, *How Politics Screwed Puerto Rico Out of Billions in Disaster Aid*, POLITICO (Dec. 23, 2017, 7:02 AM), <https://www.politico.com/story/2017/12/23/puerto-rico-disaster-aid-medicaid-315974>.

plete. Section A provides further evidence of delay as compared to earlier hurricanes, particularly Hurricane Harvey. Section B probes the reasons for delay, which involve both economic and political considerations, as well as the logistical problems faced by the federal response effort. Then, Section C seeks to distill lessons from this experience that could help enrich the field of Disaster Law.

A. Assessing the Adequacy of the Response

To say that the federal response to Hurricane María was slower than its response to comparable disasters is not to disrespect the relief workers and their strenuous and commendable efforts. For instance, based on a timeline of the emergency response, one journalist concluded that although there were “few obvious gaps in the federal response,” the timetable made it “clear that the speed and scale of the initial María relief effort pales next to other recent campaigns.”⁹⁷ Based on public reactions to previous disasters, national security professor James Miskel concluded in 2008 that two of the hallmarks of a successful disasters response from the public’s perspective were that: (1) “few if any” remained without adequate shelter, food or water after twenty-four hours, and (2) electric power was restored to nearly everyone within thirty-six hours.⁹⁸ Judged by those standards, the response to Hurricane María was a resounding failure.

A week after the hurricane struck, a CNN article compared FEMA’s responses to Hurricane María in Puerto Rico, Hurricane Harvey in Texas and Hurricane Irma in Florida.⁹⁹ The news article noted that “[f]ewer FEMA personnel [were] in place” for María than Harvey and Irma, highlighting that “[t]hose differences [were] partly because of issues unique to Puerto Rico, an island that already had a weakened infrastructure, a government struggling through bankruptcy —and that had only just been hit by Hurricane Irma.”¹⁰⁰ Before Hurricane Harvey hit Texas, FEMA had already placed people and supplies there, and the number of federal employees and National Guard soldiers quickly topped 31,000.¹⁰¹ In Florida, “[e]ven more federal personnel responded to Hurricane Irma when it made landfall.”¹⁰² Within four days, over “40,000 federal personnel, including 2,650 FEMA staff, were in place.”¹⁰³ FEMA had also “transferred 6.6 million meals and 4.7 million liters of water to states in the Southeast after Irma as of [September] 14th —four days after

⁹⁷ Robinson Meyer, *What’s Happening with the Relief Effort in Puerto Rico? A Timeline of the Unprecedented Catastrophe of Hurricane Maria*, ATLANTIC (Oct. 4, 2017), <https://www.theatlantic.com/science/archive/2017/10/what-happened-in-puerto-rico-a-timeline-of-hurricane-maria/541956/>.

⁹⁸ MISKEL, *supra* note 16, at 35.

⁹⁹ Eric Levenson, *3 Storms, 3 Responses: Comparing Harvey, Irma and Maria*, CNN (Sept. 27, 2017, 16:44 GMT), <https://www.cnn.com/2017/09/26/us/response-harvey-irma-maria/index.html>.

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ *Id.*

Irma hit the mainland.¹⁰⁴ Furthermore, FEMA provided “3 million meals and 3 million liters of water” to survivors in Texas”.¹⁰⁵

Table 1 summarizes the differences between the responses in Texas and Puerto Rico, including data from later stages in the response effort. The disparity is unmistakable.

TABLE 1: COMPARISON OF TEXAS AND PUERTO RICO HURRICANE RESPONSES¹⁰⁶

Government Action	Hurricane Harvey (Texas)	Hurricane María (Puerto Rico)
Helicopter deployment	73 helicopters within a week.	70+ helicopters after 3 weeks.
Immediate FEMA funding (9 days post-storm)	\$141.8 million	\$6.2 million
Meals delivered in first 9 days	5.1 million	1.6 million
Personnel deployed after first 9 days	30,000	10,000
FEMA payments approved in first nine days ¹⁰⁷	\$142 million	\$6 million
Time after storm to approve permanent disaster work	10 days	43 days

¹⁰⁴ *Id.*

¹⁰⁵ *Id.* Disparate treatment of Puerto Rico is also documented in Nicole Einbinder, *How the Response to Hurricane Maria Compared to Harvey and Irma*, PBS FRONTLINE (May 1, 2018), available at <https://www.pbs.org/wgbh/frontline/article/how-the-response-to-hurricane-maria-compared-to-harvey-and-irma/>.

