

COMPARTMENTALIZED CRISES? UNDERSTANDING THE RELATIONSHIP BETWEEN CLIMATE CHANGE DISCOURSE AND GOVERNANCE OF INFECTIOUS DISEASE

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While health and climate science recognize a clear linkage between infectious diseases and effects of climate change, outbreaks and disasters are frequently framed as standalone crises in public discourse. Drawing on public policy image framing literature, this paper examines effects of crossover in climate change and infectious disease discourse on policy outcomes in global infectious disease. Employing Factiva coding, I conduct a statistical analysis of infectious disease discourse and its effect on the global health policy agenda between 1990 and 2019. I find a positive relationship between climate change framing of infectious disease and global policy outcomes, significant at the 0.1 level, alongside qualitative evidence that securitized and environmental framings may have mutually reinforcing effects in elevating infectious disease on the global policy agenda.

INTRODUCTION

Despite an overall decline in mortality from infectious disease, recent decades have witnessed an increased prevalence of global infectious disease emergencies. Reforming institutions to govern such crises presents a collective action problem—one which sparked some of the earliest modern global cooperation—yet incentivizing disease surveillance and reporting continues to plague health governance institutions following each new outbreak. Concurrent with this uptick in global health emergencies, public debates over the ramifications of another collective action problem—climate change—intensified. While public opinion remains polarized, acceptance of scientific findings linking climate change to weather-related disasters has become more commonplace in public narratives. Similar to the linkages connecting climate change and disasters, it is difficult to prove direct causal links between climate change and specific outbreaks. Scientific evidence clearly supports a systemic linkage between the two trends, yet this connection rarely makes its way into public discourse.¹

Policy advocates often adopt strategies of re-framing collective action challenges, garnering support for change by defining problems in a more publicly accessible manner. In outbreak response, this is seen in securitized narratives of health, in addition to other framings including economics and human rights. Noting the normalization of public discourse linking climate change and disasters, this research investigates the power of environmental framings in garnering support for global health emergency reform. In this vein, this study examines overlap in public discourse between infectious diseases and climate change, asking whether and to what extent environmental framings of infectious disease have implications for global governance policy outcomes.

To address this, I employ data aggregating media and policy documents relating to infectious disease between 1990 and 2017 to conduct a content analysis of infectious disease image framings, including security, economic, human rights, and environmental

discourse. I consider convergence of these framings with windows of major global reforms for health emergency response—including World Health Organization (WHO) structural reforms and establishment of new UN bodies and major UN partnerships—to assess whether certain framings are more or less associated with global policy outcomes. I initially hypothesized an inverse relationship between climate and security framings over this time. Based on previous findings, I anticipated security narratives would act as broker framings for health emergency reforms, which frequently occur following crises. While securitized frames are often combined with other narratives, I hypothesized climate-related narratives could play the role of broker frames as well, but only under conditions when policy discourse proved more consequential to policy change than media coverage. My findings suggest this hypothesis was partially correct. Security frames dominated media coverage of infectious disease throughout the period of study, second only to the baseline medical framing, presenting with an initial significant spike around the 2002 SARS outbreak. While the increased attention drawn through securitized narratives certainly contributed to keeping infectious disease issues high on the global governance agenda, I find no evidence that securitized narratives acted as policy broker frames. Instead of displacing environmental framings, they often present as reinforcing frames, concurrent in cases of global governance reform. I find limited evidence, however, that environmental narratives may play a role as broker framings in global governance of infectious disease reform. This novel contribution lays the groundwork for future studies further exploring the changing role of climate and environmental discourse in global health.

HEALTH SECURITY AND THE CLIMATE CRISIS

At the root of image framing narratives of infectious disease is the much-studied securitization of global health, or discourse presenting the issue in terms of threat or risk.² Initially regarded as an useful framing for drawing needed funding and attention to fighting infectious disease, many scholars have argued that the simplification inherent to these narratives bears long-term costs, and often renders them ineffective.³ Yet securitized narratives are frequently combined with other framings. This is exemplified by the 2002 outbreak of Severe Acute Respiratory Syndrome (SARS), which marks the initial spike of the securitization era. The SARS outbreak heralded a new kind of infectious disease response in which the network of professionals engaged in response diversified to include sectors beyond the medical community.⁴ Global public discourse regarding infectious disease followed suit, reflecting the many facets of public life affected by health crises—including economics, security, and human rights. During this time, as internet access became globally prevalent, ownership of public discourse assumed new meanings, and the general public gained access to information previously limited to policy circles. In the case of SARS, securitization narratives combined with economic ones dominated, driven by the WHO travel advisory to China, and related economic losses. The years following SARS saw the 2005 creation of the International Health Regulations (IHR), the body of international law governing infectious disease prevention, outbreaks, and response, of which WHO remains the custodian. This era relatedly led to a new designation for global infectious disease emergencies: Public Health Emergency of International Concern (PHEIC).

Recent years have seen increased securitization of climate narratives; *climate crisis* is fast becoming a preferred term of reference by many news outlets, replacing earlier terms such as *climate change* and *global warming*.⁵ Alongside this shift, recognition of systemic links between climate issues and infectious disease is growing. While links between climate change and certain prevalent infectious diseases, such as malaria, have long been recognized, a new acknowledgment of systemic links between climate change and global disease outbreaks began to develop. Climate change and infectious disease are both multifaceted systemic issues, and thus the manner in which these linkages occur varies broadly.

