Zika and the Failure to Act Under the Police Power

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Zika is a mosquito-borne and sexually transmitted disease that is a dangerous threat to pregnant women, causing catastrophic birth defects in a large percentage of fetuses when their mothers become infected while pregnant. It raises numerous issues related to abortion, birth control, poverty, and women's control over their procreative choices. While the United States received ample warning from January 2016 onward that it was at risk of local transmission of this virus and public health officials at all levels generally behaved properly, the state and federal legislative responses in the summer of 2016 were entirely inadequate. For example, no state at a high level of risk undertook to provide long lasting and reliable birth control to all women who wanted it. Furthermore, Congress took a seven-week recess at the height of mosquito season without providing any funding for a Zika response. In light of these failures, it appears that the federalist system that allocates both public health police powers and duties to act contains a flaw. The system creates a vacuum within which there are no enforcement mechanisms that can compel legislators to act appropriately. This Article analyzes the response from January through August 2016 from a legal, health policy, and ethical framework, concluding that a combined effort by courts and health policy experts is required so that the United States is better able to respond to early warnings about emerging infectious diseases in the future.
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INTRODUCTION

For public health experts, witnessing the failure of federal and state governments to respond adequately to Zika from January through August 2016 was akin to watching a slow motion trainwreck. Zika is an infectious disease, transmitted primarily through mosquito bites. It can cause catastrophic birth defects, and the mosquitoes that can transmit it have long been in the United States. State governments have powers that enable them to respond to threats of infectious disease, and Congress has the power to fund this response. Despite these powers, legislative responses were inadequate in the face of early warnings and there is currently no mechanism to compel state or federal governments to use their powers appropriately in these circumstances. Given the risk of Zika coupled with the ongoing and increasing risk of other emerging infectious diseases, the inadequacy of the initial response signals that there are currently significant political impediments to ensuring the continuing protection of the public health.

The World Health Organization (WHO) declared the virus to be a public health emergency of international concern on February 1, 2016.¹ At that time, there were 116 known travel-related cases of Zika in thirty-three states. By that time, all communities in the United States that were at high levels of risk ought to have been on notice that the coming mosquito season would be one that could cause great harm to their populations.² The public health


² The language of the World Health Organization declaration made the scope of the threat clear. Zika Declaration, supra note 1.
surveillance systems\(^3\) functioned properly, and scientists had both efficiently analyzed data and openly shared information with their peers.\(^4\) In turn, recommendations for minimizing the threat were generated in an extremely efficient manner.\(^5\) Warnings and concrete recommendations were issued well in advance of mosquito season in the Western Hemisphere.\(^6\)

As the year progressed, the news steadily worsened about all aspects of Zika. And yet, state and local governments did not act as aggressively as they should have, nor did Congress.

In light of all the available information from public health officials tasked with developing appropriate responses to threats to public health, all women at risk and their partners should have been provided with access to free, long-lasting, and reliable contraception, and states at a high level of risk should have undertaken extensive education and mosquito eradication programs well in advance of mosquito season. Little to none of this occurred. If the early stage of Zika was a test of our capacity to protect ourselves from emerging infectious diseases, our country failed, even as the public health infrastructure functioned at a highly effective level.\(^7\)

Zika is a virus that is carried by mosquitoes and infects humans who are bitten by an infected mosquito.\(^8\) Infected people can also sexually transmit

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\(^3\) See, e.g., Reporting, Data Collection, & Findings, CTRS. FOR DISEASE CONTROL & PREVENTION [hereinafter CDC], http://www.cdc.gov/Zika/hc-providers/reporting-collection-findings.html [https://perma.cc/KFJ8-UUN8] (last visited Jan. 31, 2017, 11:31 PM) (providing information such as the Zika reporting and data collection information and communicating findings from the U.S. Zika pregnancy registry).


\(^5\) See, e.g., Katherine E. Fleming-Dutra et al., Update: Interim Guidelines for Health Care Providers Caring for Infants and Children with Possible Zika Virus Infection—United States, CDC (Feb. 26, 2016), https://www.cdc.gov/mmwr/volumes/65/wr/mm6507e1.htm [https://perma.cc/ZR5F-K2AC] (updating the CDC’s interim guidelines for U.S. health care providers as new information became available).

\(^6\) Id.

\(^7\) The author is not alone in reaching this conclusion. See, e.g., Alexandra Phelan & Lawrence O. Gostin, On Zika Preparedness and Response, the U.S. Gets a Failing Grade, HEALTHAFFAIRS BLOG (Apr. 28, 2016), http://healthaffairs.org/blog/2016/04/28/on-Zika-preparedness-and-response-the-us-gets-a-failing-grade/ [https://perma.cc/7A22-GGJB]. The United States system of public health is a complex federalist structure with responsibilities resting primarily upon the states but with the federal government bearing responsibility for providing surge capacity, policing quarantine at borders, and protecting national security. See 42 U.S.C. § 300h–10 (2012); see also Laura K. Donohue, Biodefense and Constitutional Constraints, 4 NAT’L SECURITY & ARMED CONFLICT L. REV. 82, 152–55 (2013) [hereinafter Donohue, Biodefense] (discussing the scope of federal quarantine law); Laura K. Donohue et al., Pandemic Disease, Biological Weapons, and War, in LAW & WAR 86 nn.33–34 (Austin Sarat et al. eds., 2014) [hereinafter Donohue et al., Pandemic Disease] (discussing the laws addressing health and national security threats).

the virus for months after their own infection has subsided and humans are contagious long after they are asymptomatic. Zika has a potentially catastrophic effect on fetuses whose mothers become infected while pregnant and possibly on newborn infants. As of 2016, there is no known cure or vaccine on the market, though there is hope of developing a vaccine for distribution in the next few years.

The mosquito that is most likely the prime vector for Zika when infected is found in the United States, particularly in southeastern states ranging from Florida to South Carolina, and as far west as Texas, concentrated primarily along the Gulf Coast. It is also present in Puerto Rico and the United States territories of the Virgin Islands. Other types of mosquitoes that may carry the virus are found in every state. As was predicted from the beginning of 2016, the Centers for Disease Control & Prevention (CDC) confirmed that

reported 3,174 suspected cases [of Zika]."

"Mosquitoes become infected when they feed on a person already infected with the virus. Infected mosquitoes can then spread the virus to other people through bites."


Id.

Zika Virus: Microcephaly & Other Birth Defects, CDC, https://www.cdc.gov/zika/healtheffects/birth_defects.html [https://perma.cc/BG4X-9GRP] (last visited Feb. 1, 2017, 12:04 AM) [hereinafter CDC, Zika Birth Defects]; see also Patricia Brasil et al., Zika Virus Infection in Pregnant Women in Rio de Janeiro, 375 New Eng. J. of Med. 2321, 2325 (2016) ("Among 117 live births in the ZIKV-positive cohort, 49 infants (42%) were found to have abnormalities on clinical examination, imaging, or both, in contrast, among 57 live births in the ZIKV-negative cohort, 3 infants (5%) had such abnormalities."); Pam Belluck, Brain Scans of Brazilian Babies Show an Array of Zika Effects, N.Y. Times (Aug. 23, 2016), https://www.nytimes.com/2016/08/24/health/zika-a-formidable-enemy-attacks-and-destroys-parts-of-babies-brains.html?r=0 [https://perma.cc/V5R9-JSY7] ("The journal Radiology, also suggest[s] a grim possibility: Because some of the damage was seen in brain areas that continue to develop after birth, it may be that babies born without obvious impairment will experience problems as they grow.").


Knowlton et al., supra note 13, at 2–3; CDC, Potential Range in the US, supra note 13.

Andrew J. Monaghan et al., On the Seasonal Occurrence and Abundance of the Zika Virus Vector Mosquito Aedes Aegypti in the Contiguous United States, PLOS CURRENTS OUTBREAKS (Mar. 16, 2016),
locally transmitted cases of Zika occurred in the United States, most likely starting in June 2016, a problem that may continue until the 2016 mosquito season ends, and may also re-emerge in 2017.

People at greatest risk of Zika infection are those with the least control over their working and living environments—those who must go outside, those who have limited access to air conditioning, and those who live in low-wage and low-wealth households. When Zika is locally transmitted, however, it is most likely impossible to entirely eradicate the exposure risk. As a result, it appears that many women in areas with Zika have chosen to abort fetuses, rather than continue with risky pregnancies.

The story of Zika in 2016, then, is a narrative about abortion, birth control, sexual activity, and poverty—a heady mix in the current political and cultural climate. It is also about the need for granular, highly skilled governmental activity at a local level, due to the labor-intensive activity needed to abate the mosquito that carries the virus—a type of labor the United States has effectively performed in the past.

The sluggish federal and state legislative response to the threat of Zika from January through August 2016 directly contradicted the ethical duty to protect the public’s health that has long been recognized as woven into the fabric of the police power. The police power for public health is extremely broad because, as the Supreme Court stated in *Jacobson v. Massachusetts* in 1905, “[u]pon the principle of self-defense, of paramount necessity, a community has the right to protect itself against an epidemic of disease which threatens the safety of its members.” Bound within this broad grant of power is an intrinsic duty to exercise it in the face of such danger. The duty requires “conserving the safety of its members,” recognizing that the


18 Abigail R.A. Aiken et al., Requests for Abortion in Latin America Related to Concern about Zika Virus Exposure, 375 NEW ENG. J. MED. 396, 396 (2016).


20 197 U.S. 11 (1905).

21 *Id.* at 27.

22 *Id.* at 29.
legislature's "function [is] to guard the public health and safety." As legal academics throughout the last century have understood, "[g]overnment is, in fact, organized for the express purpose . . . of conserving the public health and cannot divest itself of this important duty."

The failure of government to minimize public health harm matters is generally concerning. In the case of Zika, specifically, this failure in harm reduction is particularly worrisome, as a widespread outbreak could impair an entire generation of children. Public health practitioners have been aware for some time that the world has entered a new phase of public health risk from infectious diseases, yet this new awareness is coupled with a troubling complacency about the dangers. Shifting patterns of weather due to climate change increase the risk, as even small changes in temperature can cause dramatic shifts in disease patterns. The international community, generally, has created multiple structures, treaties, reporting capacities, and funding sources to identify and respond aggressively to these diseases as they arise because the risks are so severe. The United States moved to modernize its public health structure after September 11, 2001, with fears of bioterrorism leading to increased federal funding for local preparedness and with many states modernizing their public health laws and undertaking other efforts to increase capacity for rapid responses to health threats. This modernized system functioned extremely well until responsibilities shifted from public health actors to legislative actors and governors. At that point, as discussed in detail below, the lack of a vigorous response to early and clear warnings about Zika—warnings the system was designed to provide—

23 Id. at 30.
25 See, e.g., LANCE SAKER ET AL., GLOBALIZATION AND INFECTIOUS DISEASES: A REVIEW OF THE LINKAGES, SPECIAL TOPICS NO. 9, SOC., ECON. & BEHAV. RESEARCH 1 (2004) ("Globalization appears to be causing profound, sometimes unpredictable, changes in the ecological, biological and social conditions that shape the burden of infectious diseases in certain populations. There is accumulating evidence that changes in these conditions have led to alterations in the prevalence, spread, geographical range, and control of many infections, particularly those transmitted by vectors."). There are numerous examples of newly emerging and re-emerging infectious diseases. Anthony S. Fauci, Infectious Diseases: Considerations for the 21st Century, 32 CLINICAL INFECTION DIS EASES 675, 676 (2001).
27 Jonathan A. Patz et al., Global Climate Change and Emerging Infectious Diseases, 275 JAMA 217, 221–22 (1996).
shows that the current system is still dangerously flawed$^{30}$ when confronted with this kind of threat.

Particularly when an infectious disease is vector borne rather than primarily transmitted by persons who are infected, we have historically looked to state governments for protection and to the federal government for auxiliary funding of these efforts.$^{31}$ It does not appear that either can be compelled by any enforcement mechanism to respond to Zika or any other public health threat beyond what their existing public health statutory schemes require of existing administrative agencies. Given the likelihood of the continual emergence of new infectious diseases and the risks these diseases pose to our country, this structure’s inherent weaknesses may prove to be a significant problem from the perspectives of national well-being, and national security. Those with the power to act, a power that is particularly clear in the face of an infectious disease, have simply not internalized the concurrent duty to utilize that power or have felt constrained in their duty to act by countervailing pressures. They have the power but not the will.$^{32}$

This Article proceeds as follows: Section I analyzes the current legal framework of public health power for specific actors, and examines, but rejects, the possibility of compelling appropriate responses from these same actors. Section II argues that both state and federal governing bodies had a duty to appropriately respond to the infectious disease threat posed by Zika, even as many framed the problems associated with Zika as belonging within a private, rather than public, sphere. To make this argument, this Article examines the ethical and legal framework for finding a duty to act in the face of public health threats. Section III explains in detail the early, reliable information about the health threats presented by Zika and describes the public health measures that were generally recognized as appropriate in response to these threats. Section IV then examines the legal and political

$^{30}$ A counter example to inactivity was the recent Ebola virus outbreak in other countries, which led to an extraordinary level of fear and reactivity in some state governments, often in a manner that was contrary to public health guidance and protocols. See State Ebola Protocols, CDC, [https://www.cdc.gov/phlp/publications/topic/ebola.html](https://www.cdc.gov/phlp/publications/topic/ebola.html) (last visited Feb. 1, 2017) (showing a map of states which had more restrictive Ebola screening and monitoring policies as compared to CDC guidelines). State governments’ reactions perhaps should have been a sign that the structure was inadequate, and instead reflected a pattern of over-reaction grounded in fear of infection. See Yanzhong Huang, Are Americans Overreacting to the Ebola Virus?, FORBES (Oct. 21, 2014), [http://www.forbes.com/sites/yanzhonghuang/2014/10/21/are-americans-overreacting-to-the-ebola-virus/#346457711b46](http://www.forbes.com/sites/yanzhonghuang/2014/10/21/are-americans-overreacting-to-the-ebola-virus/#346457711b46). The response to Zika has been one of under-reaction and inactivity in the face of a concrete and documented threat.

$^{31}$ The federal government also provides extensive support through agencies such as the CDC and other agencies within the Department of Health and Human Services (HHS).

$^{32}$ This is not a new complaint for people in public health or in environmental sciences. Many were frustrated by the laconic initial response to AIDS, and today many lament the slow Congressional response to climate change. Because Zika is known to be a vector-borne infectious disease, historically within the bailiwick of states, the 2016 failure may actually be more worrisome, as it reflects rejection of even the historic foundational functions of public health.
failures that occurred with Zika in light of both governmental duties to act to protect the public health and the specifics of this case study.

Section V of this Article discusses the possibility that the complex moral, political, and legal issues surrounding birth control and abortion have negatively influenced government behavior in this case. Zika may be unique, and the failure of state action may not be a sign of a structural failure of public health generally, but rather a sign of public health weakness when addressing public health matters that significantly implicate reproductive choice. The Supreme Court's decision regarding access to abortion in 2016\(^{13}\) may have added to the turmoil even as it clarified that some state laws were unconstitutional.

In light of the possibility that abortion politics derailed an appropriate Zika response, this Article recommends that courts seek to minimize future politicization of public health actions by requiring that legislators present at least some evidence of public health benefits that can be derived from laws enacted under public health powers, therefore constraining the usefulness of public health legislation for purely political purposes. If the failures are related to a more general disregard for the duties of office holders, this Article further recommends that public health policy makers and academics seek to create a culture that more vigorously reinforces the positive duties inherent in the power to protect the public's health.

In order to analyze this case study fully, a multidisciplinary approach is utilized, combining legal analysis of public health powers and duties with a public health policy and public health ethics analysis as they relate to Zika.

This case study does not claim to write the final chapter on Zika or on eventual governmental responses that may occur. Generally speaking, the failure of state governments to respond to profound threats is eventually corrected by the democratic process, a fact of which elected representatives are well aware. Furthermore, the responsibility and power for protecting the public health is, and has historically been, an obligation that states take seriously and one vigorously protected from federal usurpation. If Zika emerges as the extraordinary threat it has the potential to be, it is highly likely that governments at all levels will respond aggressively out of a desire to protect human life, a desire to maintain power, and a desire to be reelected. However, the initial anemic response is troubling and may lead to the occurrence of otherwise preventable harms.

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\(^{13}\) Whole Woman's Health v. Hellerstedt, 136 S. Ct. 2292, 2300 (2016).
I. ALLOCATION OF PUBLIC HEALTH POWERS

A. The States

The police power, including the power to protect the public health, rests primarily with the states. Understanding the scope of this power, which is extremely broad, is critically important in the face of an emergent public health threat so that both state and federal governments react appropriately and so the commensurate state duty to act is seen within its correct framework. There is extensive scholarship supporting the breadth of this power. Of particular importance is the historical and analytical scholarship of Wendy Parmet, who, in an influential article about the relationship between public health law and the Constitution, found that “[a]t the time of the Constitution’s framing, both the obligation and the power to protect public health were widely viewed as belonging to the states” and that

34 The United States Constitution, under the enumerated powers doctrine, reserved powers for the states that were not specifically granted to the federal government. U.S. CONST. amend X. The police power, as it was not enumerated, remained with the states. Under the federalist system, while the state generally has the power to protect the public health, it rests with the state legislature to define what the state will do. Jacobson v. Massachusetts, 197 U.S. 11, 25 (1905). Within this system, the state legislatures have the power to enact detailed legislation and to also delegate power to municipalities. Id. The executive branch and judicial branch are then tasked with implementing and overseeing the legislative dictates. Id.