¹⁰⁶ The figures in this table are derived from Danny Vinik, *How Trump Favored Texas over Puerto Rico*, POLITICO (Mar. 27, 2018, 5:00 AM), <https://www.politico.com/story/2018/03/27/donald-trump-fema-hurricane-maria-response-480557>. An additional factor in the slow response was the inability to mobilize half of the Puerto Rico National Guard in the days after the disaster. See Dan Lamothe, *Maria Hit 9 Days Ago. Less Than Half of the Puerto Rico National Guard is on Duty*, THE WASH. POST (Sept. 29, 2017), https://www.washingtonpost.com/news/checkpoint/wp/2017/09/29/maria-hit-9-days-ago-less-than-half-of-the-puerto-rico-national-guard-is-on-duty/?utm_term=.40a5c6a2dd3c. This is an issue that calls for further inquiry. In addition to comparisons made in this paper, Puerto Rico’s universities also got much less aid than their counterparts on the mainland. See Erica L. Green & Emily Cochrane, *In Devastated Puerto Rico, Universities Get Just a Fraction of Storm Aid*, N.Y. TIMES (May 1, 2018), available at <https://www.nytimes.com/2018/05/01/us/politics/hurricane-maria-puerto-rico-emergency-aid.html>.

¹⁰⁷ THE ECONOMIST, *supra* note 3.

Percent of relief applications approved as of day 78.	39%	28%
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Addressing the criticisms that FEMA's response to Hurricane María was delayed and did not allocate as many resources to Puerto Rico as it did to cities in the contiguous United States that had been hit by two major hurricanes, FEMA Administrator Long stated "[that is] completely false."¹⁰⁸ He added that "in the first six months since María hit, FEMA invested \$10 billion in Puerto Rico, in contrast to the \$6 billion invested in the six months after Hurricane Katrina."¹⁰⁹ As Long put it, "[r]ecovery never moves as fast as people want it to be . . . [a]nd in this case, moving faster can be detrimental from the standpoint of putting this money to work in a manner that truly makes Puerto Rico stronger and more resilient."¹¹⁰ His explanation for the slow progress of recovery was based on the difficulty of obtaining power poles and construction equipment given the slew of natural disasters that had struck the U.S. in the past year.¹¹¹

There is no reason to doubt FEMA's good faith or that the federal government ultimately devoted similar resources to address Hurricane María and its aftermath as it did to other hurricanes. Response agencies were already stretched thin by two major hurricanes, wildfires in California and the logistical problems of aiding an island at some distance from the mainland.¹¹² Thus, equal resources would inevitably have led to unequal results. Indeed, this is probably always to be true when considering the needs of vulnerable populations, who are likely to need greater assistance than peers who have greater resources and less needs.

But even assuming FEMA devoted equivalent effort to the two disasters, the fact remains that equal effort was not necessarily the right standard, given the different levels of harm suffered in Texas and Puerto Rico. Consider the following table:

¹⁰⁸ Coto, *supra* note 78.

¹⁰⁹ *Id.*

¹¹⁰ *Id.*

¹¹¹ *Id.*

¹¹² As *The Economist* put it, "[e]ven the most attentive government would have struggled with María. FEMA was overstretched in Texas, Florida and California. Puerto Rico, unlike Houston, is rugged, 180 [kilometers] long, and has worn-out infrastructure and weak institutions." *THE ECONOMIST, supra* note 3.

TABLE 2: COMPARISON OF IMPACTS (TEXAS AND PUERTO RICO)

	Texas	Puerto Rico
Housing units destroyed or significantly damaged	97,000 (Greater Houston area, destroyed or major damage) ¹¹³	+400,000 (destroyed or significantly damaged) ¹¹⁴
Number of deaths	88 ¹¹⁵	500-4500 ¹¹⁶
Number without power	280,000 ¹¹⁷	1,000,000 ¹¹⁸
Number without drinking water	45 water systems in smaller communities shut down, Houston unaffected. ¹¹⁹	One half of population (approx. 1.7 million) left without potable water. ¹²⁰
Number without phone-cell or internet service	180,000 homes ¹²¹	+90% of island left with-

¹¹³ *Houston and Hurricane Harvey: What You Need to Know*, THE GREATER HOUSTON PARTNERSHIP (Mar. 19, 2018), <http://www.houston.org/pdf/comm/Hurricane-Harvey-Statistics.pdf> (last visited on May 18, 2018).

¹¹⁴ Nick Brown, *Special Report: In Puerto Rico, A Housing Crisis U.S. Storm Aid Won't Solve*, REUTERS (Feb. 6, 2018, 10:08 AM), <https://www.reuters.com/article/us-usa-puertorico-housing-special-report/special-report-in-puerto-rico-a-housing-crisis-u-s-storm-aid-wont-solve-idUSKBN1FQ211> (last visited on May 18, 2018).