In some cases, the link is directly tied to global temperature increase which broadens the physical environment conducive to spread of disease. This has been extensively researched in the case of vector-borne diseases such as malaria and Zika virus, transmitted by mosquitoes which thrive in warm temperatures.⁶ In other cases, linkages are more complex. Respiratory diseases such as SARS and Middle East Respiratory Syndrome (MERS), for example, infectious rates have been linked to sharp temperature changes which weaken the human immune system.⁷ Other key linkages focus on human population growth and displacement of wildlife due to environmental destruction and urbanization, thus forcing animals carrying zoonotic diseases in closer proximity to humans.⁸ Such complexities undermined the validity of earlier narratives that climate change might in fact prove helpful to containing influenza epidemics common in the cold winter months.⁹

Increasing presence of these linkages in public discourse raises questions regarding their relationship to global policy change. This research thus examines infectious disease narratives in media and policy discourse between 1990 and 2017. This period of study was selected based on data availability, to account for a rise in infectious disease discourse over the span of the 1990s, concurrent with both the rise of the internet age and the HIV/AIDs pandemic, which preceded the first spike in coverage in the early 2000s. While spikes in media coverage present concurrent with declared infectious disease emergencies (PHEICs), this study accounts for all infectious diseases listed as causes of mortality in the Global Burden of Disease report.¹⁰ Major reforms are more likely to occur following crises, yet the crisis dynamic associated with securitized narratives is relatively new to coverage of both climate change and infectious disease. Malaria, for example, has never been declared a PHEIC yet is among the longest-studied linkages between climate change and infectious disease.

EXISTING LITERATURE

Previous research suggests that common explanations such as variation in mortality and financial burden do not adequately account for the variance in policy attention attributed to issues in global health governance.¹¹ This body of work suggests image framing as a better explanation for the manner in which global health issues ebb and flow within the policy agenda.¹² It draws upon public policy literature, which devotes ample attention to exploring the politics of agenda setting – the mechanics behind rise and fall of certain issues to which policymakers devote resources. Image framing fits within this body of work, falling broadly into two categories: one focusing on generic frames used across multiple issue areas, and another examining issue-specific frames.¹³ Underlying such studies is the idea that problem definition, or the manner in which an issue is portrayed,

is a fluid concept which can be manipulated by policy advocates, resulting in varying perceptions of policy problems by both policymakers and the public.¹⁴ Due to its malleable nature, image framings of a policy problem are not mutually exclusive. An issue may be portrayed in a manner employing multiple framings at once. This study focuses on issue-specific frames, examining variation in problem definition within the global governance issue area of infectious disease response.¹⁵

Image Framing and Infectious Disease

Image framing narratives common to the studies of global health include medical, security, economic, and human rights narratives, often employing biomedical discourse as a baseline frame.¹⁶ Past studies have found that effectiveness of framings in influencing individual opinions is often disease-specific.¹⁷ When considering how framings effect policy outcomes, existing findings emphasize the importance of audience—especially in public health, where policy interventions are frequently determined by experts with specialized knowledge.¹⁸ In addition to these established image frames, this research examine the prevalence and effects of an environmental narrative of infectious disease response on global governance policy outcomes.

Security Framings

Securitization, a theoretical paradigm emergent from the Copenhagen School, frequently studied in image framing analyses of infectious disease, presents a policy problem in terms of threat or risk.¹⁹ This type of frame frequently occurs around crises or other focusing events, which some findings across policy issue areas suggest increase the likelihood of legislative change.²⁰ Early analysis of securitized health narratives argued they hold potential to act as “broker frames,” sidestepping demonization of those with opposing viewpoints to spur reform.²¹ More recent findings indicate the simplistic nature of these narratives encourages stigmatization and detracts from effective health policy outcomes.²² Security framings are consistently present in infectious disease narratives, spiking notably high in times of crisis. As this applies to global governance, and global health in particular, Hanrieder and Kreuder-Sonnen have theorized international organizations with the power to define crises—such as the WHO in declare a PHEIC—can created an “emergency trap” dynamic, catalyzing reform.²³ Securitized narratives are frequently combined with each alternative framing included in this study—and given their prevalence, often co-opt the narratives with which they coexist. Yet windows for innovative governance and policy change following crises pose challenges to establishing a causal link between securitized narratives and policy outcomes.

Economic Framings

Though securitized framings of are on the rise, narratives drawing on health economics have long played a key role in portrayals of infectious disease. Economic discourse is frequently employed in epidemiology, notably in discussion of burden of disease; the term *burden* itself implies cost, which may be measured in various dimensions including social, public health, and financial dynamics.²⁴ Studies of economic narratives in other issue areas have found them to act as broker frames in influencing

individual attitudes.²⁵ Economic framings of infectious disease frequently occur in terms of cost-benefit analyses of prevention versus response. Otherwise stated, what is the cost of maintaining surveillance and reporting mechanisms, and what effect do such reforms have on mitigating economic losses associated with infectious disease crisis? While some studies have found economics to be an effective framework for influencing individual attitudes in cases such as SARS, many such findings are disease-specific rather than generalizable to infectious disease more broadly.²⁶ Many studies exploring alternate infectious disease image framings cite the inadequacy of economic explanations in accounting for variance in global governance policy attention.²⁷

Human Rights Framings

Infectious disease framings invoking the concept of health as a human right frequently present concurrently with securitized and economic narratives. Such narratives typically arise in the context of humanitarian response and development aid for health. They have been found effective in influencing attitudes and opinions in disease-specific contexts including HIV/AIDS.²⁸ Given the preponderance of discourse related to health as a human right in public health practice and scholarship, this narrative is nearly universally included in image framing studies of public health. Yet its prevalence in public discourse is notably low in comparison with the security and economic narratives of infectious disease.

Environmental Framings

By adding an environmental frame to commonly studied narratives of infectious disease discourse, this study explores the shifting role of linkages between infectious disease and climate change in global health governance agenda setting. Previous work on image framing of climate change indicates that public health narratives tend to arouse hopeful emotions in individuals.²⁹ This research seeks to understand the inverse relationship—environmental narratives of disease—and the effect of those narratives on global policy outcomes. Many expected health effects of climate change are systemic rather than disease-specific, relating to well-being and lifestyle factors including poverty, displacement, and access to resources.³⁰ This study addresses such systematic linkages, including a range of search terms to address climate narratives as they relate to these issues. As climate framings have become increasingly securitized,³¹ I anticipate significant overlap between environmental and security narratives of infectious disease.