35 The disaster and aftermath of Hurricane Katrina in 2005 is an example of the public health problems that can occur with poor understanding of public health powers. Nicole Lurie, Karen DeSalvo, and Kristen Finne, in a 2015 post on the Health Affairs Blog, write that the response to Katrina “ha[s] become synonymous with systemic failure of disaster preparedness, response, and recovery policy.” Nicole Lurie et al., Ten Years After Hurricane Katrina: Progress and Challenges Remain for US Emergency Preparedness, HEALTHAFFAIRS BLOG (Aug. 27, 2015), http://healthaffairs.org/blog/2015/08/27/ten-years-after-hurricane-katrina-progress-and-challenges-remain-for-us-emergency-preparedness/ [https://perma.cc/GQ8R-D27S]. The failure involved poor planning, but it also involved poor understanding by both state and federal government officials about who had power and how that power could be utilized, leading to paralysis. WHITE HOUSE, DEP’T OF HOMELAND SECURITY, THE FEDERAL RESPONSE TO HURRICANE KATRINA: LESSONS LEARNED 52 (Feb. 2006), https://www.uscg.mil/History/katrina/docs/KatrinaLessonsLearnedW1report.pdf [https://perma.cc/Q4DG-78ZG]. A lengthy examination of what went wrong led to numerous organizational changes in federal and state disaster preparedness, but the central challenge, knowing one’s power and responsibility, is still critical to effective responses. Further complicating matters, governors of affected states had differing understandings of the Emergency Management Assistance Compact, which allows states to come to each other’s aid in times of emergency. The Governor of Mississippi was more familiar with the system than was the Governor of Louisiana, and the aid went primarily to Mississippi as a result. William L. Waugh Jr., EMAC, Katrina, and the Governors of Louisiana and Mississippi, 67 PUB. ADMIN. REV. 107, 107 (2007).

36 Lawrence Gostin has written about the scope of this scholarship at some length. For an example, see, in particular, the Section State and Local Power to Assure the Conditions for the Public’s Health: Salus Populi Est Suprema Lex in LAWRENCE O. GOSTIN & LINDSAY F. WILEY, PUBLIC HEALTH LAW: POWER, DUTY, AND RESTRAINT 87 (2016).

"issues of public health and the ability of states to protect it continue to influence [constitutional law]."\(^{38}\)

With regard to Zika, state power is distributed so that public health agencies are responsible for disease control, reporting, contact tracing, etc., and municipalities such as counties are usually responsible for mosquito control. Any enhanced powers for agencies or funding for Zika responses would come from the state legislature.

Within the federalist system, the state power and responsibility to respond to public health threats is protected by the federal judiciary, as explained in the Supreme Court opinion of *Jacobson v. Massachusetts*.\(^{39}\) *Jacobson* concerned a man’s desire not to receive a smallpox vaccine though it was mandated by his municipality that he do so.\(^{40}\) He made a series of arguments regarding what he believed were his constitutional rights to refuse to cooperate, all of which were rejected by the Supreme Court.\(^{41}\)

In writing the majority opinion, Justice Harlan sought to clearly explain the source of state power to compel Jacobson’s behavior. The state police power in public health is grounded in the state capacity for self-defense in the face of potentially ruinous public health threats\(^{42}\) and it is properly construed, in accordance with *Jacobson*, as extremely broad and potent.\(^{43}\) The power has a long history. Language referring to this power is commonly seen, for example, in reference to communicable disease quarantine, as in this quote from a Maine court, "[t]he maxim salus populi supreme lex is the law of all courts and countries. The individual right sinks in the necessity to provide for the public good."\(^{44}\)

Using *Jacobson* as a guide, state legislative action under the police power is unconstitutional if it is a "plain, palpable invasion" of individual rights secured by the Constitution or "if a statute purporting to have been enacted to protect the public health . . . has no real or substantial relation to those objects."\(^{45}\) In differentiating *Jacobson* from an earlier case where the Court did overturn a state public health law, the Court explained that the

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\(^{38}\) Id. at 15–16 ("[T]he important point is that the Supreme Court consistently saw the protection of public health as among those activities that fell within the police power, and which states could therefore undertake without running afoul of the implied limits that the Constitution placed upon state interference with interstate commerce.").

\(^{39}\) 197 U.S. 11 (1905).

\(^{40}\) Id. at 13.

\(^{41}\) Id. at 26.

\(^{42}\) Id. at 27. The reference to self-defense is important and has particular meaning in this context, as discussed in more detail, infra note 82 and accompanying text.

\(^{43}\) In describing the importance of public health and the deference it generally inspires, Wendy Parmet wrote, "[t]he claim that an intervention is needed in the name of public health is a powerful one, perhaps as compelling as the cry of national security." Parmet, supra note 37, at 22.


\(^{45}\) Jacobson, 197 U.S. at 31.
earlier law went beyond the necessity of the public health problem, which the law in Jacobson did not. The Court justified the invasion of individual rights only if public health regulations were reasonable. Finally, the Court suggested that burdens imposed by public health laws must be proportionate to the expected benefit, referring to evidence regarding this balancing with regard to vaccines.

The Court found that there was no plain, palpable invasion of the petitioner’s individual rights in Jacobson, but Justice Harlan did describe when such an invasion would likely be found with regard to a public health law. The decision gave the petitioner very little room for relief. The Court held that burdens on individuals, generally, are allowable, because “[o]n any other basis organized society could not exist with safety to its members.” However, the Court noted that a properly enacted law could be “exerted in such circumstances . . . as to justify the interference of the courts . . . [where its imposition on an individual] would be cruel and inhuman to the last degree.” In effect, such a law is extremely likely to be enforced in almost all circumstances unless, for example, a compelled vaccination for a specific individual would lead to death or a similarly grave outcome.

In assessing the statute, the Court found that it did have a real and substantial relation to protecting the public health. In its discussion of the

46 Id. at 28.
47 Id. at 29.
48 Id. at 24. Lawrence Gostin has described the Jacobson test as consisting of four parts: (1) Necessity (meaning that a threat must exist that requires intervention); (2) Reasonable Means (the response must be reasonably designed to address the problem); (3) Proportionality (the burden must be proportional to the expected benefit); and (4) Harm Avoidance (treating the maximum degree of harm allowed by the public health intervention as part of the arbitrary and capricious standard). Lawrence O. Gostin, Jacobson v. Massachusetts at 100 Years: Police Power and Civil Liberties in Tension, 95 AM. J. PUB. HEALTH 576, 579 (2005). http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1449223/
49 Jacobson, 197 U.S. at 26. The Court also made reference to social-compact theory. Id.
50 Id. at 38–39.
51 Id. at 31. The broad scope of public health powers and discretion in utilizing those powers was not limitless. The Court was aware that earlier district court cases had found constitutional violations in public health laws. Five years prior to the Jacobson decision, for example, a federal district court in California had overturned a resolution related to bubonic plague that had been adopted by the Board of Health and City of San Francisco. Jew Ho v. Williamson, 103 F. 10, 26–27 (N.D. Cal. 1900). The resolution declared Chinatown, in its entirety, to be under quarantine. Id. at 11, 23. The evidence before the court showed that the quarantine was only enforced against Chinese immigrants and people of Chinese descent, and the plaintiff proved a pattern of racist and discriminatory actions against them that had been taken under the resolution. Id. at 23. The court first held that it had jurisdiction over a matter related to a municipal public health resolution with regard to its constitutionality. Id. at 16–17. It then reiterated the state’s power to protect the public health in an emergency and the deference the court would give that power, stating that “[i]n the presence of a great calamity, the court will go to the greatest extent, and give the widest discretion, in construing the regulations that may be adopted by the board of health or the board of supervisors.” Id. at 21. The court then overturned the resolution. First it found that the resolution tended to make an infectious disease more, rather than less, dangerous, by allowing large numbers of people to move freely within a confined area. Id. at 22–23. It then found that the resolution
smallpox vaccine at issue in *Jacobson*, the Court made it clear that there can be scientific evidence that is in opposition to the choice adopted by the state legislature, but all that is required to justify a law is that there be some evidence supporting the legislative choice.\textsuperscript{52} The Court does not delineate how much evidence must be available to support legislative decisions beyond the word "some" but included substantial evidence as to the efficacy and general acceptance of vaccines in the footnotes.\textsuperscript{53} From the time of *Jacobson* until very recently, almost every state public health law that has been challenged has been upheld by the Supreme Court using this extremely protective standard the Court delineated in *Jacobson* for assessing legislative action in public health.\textsuperscript{54}

The role of the federal judiciary in assessing public health laws has implications for how states respond to public health emergencies.\textsuperscript{55} Assessing whether a law is constitutional can be particularly complex in public health situations because legislative enactments and regulatory responses often must occur in the face of rapidly emerging public health emergencies made more complex by lack of scientific certainty as to causes and/or appropriate responses. It is often in the nature of these types of public health threats that they are poorly understood, appear abruptly, and present new challenges regarding best practices. In truth, whoever has the power to determine the appropriate response may be choosing from a limited set of options in the face of imperfect information. These choices are guided primarily by the precautionary principle, a guiding principle in public health that requires decision makers to preemptively respond to threats in a manner that minimizes future consequences, even as the consequences have not yet occurred in any major form.\textsuperscript{56}

Judicial oversight for these types of decisions has risks. Inappropriate judicial oversight could undermine a state’s power to nimbly react to such a situation and could constrain states in acting under the precautionary

\textsuperscript{52} *Jacobson*, 197 U.S. at 35 (1905).

\textsuperscript{53} Id. at 31 n.1.

\textsuperscript{54} *Jacobson* has been cited in sixty-nine Supreme Court cases, with the vast majority upholding the laws in question. Professor Gostin created a chart showing these cases and the grounds of the holdings. Gostin, *supra* note 48, at 578 tbl.1.

\textsuperscript{55} The federal judiciary may also play a role in enhancing public trust in public health endeavors by overseeing the rationality of the state response.

\textsuperscript{56} For a discussion of the appropriate public health reaction under the precautionary principle in the face of early warnings of risk, see David Gee & Andrew Süring, *Late Lessons from Early Warnings: Improving Science and Governance under Uncertainty and Ignorance*, in WHO, THE PRECAUTIONARY PRINCIPLE: PROTECTING PUBLIC HEALTH, THE ENVIRONMENT AND THE FUTURE OF OUR CHILDREN 93 (Marco Martuzzi & Joel A. Tickner eds., 2004).
principle, given the possibility of having little evidence to justify any particular response or individual burden even as some action is required. On the other hand, a meaningful standard of review must be able to stand as a bulwark against unjust and prejudicial behavior.57

Lax judicial scrutiny encourages states to enact laws under the public health power that may have their genesis in ulterior motives, such as infringing upon constitutionally protected rights such as abortion.58 Public health practitioners recognize that it is critical for the public to have trust in public health officials so that threats can be addressed efficiently, with minimal coercion.59 Laws that purport to be for the protection of public health but are, in truth, passed for other reasons risk undermining this trust, particularly if it is perceived that partisan political goals are being pursued in lieu of public health goals.

B. The Federal Government

Under current law, the federal government has a significant scope of public health protection power in three areas. The first area springs from its power to control foreign relations, and involves activities such as entering into agreements with other countries to protect global health.60 The second area is controlling disease at borders, primarily through inspection and quarantine.61 The third area is its power to respond to health concerns that

57 See Wendy E. Parmet, The Police Power and Aids: The Limits of Legal Precedent, 11 J. HEALTH & HUM. RESOURCES ADMIN. 444, 444–45, 453–55 (1989) (discussing the proper role of the courts when the public, and some in public health, reacted in a discriminatory manner towards those at risk and those who were HIV positive in the earliest years of the AIDS epidemic).

58 A recent Supreme Court decision, Whole Woman’s Health v. Hellerstedt, 136 S. Ct. 2292 (2016), overturned a series of Texas public health regulations directed at abortion providers, finding that there was no evidence to show that the laws improved health outcomes and, on the contrary, that they likely had a negative effect on women’s health. Id. at 2318. This opinion was primarily focused on protecting a woman’s right to have access to abortions, but it will hopefully have a concurrent effect of decreasing state utilization of public health powers for solely political purposes.

59 Mark Rothstein has written about the decline in trust of public health officials, arguing that trust is essential in order for people to react appropriately in the face of a significant public health threat and must be restored. Mark A. Rothstein, Restoring Trust in the U.S. Centers for Disease Control and Prevention, SCHOLAR STRATEGY NETWORK (Mar. 2015), http://www.scholarsstrategynetwork.org/brief/restoring-trust-us-centers-disease-control-and-prevention [https://perma.cc/9RGL-XQ59].


61 For a discussion of the history and scope of federal quarantine law, see Donohue, Biodefense, supra note 7, at 144–52.
threaten national security.\textsuperscript{62} It also provides significant public health support to states, and this is most relevant for this problem. The data collection and expertise provided by the CDC and other agencies within the Department of Health and Human Services (HHS) are crucial. In response to emergencies, the federal government can also provide financial support and other forms of surge capacity.\textsuperscript{63} The role of the federal armed services is, however, strictly limited on United States soil, and so it can only assist in limited capacity and only through controlled channels.\textsuperscript{64} Finally, the federal government can fund and conduct research to develop vaccines, diagnostic tests, and treatments.\textsuperscript{65}

If a public health threat is severe and states appear both incapable and unwilling to address it, a complex issue can arise regarding the federal government’s capacity to react in order to preserve national security, as well as neighboring states’ powers to defend their own people from dangers emanating from their neighbors.\textsuperscript{66} A full discussion of this issue is outside of the scope of this Article. It suffices to say such an occurrence could threaten to tear at the very fabric of the union, and scholars are well aware of this risk.\textsuperscript{67} Even with such a risk, the federal government may have a justification for intervening in extremely severe circumstances, and may intervene whether current laws support the intervention or not.

The federal government has processes for providing states with surge capabilities in the face of disasters and emergencies. These resources can be allocated to a specific state that has suffered, for example, a devastating hurricane. In order to receive this assistance, a Governor must request it and

\textsuperscript{62} See Donohue et al., \textit{Pandemic Disease}, supra note 7, at nn.33–34 and accompanying text (discussing laws addressing these health threats).

\textsuperscript{63} 42 U.S.C. § 300hh-10 (2012).

\textsuperscript{64} 18 U.S.C. § 1385 (2012). The law prohibiting this activity is known as the Posse Comitatus Act, and reads: “Whoever, except in cases and under circumstances expressly authorized by the Constitution or Act of Congress, willfully uses any part of the Army or the Air Force as a posse comitatus or otherwise to execute the laws shall be fined under this title or imprisoned not more than two years, or both.” Id.


\textsuperscript{67} See, e.g., Donohue et al., \textit{Pandemic Disease}, supra note 7. The potential conflict over the parameters of state power and national security power were recently on display when Congress greatly expanded federal power in a public health emergency, were then faced with the ire of state governors, and rewrote the statute, scaling back any new, explicit federal powers. Id. at 159–62 n.52 and accompanying text.
the President must approve the request, issuing a declaration of emergency. In addition, HHS has the capacity to make a Public Health Emergency declaration. This declaration allows the Secretary of HHS to assist a state in coping with an emergency. In order for the federal government to provide significant funds to states through either of these processes, the U.S. Constitution requires that Congress must allocate the money. The President may shift money that Congress has already allocated to specific federal agencies, but he or she cannot do so in a manner that violates the separation of powers in the Constitution.

II. THE DUTY TO ACT: ETHICAL OBLIGATIONS OF GOVERNMENTS IN THE FACE OF PUBLIC HEALTH THREATS

Inherent in the police power is a responsibility to police and inherent in the derivative power to protect the public health is a duty to do so. This duty includes protecting the public from infectious diseases, including Zika. It has long been understood that "[g]overnment is, in fact, organized for the express purpose . . . of conserving the public health and cannot divest itself of this important duty." This governmental duty is an ethical obligation. It is not legally enforceable through the judiciary absent an existing statutory scheme that compels some agency action.

The best way to conceptualize this duty is by looking at the delegation of power as the creation of potential vacuums. For example, because states arguably have the primary, initial power to respond to a public health threat within their borders, other interventions, such as those by the federal

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72 Tobey, supra note 24, at 126.
73 See Hurricane Katrina: The Storm that Shamed America. INDEPENDENT (Aug. 19, 2010). http://www.independent.co.uk/news/world/americas/hurricane-katrina-the-storm-that-shamed-america-2037164.html (https://perma.cc/7Y4C-5UQ9). Hurricane Katrina in 2003, and particularly the failure to protect people in New Orleans, is commonly perceived as both a public health and political disaster that had numerous political ramifications. It is an ethical obligation that is primarily enforced through elections, an imprecise tool with little to control its timing or outcome. Another example of a public health and political problem can be found in the initial responses to the high levels of lead in drinking water in Flint, Michigan, in 2016. Timothy Gardner & Jeff Mason, Political Fallout from Flint, Michigan Water Crisis Spreads, REUTERS (Jan. 21, 2016, 4:45 AM), http://www.reuters.com/article/us-michigan-water-idUSKCN0UY2GG [https://perma.cc/P91L-TFDW].
government or by a neighboring state, are delayed if not outright foreclosed. Because the federal government is generally responsible for providing surge funding in an emergency, states generally do not set aside sufficient provisions to respond, on their own, were such an emergency to arise. In both cases, failure to fulfill one's ethical duty results in potentially catastrophic results that cannot be otherwise mediated. This power, given its exclusivity, is inextricably bound with the duty and embracing one means embracing the other.