¹¹⁵ Giulia Afiune, *Texas Officials: Hurricane Harvey Death Toll Rises to 88*, TYLER MORNING TELEGRAPH (Oct. 16, 2017), https://tylerpaper.com/news/texas/texas-officials-hurricane-harvey-death-toll-rises-to/article_d3uabb8-09ca-538e-a0f3-e86f46coce66.html.

¹¹⁶ See text accompanying notes 52 to 55 *supra*.

¹¹⁷ Tom DiChristopher, *Texas Utilities Struggle to Restore Power as Harvey Hampers Progress*, CNBC (Aug. 28, 2017), <https://www.cnbc.com/2017/08/28/texas-utilities-struggle-to-restore-power-as-harvey-hampers-progress.html>.

¹¹⁸ *Quick Facts: Hurricane Maria's Effect on Puerto Rico*, MERCY CORPS (Jan. 19, 2018), <https://www.mercycorps.org/articles/united-states/quick-facts-hurricane-marias-effect-puerto-rico>.

¹¹⁹ *Harvey Floods Left Houston Water Plant Hours Away from Failure*, CBS NEWS (Sept. 5, 2017, 7:37 AM), <https://www.cbsnews.com/news/houston-water-filtration-plant-harvey-flooding-impact/>. Other communities were under “boil water” orders. *Id.*

¹²⁰ Andrew Jakabovics, *Beginning to Assess the Magnitude of Destroyed Housing After Maria*, ENTERPRISE (Sept. 28, 2017), <https://www.enterprisecommunity.org/blog/2017/09/beginning-assess-magnitude-destroyed-housing-after-maria>.

¹²¹ Samantha Ehlinger, *Hurricane Harvey Leaves Texans without Internet, Phone Service*, SAN ANTONIO EXPRESS NEWS (Aug. 28, 2017, 4:42 PM), <https://www.mysanantonio.com/business/technology/article/Hurricane-Harvey-leaves-Texans-without-internet-12069233.php>.

		out cell phone coverage ¹²²
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Bad as things were in Texas, they were much worse in Puerto Rico. Despite the massive destruction of infrastructure and housing in Puerto Rico, the federal government simply did not choose to make it a priority. Given the massive capabilities of the federal government, it seems likely that it could have overcome resource and logistical challenges if a more strenuous effort had been made.¹²³

B. Understanding the Inadequate Response

To understand the shortcomings of the disaster response, we need to address two interrelated questions. First, why was the level of vulnerability in Puerto Rico higher (and resilience lower) as compared to Texas and Florida, and should this have motivated a more strenuous response effort on the part of the federal government? And second, why did the U.S. government fail to treat Puerto Rico as a priority consistent with the greater degree of harm the island suffered as a result of Hurricane María?

1. *Economic Factors.* At the outset, it is necessary to recognize the challenges that Puerto Rico was already facing before María. First and foremost was the economy. It would be hard to exaggerate the extent of the economic problems facing the island or the fiscal plight of its government.

Due to factors such as the end of favorable tax treatment and competition from China, the island’s economic output began to decline before the Great Recession and continued despite the U.S. economic recovery.¹²⁴ Puerto Rico is also losing about one percent of its population per year, shrinking its labor force.¹²⁵ Electricity, water and labor costs are at all-time highs, making it difficult to attract investment¹²⁶ Labor force participation is two-thirds of that on the mainland and unemployment among those in the workforce is twice as high.¹²⁷ The poverty rate

¹²² Elizabeth Weise, *Puerto Rico is Nearly Entirely Cut Off from Cellphone Service, Leading to Low Tech Solutions*, USA TODAY (Sept. 28, 2017), <https://www.usatoday.com/story/tech/2017/09/28/puerto-rico-cell-phone-service-tmobile-att-hurricane/710775001/>.

¹²³ Presumably it would not have taken three weeks to get helicopters to the scene if Puerto Rico had been invaded by Venezuela, for instance.

¹²⁴ Anne O. Krueger et al., *PUERTO RICO: A WAY FORWARD*, GOVERNMENT DEVELOPMENT BANK FOR PUERTO RICO 3-5 (Jun. 29, 2015), <http://www.gdb.pr.gov/documents/PuertoRicoAWayForward.pdf>.

¹²⁵ *Id.* at 6-7.

¹²⁶ *Id.* at 8-9.