METHODS

The aim of this study is to determine whether some of these narratives are more associated with major reform than others, and if so, by what margin. Given this variation in infectious disease narratives, I employ an auto-regressive statistical model to test the effects of different framings on major global governance policy outcomes relating to infectious disease. My study includes narratives commonly employed in image framing studies of health politics, as well as a novel environmental framing to test the effect of emergent narratives connecting climate change and health. I restrict the period of study to 1990-2017. Infectious disease narratives were predominately biomedical prior to the

1990s, thus my data present with few observations prior to this timeframe. Data availability for key control variables is limited beyond the year 2017, thus I do not extend my analysis to account for subsequent years. To test these quantitative findings, I employ content analysis of news articles and policy documents to produce a composite case study examining three major spikes in infectious disease discourse.

Guided by previous studies applying image framing concepts found in public policy literature to health politics, I conducted a search of Factiva records for predominant infectious disease framings over the period of my study.³² Search terms used to capture infectious disease were developed to include both general terms such as “infectious disease,” “epidemic,” and “pandemic,” as well as disease-specific terms drawn from infectious diseases listed in the Global Burden of Disease report.³³ These were searched in tandem with terms for each image frame, which included key phrases intended to produce conservative estimates of coverage for that year. For example, search terms for the environmental framing included “climate change,” “greenhouse effect,” and “sea-level rising,” among many others. These data were collected through an iterative process in which I developed a list of key search terms for each frame, qualitatively assessed the quality of the search results, and expanded or contracted the list accordingly over multiple iterations.³⁴

Raw article counts for each framing, with duplicates removed, constitute key independent variables. The dependent variable in this model is global governance reform, including new partnerships related to infectious disease and emergency response adopted within the year. This includes WHO structural reforms and changes to the IHR, as well as new organizational bodies created through WHO partnerships. The model additionally includes multiple control variables to account for geopolitical events and other factors that may have swayed infectious disease narratives in a given year. As previous studies have noted that mortality fails to adequately account for variation in global policy attention, the model controls for global mortality from infectious disease in a given year. Global climate change milestones including major summits and legislation constitute and additional control, as well as major climatological disasters which may generate elevated climate narratives. To account for crisis dynamics generated by major health emergencies, I include a health emergencies control variable which encompasses declared or considered PHEICs as well as the SARS outbreak, which led to the creation of PHEIC designation. A list of primary dependent and control variables, along with their measurements, is provided in Tables 1 and 2.

Table 1: Dependent Variable

Variable Name	Definition	Source
Global Governance Reform	Dummy of important global reforms regarding infectious disease response, including World Health Organization structural reforms related to emergency response and creation of new UN bodies or major UN partnerships	Case study analysis

Table 2: Control Variables

Variable Name	Definition	Source
Health Emergency	Dummy of Public Health Emergencies of International Concern (PHEICs) either declared or considered for declaration, in addition to the 2002-2003 SARS outbreak	World Health Organization; case study analysis
Mortality	Dummy of annual global mortality from infectious diseases included in search terms	Global Burden of Disease Database*
UN/COP Milestones	Dummy of important climate change summits, legislation, and resolutions internationally	UNFCCC for Climate Change**
Disaster	Dummy of environmental disasters that caused over 40 deaths internationally	EM-DAT for Disasters***

Source: *Global Burden of Disease Collaborative Network

<http://ghdx.healthdata.org/organizations/global-burden-disease-collaborative-network>

UNFCCC for Climate Change <https://unfccc.int/> *EM-DAT, CRED / UCLouvain, Brussels, Belgium (D. Guha-Sapir) www.emdat.be

DATA ANALYSIS

Consistent with previous studies, the vast majority of infectious disease framings are characterized by either medical, security, or economic narratives. The data account for a 28-year period and skew heavily right due to the spike in policy discourse around infectious disease in 2002. Descriptive statistics for all variables are listed in Table 3.

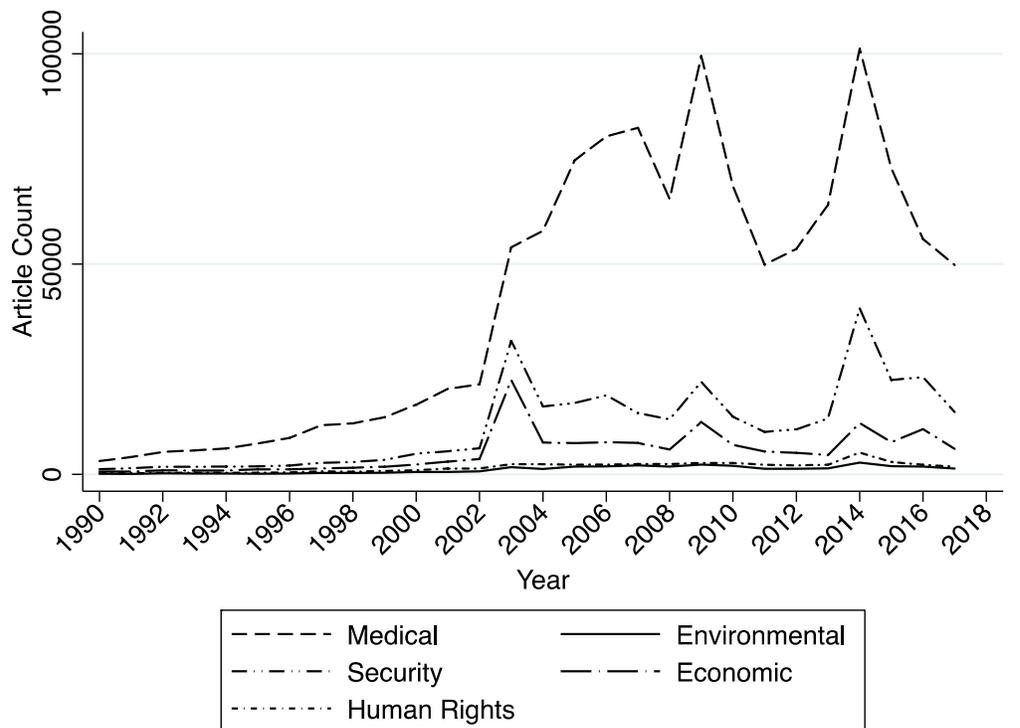
Table 3: Descriptive Statistics

	(1)	(2)	(3)	(4)	(5)
Variables	N	mean	sd	min	max
Medical	28	41,662	32,126	3,175	101,193
Environmental	28	1,135	828.7	139	2,815
Security	28	11,403	9,976	1,250	39,512