This duty has long been recognized, perhaps in such a manner as to show its existence is assumed. It predates the Constitution. For example, the Supreme Court in *Jacobson* described this obligation throughout the opinion. Justice Harlan's opinion for the majority states that a state legislature may not "properly abdicate its function to guard the public health and safety."74 Furthermore, in explaining why public health laws may burden individuals, he says "it was the duty of the constituted authorities primarily to keep in view the welfare, comfort, and safety of the many, and not permit the interests of the many to be subordinated to the wishes or convenience of the few."75 The duty requires "conserving the safety of its members,"76 recognizing that the legislature's function is to guard the public health and safety.77

Current public health law scholarship supports this concept of a duty and supports its historical basis.78 As Wendy Parmet wrote, "governments were empowered to protect and, therefore, legitimate only when they protected the public health."79 Furthermore, in studying the historical basis of public health powers in the United States, she found that in an environment that

74 Jacobson v. Massachusetts, 197 U.S. 11, 30 (1905).
75 Id. at 29. This is a reference to aspects of social compact theory, where one gives the state powers over one in exchange for its protection. Within this theory, the social compact allows the state to allocate burdens to individuals if it is for the purpose of fulfilling its obligations to its people, generally. Id. at 26–27.
76 Id. at 29.
77 Id. at 30.
78 Theories that a state has the duty to act are not exclusive to public health. A number of scholars have written about ethical duties of the state. See, e.g., Louis Friedman & Mark Tushnet, *Remnants of Religion: Contemporary Constitutional Issues* 51 (1996) ("We argue for the less obvious proposition that some sort of state action doctrine also is a necessary prerequisite to the enforcement of rights: Without a private sphere in which individual decisions are not attributable to the government, the very concept of an individual right loses its meaning."). Others have written about the possibility of a legal cause of action for failure to fulfill these duties. For example, Susan Kuo developed a theory that provides a cause of action against states who fail to protect citizens from mob violence. See Susan S. Kuo, *Bringing in the State: Toward a Constitutional Duty to Protect from Mob Violence*, 79 Ind. L.J. 177, 217–19 (2004) ("[T]his Article hopes to widen some of the[ ]cracks by using social science studies to develop a theory of State response to hostile outbursts that identifies the State's role in the formation and escalation of riots . . . .").
included high levels of risk from infectious diseases, under social contract theory, government was not only entitled, but also obligated, to protect public health.\textsuperscript{80}

The Jacobson opinion justifies the state’s public health powers by making reference to the concept of self-defense. The police power for public health is extremely broad because “[u]pon the principle of self-defense, of paramount necessity, a community has the right to protect itself against an epidemic of disease which threatens the safety of its members.”\textsuperscript{81} The reference to self-defense is important and has particular resonance in the Zika context concerning state duties. In an article about natural rights, common law, and the English right of self-defense, historian Saul Cornell wrote that “[e]arly modern English political theorists and jurists often described the right to defend oneself as the first law of nature.”\textsuperscript{82} Shifting this right to the state, where the “self” is the public, implies that the state will act to defend the public as a person would act to defend themselves. However, the state is a structure, presumably incapable of a primitive response, such as would be elicited when an individual defends themselves from an attack. Instead, a state must act with deliberation and through legislative action and administrative regulation. If social contract theory is correct and individuals have given the state this power to defend itself, the terms of that agreement must include an obligation on the state to do so through its available powers or a false bargain has been made.

It is relatively straightforward to define and justify a state duty to protect the public health. Within that duty, it is possible to ascertain with some specificity types of problems and challenges that should absolutely give rise to a duty to act, even as others may require more thought.\textsuperscript{83} Protection from and control of infectious disease has to be at the core of this duty, given that it is at the heart of state self-defense.

\textsuperscript{80} Id. at 309. The use of the phrase “social contract” here is similar in use and meaning to the phrase “social compact” that appeared in Jacobson. For a survey of the literature in this area, see GOSTIN & WILKINSON, supra note 36, at 87.

\textsuperscript{81} Jacobson, 197 U.S. at 27.


\textsuperscript{83} The scope and goals of public health are legitimately broad. Theodore H. Tulchinsky & Elena A. Vanvlikova, What is the “New Public Health”?, 32 PUB. HEALTH REV. 25, 28 (2010). However, some of the areas within a broad vision of public health, such as those related to capabilities theory, are exceptionally dense and interwoven, requiring what might be called a thick notion of legitimate public health goals. These are, for better or worse, far from the core historical functions of public health and their inclusion in a narrow and muscular definition of duty may not be entirely appropriate until there has been broader societal adoption. This is not meant to assert there is no ethical obligation to pursue them but rather that the legal and historical precedence calling for infectious disease control is currently more broadly accepted.
The public health power derives from the police power, and has, at times, been interpreted to involve a particular type of caretaking, one referred to in public health as parens patriae, meaning that the ultimate authority and responsibility for this protection rests with the state on behalf of its citizens who cannot protect themselves. This concept is used in cases involving children or adults who have limited decision-making capacity or none at all, where it is often referred to as a state duty to care. In a public health context, the power of parens patriae is different in scope, referring to management of the public health in a way that benefits all citizens generally for broader public health purposes, and is not based on any incompetency claims regarding any one individual.

At the root of parens patriae in the context of individuals or public health is a requirement to act on behalf of those who cannot, in order to protect them. This can help further define the scope of the state duty to act by focusing this duty on areas where the state can protect people and individuals who cannot adequately protect themselves. Infectious disease protection, control, and amelioration fits squarely within this concept, with a particular focus on population harm prevention and reduction.

One can push back at the notion of state public health powers springing from parens patriae, arguing that this is a paternalistic vision that is inherently antagonistic to autonomy and that public health should more correctly be viewed as an enhanced form of self-defense or, perhaps, an expression of communal values. What makes it important in a discussion of Zika is that all recommended public health interventions for this virus fit

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84 The phrase’s literal meaning is “parent of his or her country.” Parens Patriae, BLACK’S LAW DICTIONARY (10th ed. 2014).

85 See, e.g., Kay P. Kindred, God Bless the Child: Poor Children, Parens Patriae, and a State Obligation to Provide Assistance, 57 OHIO ST. L.J. 519, 521 (1996) (discussing the scope of state power in child welfare cases and arguing that “[u]nder the common law doctrine of parens patriae the state has an obligation to ensure the safety and well-being of children”).

86 This concept of parens patriae is supported by its roots in public nuisance law. Lindsay Wiley discusses the evolution of parens patriae in public health, arguing that

[In American jurisprudence the public’s interest in preserving health was embodied in the concept of the ‘police power,’ a term that has lost much of its early meaning. The concept of the police power appears to have its roots in the law of nuisance and the common law principle that property rights are limited to the extent that they injure others. Thus the public, acting through the state, could regulate the rights of real property or contract to protect the public health and safety. More importantly, basic rights of property were limited by the needs of the public.

Lindsay F. Wiley, Rethinking the New Public Health, 69 WASH. & LEE L. REV. 207, 231–32 n.95 (2012) (quoting Wendy E. Parmet, Legal Rights and Communicable Disease: AIDS, the Police Power and Individual Liberty, 14 J. HEALTH POL’Y & L. 741, 743 (1989)). The public, then, acted when other people could not act for themselves to constrain the activities of property owners. See Jacobson, 197 U.S. at 25 (citations omitted) (“The police power of the state must be held to embrace, at least, such reasonable regulations established directly by legislative enactment as will protect the public health and the public safety.”).
squarely within both of these concepts of public health, making governmental failures less defensible and more perplexing.

III. CASE STUDY: ZIKA IN 2016

In order to recognize political failings in response to the threat of Zika, it is important to understand the information that was available for elected officials to act upon in a given time frame. The possible severity and scope of the threat, even as information about the virus was initially emerging, was understood and public health officials issued straightforward recommendations in response.87

A. Emerging Evidence of Risk

1. Tracking the Spread of the Virus

In the late fall of 2015 and winter of 2015–2016, the international public health world became concerned about a sharp uptick in the number of Brazilian infants reported to be born with serious birth defects. Very quickly, it was determined that there was sufficient evidence to suspect a link between the birth defects and Zika.88 This link was confirmed in May 2016.89 By January 2016, it was already known that the Zika virus is most commonly transmitted when a mosquito that is infected with the virus bites a person.90 It is also a sexually transmitted disease; a fact suspected in 2015, that became increasingly verifiable during the first six months of 2016.91 It is a vector-borne virus,92 meaning some form of independent agent like a mosquito carries it. This means that one must control the vector in order to control the disease.93 When a person has Zika, they may not even realize it because historically, the symptoms can be mild or nonexistent unlike other severe

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87 See, e.g., Zika Declaration, supra note 1 (calling for mosquito control and protecting pregnant women from exposure).
88 An outbreak of Zika in Brazil was confirmed as early as May 2015. Mary Kay Kindhauser et al., Zika: The Origin and Spread of a Mosquito-Borne Virus, 94 BULLETIN OF THE WORLD HEALTH ORG. 675, 675 (2016), http://www.who.int/bulletin/online_first/16-171082/en/ [https://perma.cc/XXU3-TNSB] (a link between Zika and birth defects was first reported in July 2015. Id).
90 Kindhauser et al., supra note 88, at 675.
diseases carried by mosquitoes. The aftereffects may be anything but mild, as seen, for example, with the apparent connection between Zika infection and Guillain-Barré Syndrome.

For decades, the public health sector was aware of Zika and considered it much less problematic than other similarly spread diseases such as dengue fever, a disease easily confused with Zika in its early stages. Starting in 2015, however, Zika rapidly became an international public health threat.

Zika was first discovered in 1947 in Uganda’s Zika Forest, with the first confirmed infection in a human in 1954. In 1948, the virus was found in the *Aedes aegypti* mosquito. Over the next thirty years, the virus was confirmed to have been found in a growing number of locations but not in any significant numbers of infected people. There were no large-scale outbreaks of Zika observed until 2007, on the Island of Yap, a small area with a total population of 7,500 people that is more than 7,000 miles from Uganda and the Zika Forest.

It is generally believed that this first, large-scale Zika outbreak began with infected air travelers. Zika may, in fact, be a relatively old disease made newly pernicious by the modern technology of air travel. From this perspective, Zika in 2016 may be seen as a disease of modernity. Infected *Aedes hensilli* mosquitoes carry the virus, but infected persons may now

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95 See Beatriz Parra et al., Guillain–Barré Syndrome Associated with Zika Virus Infection in Colombia, 375 NEW ENG. J. MEDICINE 1513, 1513–14 (2016) (showing the correlation between Zika and Guillain-Barré Syndrome).
98 Zika was first discovered in a monkey from the Zika Forest in Uganda in 1947. Musso & Gubler, supra note 92, at 489. In 1948, the virus was found in the *Aedes aegypti* mosquito. Id. The first humans to show signs of a Zika infection were found in 1952 in Uganda and the first confirmed case of Zika infection in a human was in 1954. Id. at 489–90. For another source for all material related to the initial spread of the disease, see Kindhauser et al., supra note 88.
99 Musso & Gubler, supra note 92, at 489.
100 Prior to the recent problems, it was found as far away as India and Indonesia. Id. at 488. India is about 3,500 miles from Uganda, and Indonesia is about 5,500 miles from Uganda. Distance From India to Uganda, DISTANCEFROMTO, http://www.distancefromto.net/distance-from-india-to-uganda [https://perma.cc/N4ZK-M526]; Distance From Indonesia to Uganda, DISTANCEFROMTO, http://www.distancefromto.net/distance-from-indonesia-to-uganda [https://perma.cc/76W-Q322].
101 Musso & Gubler, supra note 92, at 490.
102 Id. at 504.
103 Id. at 501.
travel quickly and easily to destinations far from the Zika Forest, infecting local mosquitoes at that new destination with the disease. Within one mosquito season, it was estimated that 73% of Yap residents had been infected.\textsuperscript{104} The general perception of that epidemic has been that the effect was mild and did not raise any cause for serious concern.\textsuperscript{105}

Zika became worrisome from a public health perspective in 2013 because the virus had achieved geographic mobility previously unknown in its history and seemed to be increasing in severity. By this time, it had spread to many other Pacific Islands.\textsuperscript{106} An outbreak in French Polynesia lasted from October 2013 until April 2014.\textsuperscript{107} During that time, blood samples have shown that 66% of the population was exposed to the virus.\textsuperscript{108} Retrospective studies from this outbreak were the first where scientists could show a quantifiable association between Zika and specific negative outcomes such as autoimmune problems and Guillain-Barré syndrome.\textsuperscript{109} These studies also showed an association between Zika and an increased risk of microcephaly in infants born to mothers who became infected by Zika during their pregnancies, but the incidence of problems seems to have been small.\textsuperscript{110} As of 2016, some scientists hypothesized that the virus mutated to become more dangerous to humans at some point between 2013 and 2015, making it far more problematic than in its original form.\textsuperscript{111}

In March 2015, Brazil began reporting a new virulent disease spreading in its population.\textsuperscript{112} This disease was identified as Zika in May 2015.\textsuperscript{113} This was the first time Zika was found to be spreading locally through infected mosquitoes in the Americas.\textsuperscript{114} By June 2016, Zika outbreaks with active, mosquito-borne disease had occurred in Columbia, Mexico, Guatemala, Paraguay, and Venezuela, as well as in Puerto Rico.\textsuperscript{115} People had been

\textsuperscript{104} Id. at 490.
\textsuperscript{105} See id. ("This outbreak underscored the potential of [Zika] as a newly emerging arbovirus.").
\textsuperscript{106} Id. at 488.
\textsuperscript{108} Id. at 2129.
\textsuperscript{109} Id. at 2125.
\textsuperscript{110} Id.
\textsuperscript{111} Lulan Wang et al., From Mosquitoes to Humans: Genetic Evolution of Zika Virus, 19 CELL HOST & MICROBE 561, 561 (2016), http://www.cell.com/cell-host-microbe/fulltext/S1931-3128%2816%2930142-1 [https://perma.cc/5DW4-GHBW].
\textsuperscript{112} Kindhauser et al., supra note 88, at 675.
\textsuperscript{113} Id.
\textsuperscript{114} Id.
diagnosed with Zika in each state in the continental United States as well as the District of Columbia, and all of these were considered travel-related cases or cases concerning sexual transmission of the disease by travelers.\textsuperscript{116} By August 2016, there were confirmed local transmissions of Zika in Florida.\textsuperscript{117}

It is still unclear which specific types of mosquito are carrying Zika in the Americas. It is generally considered, as of 2016, that \textit{Aedes} mosquitoes, specifically \textit{Aedes aegypti}, are likely the main vectors, but there is a chance that other mosquitoes such as \textit{Culex} are also vectors.\textsuperscript{118} This is important for two reasons. First, different types of mosquitoes behave differently and eradication programs need to be targeted toward specific types. Second, different types of mosquitoes are located in different parts of the United States.\textsuperscript{119} \textit{Aedes aegypti} is found primarily in the southeastern United States,\textsuperscript{120} and this is where current public health responses are focused. Yet, there are mosquitoes in all states, all of which begin to hatch when the temperature reaches fifty degrees.\textsuperscript{121} If all mosquitoes are potential Zika vectors the problem has a far broader potential geographic reach.

During the course of the Brazilian epidemic it became clear that Zika could be spread through sexual contact.\textsuperscript{122} At first, it was thought that only men could give Zika to their partners,\textsuperscript{123} but as of July 2016, a case was confirmed of a woman giving it to a man.\textsuperscript{124} Early studies show a risk that men can spread the virus for at least three months after exposure.\textsuperscript{125} For women, the timeframe of active virus shedding is still undetermined.