¹²⁷ Lara Merling et al., *LIFE AFTER DEBT IN PUERTO RICO: HOW MANY MORE LOST DECADES?*, CENTER FOR ECONOMIC AND POLICY RESEARCH 2 (July 2017), <http://cepr.net/images/stories/reports/puerto-rico-2017-07.pdf>.

is shocking: forty-six percent for adults, fifty-eight percent for children.¹²⁸ Median household income is \$19,000, about one-third of the mainland average of \$53,900.¹²⁹

Given this economic situation, it is not surprising that the government is deeply in debt.¹³⁰ Despite austerity efforts, public sector debt comprised one hundred percent of Puerto Rico's Gross National Product (G.N.P.) by 2014, having risen every year since 2000.¹³¹ The highway authority, the electric utility and the water company were already in the midst of financial crisis by 2015.¹³² After the United States Supreme Court ruled that Puerto Rico could not make use of the Bankruptcy Code, Congress passed the Puerto Rico Oversight, Management and Stability Act (P.R.O.M.E.S.A.) that created the Financial Oversight and Management Board of Puerto Rico.¹³³ The Board oversees the island's budget and finances as the government seeks to regain solvency.¹³⁴ The Board's Fiscal Plan would commit the island to another decade of austerity, with additional spending cuts of \$25.7 billion.¹³⁵ The plan includes a pay freeze for government employees in order to shrink government employment, as well as cuts in healthcare services, public education and university funding.¹³⁶ After failing to reach a deal with bondholders, the government of Puerto Rico entered a process under P.R.O.M.E.S.A. akin to a Chapter 9 municipal bankruptcy process.¹³⁷

The austerity measures imposed by the Fiscal Control Board to address Puerto Rico's debt crisis have a direct relationship to disaster response. As discussed in Part I, FEMA plays primarily a coordination role in emergency response, relying heavily on local authorities. Serious budget cuts would necessarily impair those local response capacities. Financial issues also undoubtedly contributed to infrastructure weaknesses that made the crisis worse, such as the poor condition of the island's electricity grid.

The government's fiscal issues can also impact the disaster recovery more directly. There was a delay of several months in the release of \$4.7 billion in disaster funding because the U.S. Treasury Secretary disagreed with the government of

128 *Id.*

129 *Id.* at 9.

130 So is the U.S. government, but Puerto Rico does not have the advantage of being able to print its own money.

131 Krueger et al., *supra* note 124, at 9.

132 *Id.* at 15-16.

133 See Merling et al., *supra* note 127, at 10. The Act is now Chapter 20 of 48 U.S.C. §§2101-2241.

134 *Id.*

135 *Id.* at 11.

136 *Id.* at 12-13.

137 *Id.* at 17-19.

Puerto Rico over terms for repayment.¹³⁸ According to Puerto Rico's Governor, Ricardo Rosselló, Treasury had demanded that repayment be given a higher budget priority than essential government services and had sought to cap the amount of aid at \$2 billion.¹³⁹ Ultimately, however, White House officials required the Governor and his team to agree to assume responsibility for cost overruns, a requirement that was not imposed on Texas; FEMA added this requirement as an amendment to the disaster declaration.¹⁴⁰ Consequently, cost estimates have become more contentious and time-consuming than usual.¹⁴¹

Puerto Rico had severe housing issues before the storm hit. New home prices have fallen by a quarter over the past decade, mainly as a result of the island's weakened economy.¹⁴² A conservative estimate puts the number of homes constructed without permits or compliance with building codes at 260,000, but a 2007 study estimated that said figure could be as high as 700,000.¹⁴³ Some more recent reports estimate even higher figures. The *Miami Herald* reported that "as much as half the housing on the island was built without permits No one knows precisely how much of that there is, but the government's housing secretary says it could be as much as the roughly one million legal dwellings on the island."¹⁴⁴ These *informal* houses were hit especially hard by the storm:

It's that informal construction that bore the brunt of María's fury, said housing secretary Fernando Gil. There's no full tally yet, but the numbers so far are hair-raising: 250,000 homes with major damage, 70,000 of those destroyed. By the time inspections are concluded, Gil estimates, as many as 300,000 dwellings will be determined to have suffered some degree of significant damage.¹⁴⁵

These *informal* homes may have trouble qualifying for disaster aid, particularly in cases where the resident does not have title to the land.¹⁴⁶ In the meantime, the island has about 330,000 vacant houses due to population decline, some of which might be rehabilitated to provide housing.¹⁴⁷

¹³⁸ Adrian Florido, *Feds and Puerto Rico Reach Deal Allowing Disaster Recovery Loans to Start Flowing*, N.P.R. (Mar. 22, 2018), <https://www.npr.org/sections/thetwo-way/2018/03/22/596196849/feds-and-puerto-rico-reach-deal-allowing-disaster-recovery-loans-to-start-flowing>.