Economic	28	5,378	4,877	664	22,433
Human Rights	28	1,697	1,157	247	5,181
Health Emergency	28	0.321	0.476	0	1
Mortality (millions)	28	10.410	1.141	8.142	11.51
UN/COP Milestones	28	0.286	0.460	0	1
Disaster	28	0.536	0.508	0	1

The data present with collinear spikes around major health crises. Some of the increase over time for all framings is also due to the advent of accessible internet, which augmented the raw quantity of public discourse. Due to collinearity, the model unfortunately cannot accommodate this control. Trends in issue frames across the period of study are illustrated in Figure 1.

Figure 1: Infectious Disease Across the Years (1990-2019)



In terms of raw article count, the baseline medical framing outnumbers the rest, presenting more than three times as frequently as the second-most prevalent framing, security. Beyond that, the security narrative dominates, more than doubling the raw article count for economic framings. Human rights and environmental narratives unsurprisingly trail far behind. The descriptive statistics also make apparent the manner in which gaps in narratives develop around major crises. The medical baseline framing notwithstanding, key narratives of infectious disease remained somewhat comparable in prevalence throughout many years of the 1990s. Gaps between them grew significantly beginning with the 2002 SARS outbreak. Removing the medical framing, Figure 2 illustrates the breakdown in average presence of other key image framings across the

years. Security framings account for more than half, followed by economic framings at around one quarter, and finally human rights and environmental framings constituting the remainder.

Figure 2: Infectious Disease by Framing Type (average across years)

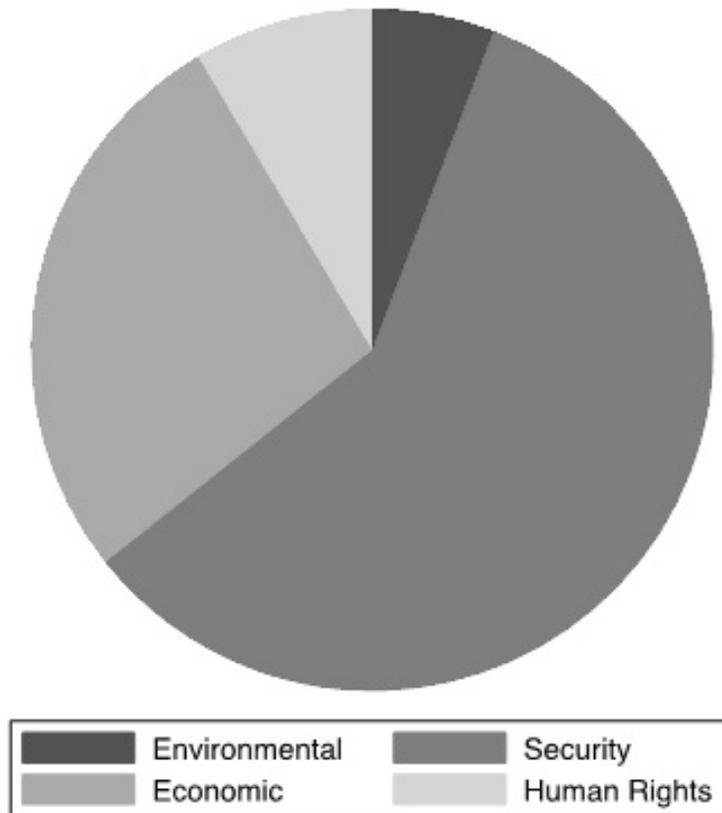


Table 4 presents the regression results for a model fitted to measure relationships between each framing and major global governance reform across the period of study. This model presents relationships between each narrative present in the data and major reforms, while controlling for important co-variants suggested in the literature. Given previous findings, this study is designed with particular attention to environmental framing as a key independent variable. Indeed, beyond the baseline medical framing, the environmental frame is the only independent variable presenting with statistically significant results, demonstrating a small positive association with reform at the 0.1 level. Yet the medical baseline framing as well as the control variable for mortality appear to be better predictors of reform, each presenting with small negative associations.

Table 4: Predicting Global Governance Reform Based on Infectious Disease Framings

Variables	(1) Global Governance Reform	(2) Sigma
Medical	-4.07e-05** (1.72e-05)	
Environmental	0.00160* (0.000913)	
Security	6.57e-05 (6.32e-05)	
Economic	-8.44e-05 (0.000107)	
Human Rights	-0.000524 (0.000589)	
Health Emergency	0.0126 (0.446)	
Mortality	9.66e-07** (4.30e-07)	
UN/COP Milestones	0.0651 (0.173)	
Nine Eleven	0.292 (0.732)	
Disaster	-0.298 (0.246)	
Constant	-283.2** (121.3)	0.300*** (0.0816)
Observations	28	28

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

These results, while promising, should be interpreted with caution. The malleable nature of image framing narratives presents inherent challenges to quantitative analysis. Given that this model treats years as observations (N=28), it can accommodate only a limited number of co-variants, leaving a high potential for omitted variable bias. Additionally, all key independent variables analyzed here are collinear in nature due to overarching trends in infectious disease coverage. I thus offer these results as exploratory findings, and delve into the relationships they reveal through qualitative case study analysis.

CASE STUDY: TRENDS IN INFECTIOUS DISEASE IMAGE FRAMING, 1990-2017

This composite case study presents qualitative analysis of trends driving three major spikes present in infectious disease narratives over the period of study. While each spike

clearly occurs around the onset of a global health emergency – the 2002 SARS outbreak, 2009 H1N1 pandemic, and 2014 response to the Ebola outbreak in West Africa – this analysis looks beyond crises driving news coverage to examine variation in relationships between infectious disease narratives and policy outcomes. Qualitative findings suggest that security and environmental narratives may be mutually reinforcing in elevating infectious disease on the global health policy agenda.