\textsuperscript{116} Zika Virus: Case Counts in the US, CDC, https://www.cdc.gov/Zika/geo/united-states.html [https://perma.cc/Z78G-GU73] (last visited Aug. 24, 2016) [hereinafter CDC, Case Counts].
\textsuperscript{117} Id.
\textsuperscript{118} Will Carless, Nobody is Completely Sure Which Mosquito Spreads Zika Virus in Brazil, USA TODAY (Apr. 7, 2016, 11:08 AM), http://www.usatoday.com/story/news/world/2016/04/07/global-post-mosquito-Zika-brazil/82742382/ [https://perma.cc/UP6E-VTCU]. \textit{Culex} is the mosquito that bites at night. Zika has been found in \textit{Culex} mosquitoes in Brazil. Id.
\textsuperscript{120} This type of mosquito, and its close cousin \textit{Aedes albopictus}, have the potential to expose roughly 173.5 million people to diseases they carry. KNOWLTON ET AL., supra note 13, at 2, 9. They have been found as far north as New York and New Hampshire, and, with continued global warming, are expected to become more widespread. Id. at 11.
\textsuperscript{121} Molly Murray & Natalie DiBlasio, Cold Has Delayed, Not Killed, One Sign of Summer, USA TODAY (Apr. 8, 2014), http://www.usatoday.com/story/weather/2014/04/08/mosquito-season-coming/74617151/ [https://perma.cc/54DE-ATE8].
\textsuperscript{122} Michael McCarthy, Zika Virus Was Transmitted by Sexual Contact in Texas, Health Officials Report, 352 BMJ (Feb. 4, 2016), http://www.bmj.com/content/352/bmj1720 [https://perma.cc/7MJ-C2CS].
\textsuperscript{123} Brooks et al., supra note 9, at 745.
\textsuperscript{124} Id.
\textsuperscript{125} Id.
Generally, the disease only lasts from several days to a week. If a woman is pregnant, however, she may remain infected for a number of months due to her fetus continually re-infecting her. It appears that sexual transmission can be prevented by not having sex or by using condoms during all sexual contact, but, given the newness of this disease in its current manifestation, this may not prove to be correct. A case in the summer of 2016 in Utah may have involved human-to-human transmission of the virus without any sexual contact, which left open the possibility of other routes of contagion.

2. The Health Threats from Zika

In 2016, knowledge about the specific health threats presented by Zika was a rapidly moving target, with developing news being released showing ever more egregious problems with Zika’s effect on pregnant women and their fetuses. In areas of public health concern, under the precautionary principle, reasonable steps must be taken to protect people from any serious risk of harm to their health. In applying the precautionary principle, the WHO has stated that the protection of public health is so important that “in the case of serious or irreversible threats to the health of humans or the ecosystem, acknowledged scientific uncertainty should not be used as a reason to postpone preventive measures.”

Determining what is considered reasonable requires, among other things, a balancing of scope, likelihood, and severity of the harm to the public health. From a public health perspective, a significant commitment of resources was presumably reasonable to combat Zika, since data from studies emerging over the spring and summer revealed the possible severity

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127 For the initial study showing the possibility of this theory, see Dawn M. Dudley et al., A Rhesus Macaque Model of Asian-Lineage Zika Virus Infection, NATURE COMM. (June 28, 2016), http://www.nature.com/articles/ncomms12204 [https://perma.cc/2BMH-XFKK].

128 Zika Virus. Protect Yourself During Sex, CDC, http://www.cdc.gov/Zika/prevention/protect-yourself-during-sex.html [https://perma.cc/2KRL-9YHU] (last visited Aug. 5, 2016); see Brooks et al., supra note 9, at 746 (“Men and women who want to reduce the risk for sexual transmission of Zika virus should use barrier methods against infection consistently and correctly during sex or abstain from sex when one partner has traveled to or lives in an area with active Zika transmission.”).

129 CDC Assisting Utah Investigation of Zika Virus Infection Apparently Not Linked to Travel, CDC (July 18, 2016), http://www.cdc.gov/media/releases/2016/0718-Zika-utah-investigation.html [https://perma.cc/4DRR-FKG9].

of harm.\textsuperscript{131}

For most people, Zika has been a mild illness.\textsuperscript{132} Many people do not know they have been infected.\textsuperscript{133} The symptoms, when there are any, resemble a mild cold, sometimes with a rash, and often with some form of conjunctivitis.\textsuperscript{134} They do not last more than two weeks.\textsuperscript{135} A small percentage of people will have an autoimmune response leading to problems such as Guillain-Barré syndrome, which can lead to temporary paralysis and, infrequently, death.\textsuperscript{136}

Once a person has had Zika, it appears they develop antibodies and will not get it again.\textsuperscript{137} Case studies of mosquito transmission on a mass scale indicate that when the vast majority of people in an area show signs of having been infected within one mosquito season, it has the effect of creating herd immunity, making Zika much less of a consistent health threat, particularly for pregnant women, in that area if mosquitoes remain infected

\textsuperscript{131} For a discussion of the appropriate public health reaction under the precautionary principle in the face of early warnings of risk, see David Gee & Andrew Stirling, \textit{Late Lessons from Early Warnings: Improving Science and Governance Under Uncertainty and Ignorance}, \textit{in THE PRECAUTIONARY PRINCIPLE, supra} note 130, at 93–120 (Marco Martuzzi & Joel A. Tickner eds., 2004), http://www.euro.who.int/__data/assets/pdf_file/0003/91173/E83079.pdf [https://perma.cc/53TH-88RM]. The balancing called for here is inherent in the concept of the precautionary principle: “What is considered an ‘acceptable risk’ or sufficient evidence to act is a function not only of the level of risk and the strength of evidence and uncertainty, but also of the magnitude, reversibility and distribution of the risk, the availability of opportunities to prevent risk, the public’s risk aversion, society’s culture and values, and the pros and cons of alternative options.” \textit{THE PRECAUTIONARY PRINCIPLE, supra} note 130, at 5.

\textsuperscript{132} In August 2016, a study was released that showed Zika might have an effect on adult brains, but this research is in its early stages and the implications are still unclear. Hongda Li et al., \textit{Zika Virus Infects Neural Progenitors in the Adult Mouse Brain and Alters Proliferation}, \textit{19 CELL STEM CELL 593}, 593 (2016), http://www.cell.com/cell-stem-cell/fulltext/S1934-5909(16)30252-1 [https://perma.cc/W29P-ZQBS]. A case study was also published in August 2016, which may show a neurological effect in an adult from a Zika infection. Marco T. Medina et al., \textit{Zika Virus Associated with Sensory Polyneuropathy}, \textit{369 J. NEUROLOGICAL SCI. 271}, 271–72 (2016), http://www.jns-journal.com/article/S0022-510X(16)30535-4/fulltext [https://perma.cc/MJ99-28FJ].


\textsuperscript{134} Zika Virus: Symptoms, supra note 133.

\textsuperscript{135} Id.


for additional seasons.\textsuperscript{138}

The outbreak in Brazil in 2015 was immediately noteworthy because of the severity of the problems it caused in infants.\textsuperscript{139} This has been repeated in outbreaks that have occurred since then. In 2016, it became clear that Zika has catastrophic effects on the brain development of a large percentage of fetuses whose mothers have no immunity to the virus and who are exposed to it while pregnant.\textsuperscript{140} This sudden change is why some scientists hypothesize that the virus has mutated from when it was observed in other countries at earlier times.\textsuperscript{141}

When a woman is infected with Zika during pregnancy, the Zika virus crosses the placenta and infects the fetus;\textsuperscript{142} this is unusual for a maternal illness.\textsuperscript{143} The placenta is usually an effective barrier that protects the fetus from diseases with which the mother is infected.\textsuperscript{144} When a virus crosses the placenta, it can have serious effects on the actual development of the fetus that may lead to birth defects, rather than exposing the fetus to a discreet illness that may or may not be treated.\textsuperscript{145} A recent widespread virus, which caused birth defects similar to Zika, was German measles, or rubella, which caused public health problems in the United States in the 1950s and 1960s

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{138} Musso & Gubler, supra note 92, at 494.
\item \textsuperscript{139} See Patricia Brasil et al., Zika Virus Outbreak in Rio de Janeiro, Brazil: Clinical Characterization, Epidemiological and Virological Aspects, 10 PUB. LIBR. OF SCI. NEGLECTED TROPICAL DISEASES 1, 8 (2016), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4829157/pdf/pntd.0004636.pdf [https://perma.cc/7WHB-5VVD] (discussing the epidemic of microcephaly in newborns and the connection with Zika infected mothers).
\item \textsuperscript{140} The effects may extend beyond birth, as infants can remain infected for months. Danielle B.L. Oliveira, Prolonged Shedding of Zika Virus Associated with Congenital Infection, 375 NEW ENG. J. MED. 1202, 1202-03 (2016), http://www.nejm.org/doi/10.1056/NEJMc1607583 [https://perma.cc/82A2-AF98].
\item \textsuperscript{141} Wang et al., supra note 111, at 561.
\item \textsuperscript{142} Beth Mole, First Mouse Studies Show Zika Explodes in Fetal Brain, Confirm Link to Defects, ARS TECHNICA (May 11, 2016, 4:00 PM), http://arstechnica.com/science/2016/05/in-pregnant-mice-Zika-ravages-pups-1000x-more-virus-in-placenta-than-mom/ [https://perma.cc/8T9D-42RV]. The process for the crossover was identified in August 2016. See Kellie Ann Iurudo et al., Zika Virus Productively Infects Primary Human Placenta-Specific Macrophages, 1(13) JCI INSIGHT 1 (2016), http://insight.jci.org/articles/view/88461?key=2677c2ebd867c383f9d [https://perma.cc/DA3Q-G9Z2].
\item \textsuperscript{143} Very few maternal illnesses have a direct effect on the fetus. See Sue G. Boyer & Kenneth M. Boyer, Update on TORCH Infections in the Newborn Infant, 4 NEWBORN & INFANT NURSING REV. 70, 70 (2004) (discussing the few maternal illnesses commonly known to harm a fetus through the placenta).
\item \textsuperscript{144} For example, HIV almost never crosses the placenta, and so an infant’s exposure to a mother’s HIV almost always occurs during birth. Proper medical care during delivery can virtually eliminate this risk. See id. at 75 (discussing the manners in which a mother can pass HIV on to her child and the various risk factors attendant to each method of transference).
\item \textsuperscript{145} Id. at 71–74. While most people are immune to Chicken Pox, it, too, can cause birth defects in fetuses whose mothers get the virus while pregnant, though the risk of defect, at roughly 2%, is far lower than with Zika.
\end{itemize}
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before a vaccine was made available in 1969.146

In the case of Zika, the virus appears especially attracted to specific
types of fetal brain tissue. The effect of Zika on this brain tissue appears
to be the crux of the problem. In a developing fetus, there are human neural
progenitor cells (hNPCs) that will eventually develop the brain cells of a
person.147 Zika crosses the placenta and infects these cells.148 Once infected,
hNPCs also become extremely efficient factories for producing the Zika
virus, which then spreads to more of these cells.149 Zika appears to kill some
of these cells but also attenuates the development of others, which are then
carriers of the virus.150

One of the first alarming problems noticed in Brazil during late 2015
and early 2016 was a sudden spike in the number of children reported to be
born with microcephaly.151 Microcephaly describes a condition where a
child is born with an unusually small head.152 Historically, microcephaly by
itself has not always been catastrophic for children.153 Ranges of other
physical problems that vary in seriousness can, but do not necessarily,
accompany microcephaly.154 The initial reports from Brazil seemed to show
that 1% to 13% of children whose mothers were infected with Zika during
pregnancy and carried their babies to term would develop this condition.155
As it became likely that the spike in microcephaly was connected to the
concurrent outbreak of Zika, but before there was scientific confirmation of
a causal connection, WHO declared a public health emergency in Brazil
related to Zika and fetal development on February 1, 2016.156

146 Becky Little, Way Before Zika, Rubella Changed Minds on Abortion, NAT’L GEOGRAPHIC (Feb.
control-womens-health-history/ [https://perma.cc/P6FW-X822].
147 Hengli Tang et al., Zika Virus Infects Human Cortical Neural Progenitors and Attenuates Their
Growth, 18 CELL STEM CELL 587, 587–589 (2016), http://www.cell.com/cell-stem-cell/fulltext/S1934-
5909(16)00106-5 [https://perma.cc/RZ5T-S642].
148 Id. at 587.
149 Id. at 588.
150 Id. at 589.
151 Kindhauser et al., supra note 88, at 686A–686B.
153 Id.
154 Id.
155 Cesar Gomes Victora et al., Comment, Microcephaly in Brazil: How to Interpret Reported
6736(16)00213-I.pdf [https://perma.cc/Y39Y-FWV8]; Michael A. Johansson et al., Zika and the Risk of
156 Zika Declaration, supra note 1. Early reports of the connection helped guide this response. See,
et al., Zika Virus Infection with Prolonged Maternal Viremia and Fetal Brain
601824?at=article [https://perma.cc/47NL-55NX] (discussing the connection between Zika outbreaks and
an increase in newborn microcephaly).
Within months of the confirmation of the connection between microcephaly and Zika, researchers observed the behavior of Zika in fetal brains, deducing that the reason Zika leads to microcephaly in some babies appears to be directly related to Zika interrupting the production of brain cells in the manner described above. Fetal brain development happens as new brain cells are created during pregnancy. The fetal head is very soft and expands as the new brain material increases in size. It seems that in the case of Zika, microcephaly occurs because Zika has killed off a sufficient number of brain cells so that the brain does not increase in size, thus leading to a smaller head circumference. Microcephaly is a symptom of brain damage, then, and not the cause. Children with this condition who have been exposed to Zika in utero have severe brain damage, referred to by researchers as catastrophic, at a much higher rate of incidence than has ever been associated with microcephaly in the past.

The initial studies demonstrating how Zika attacks fetal brain tissue implied that the problems related to Zika extended far beyond cases of microcephaly. Other studies have since shown a higher incidence of brain defects in infected fetuses than was originally thought when the rate was based on observable smaller head circumferences. Early studies showed measurable brain defects in more than 40% of babies born after their mothers were infected with Zika, and the number may be significantly higher. It is difficult to detect some of these problems early in infancy, and so it is only with observation of these children over time that the full scope and effect of Zika can be known.

Zika is a threat to a fetus throughout a pregnancy. In the first few months of the Zika outbreak, as its connection to microcephaly was still unproven but suspected, it was thought that the highest risk for fetal health was during the first trimester of pregnancy. As of the summer of 2016, this was no longer considered true, though it does appear true for the more

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157 See Tane et al., supra note 147, at 588.
159 Id.
160 See CDC, Zika Birth Defects, supra note 11 ("Zika virus infection during pregnancy is the cause of microcephaly. During pregnancy, a baby’s head grows because the baby’s brain grows. Microcephaly can occur because a baby’s brain has not developed properly during pregnancy or has stopped growing after birth.")
161 Brasil et al., supra note 11, at 2328–29.
162 Id. at 2325, 2328.
164 Brasil et al., supra note 11, at 2325.
165 CDC, Zika Birth Defects, supra note 11, at 2328 ("Disproportionate microcephaly was seen only in infants infected in the first trimester of pregnancy . . . .")
severe cases of Zika-related microcephaly. Assuming it is the presence of hNPCs that make a fetus vulnerable to Zika, it appears these cells are present throughout a pregnancy; fetal brain damage has been shown to occur as late as thirty-nine weeks into gestation. While Zika generally lasts for two weeks in adults, it may last far longer in pregnant women, which could increase the risk to fetal development and, perhaps, increase the length of time for there to be a risk of sexual transmission.