¹³⁹ *Id.*

¹⁴⁰ Vinik, *supra* note 106.

¹⁴¹ *Id.*

¹⁴² Brown, *supra* note 115.

¹⁴³ *Id.*

¹⁴⁴ Andres Viglucci, *Half of Puerto Rico's housing was Built Illegally. Then Came Hurricane Maria*, MIAMI HERALD (Feb. 14, 2018), <http://www.miamiherald.com/news/nation-world/world/americas/article199948699.html>.

¹⁴⁵ *Id.*

¹⁴⁶ Brown, *supra* note 116.

¹⁴⁷ *Id.*

Housing recovery is also handicapped by the almost complete lack of flood insurance. At the time of María, less than a half-a-percent of housing units had flood insurance.¹⁴⁸ Only half of the houses even had wind insurance, and those policies typically have significant deductibles.¹⁴⁹ To add to the problems besetting homeowners, more than ten percent of active mortgages were delinquent when María hit, almost triple the figure on the mainland.¹⁵⁰

Thus, many Puerto Rican residents were unusually vulnerable to disasters for reasons stemming from poverty and a weak economy, and from the inability of local government to marshal the resources that states such as Florida and Texas could muster. Because federal disaster relief relies heavily on local partners, the federal effort faced unique difficulties from the outset.

FEMA's advance planning for a possible hurricane in Puerto Rico did not take the diminished capabilities of local responders into account. Besides planning for a smaller hurricane, FEMA's advance plan for Puerto Rico ignored the problems handicapping the island's resilience. According to *Politico*, which obtained a copy of the plan and shared it with experts:

FEMA did not anticipate having to take on a lead role in the aftermath of the disaster, despite clear signs that the island's government and critical infrastructure would be overwhelmed in the face of such a storm. Instead, the document largely relied on local Puerto Rico entities to restore the island's power and telecommunications systems. It [did not] mention the financial instability of the Puerto Rican government and Puerto Rican electrical utility, factors that significantly complicated the immediate response to María.¹⁵¹

2. *Political factors.* Strong White House support is needed to make FEMA effective, for the simple reason that FEMA has no direct authority over the agencies it seeks to coordinate.¹⁵² Indeed, it has little clout compared with the military, which is often the most crucial participant in response to major disasters,¹⁵³ which

¹⁴⁸ There were approximately five-and-half thousand flood insurance policies, but over a million-and-a-half housing units. Tim Johnson & Kevin G. Hall, *Few Puerto Rican Households Had Flood Insurance. They Can't Afford It*, MCCLATCHY WASH. BUREAU (Oct. 12, 2017), <http://www.mcclatchydc.com/news/nation-world/national/economy/article178344776.html>.

¹⁴⁹ Leslie Scism & Nicole Friedman, *Hurricane Maria Exposes a Common Problem for Puerto Rico Homeowners: No Insurance*, WALL ST. J. (Sept. 20, 2017), <https://www.wsj.com/articles/hurricane-maria-exposes-a-common-problem-for-puerto-rico-homeowners-no-insurance-1505940660>.

¹⁵⁰ *Id.*

¹⁵¹ Danny Vinik, *FEMA's Plan Underestimated Puerto Rican Hurricane in Preparing for the Storm, the Disaster Agency Failed to Anticipate the Level of Damage or Extent of Federal Involvement Required*, POLITICO (Apr. 15, 2018, 6:55 AM), <https://www.politico.com/story/2018/04/15/puerto-rico-hurricane-fema-disaster-523033>.

¹⁵² MISKEL, *supra* note 16, at 74, 136. On the role of the White House in the Katrina response, which contributed to the failings of the federal effort, see Richard T. Sylvester, *President Bush and Hurricane Katrina: A Presidential Leadership Study*, 604 ANNALS AM. ACAD. POL. & SOC. SCI. 26 (2006).

¹⁵³ MISKEL, *supra* note 16, at 40-41, 54-55, 84.

leaves FEMA as the smaller partner by far even though nominally in charge. Fortunately, presidents generally have strong political incentives to respond to disasters efficiently. Typically, the White House, as well as federal agencies, come under sharp pressure from the congressional delegations of the affected states. Disaffected voters may decline to support the president's reelection or may take revenge in congressional races. But these conditions were not present after Hurricane María. Puerto Rico was handicapped from the beginning because its residents do not vote in presidential elections and do not elect voting members of Congress.¹⁵⁴ Of course, there are significant Puerto Rican communities in U.S. cities that may have helped exert some pressure and countered somewhat the lack of direct representation. Still, Puerto Rico had far less political importance for the President or Congress than Florida or Texas, the site of the other two major hurricanes.