SARS, 2002-2004

The 2002 outbreak of SARS defined a well-documented paradigm shift in global health governance. Prior to this time there was no formal mechanism for declaring a global health emergency. Thus, following the outbreak's onset in late 2002, the WHO took an action many argued overstepped its mandate, issuing travel advisories for Toronto and parts of China in the spring of 2003.³⁵ In retrospect this is widely regarded as a key step in preventing SARS from becoming a major pandemic, yet it took place against the wishes of the Chinese government, which feared the economic ramifications of trade and travel advisories. In the aftermath of the SARS pandemic, this action was justified retroactively through codification in the IHR, which was adopted in 2005 and took effect in 2007.³⁶

Media coverage surrounding the travel advisory is the primary driver of the 2003 spike, yet interplay among competing narratives reveals a more nuanced story. Medical framings of infectious disease coverage, which had climbed steadily throughout the 1990s, spiked to unprecedented levels in 2003, the year the travel advisory was issued, remaining high through the 2005 adoption of the IHR, and indeed through 2007, when its implementation was finalized. Yet for security and economic narratives, the spike around the SARS outbreak appears even more stark in relation to the crisis itself, though less so in relation to subsequent reforms. Securitized narratives present with a small peak around 2007, otherwise remaining relatively stable albeit elevated from pre-SARS levels. Economic narratives are similarly elevated from the period preceding SARS, and relatively stable during this period.

It is additionally notable that the SARS outbreak occurred during a critical period of global climate change debates, during which news coverage of climate change itself was at an all-time high.³⁷ The Kyoto Protocol, to which the U.S. was not a signatory, had been signed in 1997 and would not take effect until 2005. Behind this spike in the interim years was an interplay between positive and negative economic framings of climate change driven by the international community and U.S. government under the Bush Administration, respectively.³⁸ The SARS crisis drew unprecedented attention to growing threat from animal transmission of infectious diseases, at a time when the complexities of climate change and its implications relating to wildlife displacement, urbanization, and population density were a key focus of global governance efforts.³⁹ In the wake of the SARS outbreak, the UN hosted an April 2004 conference focused specifically on prevention efforts related to disease transmission between animals and humans.⁴⁰ As scientific understandings of SARS made their way into public discourse, news coverage turned to such efforts at crafting effective policies for prevention.

Finally, a closer look at the policy discourse reveals that sustained attention to environmental narratives is partially attributable to discourse regarding other diseases. While environmental narratives begin to decline after 2007, their period of elevation coincides with the years leading up to the 2008 launch of the Rollback Malaria

Partnership Global Malaria Action Plan.⁴¹ During 2002-2004 spike in infectious disease framings, security and economic frames remain dominant alongside conventional medical narratives in discourse describing the SARS crisis in real time. Yet the elevation in environmental narratives beginning near the onset of the outbreak remains present through the year in which the IHR took effect. While the security and economic framings are frequently referenced as “broker frames,” their presence drops sharply after 2003. Concurrently, the baseline medical narrative for infectious disease continues to climb until 2006. The environmental narrative, declining slightly after the initial outbreak, then climbs again to remain consistently high between 2005 and 2007. The human rights frame continues a slow increase throughout the remainder of the decade. These patterns suggest that interplay between securitized discourse surrounding crises and major climate-related news stories may create a mutually reinforcing dynamic between security and environmental framings of infectious disease.

H1N1, 2009-2010

The outbreak of H1N1 (known colloquially as swine flu), beginning in early 2009 and lasting through much of 2010, became the first pandemic to put the newly minted IHR to the test. Its quick onset and severity led the WHO to declare the first PHEIC in April 2009. The U.S. concurrently declared a public health emergency.⁴² Unlike the case of SARS, H1N1 had widespread global implications, affecting 168 countries by July 2009, in the first few months of the crisis.⁴³ The pandemic led to widespread criticism of health governance organizations due to an undersupply of the flu vaccine.⁴⁴

H1N1 additionally marked the onset of another epidemic in which animal to human transmission played a key role in public discourse. While H1N1, like other flu viruses, is easily transmitted between humans, many studies uncovered evidence of transmission between humans and animals, and vice versa.⁴⁵ In the pandemic’s wake, assessment of the H1N1 response fell to the nascent IHR Review Committee.⁴⁶ While the review covered global, national, and state-level response plans, emphasis was on strengthening response at the country level.⁴⁷ The H1N1 pandemic drew attention to regional, country, and local-level challenges of IHR implementation, leading to efforts to double-down on previously passed reforms.

While considered a pivotal crisis in global health policy, public discourse regarding H1N1 falls within a narrower scope than that relating to the SARS crisis. Reflecting widespread coverage of the vaccine shortage, medical narratives spike notably, reaching their second highest peak over the period of this study. Security and economic narratives increase less markedly than in the case of SARS. Security narratives are noticeably lower than might be expected given the significance of the first PHEIC designated outbreak. This relative discrepancy may be attributable to a normalization of H1N1 by a public audience accustomed to annual influenza. Relatedly, economic narratives in particular are less dominant during this crisis than during SARS, when they reach their highest peak. Environmental framings reach their highest peak yet at the onset of H1N1, and their second highest during the period of study, appearing to reflect displacement narratives connecting climate change with new dynamics characterizing human to animal disease transmission. Concurrently, human rights narratives undergo a smaller bump and plateau during the 2009-2010 period.

