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Framing Infectious Diseases and U.S. Public Opinion

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FRAMING INFECTIOUS DISEASES AND U.S. PUBLIC OPINION

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Mita Saksena

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To: Dean Kenneth Furton
College of Arts and Sciences

This dissertation, written by Mita Saksena, and entitled Framing Infectious Diseases and U.S. Public Opinion, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

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Date of Defense: November 9, 2011

The dissertation of Mita Saksena is approved.

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DEDICATION

I dedicate this dissertation to my mother, Chhaya Srivastava, who fostered a love of learning in me, and supported and encouraged me in the completion of this work.

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ABSTRACT OF THE DISSERTATION

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The United States has been increasingly concerned with the transnational threat posed by infectious diseases. Effective policy implementation to contain the spread of these diseases requires active engagement and support of the American public. To influence American public opinion and enlist support for related domestic and foreign policies, both domestic agencies and international organizations have framed infectious diseases as security threats, human rights disasters, economic risks, and as medical dangers. This study investigates whether American attitudes and opinions about infectious diseases are influenced by how the issue is framed. It also asks which issue frame has been most influential in shaping public opinion about global infectious diseases when people are exposed to multiple frames.

The impact of media frames on public perception of infectious diseases is examined through content analysis of newspaper reports. Stories on SARS, avian flu, and HIV/AIDS were sampled from coverage in The New York Times and The Washington Post between 1999 and 2007. Surveys of public opinion on infectious diseases in the same time period were also drawn from databases like Health Poll Search and iPoll.

Statistical analysis tests the relationship between media framing of diseases and changes in public opinion.

Results indicate that no one frame was persuasive across all diseases. The economic frame had a significant effect on public opinion about SARS, as did the biomedical frame in the case of avian flu. Both the security and human rights frames affected opinion and increased public support for policies intended to prevent or treat HIV/AIDS. The findings also address the debate on the role and importance of domestic public opinion as a factor in domestic and foreign policy decisions of governments in an increasingly interconnected world. The public is able to make reasonable evaluations of the frames and the domestic and foreign policy issues emphasized in the frames.

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LIST OF ABBREVIATIONS AND ACRONYMS

ACT UP- AIDS Coalition to Unleash Power

AIDS- Acquired Immunity Deficiency Syndrome

ANOVA- Analysis of Variance

ARV- Antiretroviral

CDC- Centers for Disease Control and Prevention

CIA - Central Intelligence Agency

FAO- UN Food and Agricultural Organization

HIV- *Human Immunodeficiency Virus*

HPAI- Highly Pathogenic Avian Influenza

H5N1- Avian Influenza A

IHR- International Health Regulations

MMWR- Morbidity Mortality Weekly Report

NIC- National Intelligence Council

SARS- Severe Acute Respiratory Syndrome

SPSS- Statistical Package for the Social Sciences

UNDP- United Nations Development Program

UNAIDS- United Nations Program on HIV/AIDS

WHO- World Health Organization

WTO- World Trade Organization

I. INTRODUCTION

During the Cold War, nuclear weapons and bloc rivalry dominated the foreign policy and security agenda of the United States government.[1] Issues such as public health and infectious diseases were considered to be "low politics."[2] Although the 1981-89 era saw the discovery of a new plague (HIV/AIDS), it was not seen as a security or foreign policy concern within the United States. With the end of the Cold War, as old military threats from other states waned, some scholars alleged that rather than originating from rival states, threats were either domestic or transnational (i.e., non-state) or the state itself posed a challenge to its citizens.[3] Not only was the origin of threats different, the nature of threats differed as well.[4] Some international relations theorists focused attention on threats arising from political, environmental, and societal sectors.[5] Scholars argued that in an increasingly interconnected and interdependent world, events such as civil wars, environmental degradation, infectious diseases, migration of refugees, international narcotics, and terrorism were transnational threats that could not only threaten the

[1] Stephen M. Walt, "The Renaissance in Security Studies," International Studies Quarterly 35, 2 (1991): 211–39.

[2] David P. Fidler, "Health as Foreign Policy: Between Principle and Power," The Whitehead Journal of International Relations and Foreign Policy 179 (2005): 179–94.

[3] Ayoob Mohammed, "Defining Security: A Subaltern Realist Perspective," in Critical Security Studies, ed. Keith Krause (Minneapolis: University of Minnesota Press, 1997).