3. Duration and Scope of Risk of an Epidemic

Depending on how Zika progresses through the 2016 and 2017 mosquito seasons, the virus might have a substantial impact on the United States before a vaccine is developed and marketed. It might also be contained and have a relatively limited impact. The potential for a threat is clear, but how it will play out is not. Using aerial surveillance provided by National Aeronautics and Space Administration (NASA), coupled with analysis provided by the National Center for Atmospheric Research, the CDC identified areas at high risk for mosquito-borne Zika in 2016 in the following states. Florida, Alabama, Louisiana, Mississippi, Georgia, and South Carolina. Texas has areas considered moderate risk, but the CDC also considers the entire southeast Gulf Coast an area of high risk, which includes parts of Texas. There are areas of moderate risk extending as far north as New York, and as far west as Oklahoma and Kansas. Areas of low risk

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166 Brasíl et al., supra note 11, at 2325.
167 Id. at 11, at 2328–29. Studies released in August 2016 found that the hNPC cells that are vulnerable in a fetus are also present in adult humans, leaving it unclear when during fetal development and infancy the risks of Zika diminish. See supra note 124. The fetal brain develops throughout a pregnancy starting at roughly three weeks after the fetus is formed, and grows rapidly during the last trimester. Joan Stiles & Terry L. Jernigan, The Basics of Brain Development, 20 NEUROPSYCHOLOGY REV. 327, 328 (2010), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2989000/ [https://perma.cc/84VA-3D46]. Given the rapid growth and development of the brain throughout pregnancy, coupled with the limited understanding of Zika, it is also unclear how the timing of infection affects brain development in terms of impairments, though late stage infection has apparently been dangerous enough to have been linked to some fetal deaths. See Brasíl et al., supra note 11, at 2328 (indicating a possible correlation between late stage infection and fetal death).
168 A study published in June 2016 about Zika in monkeys found that the virus lasted far longer in pregnant monkeys than it did in non-pregnant monkeys. Dudley et al., supra note 127, at 6. If the same is true for humans, one theory posits that the way Zika interacts with hNPCs turning them into factories for the virus—can prolong the virus’s life in a pregnant woman because the fetus is a continuing source of new viral material. See id. at 5 ("The fetus may . . . be[] the source of the prolonged maternal plasma viremia."). This theory is supported by a study published in August 2016, which found that infants born with Zika can remain infected for months after birth. See supra note 132, Olivesia, supra note 140.
extend as far west as Utah and California.172 During 2016, the incidence of the virus was being closely monitored to better predict the extent of the risk for 2017.173

If historical experience with the West Nile virus’s transmission patterns is a reliable guide, August and September will best inform our understanding of the first season’s spread—these are the months when Zika is likely to be most actively diagnosed, making public health officials aware of mosquito transmissions.174 Of the twenty-one declarations of emergency issued in response to West Nile, seventeen happened in the month of August, with one declaration made each subsequent month through November.175

As of 2016, data about areas that have had an outbreak of mosquito-borne Zika all show that extremely high percentages of people in these areas (many of them pregnant women) are exposed to the virus during the first mosquito season.176 This high level of exposure can, in turn, lead to herd immunity, where the population in general will be less vulnerable to the disease in the future.177 This may be unlikely to occur in the United States; some scientists believe that the spread will be much more limited.178 The presence of standing water, lack of access to air conditioning and window screens, as well as the need to leave the house, all increase the risk of infection, and these variables appear to be easier to control in the United States than in some countries that have had a problem with Zika.179 It is

172 Id.
175 Id. at 24, 27.
176 For example, it is estimated that 73% of people in Yap were exposed during one season of Zika in 2007. Mark R. Duffy et al., Zika Virus Outbreak on Yap Island, Federated States of Micronesia, 360 NEW ENG. J. MED. 2536, 2539 (2009), http://www.nejm.org/doi/pdf/10.1056/NEJMoa0805715 [https://perma.cc/LU9E-T3KZ].
177 See Musso & Gubler, supra note 92, at 493–94 (suggesting that populations widely-exposed to Zika may develop genetic resistance to the virus).
178 Jon Cohen, So Far, Zika is Showing Up in the United States Just Where the Modelers Said It Would, Sci. (Dec. 15, 2016, 4:00 PM), http://www.sciencemag.org/news/2016/05/zika-will-soon-spread-united-states-it-won-t-be-disaster [https://perma.cc/W2UC-3LZH]. Some of the reasoning behind this belief is somewhat open to challenge, such as in a statement attributed to a scientist in the article who says that Latin America is more at risk because people there are more social and expose more skin than in the United States. Id.
179 For example, a public health official in Texas was quoted in May 2016 saying “[t]he fact that we have more access to screens and air conditioning by itself is probably very highly protective.” Dennis Thompson, With Zika at the Doorstep, U.S. Health Officials Brace for Battle, HEALTHDAY (May 9, 2016), https://consumer.healthday.com/disabilities-information-11/misc-birth-defect-news-63/Zika-710671.html [https://perma.cc/48UK-ET46].
known that during the course of one mosquito season, the outbreak in Puerto Rico spread to every district and is thought to have infected at least 30% of the population.\textsuperscript{180} This is substantially lower than what has been found in other areas after a Zika outbreak.\textsuperscript{181} All of this makes it rational to conclude that herd immunity is not likely to occur in areas within the United States.

Ironically, the capacity of the better off among us to limit mosquito exposure at work and at home may, in the long run, contribute to a more problematic group outbreak among the disadvantaged. First, by limiting exposure, we thwart the development of herd immunity for a geographic population during the first mosquito season of locally transmitted disease.\textsuperscript{182} If, at the same time, we fail to eradicate the virus, we risk disease mutation during the following mosquito season.\textsuperscript{183} Because outdoor work and substandard housing is not evenly distributed across the population of the United States, if we do nothing to address these inequities, we allocate the risk of exposure (due to lack of herd immunity) to those with the fewest personal resources available to protect themselves from it with window screens, repellents, air conditioners, and barrier contraceptives.\textsuperscript{184}

What had been initially described as a very small and limited outbreak in Florida in August 2016 quickly spread to another area nearby.\textsuperscript{185} Eventually, the CDC reported that initial mosquito abatement programs done in response to the first local spread were not having an effect on the mosquito population.\textsuperscript{186} To further complicate matters, the CDC has also said that there may be numerous small outbreaks in the continental United States that will not be identified as Zika outbreaks because of their size and lack of consistent, observable symptoms.\textsuperscript{187}


\textsuperscript{181} See supra note 176 (citing the high rate of Zika exposure in Yap).

\textsuperscript{182} See supra Section III.A.1 (discussing the phenomenon of herd immunity).

\textsuperscript{183} See supra Section III.A.2 (discussing the possibility of Zika virus mutation).

\textsuperscript{184} See supra note 179 (discussing the probable effects of social inequities and reduced resources on the likelihood of Zika exposure).

\textsuperscript{185} See Zika Virus: South Florida Maps, CDC, https://www.cdc.gov/zika/intheus/florida-maps.html [https://perma.cc/BAW9-EWF] (last visited Feb. 1, 2017) (indicating that in September the initial 1.5 square mile Miami outbreak zone was quickly expanded to cover a 4.5 square mile area).


\textsuperscript{187} CDC Telebriefing, supra note 186.
B. Public Health Recommendations

From January through August 2016, there was widespread agreement as to the general parameters of appropriate public health responses to Zika to minimize the threat. In the hope that a vaccine for Zika will be developed within the next three or four years, the goal has been to keep the number of exposed people to a minimum in the interim. The CDC and WHO issued recommendations in accord with each other. In summary, the tasks for public health administrators in areas at risk of infection were fairly straightforward on a macro level but contained complex implementation problems on a micro level.

In the United States, most of these tasks are a state responsibility, often completed in tandem with local and municipal governments. First, mosquitoes have to be controlled as well as possible. Controlling the Aedes aegypti mosquito is expensive and labor intensive, and as of 2016, perfect execution is probably unattainable—but overall numbers of the insect can be reduced, which can in turn reduce risk. Mosquito eradication is, in short, a harm-reduction approach. Second, recognizing that no mosquito eradication program is perfect, people have to be protected from mosquito bites. Providing mosquito spray, window screens, and public education about risk avoidance should be relatively straightforward governmental responses given the CDC’s recommendations, though particular attention

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188 For CDC guidelines describing the various state responsibilities, see Top 10 Zika Response Planning Tips: Brief Information for State, Tribal, Local, and Territorial Health Officials, CDC, http://www.cdc.gov/Zika/public-health-partners/tips.html [https://perma.cc/JZ9J-F2F7] (last updated Nov. 17, 2016). Some guidelines, such as travel recommendations, have consistently shifted, but this is in light of newly developing scientific data and new outbreaks. The primary detailed guidance for state public health officials is in a continually updated draft interim response plan. See, e.g., CDC ZIKA RESPONSE PLAN, supra note 17.

189 See supra Section II.

190 This type of mosquito is not effectively killed by aerial spraying, and it breeds in very small quantities of water. CBS NEWS, supra note 186. As a result, public health efforts to eradicate the breeding grounds are labor intensive and intrusive because all private property needs to be inspected and cleared of water-retaining objects like old tires, plastic pots, and any other small container that can hold water and is outside. See Meg Tirrell & Betsy Spring, Fighting Mosquitoes with More Mosquitoes, CNBC (Mar. 4, 2015, 12:09 PM), http://www.cnbc.com/2015/03/04/fighting-dengue-in-the-florida-keys.html [https://perma.cc/3NCB-R9BB] (indicating that even tiny sources of standing water greatly hamper public efforts to eradicate mosquito-borne viruses).

191 In the Florida Keys, efforts have been underway for years to eradicate the mosquito because of dengue fever, a mosquito-borne disease that first appeared there in 2009–2010. Tirrell & Spring, supra note 190. As an example of the intense effort required, one person has a full-time job inspecting one square mile of property for standing water and Aedes aegypti mosquitoes in Key West. Id. In an interview from March 2015, Michael Doyle, the director of the Florida Keys mosquito control district said that the intense efforts had managed to cut the population in half, which he also said was “considered good.” Id. See, e.g., Zika Virus: Prevent Mosquito Bites, CDC, http://www.cdc.gov/Zika/prevention/prevent-mosquito-bites.html [https://perma.cc/275Y-8LX7] (last updated Aug. 15, 2016) (listing some simple mosquito-bite prevention measures such as wearing long pants).
ought to be paid to those in poverty. Third, given the high risks associated with pregnancy during a Zika outbreak, all people who can become pregnant should be given access to long-term, highly effective birth control so that they can choose to delay pregnancy until the risks are minimized. Fourth, pregnant women must have access to reliable education about risks, options, and methods to protect themselves, as well as having meaningful access to these options and methods, such as mosquito repellant and barrier protection for sexual activity. Tracking the spread of the disease, administering proper tests, contact tracing of sexual partners of those who are infected, protecting the blood supply, and myriad other tasks must also be involved. Finally, on a federal level, research must continue to develop a vaccine or some other medical response to eventually limit the damage Zika can cause.

It is probably safe to assume that avoiding pregnancy is the best form of prevention for women who do not want to contract Zika during pregnancy—and for those who wish to remain sexually active, reliable, long-lasting birth control is the best method for avoiding unintended pregnancy. Some countries with Zika outbreaks have recommended that all women in those countries avoid getting pregnant for several years, presumably allowing time for the problem to be resolved. While birth control access and funding is a complex political issue, particularly in the states likely to have problems with Zika, its importance from a public health perspective at this time

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193 Access to air conditioning and adequate window screens require resources, as does the ability to stay inside all day, since most people presumably go outside for work and to fulfill other responsibilities. Even mosquito spray costs may be prohibitive. A typical container of DEET spray costs about $3.13, and needs to be applied multiple times per day to be effective. See WALMART, http://www.walmart.com/search/?query=mosquito%20repellent&typeahead=mosquito (last visited Aug. 31, 2016) (describing the spray as providing “hours” of protection from mosquitoes). Some news sources have reported sudden upticks in the price of repellants as Zika concerns grow. Jonathan Bern, For Consumers, Avoiding Zika is Getting More Expensive, CBS MONEYWATCH (May 27, 2016, 5:15 AM), http://www.cbsnews.com/news/as-demand-for-bug-spray-raises-on-Zika-fears-so-do-prices/ [https://perma.cc/GWK7-2BXJ]. Additionally, manufacturers have noticed a significant uptick in DEET purchases during 2016, which may lead to further price increases or shortages. Linda A. Johnson, Scammers, Bug Spray Companies Capitalizing on Zika Fears, ASSOCIATED PRESS (Aug 3, 2016), http://bigstory.ap.org/article/20dfe9aacc2a347939b55505404e35551/scammers-bug-spray-companies-capitalizing-zika-fears [https://perma.cc/942S-EJRH].

194 See supra Section III.A.2 (discussing risks posed by Zika to pregnant women).


197 See id. at 2–3 (discussing social and political issues surrounding contraception in Zika-affected countries).
cannot be overstated. Some of the same countries that have recommended women refrain from pregnancy during the epidemic have been criticized for making it difficult to access reliable birth control during the same period, as lack of access can make complying with the recommendation difficult or impossible.\textsuperscript{198} Given that the most significant risk from the Zika virus is to the development of the brains of fetuses,\textsuperscript{199} reducing the number of pregnancies in areas with Zika is logically the simplest method for reducing any problems. Furthermore, because roughly half of all pregnancies in the United States are not planned,\textsuperscript{200} reducing this particular number is arguably the least intrusive, most autonomy-enhancing,\textsuperscript{201} and most cost-effective\textsuperscript{202} step a state can take to reduce the actual number of babies born with significant brain defects. Finally, public health decisions need to take place within a framework of what actually occurs in people’s lives. Many women may not realistically be able to insist on the use of barrier protection during sexual contact and so, if pregnant, will not be able to protect their fetus from infection by a sexual partner. Avoiding pregnancy with a method under their own control such as a long-acting, reversible contraception (LARC) may be the only way to protect both mother and child.

The need to provide full access to reliable birth control in the face of these risks is particularly called for given the high number of unintended pregnancies\textsuperscript{203} that occur every year in the United States. The CDC estimates that 49\% of all pregnancies in the United States are unintended.\textsuperscript{204} Of these pregnancies, as with all pregnancies, a significant number end in miscarriage and abortion: as an example, the CDC estimates that there were 6,578,000 total pregnancies in the United States in 2008, out of which there were 4,248,000 live births, 1,212,000 abortions, and 1,118,000 fetal losses.

\textsuperscript{198} Id.

\textsuperscript{199} See supra Section III.A.2 (discussing the Zika’s effects on fetal brain development).


\textsuperscript{201} Offering access to reliable, long-lasting birth control to people who do not wish to become pregnant allows people to make choices and control their lives, rather than imposing burdens on them.

\textsuperscript{202} Assuming states bear the cost for many of the births that result from unintended pregnancies, it can be reasonably speculated that providing birth control would actually yield a net savings over paying for prenatal care and birth. In the context of Zika particularly, the cost of providing birth control would almost surely be offset by the state’s being spared the expense of caring for children born with brain damage.

\textsuperscript{203} Unintended pregnancy is a term meaning “a pregnancy that is reported to have been either unwanted (that is, the pregnancy occurred when no children, or no more children, were desired) or mistimed (that is, the pregnancy occurred earlier than desired).” Reproductive Health: Unintended Pregnancy Prevention, CDC, https://www.cdc.gov/reproductivehealth/unintendedpregnancy/ [https://perma.cc/N3WA-6815] (last updated Jan. 22, 2013). The CDC estimates that 49\% of pregnancies in the United States are unintended. Id.

\textsuperscript{204} Id.
(including both miscarriages and stillbirths).205 After taking into account these statistics, 37% of births in the United States result from unintended pregnancies.206 These percentages of unintended pregnancies and births have remained relatively consistent from 1982 to at least 2010, when the last large-scale analysis was done.207

In effect, it may be correct to say that more than a third of births in this country are the result of lack of access to contraception, lack of access to high-quality contraception, or lack of education about access or effective use of contraception in planned sexual activity. Given the impossibility of preventing all exposure to Zika and the risks attendant to exposure during pregnancy, preventing unintended pregnancies in areas at risk of local transmission is a public health as well as a private-choice issue. Providing contraception programs could reduce societal risks of Zika birth defects by more than a third, and would therefore be an ethically justifiable and cost-effective response. The recent availability for all women of childbearing age of highly reliable, long-term birth control, such as IUDs and implanted hormones, makes this an even more compelling public health tactic.208

C. Private Responses to Zika

Zika’s main risk is to developing fetuses.209 Legally as well as practically, the primary decision maker and actor regarding risks associated with pregnancy is the pregnant woman. The legal framework for procreative choice decision making in the United States is complex and women facing Zika in 2016 must make decisions in light of these complexities.210 One’s capacity to make these choices has historically been influenced by one’s personal wealth, and the Zika virus appears likely to be much more dangerous for those who have limited means.211 Politicians express moral


207 Id. at 6.


209 See supra Section III.A.2 (discussing the effects of Zika on fetal brain development).

210 The legal framework reflects the cultural framework, where women who make responsible choices regarding birth control may be subject to shaming.

211 The risk of exposure to Zika cannot be entirely eliminated through private actions short of moving, which anecdotes suggest many pregnant women of means chose to do in Brazil in 2015, but the risk of bearing a child impaired by Zika can be eliminated through birth control and abortion for those who have access. Jenny Barchfeld & Mauricio Savarese, For Brazil’s Rich and Poor, Disparate Response to Zika, SAN DIEGO UNION-TRIB. (Jan. 31, 2016, 8:43 AM),
ambivalence about open access to government-funded birth control and abortion by enacting complex regulations that can limit access, by underfunding programs that provide reliable birth control to women who need financial assistance, and by often refusing to provide funding for abortions. Adding to the complexity, the risk of carrying a fetus to term that is infected with Zika may impact the resulting child’s entire life. A woman must therefore carefully consider the effects on the child, herself, and her family. Current estimates of the cost of caring for a child with the brain damage associated with Zika range as high as $10 million,\(^{212}\) and while governmental programs in effect as of 2016 will offset much of this cost, it is fair to assume that a significant financial burden will fall on individual families.\(^{213}\)

There are four distinct levels of risk women must assess regarding pregnancy and Zika. First, there is the relatively low risk of acquiring Zika through travel or through infection by someone else who has traveled to an area with Zika.\(^{214}\) The belief in 2016 was that this risk could be avoided by not traveling to areas with mosquito-borne Zika and by using barrier protection when having sexual contact with people who may have been exposed. This level of risk is likely to be a constant until a vaccine is developed.\(^{215}\)

Second, there is an intermediate level of risk for those living in areas that are at a high risk of having a Zika outbreak. Given the duration of human


\(^{212}\) This cost was often repeated in the summer of 2016, but it is hard to use it as anything more than an extremely rough estimate, as no concrete costs can, as yet, be calculated. A research scientist at Yale’s Center for Infectious Disease Modeling and Analysis hypothesized in August 2016 that the cost will be roughly $4.1 million over the lifetime. Emma Grey Ellis, *The Price of Zika? About $4 Million Per Child*, WIRED (Aug. 16, 2016, 7:00 AM), http://www.wired.com/2016/08/price-Zika-4-million-per-child/ [https://perma.cc/PPE9-DFDR]. The CDC offers a range of costs from $1 to $10 million for each case. Id.

\(^{213}\) The burdens of healthcare are not distributed evenly in the United States and caring for disabled children is a time-consuming and expensive undertaking for parents. For an excellent article discussing health care social justice issues, both generally and in relation to disability, see Emily Deuer, *Health Justice: A Framework (and Call to Action) for the Elimination of Health Inequity and Social Injustice*, 65 AM. U. L. REV. 275, 336–38 (2015).