In a notable similarity to environmental narratives surrounding SARS, the 2009 onset of the H1N1 pandemic coincided with a major spike in general climate-related news coverage in the lead-up to the Copenhagen Climate Summit (COP-15), held in December of that year. While the model presented in this study controls for major climate summits and legislations, qualitative evidence reveals some overlap in coverage of the climate summit and H1N1, indicating this contributes to the uptick noted in descriptive statistics for the environmental narrative. It may be that securitized health narratives acted as reinforcing frames in support of climate action, as the two issues made headlines throughout much of that year.⁴⁸

Ebola and Zika, 2014-2016

The 2014-2016 Ebola outbreak in West Africa – the worst in history, claiming over 11,000 lives⁴⁹ – is the primary driver of the spike occurring between 2014 and 2016, a period during which public discourse relating to infectious disease reached record highs. This period is in fact characterized by two peaks: a primary spike in 2014, heavily driven by coverage of Ebola, followed by a smaller peak in 2016 around the time of the Zika outbreak. While security narratives dominated public discourse, the 2014 peak marks the highest point during the period of analysis for every framing other than Economics, which peaked in 2003 at the height of the SARS crisis. Originating in Guinea and Liberia, and soon thereafter in Sierra Leone, transmission spread to include a small number of isolated cases in the US and Europe.

Securitization of Ebola came about in part through this geographic dynamic, as transmission identified cases of the disease in the U.S. and Europe contributed to the uptick in global news coverage. Exemplifying securitized discourse, the *New York Times* article covering the October 2014 case in Texas announced, “With New Ebola Case Confirmed, U.S. Vows Vigilance.”⁵⁰ It is noteworthy that unlike SARS, which can be transmitted easily between individuals, Ebola transmission requires close contact with bodily fluids. Yet fear of Ebola, with a 50 percent fatality rate, stoked a stronger securitized narrative than witnessed during SARS.⁵¹ In that vein, the Ebola outbreak notably marked the first instance in which an infectious disease crisis was referred to the UN Security Council, which in September 2014 unanimously passed a resolution calling on states to contribute more resources to the response effort.⁵² In addition to contributing to the securitization of Ebola, this explains the peak in human rights framings contemporaneous with the crisis.

In addition to Ebola, this period encompasses two other PHEICs. A resurgence of Polio in Afghanistan, Pakistan, and Nigeria, endangered prospects for eradication of the disease and was declared a PHEIC in May 2014, though garnered little media attention. Additionally, as previously noted, in early 2016, the WHO declared its fourth PHEIC due to the spread of Zika-virus in the Americas. Zika, which unlike Ebola is not considered fatal, marked the first mosquito-borne disease to be declared a PHEIC.⁵³ A smaller uptick in coverage is notable in 2016, driven primarily by coverage of Zika. In 2016, security and economic narratives are again higher than they were in the preceding year. This shift is barely notable in the trendline of baseline medical framings, registering only as a deceleration in the decline following the Ebola crisis. While the Environmental and Economic framings continue to decline, they also experience notable decelerations presenting as plateaus during this period.

Environmental narratives relating to the Ebola crisis were driven by narratives of both wildlife displacement leading to transmission between animals and humans, and global temperature increase. Of note, the Paris Climate Summit (COP-21) and negotiation of the Paris Agreement to reduce the effects of climate change took place in November of 2015, contributing to reinforcing climate and health narratives. Leading up to the summit, French environment minister Ségolène Royal made headlines with a public comment suggesting that deforestation and displacement of bats, which may carry Ebola virus, “may have started West Africa’s Ebola outbreak.”⁵⁴ Media coverage of the 2019 PHEIC declared due to the Ebola outbreak in Democratic Republic of the Congo and Uganda, while outside the timeframe of this study, demonstrates further integration of scientific findings linking climate change and Ebola in public discourse.⁵⁵

In response to criticism that the global community was slow to act during the Ebola crisis, while still in the midst of the Zika PHEIC, the World Health Assembly adopted the Health Emergency Programme (HEP), the largest structural reform in WHO history, in May 2016. At first glance, securitization narratives, which dominated the spike in media coverage during this period, appear to be a key driver of this change. In a 2015 article in *The Lancet*, Bill Gates exemplified security as a broker frame, calling for a health emergency reform to create an institution akin to NATO.⁵⁶ The provision of the HEP mirror this call, broadening the WHO mandate in times of crisis. Converging medical and security narratives are potential drivers of reform in this case. Yet the pattern across major spikes in infectious disease discourse cases suggests that windows of opportunity for reform may occur when securitized environmental narratives coincide with climate advocacy surrounding key summits and legislations. Environmental framings remained elevated throughout the Ebola crisis and adoption of the HEP, mimicking the pattern observed following SARS. It is more challenging to draw conclusions in this case, however, as the HEP was adopted concurrently with the 2016 Zika PHEIC.

CONCLUSIONS AND IMPLICATIONS

This study presents exploratory findings suggesting environmental discourse may play a role in elevating infectious disease crises on the global health policy agenda. While I initially hypothesized securitized frames would act as broker frames, the security narrative does not stand out in my empirical findings. I do, however, find qualitative evidence that it acts as a bridge framing facilitating reform processes. These results corroborate findings suggesting securitized framings of infectious disease, while key in garnering public attention, do not act as broker frames driving reform—but may act as a catalyst in combination with other policy narratives prevalent during times of crisis.⁵⁷ To a degree they support the concept of an “emergency trap” dynamic in reform driven by international organizations. As I employ a broadened concept of reform extending beyond the WHO, it is difficult to draw a direct comparison. Yet my findings offer a complimentary explanation encompassing reforms within a broad swath of global health governance institutions, and suggesting how reinforcing frames might interplay with security narratives.

Each spike in media coverage explored in the case studies coincides with a global public health emergency, yet not all crises are followed by major reform. Security and economic narratives were generally better aligned with baseline medical framings, spiking in reaction to crisis events. The environmental narrative is notable in that its

fluctuations do not adhere as closely to crises. It appears instead to act as a reinforcing frame when major climate summits and legislations coincide with disease crises. In the case of IHR adoption following the SARS crisis, environmental frames exhibit persistent elevated presence throughout both crisis and reform. This pattern suggests that the sequence and combination of key narratives, as opposed to the unique frames identified in the literature, may act as brokers for policy change. The interplay between infectious disease crises and related but slower-moving global policy processes such as climate negotiations may play a key role in driving environmental discourse trends. Earlier studies of issue framing in health crises also suggest this may be tied to audience.⁵⁸ In other words, environmental frames are more compelling to health experts responsible for driving policy change than they might be to the general public. This hypothesis is worthy of further qualitative exploration in future research.