As Table 1 showed, the response to Hurricane Harvey in Texas was considerably prompter than the response to Hurricane María in Puerto Rico. This feat may have owed something to the energetic efforts of the Texas congressional delegation. The Senate majority whip, John Cornyn (R-Texas), put the nomination of the deputy director of the Office of Management and Budget (OMB) on hold for months and allowed it to move forward only after Congress passed a \$90 billion disaster relief bill.¹⁵⁵ Puerto Rico had no similar congressional champion.

One significant problem in mobilizing political support for the relief effort was media inattention. A Massachusetts Institute of Technology (MIT) study revealed that Hurricane María received only a third as many mentions in the media compared to Harvey and Irma —about 6,600 as opposed to over 17,000 and 19,000, respectively, in the two-week period straddling each storm.¹⁵⁶ This does not seem to have been due to lack of public interest, as indicated by online activity such as the number of shares on Facebook.¹⁵⁷ Still, it was much harder for the public to remain informed about conditions in Puerto Rico. It was also undoubtedly unhelpful that only slightly more than half of Americans were aware that Puerto Ricans are United States citizens.¹⁵⁸ Without public attention, there was less pressure for the White House or Congress to prioritize the issue.

¹⁵⁴ On the history of Puerto Rico's status *vis-à-vis* the United States, see *Developments in the Law: The U.S. Territories*, 130 HARV. L. REV. 1616, 1656-80 (2017).

¹⁵⁵ Vinik, *supra* note 106.

¹⁵⁶ Anushka Shah, Allan Ko & Fernando Peinado, *The Mainstream Media Didn't Care About Puerto Rico Until It Became A Trump Story*, WASH. POST, (Nov. 27, 2017), https://www.washingtonpost.com/news/posteverything/wp/2017/11/27/the-mainstream-media-didnt-care-about-puerto-rico-until-it-became-a-trump-story/?utm_term=.023b2491b458. (The *Trump Story* emerged after the President became involved in a hostile exchange with the mayor of San Juan.)

¹⁵⁷ *Id.*

¹⁵⁸ Kyle Dropp & Brendan Nygan, *Nearly Half of Americans Don't Know Puerto Ricans Are Fellow Citizens*, N.Y. TIMES (Sept. 26, 2017), <https://www.nytimes.com/2017/09/26/upshot/nearly-half-of-americans-dont-know-people-in-puerto-ricoans-are-fellow-citizens.html>.

Regardless of the reasons, it is clear that President Donald Trump did not treat Puerto Rico post-María as a priority.¹⁵⁹ He tweeted about the situation in Texas in the first week after Harvey made landfall three times as often as he did in the same period after María.¹⁶⁰ The week after María, he tweeted half as often about the storm than he did to complain about football players who knelt during the national anthem.¹⁶¹ He also engaged in an angry verbal exchange with the mayor of San Juan over the adequacy of the federal response.¹⁶² This performance can hardly have helped to persuade officials in the Defense Department or elsewhere to move disaster response for Puerto Rico to the top of their priority lists, drop other on-going projects and take urgent action.

C. Lessons Learned

Since Hurricane Katrina devastated New Orleans in 2005, the federal disaster response system had not fallen so short of what American citizens are entitled to expect from their government.¹⁶³ There is no doubt that there will be post-mortems from a variety of perspectives for years to come. This section offers a few preliminary thoughts about the lessons we should take away from Puerto Rico's post-María experience to date.

1. *The federal government needs greater surge capacity.* Climate change and the increasing population in vulnerable areas all but guarantee that the likelihood of massive harm stemming from natural disasters will increase drastically in the years to come. This will necessarily increase the probability of two or more disasters occurring in close succession.¹⁶⁴ Thus, the government needs to plan for multiple events, just as the Pentagon plans for the possibility of more than one simultaneous war.

¹⁵⁹ The problem was not just the relative paucity of presidential tweets. As *The Economist* put it:

The President at first sought to downplay the disaster, then suggested Puerto Ricans were doing too little to help themselves. Three weeks after Maria, he suggested it would soon be time for the feds to leave. "We cannot keep FEMA, the Military & the First Responders, who have been amazing (under the most difficult circumstances) in P.R. forever!"

THE ECONOMIST, *supra* note 3.

¹⁶⁰ Vinik, *supra* note 106.