\(^{214}\) *Transcript for CDC Telebriefing: Zika Virus Update - August 1*, CDC, https://www.cdc.gov/media/releases/2016/t0801-zika-update.html [https://perma.cc/DYV6-3BAB] (“We know with 1600-plus infections documented in the U.S., there are many times that number of people who have actually had the disease in the U.S. because most asymptomatic people aren’t tested. Really the few asymptomatic diagnoses we have are pregnant women in this country.”).\(^{215}\) See Kelly McBride Folker, *Zika: The Millennials’ S.T.D.?,* N.Y. TIMES, Aug. 21, 2016, at SR5, https://www.nytimes.com/2016/08/21/opinion/sunday/zika-the-millennials-s.t.d.html [https://perma.cc/V3DF-FDXJ] (indicating that the risk of contracting Zika through sexual contact is low and not likely to increase).
pregnancy, many women will be pregnant during mosquito season, and can suddenly be exposed to a high level of risk if Zika spreads to mosquitoes where they live, such as occurred in August 2016 in some areas of Miami, Florida.\(^{216}\)

The third level of risk is for those living in areas that currently have mosquitoes infected with Zika. This appears to be a much higher risk than exposure through travel. For example, in July 2016, the director of the CDC estimated that in Puerto Rico, fifty pregnant women a day were being infected with Zika.\(^{217}\) The number of mosquitoes in an area can be reduced and a person can take every possible precaution, but these numbers from Puerto Rico imply that the risk will remain substantial. The number of infected pregnant women is particularly worrisome because data appears to show that many women in Puerto Rico delayed pregnancy during the outbreak, with the number of births falling below the number of deaths for the first time in the area’s history\(^{218}\) and so the raw number of pregnancies was already greatly reduced.

Finally, a woman must consider whether, if she is or becomes pregnant, she can ensure that a sexual partner will use barrier protection during her pregnancy in order to minimize her exposure to the virus through sexual transmission.\(^{219}\)

1. Abortion Choices

Considering abortion in light of Zika, this section first discusses the complexity of a decision to have an abortion and then discusses the possible ramifications for deciding not to have one. Of course, a pregnant person’s response to risk will depend on their own assessment of the level of risk they are willing to tolerate, but Zika’s risk variables make accurate risk assessment difficult. For pregnant women who have been exposed to Zika, who may have been exposed, or may run the risk of being exposed, the options are stark. It is possible that women may feel rushed into having

\(^{216}\) See supra note 185 and accompanying text (documenting the sudden spread of Zika from one Miami neighborhood to an adjacent one in August 2016).


\(^{219}\) Not all women are in a position to insist on the use of condoms. Research related to HIV and condom use revealed that condom negotiation to prevent the spread of sexually transmitted diseases was difficult for some women, particularly those in relationships where they suffered from domestic violence. See, e.g., Andrea Carlson Gielen et al., Intimate Partner Violence, HIV Status, and Sexual Risk Reduction, 6 AIDS & BEHAV. 107, 108 (2002), http://link.springer.com/article/10.1007/A1015494513192 [https://perma.cc/69WZ-B5A3] (citing a 1997 study that found current abuse to be associated with less condom use).
prophylactic abortions in order to avoid unclear levels of risk, particularly within an unsupportive legal framework with regards to late-term abortions.220 Early abortion prior to any diagnosis of Zika for pregnant women in areas with active Zika transmission can be a thoughtful choice because a Zika infection can be present with little or no symptoms, so women may not know if they have been infected.221 An individual may rationally believe she has a lack of control over possible exposure to the virus and worry that there is currently no ability to accurately diagnose all fetal brain impairment in utero.222 Furthermore, because Zika may cause catastrophic birth defects during any stage of a pregnancy,223 women may find out she is, or is at risk of, carrying a brain-damaged fetus after the fetus is considered viable.

The rubella outbreak in the United States in the mid-twentieth century is an important historical antecedent to Zika, and comparisons between the two viruses are illuminating. Therapeutic abortions were commonly provided in cases of rubella after a diagnosis.224 However, while it is known that both rubella225 and Zika226 cross the placenta and affect fetal brain development, a number of other problems differentiate the two diseases and serve to highlight the complexity of Zika for pregnant women. First, unlike rubella, the symptoms of Zika can be extremely mild and many people do not know that they are infected.227 Second, doctors were relatively sure that


221 Zika Virus: Symptoms, Testing, & Treatment, supra note 126.

222 See Anna Giorgi, Everything You Should Know About Brain Defects, HEALTHLINE (Dec. 6, 2016), http://www.healthline.com/health/congenital-brain-defects#Overview1 [https://perma.cc/L7HK-SQGJ] (“In some cases, accurate diagnosis may not be possible until after birth when signs such as intellectual disabilities, delayed behavior, or seizures may be more noticeable.”).

223 See Univ. of Wash., Study Details Zika Virus Disrupting Fetal Brain Development During Pregnancy, SCIENCE DAILY (Sept. 17, 2016), https://www.sciencedaily.com/releases/2016/09/160912122552.htm [https://perma.cc/9NN3-7QFF] (“The Zika virus can cross the placenta late in pregnancy and affect the fetal brain by shutting down certain aspects of brain development.”).

224 For a discussion of rubella abortions in the context of Zika, see Lévy, supra note 8. During the rubella outbreak, “many pregnant women, with the help of their doctors and hospitals, acted decisively to avoid the possible damaging effects of [rubella].” See LESLEI J. REAGAN, DANGEROUS PREGNANCIES: MOTHERS, DISABILITIES, AND ABORTION IN MODERN AMERICA 119 (2010) (finding that the proportion of women who had abortions after a diagnosis was at least 50%).


226 See Univ. of Wash., supra note 223 (“The Zika virus can cross the placenta late in pregnancy and affect the fetal brain by shutting down certain aspects of brain development.”).

rubella infections led to birth defects228 whereas the specific level of risk associated with Zika remains unclear.229 Finally, it appears that infection with Zika can cause harm to the fetus at any time in a pregnancy, meaning that the window of risk extends beyond when abortions are legal and widely available, whereas with rubella, these risks were limited to exposure during the first trimester.230

Laws regarding abortion have become increasingly complex to navigate since the early 1960s. At that time, abortion was illegal, but physicians generally controlled access through the use of therapeutic abortions, which were widely used during the rubella outbreak.231 Current legal limitations on late-term abortions vary by state and have varying exceptions, ones not written with a Zika situation in mind, and that generally allow late-term abortions only to protect the life or health of the mother.232 State laws limiting access to late-term abortions reflect popular opinion prior to Zika and none have been changed as of August 2016.233 These laws may not reflect community responses to Zika. A poll conducted in 2016 found that only 23% of Americans favored a woman having a right to abortion after twenty-four weeks of pregnancy.234 However, if there is a “serious possibility” of brain damage related to Zika, the numbers changed dramatically, with 59% supporting access to post-viability abortion.235

The right to have control over one’s own procreative choices often is conflated with the right to have an abortion, but in order for it to truly be a choice, the right must also include the right to continue with a pregnancy. Some people believe that abortion is wrong and would never consider having

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228 See REAGAN, supra note 224, at 119 (stating that this belief was subject to some conflict, with physicians disagreeing as to whether, for example, 100% or 75% of children would be born with birth defects, but very few believed it was substantially less).
230 REAGAN, supra note 224, at 119.
231 See id. (stating that physicians controlled access to therapeutic abortions by misinforming patients of the disease’s potential effects and downplaying the risk of damage).
233 See id. ("Even after fetal viability, states may not prohibit abortions ‘necessary to preserve the life or health’ of the woman.").
235 Id. at 3. This may reflect opinions about severe birth defects more generally, and not be about Zika, specifically. In a national poll from 2002 about early abortions, 24% of Americans polled thought abortion should be available for women for any reason, and this number jumped to 75% who felt it should be available “if there is a strong chance of a serious defect.” Abortion, the Court and the Public, PEW RES. CTR. 2–3 (Oct. 3, 2005), http://www.people-press.org/2005/10/03/abortion-the-court-and-the-public/ [https://perma.cc/9CEF-QC7W].
one. Even for those who do not take such an absolute position, a specific situation may arise in the face of a Zika infection where it makes sense, to them, to carry a baby to term. The resulting child is still a person, still deserving of respect and care,\(^\text{236}\) and the mother should not be condemned as selfish or misguided for exercising her moral agency in a specific situation. Some have a concern that this type of condemnation has been directed towards mothers who choose to carry fetuses to term with other birth defects.\(^\text{237}\) This is so even in light of the significant advances made in disability law and policy since the rubella outbreak.\(^\text{238}\)

In the face of a threat such as Zika, it is important to recognize and anticipate the threat of eugenics, where mothers can be pressured to abort and vilified if they choose not to, even as their children are viewed as something less than human and they themselves are viewed as something less than adequate mothers for the decision they have made. The information about the effects of Zika available as of the summer of 2016 is frightening and upsetting. The press publishes stories and pictures of children with malformed heads, blind, deaf, and constantly crying.\(^\text{239}\) The articles describe mothers who are often poor and struggling to care for severely ill children; children who are lacking in brain material and so will never recover.\(^\text{240}\) Further, the possibility of extraordinarily high costs in the future for treating these children has been reported.\(^\text{241}\) Running numbers as to possible risk of exposure, expected pregnancies in areas at risk, and estimates of how many babies would suffer brain damage, articles have appeared in the popular

\(^{236}\) The concept that all persons are entitled to respect is a foundational one in bioethics. See United Nations Educational, Scientific and Cultural Organization, Universal Declaration on Bioethics and Human Rights 1–2 (Oct. 19, 2005), http://portal.unesco.org/ev.phpURL_ID=31058&URL_DO=DO_TOPIC&URL_SECTION=201.html [https://perma.cc/EV8X-M9JL] (referring to respect for all persons in multiple instances).

\(^{237}\) For an avowed anti-abortion article showing the perception of the presence of societal eugenics-type pressure to abort on women pregnant with disabled fetuses, see Sarah Terzo, Parents of Unborn Babies with Disabilities Often Experience Great Pressure to Abort, LIVE ACTION NEWS (Mar. 26, 2013, 6:59 PM), http://liveactionnews.org/parents-of-unborn-babies-with-disabilities-often-experience-great-pressure-to-abort/ [https://perma.cc/P4C9-LRHZ] (discussing the pressure to abort mothers often face).

\(^{238}\) See Reagan, supra note 224, at 164 (describing the new laws as "most conservative and most reasonable" because [they] would "simply bring the law into conformity with . . . medical judgment and public opinion," which supported abortion for a limited number of reasons, including rape, incest, and probable fetal deformity in addition to saving the woman's life.").


\(^{240}\) Id.

\(^{241}\) This number came from a range of possible costs given by an official with the CDC, but it is highly speculative. See Ed Leefeldt, The True Cost of Zika in the U.S. Could Be Staggering, CBS MONEYWATCH (June 3, 2016, 5:12 PM), http://www.cbsnews.com/news/the-true-cost-of-zika-in-the-u-s-could-be-staggering/ [https://perma.cc/J96P-D6RH] (estimating the cost of providing for children born with Zika to be between $13 and $130 billion).
press suggesting that the long-term cost of these babies from 2016 could be as high as $130 billion in the United States if Zika becomes widespread.\textsuperscript{242}

In a study of the rubella outbreak in the United States, Leslie Reagan describes the cultural phenomena of societal perceptions of children born with malformations.\textsuperscript{243} She describes a perception of disability as something to fear: something abnormal and different.\textsuperscript{244} She also writes about how women prior to rubella viewed themselves as responsible for the health and safety of their children during pregnancy, a fear she refers to as “maternal marking.”\textsuperscript{245}

The onset of rubella led to a shift in perception, because the parents were generally considered innocent, having done nothing wrong.\textsuperscript{246} The media then, as it does now, provided reporting of the problem and framed the cultural understanding of it.\textsuperscript{247} It was a tragedy that befall innocent parents and abortion was the honorable response.\textsuperscript{248} This perspective can be seen in a number of articles in popular magazines that Reagan cites from that time, where mothers would give interviews in which they openly discuss their decision to abort.\textsuperscript{249}

The babies born with rubella syndrome were regarded as tragedies rather than as people, and the stories tended to stress that mothers did not know the risk they were facing until the children were born.\textsuperscript{250} In medical records from that time, these children were often referred to as “it” and the presence of intellectual impairment was considered the most tragic characteristic.\textsuperscript{251} The medical establishments recommended therapeutic abortions whenever a woman was diagnosed with rubella during the at-risk stage of her pregnancy.\textsuperscript{252} While this could be described as protecting a woman’s decision to not continue a pregnancy in a difficult situation, the eugenics undertone, pronounced in public discussions of the disease and reporting of the problem, could be said to be reflected in the medical establishment’s

\textsuperscript{242} Id.

\textsuperscript{243} See REAGAN, supra note 224, at 6 (“This book demonstrates the importance of race and ideologies of respectability to the histories of reproduction, disease, and disabilities.”).

\textsuperscript{244} See id. at 7 (“More scholars have previously recognized, expectant mothers and fathers across all social categories feared the prospect of a ‘defective’ child and hoped for healthy, normal, well-formed babies.”).

\textsuperscript{245} Id.

\textsuperscript{246} Id. at 46.

\textsuperscript{247} Id.

\textsuperscript{248} See id. at 57 (“German measles helped to lift the repression of a sexually deviant practice—namely, abortion—and transform it into an honorable one.”).

\textsuperscript{249} See id. at 78 (discussing the various articles about women who chose to have abortions).

\textsuperscript{250} Id. at 47.

\textsuperscript{251} Id.

\textsuperscript{252} See id. at 76–77 (citations omitted) (“Williams Obstetrics, the standard medical school textbook in the United States [during the rubella outbreak] endorsed therapeutic abortion for maternal rubella in the first trimester when the risk of ‘defects’ was high ‘if the mother and her husband [did] not want to assume the obvious risks involved.’”).
position. The current climate has a different baseline perception of mothers. As Reagan describes, the current culture is often one of suspicion of pregnant women and mothers. The notion of maternal marking through unwise or intemperate choices is commonplace in popular culture, and pregnant women are constantly at risk of receiving unsolicited advice, condemnation, and rebuke for their choices. Given the lack of state support early in the Zika threat for public health initiatives that could protect women of childbearing age, the onus of safety seemed to rest almost entirely on those at risk. Realistically, this privatized view of Zika could result in women being held responsible for avoiding the virus, blamed for infecting a fetus, and further blamed for failing to have a timely abortion.

2. Birth Control

The complex decisions regarding risk for women who may become pregnant are similar to the ones for those who are pregnant, but the choices in light of risks for non-pregnant people are relatively simple. Consider those who are sexually active or those who cannot control whether they are sexually active. Within this group, those who also decide that the level of risk from Zika is unacceptable, who are not yet pregnant, and who choose not to be pregnant, should most likely use birth control. From a public health and ethical perspective, the risks of Zika considerably alter the discussion about the morality of using birth control even for those who have historically disapproved of it. For example, Pope Francis, head of the college of Roman Catholic bishops and the hierarchical leader of the Roman Catholic Church, has said that the use of birth control may be acceptable for those at risk of Zika, even though the Church generally condemns its use.

Birth control's role in harm reduction from a Zika infection is exacerbated by problems of access to birth control, specifically related to cost, physician training, and education. All of these problems can be

253 See id. at 177–78. Reagan writes persuasively that it was the medical establishment and parents’ responses to rubella that led to the eventual legalization of abortion in the United States and this Article does not challenge that. Rather, as Reagan points out, while there is a risk of depriving a woman of the option to terminate a pregnancy, there is also a risk of seeking to compel her to do so in situations such as rubella and Zika. Id. at 179.

254 Id. at 13.


256 Daniel Burke & Elizabeth Cohen, Pope Suggests Contraceptives Could Be Used to Slow Spread of Zika, CNN (Feb. 18, 2016, 10:20 PM), http://www.cnn.com/2016/02/18/health/Zika-pope-francis-contraceptives/ [https://perma.cc/X88N-W5S3].

alleviated to some degree by public health officials, but currently create challenges for women. The CDC recommends that women using birth control to prevent exposure to Zika utilize long-acting reversible contraception (LARCs), which generally refers to IUDs and hormonal implants, both of which are highly reliable and long lasted methods of preventing pregnancy.\textsuperscript{258} LARCs have high initial costs, though they are cost effective over the course of their use.\textsuperscript{259} The cost can be a significant barrier for low-income women in states that do not fully fund unmet family planning needs.\textsuperscript{260} LARCs require training for proper insertion, and many physicians do not feel comfortable with the training they have received.\textsuperscript{261} Finally, many patients and doctors are currently not adequately educated about the value of LARCs and their relative safety.\textsuperscript{262}

IV. THE FAILURE TO ACT

As the analysis shows in Section I and II above, states and the federal government have a duty to act within their powers to protect people from Zika. This did not occur, and, while all people are at some risk, the failure to act created a disproportionate risk for people living in poverty. The following timeline highlights events that put state governments and Congress on notice as to the severity and scope of the threat from Zika, showing that there was sufficient time and guidance for an early response that would have fulfilled this duty.