These findings contribute to understandings of issue framings beyond security applied to global health emergencies in public discourse. They additionally highlight the need for future case study analyses to trace causal mechanisms of infectious disease image framing, with particular attention to environmental image framings. Interplay between infectious disease crises and reform, and global climate advocacy surrounding major summits and legislations is a trend revealed in the case study warranting further attention. Future research should examine these linkages more closely, perhaps broadening its scope beyond the questions of policy change and individual attitudes typically covered in image framing research to address questions of aid effectiveness. In particular, including proxies for donor preferences as well as geocoding in future analyses may present a more nuanced picture of interactive dynamics between public discourse and other key variables—thus painting a clearer picture of the relationship between environmental discourse and the global health policy agenda.

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¹ Hannah Brown, "Reducing the Impact of Climate Change," *Bulletin of the WHO*, Nov. 2007.

² Ole Waever. "Securitization and Desecuritization," in R.D. Lipschutz (ed.), *On Security* (pp. 46-87). Columbia University Press, 1985.

³ James Smith, "Global Health Security: A Flawed SDG Framework," *The Lancet* (Lancet Publishing Group, June 6, 2015).

⁴ S W Yoon, "The Role of Epistemic Communities in the Global Response to Severe Acute Respiratory Syndrome : Implications for Global Health Governance" (2015).

⁵ Marc Tracy, "As the World Heats Up, the Climate for News Is Changing, Too - The New York Times," accessed January 1, 2020. <https://www.nytimes.com/2019/07/08/business/media/as-the-world-heats-up-the-climate-for-news-is-changing-too.html>

⁶ WHO 2009.

⁷ Jianguo Tan et al., "An Initial Investigation of the Association between the SARS Outbreak and Weather: With the View of the Environmental Temperature and Its Variation," *Journal of Epidemiology and Community Health* 59, no. 3 (March 2005): 186–92. S. Neil MacFarlane and Thomas Weiss, "Political Interest and Humanitarian Action," *Security Studies* 10, no. 1 (September 2000): 112–42.

⁸ Kate E. Jones et al., "Global Trends in Emerging Infectious Diseases," *Nature* 451, no. 7181 (February 21, 2008): 990–93. Brilliant, Larry, "The Age of Pandemics," *The Wall Street Journal*, May 2, 2009.

- ⁹ Leigh Phillips, "Climate Change No Antidote to Flu Pandemics" *Road to Paris*, July 22, 2014.
- ¹⁰ Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2017 (GBD 2017) Burden by Risk 1990-2017. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2018.
- ¹¹ Jeremy Shiffman, "A social explanation for the rise and fall of health issues," *Bulletin of the World Health Organization*, 87, 8, 8 2009. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2733265/>
- ¹² Colin McInnes et al., "Framing Global Health: The Governance Challenge," *Global Public Health* 7, no. SUPPL. 2 (December 2012).
- ¹³ Holli A. Semetko and Patti M. Valkenburg, "Framing European Politics: A Content Analysis of Press and Television News," *Journal of Communication* 50, no. 2 (June 1, 2000): 93-109.
- ¹⁴ David A. Rochefort and Roger W. Cobb, "Problem Definition: An Emerging Perspective," in *The Politics of Problem Definition: Shaping the Policy Agenda*, ed. David A. Rochefort and Roger W. Cobb, 1994, 1-31; John W. Kingdon, *Agendas, Alternatives, and Public Policies* (Longman, 1995).
- ¹⁵ Robert M. Entman, "Framing: Toward Clarification of a Fractured Paradigm," *Journal of Communication* 43, no. 4 (December 1, 1993): 51-58.
- ¹⁶ Adam D. Koon, Benjamin Hawkins, et al. "Framing and the Health Policy Process: A Scoping Review," *Health Policy and Planning*, 31, 6, 7 2016.
- ¹⁷ Mita Saksena, "Framing Infectious Diseases and U.S. Public Opinion," *ProQuest ETD Collection for FIU*, January 1, 2011.
- ¹⁸ T. Balzacq. "The three faces of securitization: Political agency, audience and context." *European Journal of International Relations* 11(2): 171-201, (2005).
- ¹⁹ S.E. Davies. "Securitizing infectious disease. *International Affairs* 84(2): 295-313 (2008); S. Eble. *Virus alert: security, governmentality, and the AIDS pandemic*. New York: Columbia University Press (2009); S. Guzzini, "Securitization as a causal mechanism." *Security Dialogue* 42(4-5): 329-341 (2011); Waever, "Securitization and Desecuritization"
- ²⁰ Kingdon; Frank R. Baumgartner and Bryan D. Jones, *Agendas and Instability in American Politics* (The University of Chicago Press, 2009).
- ²¹ Andrew J Hoffman and Stephen M Ross, "Talking Past Each Other? Cultural Framing of Skeptical and Convinced Logics in the Climate Change Debate," 2011.
- ²² Smith, "Global Health Security: A Flawed SDG Framework."
- ²³ T. Hanrieder and C. Kreuder-Sonnen. "WHO decides on the exception? Securitization and emergency governance in global health." *Security Dialogue* 45(4): 329-341 (2014).
- ²⁴ Global Burden of Disease Collaborative Network. <http://ghdx.healthdata.org/organizations/global-burden-disease-collaborative-network>
- ²⁵ Alexander W. Severson and Eric A. Coleman, "Moral Frames and Climate Change Policy Attitudes*," *Social Science Quarterly* 96, no. 5 (November 2015): 1277-90.
- ²⁶ Saksena, "Framing Infectious Diseases and U.S. Public Opinion."
- ²⁷ Shiffman, "A social explanation for the rise and fall of health issues."
- ²⁸ Saksena, "Framing Infectious Diseases and U.S. Public Opinion."
- ²⁹ Matthew C. Nisbet and Teresa Myers, "Trends: Twenty Years of Public Opinion about Global Warming," *The Public Opinion Quarterly* (Oxford University Press/American Association for Public Opinion Research), accessed January 1, 2020.
- ³⁰ Alistair Woodward, Simon Hales, and Philip Weinstein, "Climate Change and Human Health in the Asia Pacific Region: Who Will Be Most Vulnerable?," *Climate Research* (Inter-Research Science Center), accessed January 1, 2020.
- ³¹ Tracy, "As the World Heats Up, the Climate for News Is Changing, Too."
- ³² Factiva is an online search tool and database that aggregates content from licensed and free sources – providing access to over 32,000 newspapers, journals, magazines, photographs, newswires, policy documents, and other informational sources from every country. Access it here: www.global.factiva.com. My search parameters include the years 1990-2017, all article sources, and subjects, and searching within the full article – not solely the title or headline. I do, however, limit my search to English-language sources.
- ³³ Global Burden of Disease Collaborative Network. <http://ghdx.healthdata.org/organizations/global-burden-disease-collaborative-network>
- ³⁴ A full list of search terms is available upon request.