¹⁶¹ *Id.*

¹⁶² *Id.*

¹⁶³ Unfortunately, *The Economist's* verdict about the response to date may stand: "Puerto Rico was due the same emergency response as any other part of America. Its 3.4m inhabitants got so much less, in such desultory fashion, with such horrible consequences [...]." THE ECONOMIST, *supra* note 3.

¹⁶⁴ For illustrative purposes, suppose that there is a 5% chance (one in twenty) that a major disaster will occur somewhere in the United States during a specific period. Then the chance of two such disasters occurring is one in four hundred or 0.25%. Now suppose that the chances of such an event increase by a factor of two, to 10% (one in ten). Now, the chance of two such events is one in a hundred or 1%. Thus, doubling the chance of a major disaster quadruples the chances of experiencing two in the same time period. Similar reasoning shows that the chances of experiencing three such disasters increase by a factor of eight. This analysis assumes that disasters are not correlated, but it seems likely

2. *Presidential leadership is indispensable.* FEMA's role requires to summon and coordinate the efforts of agencies that are much more powerful and larger, pulling them away from their normal activities. In the event of a catastrophic event, this collaboration must happen very quickly. Without strong support from the top, FEMA has limited ability to command maximum effort from those agencies.

3. *Media access is a key part of effective disaster response.* From the point of view of hard-pressed disaster personnel, the media is probably perceived as being a disruptive nuisance. But disaster response is a political act, not just a management problem. Without public awareness of the extent of the disaster, response and recovery will lack political salience and will not receive the governmental priority it deserves.

4. *Planning must include realistic assessments of local resiliency.* The disaster response system works best with strong local partners. States like Texas, Florida and California may be prone to disaster events, but they also have substantial public and private resources to bring to bear. Poorer jurisdictions such as New Orleans or Puerto Rico are much less able to respond to a major disaster. To assume they will play a leading or even equal role in the aftermath is unrealistic and a recipe for failure.

5. *Disasters magnify existing inequalities.* Puerto Rico is much poorer than the mainland states, faces severe governmental fiscal problems and is locked out of the U.S. political system. All of these factors handicap disaster response and make recovery more difficult. Although it seems impossible to document this point, it seems equally impossible to dismiss the possibility that the island's Hispanic make-up contributed to the inattention from political leaders.

6. *Resource allocation must consider the scale of need.* This may seem an obvious point, but the statement of FEMA's head suggests that the agency viewed it as sufficient to allocate resources equally between major disaster areas. That simply is not appropriate when some areas are suffering much greater deprivations. Puerto Rico had more urgent needs than Texas or Florida, and it should have received a higher priority than either of them.

7. *Pay me now or pay me later.* As is well-known, investments in resilience pay for themselves when natural disasters strike.¹⁶⁵ If the federal government had paid

that a major hurricane will occur under conditions that indicate a major hurricane season, so that the odds of a repetition are probably enhanced.

¹⁶⁵ For instance, according to a recent report:

Recent studies have indicated that for every dollar spent building or improving buildings to comply with the newer codes saves four dollars in damages. . . . [T]he return on investment in building to the upgraded codes parallels similar investment in efforts to create a more resilient infrastructure. Studies have indicated that it's possible to receive a 6:1 rate of return on federal grants that have been provided for in mitigation efforts, including enhancing the infrastructure.

attention to the frailty of Puerto Rico's electrical system earlier, it would not have had to invest billions to rebuild it. Even now, the federal government has not invested the funds necessary to ensure that Puerto Rico's electrical system will be able to withstand another major hurricane.

8. *Flood insurance does not reach the poor.* Homeowners in many parts of the United States are probably much less likely to be poor than those who rent housing. But the poor may also own housing, as was true in parts of New Orleans and in Puerto Rico.¹⁶⁶ As in Puerto Rico, poorer New Orleans residents often had problems showing clear title.¹⁶⁷ We need a voucher system to make flood insurance affordable for the poor. FEMA also needs to have more flexibility to deal with situations where the possession of housing is clear, there is no other apparent owner and a legal title is in question.

9. *Climate change increases the need to prepare for catastrophic events.* The unusual high intensity of the major hurricanes of the 2017 storm season is consistent with predictions regarding the effects of climate change and suggests that such storms will continue to become more likely.¹⁶⁸ A recent Stanford study concluded that, even if the commitments in the Paris Agreement are met, emissions nevertheless "are likely to lead to substantial and widespread increases in the probability of historically unprecedented extreme events."¹⁶⁹ Some scientists have linked Hurricane Harvey's record rainfall to climate change.¹⁷⁰ Besides attempting to curb emissions, we also need to start ramping up our emergency response capacity.