\textsuperscript{258} CDC, supra note 203.
\textsuperscript{259} Shoupe, supra note 259, at 1.
\textsuperscript{260} See id. at 3 ("There is a great deal of variation of contraceptive use worldwide with high unmet needs among young unmarried women especially in less developed poorer countries.").
\textsuperscript{261} See id. at 6 ("Nearly a third of obstetrician gynecologists who were surveyed reported a lack of insertion training as a barrier to the use of contraceptive implants.").
\textsuperscript{262} See id. at 5 (citing the lack of education regarding LARCs in healthcare professionals).
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>May 2015</td>
<td>Locally transmitted cases of Zika were confirmed in Brazil, the first case in the Americas. The same type of mosquito is in the continental United States, and areas that have the mosquito are aware that they do.</td>
</tr>
<tr>
<td>January 2016</td>
<td>CDC reports that infected travelers could lead to local transmission of Zika in the United States. Puerto Rico has confirmed local transmissions, and fetal impairment from Zika is suspected, though not proven.</td>
</tr>
<tr>
<td>January 22, 2016</td>
<td>CDC begins coordinating Zika response from the Emergency Operations Center (EOC), a center created in 2003 to coordinate responses to public health emergencies.</td>
</tr>
<tr>
<td>February 1, 2016</td>
<td>WHO declares Zika an international emergency and recommends, for places at risk of local transmission of Zika, implementation of vector control of mosquitoes, as well as advising that “appropriate personal protective measures should be aggressively promoted and implemented” and governments should “ensure that women of childbearing age have necessary information and materials to reduce risk of exposure.”</td>
</tr>
<tr>
<td>February 8, 2016</td>
<td>CDC puts the EOC on the highest level of activation for Zika.</td>
</tr>
</tbody>
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263 Recognizing, Managing, and Reporting Zika Virus Infections in Travelers Returning from Central America, South America, the Caribbean, and Mexico, CDC (Jan. 15, 2016, 7:45 PM), http://emergency.cdc.gov/han/han00385.asp [https://perma.cc/B9H8-WPN8].

264 Id.


266 See CDC Work Intensifies to Fight the Zika Virus, CDC (Mar. 31, 2016, 2:00 PM), https://content.govdelivery.com/accounts/USCDC/bulletins/14048ba [https://perma.cc/SAEZ-BAB9] (“This is only the fourth incident that led us to activate at this level—Hurricane Katrina, H1N1 Influenza, and Ebola were the others . . .”).
<table>
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<tr>
<td>February 22, 2016</td>
<td>President Obama requests $1.9 billion in funding from Congress for Zika response.(^{268})</td>
</tr>
<tr>
<td>March 2016</td>
<td>CDC issues extensive planning tips for states.(^{269})</td>
</tr>
<tr>
<td>April 2016</td>
<td>CDC holds a summit in Atlanta, Georgia, where it states that the key priority is to decrease risk to pregnant women and women of reproductive age, and that sustainable mosquito control is crucial.(^{270})</td>
</tr>
<tr>
<td>April 13, 2016</td>
<td>CDC confirms that Zika causes brain defects in fetuses.(^{271})</td>
</tr>
<tr>
<td>April 27, 2016</td>
<td>CDC and NASA release a map showing areas at high and moderate risk of Zika in the United States.(^{272})</td>
</tr>
<tr>
<td>June 2016</td>
<td>Local spread of Zika is widespread in numerous countries, and cases of travel-related or sexually transmitted Zika are in forty-seven states.(^{273})</td>
</tr>
<tr>
<td>August 2016</td>
<td>The local spread of Zika is confirmed by the CDC in two areas of Florida(^{274}) and it is estimated that tifty pregnant women are contracting Zika each day in Puerto Rico.(^{275})</td>
</tr>
</tbody>
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A steady barrage of evidence, far exceeding the highlights listed above, was made public from January to August 2016, consistently communicating the severity of Zika and the steps necessary to protect people from it.\(^{276}\) Included in this information was detailed information about what governments should do to minimize risks from the virus, the funding required, and the concerns about timeliness of response, because mosquitoes...


\(^{272}\) Yasmin Tayag, NASA Released this Zika Forecast Map Today, INVERSE (Apr. 27, 2016), https:// inverse.com/article/14022 nasa released this-Zika-forecast-map-today [https://perma.cc/0KY2-NKYM].


\(^{274}\) CDC Telebriefing, supra note 186.

\(^{275}\) Agence France-Presse, supra note 217.

\(^{276}\) See discussion infra Section IV.

\(^{277}\) See discussion infra Section IV.
are most prevalent in the summer.
In light of this, it is relatively simple to say that state and municipal
governments in areas identified as being at risk for Zika should have
implemented intensive mosquito control plans early in the year, provided
public education about both mosquito abatement and pregnancy risks, and
made every effort to provide access to effective birth control for women who
wanted to avoid the risks of a Zika infection by delaying pregnancy.
Concurrently, Congress should have appropriated funds to assist states in
accomplishing these steps, and should have provided funding for developing
a vaccine and other medical responses.
Instead, and in the face of recommendations from WHO, CDC, and
numerous public health professionals, most of this did not occur. In April
2016, as it became clear that the response was inadequate, Professor
Lawrence Gostin—one of the leading public health academics in the
world—issued a breathtaking condemnation, stating:

It is one thing to fail to prepare for an emerging infectious
disease if the risks are uncertain. But it is quite another to fail
to act when the facts are clear: we know that Zika is coming to
the U.S., that it harms newborns, and will disproportionately
affect poor women and their children. Failure to prepare for a
storm that is spreading rapidly in our region, heading for our
shores, and which could affect the next generation is
unconscionable.\footnote{Phelan & Gostin, supra note 7.}

Yet even in the face of this and many other public admonishments, the
response did not occur. Consider Congress’ behavior after President Obama
requested funding in February 2016. As described above, the President sent
a request for $1.9 billion in funding for Zika preparedness to Congress two
weeks after the WHO declared Zika to be a public health emergency.\footnote{Letter from the President—Zika Virus, supra note 268; see Adrienne Latrance, A Threat Bigger Than Zika, ATLANTIC (July 18, 2016), http://www.theatlantic.com/health/archive/2016/07/a-threat-bigger-than-Zika/491564/ [https://perma.cc/LN3K-CQAN].}
Three months later, in May 2016, the Senate responded with a proposal for
senators from Florida, a state known to be at high risk, failed in their attempt
to pass a bill providing the full funding the President requested.\footnote{James Rosen & Tony Pugh, Senate Approves Zika Money, but Obama, Rubio Say It's not Enough, MIAMI HERALD (May 17, 2016, 7:52 PM), http://www.miamiherald.com/news/politics-government/article78201702.html#storylink=cpy [https://perma.cc/ZRN8-U7U7]. The State Governors’ Association also sent a letter to Congress in May 2016 asking it to fund Zika preparedness, which had driven by the need to prepare.\footnote{Governors’ Letter to Congress, supra note 368.}
of Representatives responded to the Senate bill by attaching riders to its proposed bill that guaranteed it would not pass when sent back to the Senate for consideration. These riders included a provision preventing any of the funds to be used for contraception funding, a provision allowing pesticides to be used that violated federal clean water laws, and, oddly, a provision to allow the confederate flag to be flown in military cemeteries. The contraception rider was in direct opposition to all public health recommendations as to the best way to protect women’s health. The pesticide rider language was taken from a bill that had failed to pass in the House in 2011. The current regulations allow municipalities to spray for mosquitoes during emergencies in areas that are ordinarily protected, meaning no rider was necessary for responding to Zika. The confederate flag rider appears to have been attached entirely for the purpose of causing offense. It may also signal the acceptance of the politicization of public health funding. The bill then failed to pass the Senate and so no funding was appropriated for Zika responses. On July 13, 2016, the House of Representatives went into a seven-week recess at the height of mosquito...
season.\textsuperscript{287} It appears that the first case of local transmission of Zika occurred in the continental United States shortly before the recess, though it was not confirmed until shortly afterwards.\textsuperscript{288}

In the face of Congressional deadlock from February through August, the executive branch moved money from other areas of public health, particularly Ebola research, in order to fund responses to Zika, though the money appeared to be quickly running out by the end of that time.\textsuperscript{289} However, these federal allocations also included funds being used for research related to the development of a Zika vaccine, limiting the amounts made available for states.\textsuperscript{290}

State behavior also showed a pattern of disengagement, particularly in terms of funding and legislative action. Florida is currently the only state to have allocated funds for Zika.\textsuperscript{291} In contrast, public health agencies and officials have been responding. For example, these various agencies have applied for and received $95 million in grants for Zika preparedness from HHS.\textsuperscript{292} Furthermore, every state at risk has a public health agency website with educational information about risks and methods of protection.

Along with the federal government, states also have procedures for declaring public health emergencies, with varying degrees of access to emergency funds.\textsuperscript{293} These generally take the form of executive orders or emergency declarations, and actors as varied as governors, mayors, judges, city managers, and health district directors have issued them in response to other mosquito-borne illnesses, most recently West Nile virus.\textsuperscript{294} Florida is the only state to have made such a declaration in response to Zika, which it


\textsuperscript{288} CDC, Advice for Florida, supra note 16.


\textsuperscript{293} Sunshine, supra note 174, at 19.

\textsuperscript{294} Ten states have declared some form of emergency with West Nile, but the level of government making the declaration included thirteen local governments, six state governments, and two separate federal declarations. Id. at 24, 25.
did on February 3, 2016.\textsuperscript{295} The scope is limited both in terms of geography and focus. It covers four counties and only mentions mosquito control, public outreach, and diagnostic tools, but not birth control.\textsuperscript{296}

An effective abatement process for the mosquito that carries Zika involves what can be described as “military-style interventions . . . with government officials going door to door to remove standing water and spray insecticides.”\textsuperscript{297} This is extremely expensive and intrusive, requiring significant public and private commitment. State mosquito control is often described as a patchwork, and responding to a sudden emergency can be difficult.\textsuperscript{298} There are over seven hundred separate mosquito districts in the United States, and they have disparate governing bodies, funding streams, and powers.\textsuperscript{299} Florida itself has sixty-six districts, with different levels of funding and expertise.\textsuperscript{300} Most municipalities do not have the resources to regularly spray for even easily reached mosquitoes,\textsuperscript{301} and a campaign such as called for here is beyond them. However, the response to West Nile virus in the 1990s showed, in numerous states, that with sufficient funding and commitment, an appropriate response could occur.\textsuperscript{302}

In Florida, aggressive mosquito abatement began only after four cases of locally transmitted Zika were discovered in July of 2016.\textsuperscript{303} The abatement was initially conducted in a small area where the cases had occurred.\textsuperscript{304} The CDC was invited to assist, and sent a team to offer


\textsuperscript{296} Id.

\textsuperscript{297} Edgar Walters, In Texas, State Offers Little Help with Zika Prevention, Control, TEX. TB. (June 3, 2016, 6:00 AM) (quoting Peter Hotez, Dean of the National School of Tropical Medicine at Baylor College of Medicine), https://www.texastribune.org/2016/06/03/texas-struggling-zika-prevention [https://perma.cc/2VYU-7ETN].

\textsuperscript{298} Maryn McKenna, Disorganized Mosquito Control Will Make US Vulnerable to Zika, NAT’L GEOGRAPHIC PHENOMENA (Feb. 29, 2016), http://phenomena.nationalgeographic.com/2016/02/29/zika-mosquito-control/ [https://perma.cc/B34Z-XQZ3].

\textsuperscript{299} Id.

\textsuperscript{300} Id.

\textsuperscript{301} For example, Horry County, South Carolina has an annual mosquito control budget of $400,000. Weekly spraying for the county would cost $600,000 for a season, exceeding the budget and leaving no money for breeding ground eradication or property inspections. Audrey Hudson, Zika Virus Appears in SC as Horry Officials Discuss Mosquito Control, CHARLOTTE OBSERVER (Apr. 29, 2016), http://www.charlotteobserver.com/news/local/article74726327.html [https://perma.cc/VH7L-JNCW].

\textsuperscript{302} Id.

\textsuperscript{303} Local, state, and federal officials worked quickly to control mosquitoes after West Nile was confirmed in New York in the 1990s, and the response over the course of the outbreak was effective. John T. Roehrig, West Nile Virus in the United States—A Historical Perspective, REV INFECT DIS 30(6), 3007–3102 (2013), http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3967162/ [https://perma.cc/V371-2KEP].

expertise.\textsuperscript{305} Unfortunately, the abatement failed to have a significant effect, leading some to hypothesize that the mosquitoes were immune to the sprays being used.\textsuperscript{306} As of June, Texas had refused to provide assistance for mosquito abatement or other public health services to localities that were responsible for providing these services.\textsuperscript{307} Many localities did not have the funding themselves, particularly in poorer areas of Texas.\textsuperscript{308} People living in poverty are known to be at greater risk from Zika because of the built and lived environment, as well as due to greater sustained risk because of low public health resources in the areas in which they live.\textsuperscript{309} Yet, even in light of this, as of August, the state had still not directed any funds for mosquito control, though the State Department of Health Services said it was “working with local governments to assess mosquito control capabilities and activities.”\textsuperscript{310}

In terms of access to birth control and abortions, there has been a similar lack of activity, even as it is known that this is a pressing problem that predates Zika. Access to birth control in the United States can be problematic, particularly from a financial perspective, making support in this area critical in order to protect people from Zika.

As of 2014, roughly twenty million women of childbearing age in the United States needed financial assistance to purchase birth control.\textsuperscript{311} Programs to provide this assistance are less likely to be fully funded in many of the States most at risk of a Zika outbreak. In Florida, 59% of pregnancies (207,000 in 2010) are not planned, significantly higher than the average of 45% for the entire country.\textsuperscript{312} Nationally, the unintended pregnancy rate is five times higher for women under the poverty level as for women over the


\textsuperscript{307} As a local public health official complained at the time, “[t]he federal government has the money, the state has the authority, and the local health department has the problem,” Walters, supra note 297.

\textsuperscript{308} Id.

\textsuperscript{309} Id.


poverty level.\textsuperscript{313}

In an effort to increase access to birth control in response to Zika, HHS has increased the share of cost that the federal government will pay for birth control under traditional Medicaid from 50% to 90%, making this an economically feasible approach for state governments.\textsuperscript{314} Under the Medicaid expansion that allows states to offer Medicaid benefits to the working poor, the federal government paid for all expansion costs through 2016.\textsuperscript{315} This program covers all forms of birth control, including LARC.\textsuperscript{316} Many of the states that have not expanded Medicaid are also at a high risk of Zika, such as Florida, South Carolina, and Texas, which may also change the state political calculations but has not yet done so.\textsuperscript{317} Though they are permitted by federal law to do so, no state that is at a high risk of Zika currently uses Medicaid to fund abortions beyond instances of threat to the mother’s life, rape, or incest, with the exception of Mississippi, which allows for Medicaid funded abortions in cases of fetal impairment.\textsuperscript{318}

The reaction of state governments with regard to birth control is most pointed because of what has not been done or said. The CDC released a report on August 5, 2016, that called for increased access to birth control, particularly LARC, in light of Zika and the high rate of unintended pregnancies in areas at risk for Zika.\textsuperscript{319} While late, perhaps this report will be sufficient to prompt some states to focus on providing these resources. At the end of August, however, even as reports emerged of increased abortion rates where Zika was spreading in other countries and in light of a clear public health need, little was done.

Finally, on June 1, 2016, HHS issued an informational bulletin that allows state Medicaid programs to provide mosquito repellent free of charge

\textsuperscript{313} Id.


\textsuperscript{316} Id.

\textsuperscript{317} For example, as of August 2016, no state that had refused the Medicaid expansion openly approached HHS asking for a Medicaid waiver that would allow them to provide LARC to their population. Id.


\textsuperscript{319} Sherce L. Boulet et al., Contraceptive Use Among Nonpregnant and Postpartum Women at Risk for Unintended Pregnancy, and Female High School Students, in the Context of Zika Preparedness—United States, 2011–2013 and 2015, 65 MORBIDITY & MORTALITY WKLY. REP. 780, 781–85 (2016), http://www.cdc.gov/mmwr/volumes/65/wr/mm6530e2.htm?s_cid=mm6530e2e [https://perma.cc/QZQ2-KAF7].
as long as a Medicaid beneficiary has a doctor’s prescription.\textsuperscript{320} Texas implemented this policy in August,\textsuperscript{321} which was promptly met with criticism. A local judge in Texas was quoted in the newspaper, saying that the process was extremely cumbersome and likely to be too difficult for people to comply with, even as Medicaid officials in Texas stressed that no office visit is required to obtain the prescription.\textsuperscript{322}

If Zika becomes widespread in any area of the continental United States, states might consider emulating Puerto Rico, which has established a list of products used in Zika prevention that are subject to price controls in an effort to prevent price gouging—including window screens, repellants, and condoms.\textsuperscript{323} A number of corporations that manufacture repellants are making donations in Puerto Rico,\textsuperscript{324} and a large chain of drugstores there reduced prices on products recommended by the CDC to prevent Zika exposure.\textsuperscript{325}

At least in the initial stages of the problem during the summer of 2016, no state or federal agency in the continental United States allocated funds to provide window screens or assistance in breeding ground abatement for women of childbearing age who needed it. This, along with difficulty in accessing birth control, unequal distribution of funding for mosquito abatement in some states, and the higher incidence of trash that contains water (a known breeding ground for mosquitoes) in poorer neighborhoods, means that if Zika does establish a significant presence in any state, poorer people are likely to suffer a higher incidence of infections while pregnant.