- ³⁵ Andrew P. Cortell and Susan Peterson, “Dutiful Agents, Rogue Actors, or Both?: Staffing, Voting Rules, and Autonomy in the WHO and the WTO.” In Hawkins et al, eds, *Delegation and Agency in International Organizations*, Cambridge: Cambridge University Press. 2006.
- ³⁶ International Health Regulations, WHO, 2005 <https://www.who.int/ihr/en/>
- ³⁷ Aeshna Badruzzaman, Sidita Kushi, and Summer Marion. “Co-Opting the Climate? The Power of Issue Framing in Environmental Policy,” Working Paper (2019).
- ³⁸ A. Badruzzaman et al, “Co-Opting the Climate.”
- ³⁹ Zhao Rong Lun and Liang Hu Qu, “Animal-to-Human SARS-Associated Coronavirus Transmission? [2],” *Emerging Infectious Diseases* (Centers for Disease Control and Prevention (CDC), 2004).
- ⁴⁰ “UN Health Agency Hosts Meeting to Fight Spread of Animal Diseases to Humans,” *UN News*, April 30, 2004.
- ⁴¹ “The Global Malaria Action Plan” Roll Back Malaria Report, Sept. 1, 2008.
- ⁴² Donald G. McNeil. “U.S. Declares Public Health Emergency Over Swine Flu,” *The New York Times*, April 26, 2009.
- ⁴³ “Pandemic (H1N1) 2009 – update 60,” WHO 2009. https://www.who.int/csr/don/2009_08_04/en/
- ⁴⁴ The 2009 H1N1 Influenza Vaccination Campaign: Summary of a Workshop Series, Institute of Medicine (US) Forum on Meidcal and Public Health Preparedness for Catastrophic Events. Washington, DC: National Academics Press, 2010. <https://www.ncbi.nlm.nih.gov/pubmed/21595118>
- ⁴⁵ Min Suk Song et al., “Evidence of Human-to-Swine Transmission of the Pandemic (H1N1) 2009 Influenza Virus in South Korea,” *Journal of Clinical Microbiology* 48, no. 9 (September 2010): 3204–11. Emily Porter. “Swine Flu Doesn’t Just Pass from Pigs to People – It Goes Both Ways,” *The Conversation*. September 7, 2016. <https://theconversation.com/swine-flu-doesnt-just-pass-from-pigs-to-people-it-goes-both-ways-63958>
- ⁴⁶ “How will the global response to the pandemic H1N1 be reviewed?” WHO, April 12, 2010. https://www.who.int/csr/disease/swineflu/frequently_asked_questions/review_committee/en/
- ⁴⁷ Vidula Pirohit et al, “Public Health Policy and Experience of the 2009 H1N1 Influenza Pandemic in Pune, India,” *International Journal of Health Policy Management*, 7(2): 154-166. Feb. 2018.
- ⁴⁸ “Obama, Harper, and Calderon Talk Trade, Swine Flu at Summit,” *Reuters*. October 8, 2009.
- ⁴⁹ “2014-2016 Ebola Outbreak in West Africa,” Center for Disease Control and Prevention. <https://www.cdc.gov/vhf/ebola/history/2014-2016-outbreak/index.html>
- ⁵⁰ Manny Fernandez and Jack Healy “With New Ebola Case Confirmed, U.S. Vows Vigilance”, *The New York Times*, Oct 15, 2014. <https://www.nytimes.com/2014/10/16/us/ebola-outbreak-texas.html>
- ⁵¹ Michaeleen Doucleff. “Could The Ebola Outbreak Spread To Europe Or The U.S.?” *NPR*, June 25, 2014.
- ⁵² UNSC Resolution 2177 (2014). <https://www.npr.org/sections/health-shots/2014/06/25/324941229/could-the-ebola-outbreak-spread-to-europe-or-the-u-s>
- ⁵³ Sabrian Tavernise and Donald G. McNeil, “Zika Virus a Global Health Emergency, WHO Says,” *The New York Times*, Feb. 1, 2016. <https://www.nytimes.com/2016/02/02/health/zika-virus-world-health-organization.html>
- ⁵⁴ Caroline Davies, “Deforestation ‘may have started west Africa’s Ebola outbreak,’” *The Guardian*, Oct. 29, 2015. <https://www.theguardian.com/world/2015/oct/29/deforestation-might-have-started-west-africas-ebola-outbreak>
- ⁵⁵ Jen Christensen, “Climate crisis raises risk of more Ebola outbreaks,” *CNN*, Oct 15, 2019. <https://www.cnn.com/2019/10/15/health/climate-crisis-ebola-risks/index.html>
- ⁵⁶ Bill Gates, “The next Epidemic - Lessons from Ebola,” *New England Journal of Medicine* 372, no. 15 (April 9, 2015): 1381–84.
- ⁵⁷ A. Badruzzaman et al, “Co-Opting the Climate.”
- ⁵⁸ T. Balzacq. “The three faces of securitization.”