Beyond Disaster Law, Hurricane María poses important questions about the economic and political future of Puerto Rico. Those critical issues are outside the scope of this article,¹⁷¹ but the reconstruction effort and whether it succeeds or fails

ZURICH NORTH AMERICA, REBUILDING INFRASTRUCTURE: THE NEED FOR SUSTAINABLE AND RESILIENT SOLUTIONS 5 (2018), https://www.zurichna.com/_/media/dbe/zna/docs/kh/infrastructure/zurich_resilient-infrastructure_final.pdf (footnotes omitted).

¹⁶⁶ See *Beyond Data: Straight Talk from some Lower Ninth Ward Residents*, GREATER NEW ORLEANS COMMUNITY DATA CENTER (Mar. 23, 2005), http://www.datacenterresearch.org/pre-katrina/orleans/8/22/cem/owner_occupied.html.

¹⁶⁷ Kathy Finn, *Blighted Houses Still Mar New Orleans a Decade after Katrina*, REUTERS (Aug. 23, 2015), <https://www.reuters.com/article/us-usa-katrina-blight/blighted-houses-still-mar-new-orleans-a-decade-after-katrina-idUSKCN0QSoFE20150823>. ("Many of homes in the Lower Ninth Ward were handed down through several generations and it is unclear who holds the deed"). *Id.*

¹⁶⁸ Annie Sneed, *Was the Extreme 2017 Hurricane Season Driven by Climate Change? Global Warming Already Appears to be Making Hurricanes More Intense*, SCI. AM. (Oct. 26, 2017), <https://www.scientificamerican.com/article/was-the-extreme-2017-hurricane-season-driven-by-climate-change/>.

¹⁶⁹ Noah S. Diffenbaugh, Deepti Singh, & Justin S. Mankin, *Unprecedented Climate Events: Historical Changes, Aspirational Targets, and National Commitments*, 4 SCI. ADVANCES (2018), available at <http://advances.sciencemag.org/content/4/2/eaao3354>.

¹⁷⁰ Henry Fountain, *Scientists Link Hurricane Harvey's Record Rainfall to Climate Change*, N.Y. TIMES (Dec. 13, 2017), <https://www.nytimes.com/2017/12/13/climate/hurricane-harvey-climate-change.html>.

¹⁷¹ For further discussion of Puerto Rico's governance issues, see Aníbal Acevedo Vilá, *With Plenary Powers comes Plenary Responsibility: Puerto Rico's Economic and Fiscal Crisis and the United States*,

will undoubtedly have larger ramifications. However, even limiting the focus to disaster management suggests that some significant reforms are in order.

CONCLUSION

Hurricane María led to the biggest failure of American disaster response since Hurricane Katrina struck New Orleans and the Gulf Coast in 2005. As shown in Part II, the disaster response was delayed, much of the island was left without electricity or drinkable water for extended periods of time and hundreds, perhaps thousands, died. All of this shows a serious failure to uphold the nation's obligations to its citizens.

Part III of the article probed the reasons for the inadequate disaster response. FEMA is designed to coordinate the effort of local responders and federal agencies. Coming on the heels of other disasters and involving difficult geography and massive damage due to the island's economic weakness, María posed major challenges, which FEMA was unable to meet due to two major reasons relating to its coordination mission. First, because of the island's fiscal crisis, local authorities—including utilities—were unable to perform the role that FEMA normally expects. This was entirely foreseeable but was not integrated into planning. Second, because FEMA lacks effective power over agencies such as the Defense Department, it needs strong support from the White House to obtain the resources needed to cope with catastrophic incidents. But Puerto Rico lacks political representation, the media was inattentive, and the President was seemingly indifferent to the crisis.

Post-María reconstruction will be a test of the U.S. governance system's ability to respond to the needs of its most vulnerable citizens. Proposing a plan for reconstruction is outside the scope of this article; the effectiveness of reconstruction will depend on political will as much as policy analysis. But if nothing else, María should drive home some important lessons about Disaster Law and policy. These lessons include the need for greater federal surge capacity and a more realistic approach regarding the capacities of local governments, the indispensable role the White House plays after catastrophic events and the importance of strengthening resilience prior to such events.

Learning these lessons may help us be better prepared to confront the next catastrophic event, in Puerto Rico or elsewhere. Much as we hate to contemplate this prospect, there is very little as certain as the fact that the occurrence of another Katrina or María-scale disaster, somewhere in the United States, is only a matter of time. We must be better prepared when that day comes.