\textsuperscript{320} Wachino, supra note 314, at 2.

\textsuperscript{321} Mosquito Repellent is Now Available as a Medicaid Benefit!, TEX. HEALTH & HUM. SERVS. (Aug. 25, 2016), https://hhs.texas.gov/node/41326 [https://perma.cc/A29B-KXXW].


V. HOW ZIKA MAY BE UNIQUE: ABORTION, BIRTH CONTROL, AND EUGENICS

It is possible that at both a federal and state level, the failure of legislators and governors to adequately respond to Zika is due to its primary effect resting on pregnant women and their fetuses. Because Zika has a damaging effect on a fetus, one of the most important and politically complex issues arising from the spread of the virus is access to abortion, birth control, and reproductive choice. These are politically fraught issues in the United States, as evidenced by the disparate stances on them embodied in the political platforms of the two main political parties. The Democratic Party platform states that “[w]e believe unequivocally, like the majority of Americans, that every woman should have access to quality reproductive health care services, including safe and legal abortion regardless of where she lives, how much money she makes, or how she is insured.” The Republican Party platform, in direct contrast, states on the subject of abortion that “we assert the sanctity of human life and affirm that the unborn child has a fundamental right to life which cannot be infringed.” On birth control, it states that “[w]e renew our call for replacing ‘family planning’ programs for teens with sexual risk avoidance education that sets abstinence until marriage as the responsible and respected standard of behavior.”

This political divisiveness matters because it renders funding for birth control and abortions deeply political issues, even in the time of public health crisis. Public health measures related to these issues are in danger of commonly becoming little more than political pawns, as occurred when Congress debated funding for Zika preparedness. It may be that this politicization has now bled over into balking at implementing public health measures that relate to procreative issues, such as spraying for mosquitoes that can carry Zika.

Furthermore, in the political fight for access to both birth control and abortion, access to family planning has often been perceived as a private right. To a degree, this is entirely correct, particularly given the personal implications of all individual procreative choices. However, the sum of these

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326 Scholars have referred to absolutist and extreme rhetoric about these subjects as a form of "moral panic" and it may cause elected officials to be unable to respond appropriately, from a public health perspective, in situations that relate to it.


329 Id. at 34.

330 See supra discussion Section IV (discussing Congress’ response after President Obama requested funding to fight Zika).
choices, even absent a specific threat such as Zika, has significant implications for public health. It is not difficult to argue that access is a public good, one that can be administered to enhance both individual autonomy and public health outcomes. Recent public arguments, however, tend to be more focused on the individual, ignoring or minimizing the public health implications. This, in turn, may make it difficult to shift the political focus to the public health side of these issues.

Both Congress and state legislators have shown a willingness to politicize public health with regard to abortion. In June 2016, the Supreme Court decided Whole Woman's Health v. Hellerstedt. This case arose out of a constitutional challenge of two laws passed by the Texas legislature that purported to regulate abortion clinics utilizing Texas' public health powers though there was no evidence that either law would enhance any health outcomes. Both laws were overturned primarily due to lack of public health evidence justifying their passage. The first law required all physicians who perform abortions to have admitting privileges at a hospital within thirty miles of the abortion facility where they work. The second law required that all facilities that perform abortions, whether through medication or vaginally, must satisfy minimum standards for the design of ambulatory surgical centers.

These two laws are of a type commonly referred to as "TRAP" laws—an acronym standing for Targeted Regulation of Abortion Providers. These laws treat abortion differently than other medical services, and treat health care providers differently when performing abortions than when performing other medical services. Most states have at least one TRAP law in effect. It is fair to say that these laws are written in an effort to make it more difficult for physicians to provide abortions and for pregnant people to access abortions. The laws do not appear to have any true public health

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331 136 S. Ct. 2292 (2016).
332 Id. at 2300.
333 Id. at 2300, 2313, 2318.
335 Id. § 245.010(a) (West 2016).
336 Whole Woman's Health, 136 S. Ct. at 2321 (Ginsburg, J., concurring).
337 See NARAL PRO-CHOICE AM. & NARAL PRO-CHOICE AM. FOUND., WHO DECIDES? THE STATUS OF WOMEN'S REPRODUCTIVE RIGHTS IN THE UNITED STATES 10 (26th ed. 2017), https://www.prochoicemedia.org/wp-content/uploads/2017/01/WhoDecides2017-DigitalEdition3.pdf [https://perma.cc/Y4CM-DKJ3] (describing how TRAP laws often "limit the provision of care only to physicians or to hospital settings, force practices to convert needlessly into mini-hospitals at great expense, require abortion providers to get admitting privileges, and require facilities to have a transfer agreement with a local hospital (with nothing requiring hospitals to grant such privileges)."

338 Forty-five states and the District of Columbia currently have TRAP laws. Id.
339 For example, in a case regarding a TRAP law in Wisconsin, Judge Posner quoted a lower court judge as finding the "Legislature's only purpose in its enactment was to restrict the availability of safe, legal abortion in this State . . . ." Planned Parenthood of Wisconsin v. Schimel, 806 F.3d 908, 913 (7th Cir. 2015). The Governor of Texas, Greg Abbott, in a statement following the Supreme Court decision
purpose beyond limiting abortions, and are generally opposed by medical associations because of the lack of scientific basis. For example, in response to these laws in Texas, the American College of Obstetricians and Gynecologists issued a statement in opposition in conjunction with filing an amicus brief supporting Planned Parenthood. In this statement, it said that the laws in question not only had no medical justification but actually increased the risk of harm to patients, and argued that “unless there is a substantial public health justification, legislators should not interfere with patient care, medical decisions, and the patient-physician relationship.”

TRAP laws exist due to the legal status of abortion and states’ powers regarding public health. Even as the Supreme Court has consistently upheld a woman’s right to access an abortion, a majority of state legislative representatives, for private or political purposes, espouse deeply held moral opposition to the procedure, with more than half of all elected officials in the United States claiming opposition to abortion in all circumstances. As these officials are aware, what they can do in light of this stated moral concern is limited by the Constitution, as currently understood. To make matters worse, from this perspective, since abortion became legal in the United States it has been a relatively common medical procedure, with current annual numbers ranging from roughly 700,000 to 1.1 million. In 2012, there were 210 abortions for every one thousand live births. Most of these occurred early in pregnancy. One can see why those opposed to abortion would seek to reduce these numbers by reducing access through laws and regulations. The moral condemnation regarding abortion often extends to various forms of birth control, making it ethically and politically

in Whole Woman’s Health, acknowledged that Texas’ goal in passing the laws was “to protect innocent life, while ensuring the highest health and safety standards for women.” Marina Fang, Texas Governor Admits Anti-Abortion Law Was About Restricting Abortion, HUFFINGTON POST, (Jun. 27, 2016, 3:22 PM), ttp://www.huffingtonpost.com/entry/greg-abbott-texas-abortion-law_us_57717093e4b017b37996cb23 [https://perma.cc/SM6L-3ED9].


341 PRO-CHOICE AM., supra note 337, at 6–7.

342 See Whole Woman’s Health, 136 S. Ct. at 2300 (reiterating that “a provision of law is constitutionally invalid[] if the ‘purpose or effect’ of the provision ‘is to place a substantial obstacle in the path of a woman seeking an abortion before the fetus attains viability’”) (emphasis omitted) (quoting Planned Parenthood of Se. Pa. v. Casey, 505 U.S. 833, 878 (1992)).


345 See id. (reporting that 91.4% of abortions in 2012 occurred during the first trimester of pregnancy).
difficult for these legislators to increase access to birth control as a method of reducing abortion.

A significant Supreme Court case regarding abortion rights decided twenty-four years before Whole Woman’s Health was Planned Parenthood of Southeastern Pennsylvania v. Casey. The majority opinion, written by Justice O’Connor, reaffirmed that a woman had a constitutionally protected right to have an abortion, but also held that “the State has legitimate interests from the outset of the pregnancy in protecting the health of the woman and the life of the fetus that may become a child.” The limit on a state’s exercise of these legitimate interests was whether it created an undue burden on a woman’s ability to have an abortion.

Given that the Supreme Court in Casey allowed that states had an interest in preventing abortions and, historically, courts have rarely overturned state public health laws, it makes sense that state governments opposed to abortion would enact laws that had no evidence as to their medical benefit but served to make it more difficult for abortions to occur, thus leading to the prevalence of TRAP laws.

Whole Woman’s Health is a stinging rebuke to this practice, but the existence of TRAP laws themselves show a political willingness to utilize public health police powers in a manner that does not improve health as long as it reduces access to abortions. It may be that this same motive has led states to ignore their duty to protect the public from Zika, given the virus’ effect on pregnancy.

Abortion is likely to be sought by many people if there is a Zika outbreak, which may make this an even more explosive issue for politicians, perhaps explaining a “head in the sand” approach to the entire problem out of a desire to avoid any discussion. Even among those who generally oppose abortion, polling reveals a significant shift in people’s thoughts on even late-term abortion when considered in light of the initial reports on risks presented by Zika. A recent poll, discussed above briefly in Section III.C.1, asked questions about abortions that occur after viability, which is outside of constitutional protection. The poll found that a significant majority of Americans are generally opposed to abortions that take place

347 Id. at 846.
348 Id.
349 Id. at 874.
350 As an illustration of this, Senator Marco Rubio (R-Fla.), even as he was arguing for federal funding to be used for Zika preparedness, stated that he opposed abortion for women with Zika. Tom LoBianco, Rubio Opposes Abortions for Zika-Infected Women, CNN POLITICS (Aug. 8, 2016, 12:30 PM), http://www.cnn.com/2016/08/08/politics/rubio-zika-abortion/ [https://perma.cc/QE9F-JB9Z].
351 Supra Section III.C.1.
after a fetus is viable, considered to occur at twenty-four weeks with less than a quarter of people polled believing such an abortion should be available except in cases of danger to a mother’s health. However, a substantial majority were in favor of such an abortion if a woman had tests showing a serious possibility of microcephaly caused by maternal infection with Zika, with the number approving of access jumping from 23% to 59%. The poll is particularly interesting in what it revealed about Republican-identified voters, given that their party is adamantly opposed to legal abortion in any circumstance. Without Zika, 12% of Republicans polled supported late term, post-viability abortions. With Zika, the number jumped to 48% approval.

These numbers confirm that a significant number of people consider it proper to seek an abortion when faced with the possibility of bearing a child suffering from fetal infection with Zika, even if the fetus is viable. This is most likely not an anomaly. A study from March of 2016 looked at abortion rates in countries that had Zika. The number of abortions greatly increased in Latin American countries suffering from Zika where abortion was illegal. There is a service for women in these countries called Women on Web that provides medical abortions. Analyzing that organization’s data, rates of increase varied from 36% to 108% over the baseline. Of particular interest, the increase of the number of abortions was greatest in those countries that provided warnings to women about the risks of pregnancy and Zika. This data is consistent with the poll; both imply people are likely to seek abortions if pregnant and infected with Zika.

The numbers revealed by polling show that people are capable of responding to emergencies by changing their views about what is appropriate. A readjustment of ethical standards in light of significant public health risks is not necessarily a sign of moral relativity, but can often be an appropriate response made in order to avoid significant and tragic harms.

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352 See Helen Branswell, Most Americans Favor Late-term Abortion if Zika Harms Fetus, STAT-Harvard Poll Finds, HARVARD STAT NEWS (Aug. 5, 2016), https://www.statnews.com/2016/08/05/stat-harvard-poll-Zika-abortion/ [https://perma.cc/7ALL-TPTD] (“Generally, the vast majority of Americans oppose late-term abortions.”). In this poll, 61% were opposed to these abortions, absent Zika (and 15% neither approved or opposed). ZIKA VIRUS AND THE ELECTION SEASON, supra note 234, at 9.

354 Branswell, supra note 352, at 1. In this poll, 59% of those polled approve of abortion in this situation (and 13% gave no answer). Id.


356 Id. at 3.

357 Id.

358 See Aiken et al., supra note 18 (“We analyzed data with respect to requests for abortion through WoW between January 1, 2010, and March 2, 2016 in 19 Latin American countries.”).

359 Id.

360 Id.

361 Id.

362 Id.
The new risk alters any prior balancing of risk of harms. An example of this type of shift occurred in 2015, when conservative then-Governor Mike Pence of Indiana changed his position about needle exchange programs for drug addicts. He had been a long-time opponent of these programs, voting against them when he was in the House of Representatives. However, facing an outbreak of HIV in a small town in his state that was traced to a heroin problem, he gradually changed his mind and eventually signed a law that provided needles. He said that he agonized over the decision, but finally decided that, in the face of a “public health emergency,” it was the proper choice. It was one he justified because it would “save lives” even as he remained opposed to needle exchanges more generally.

It should be noted that Governor Pence did not change his mind until he was confronted with hundreds of cases of HIV, and long after he had been asked to do so. It may be that moral and political concerns about abortion and birth control are preventing politicians from responding to Zika, but they too may change their minds if there is a significant outbreak in the continental United States.

**Conclusion**

Governmental responses to Zika in its early stages were insufficient. It may well be that Zika will never appear in large numbers in the United States and that the number of people harmed by it will be small. However, from January through August of 2016, it could not be known what the eventual turn of events would be. What is known is that every public health agency tasked with identifying and investigating infectious diseases warned the United States of the risks presented by the Zika virus. These agencies also agreed as to the appropriate responses required to minimize risk, particularly in light of the fact that there was no known cure or vaccine for the disease. Furthermore, this warning came early, giving states and Congress sufficient time to minimize the risk of harm.

The federalist system in the United States places both power and duty in the hands of states to protect their citizens from communicable diseases.

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364 Id.

365 Id.

366 See Megan Twohey, *Pence on H.I.V. Crisis: Prayer and Pragmatism*, N.Y. TIMES, Aug. 8, 2016, at A1 (“Dr. Walther, the deputy health commissioner, testified that Mr. Pence was considering declaring a public health emergency . . .”).

367 Berman, *supra* note 363.
Congress has the power and duty to fund state efforts to grapple with large-
scale public health emergencies. Neither states nor Congress responded as
they ought to, leaving numerous people, particularly women who live in
poverty, at significant risk of giving birth to brain damaged children. In the
words of Lawrence Gostin, this is unconscionable.\textsuperscript{368}

Beyond concerns about the possible effect of Zika, this case study also
reveals a significant weakness in the United States public health system. The
refusal to act on a public health threat in light of a clear duty, consistent
recommendations, and the means to do so is a sobering event. The federalist
system is meant to function in a manner that ensures the protection of its
members from infectious disease. Absent political will, there are currently
no mechanisms to force the United States governments to act, which is
worrisome in the face of how governments behaved in response to the initial
threats of Zika combined with an increasing risk of other emerging and re-
emerging infectious diseases. It appears that many elected officials are
unaware of or unmoved by their responsibilities under the police power, and
act with casual disregard for the damage that inaction may cause to the
public's health.

Furthermore, even as states have failed to address the problem as
aggressively as they could, many of their communications appear to make
Zika an issue of personal responsibility, telling people to avoid being bitten,
avoid travel, and wear repellent.\textsuperscript{369} If one were feeling uncharitable, this
could be perceived as a cowardly attempt to avoid all public responsibility
for harms caused by this virus, and perhaps as part of a larger pattern of
seeking to constrain the project of protecting the public health.

Health is both a private and a public good, as well as both a private and
a public responsibility. This duality is a topic about which much can be said,
much of that outside the immediate scope of this Article. For purposes of
this case study regarding Zika, it is sufficient to note that, absent a belief that
health is entirely a private good and that states ought to entirely abandon
public health, there is a significant and historically recognized state
obligation to protect populations from vector-borne viruses that can cause
severe birth defects.

In light of the failures outlined here, this Article makes two
recommendations. The first is for courts to routinely demand some evidence
of the public health benefit that justifies laws enacted under the public health
police power, mirroring the Supreme Court's recent approach to TRAP laws

\textsuperscript{368} See Phelan & Gostin, supra note 7 ("Failure to prepare for a storm that is spreading rapidly in
our region, heading for our shores, and which could affect the next generation is unconscionable.").

\textsuperscript{369} State efforts to warn and educate about public health threats are necessary and important, but
some other action is often called for. The case study here should not be confused with situations where
an individual's autonomy could be threatened by state actions to reduce a particular threat, such as actions
to reduce obesity. In this case study, the CDC and WHO recommendations for state action do not present
such threats.
described above. This can help diminish wanton politicization of public health, perhaps leading to more rational use of the police power, a use that is connected to public health duties rather than partisan ones. The second is for policy makers and academics to consistently remind elected officials of their duty and the structure that creates it. The culture in which politicians work must reinforce their obligations to do this work with an eye to protecting the public, which, in turn, means heeding data that shows emerging public health threats.