[4] Barry Buzan, Ole Weaver, and Jaap de Wilde, Security: A New Framework for Analysis (Boulder: Lynne Rienner Publishers, 1998), 71–161.

[5] Ibid., 61-171.

internal stability of states but also the security of other states. These transnational issues were security issues to be addressed by foreign policy officials.

While twentieth century scholars argued about whether poverty, degradation of the environment, climate change, and other concerns should be treated as security issues, it was HIV/AIDS that was declared a security threat by the United Nations Security Council and United States security agencies in 2001.[6] With globalization and increased migration, air travel, and food and animals trade, infectious diseases could emerge anywhere in the world and spread quickly to other parts of the world, including the United States. Threats could arise not only from naturally occurring diseases but also from deliberate use of microbes as weapons. Policy makers grew increasingly concerned about the threat of bioterrorism.[7] Infectious diseases were not just the concern of public health officials and a domestic issue of any one country but a foreign policy concern as well. The potential danger posed by infectious diseases required coordination among national health agencies, investment in disease surveillance, and close cooperation among international agencies. This dissertation explores the reaction of the public to this new foreign policy and security issue—one that traditionally was a biomedical and humanitarian issue. While the focus of this work is on the public response to framing infectious diseases as security threats, this study also adds to the larger debate regarding

[6] National Intelligence Council, The Global Infectious Disease Threat and Its Implications for the United States (National Intelligence Estimate 99-17D, January 2000), at http://www.dni.gov/nic/PDF_GIF_otherprod/infectiousdisease/infectiousdiseases.pdf, last accessed August 1, 2011.

[7] David P. Fidler, "Public Health and National Security in the Global Age: Infectious Diseases, Bio-terrorism, and Realpolitik," George Washington Law Review 35, 4 (2003): 787–856.

domestic public opinion as a factor that affects the foreign policy decisions of governments in an increasingly interconnected world.[8] A body of scholarly work has debated the role of public opinion in foreign policy decision making in democratic societies. The debates have centered on the role of the public in foreign policy decision making (i.e., whether public opinion follows, determines, or sets some limits on leaders who avoid making policies that might later evoke "public retribution").[9] With the increased importance of issues such as immigration, infectious diseases, and the environment, the policy making elite increasingly feel the pressure to consider and respond to domestic public opinion and popular preferences.[10] The study of public opinion on a transnational issue like infectious diseases also contributes to the existing debates on the theory of international relations. In a world faced with pressing non-military issues and with domestic and transnational actors linked to these issues,

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[8] James D. Fearon, "Domestic Politics, Foreign Policy, and Theories of International Relations," Annual Review of Political Science 1 (1998): 289–313; Philip J. Powlick, "The Sources of Public Opinion for American Foreign Policy Officials," International studies Quarterly 39,4(1995): 427–51; Thomas Risse Kappen, "Public Opinion, Domestic Structure, and Foreign Policy in Liberal Democracies," World Politics 43, 4 (1991): 479–512; Bruce Beuno de Mesquita, "Domestic Politics and International Relations," International Studies Quarterly 46, 1 (2002): 1–9; Lawrence R. Jacobs and Robert Y. Shapiro, Politicians Don't Pander: Political Manipulation and the Loss of Democratic Responsiveness (Chicago: University of Chicago Press, 2000), 3-27.

[9] Josh N. Price, "Identifying Conceptions of the Public Opinion/Foreign Policy Nexus," in A Dialogue on Presidential Challenges and Leadership: Selected Papers of the 2008-2009 Presidential Fellows, eds. In Alex J. Douville and Jessica L. Zapf (Washington D.C.: Center for the Study of The Presidency and Congress, 2009), also available online at http://www.thepresidency.org/storage/documents/Fellows2009/Price.pdf, last visited July 7, 2011.

[10] Paul Berstein, "Bringing the Public Back in: Should Sociologists Consider the Impact of Public Opinion on Public Policy?" Social Forces 77, 1 (1998): 27–62.

international behavior could be the result of a "multiplicity of motives, not merely the imperative of systemic power balances."[11]

An extensive literature on the nexus between public opinion and foreign affairs exists. The literature, however, is limited to an understanding of traditional security issues. Much of the early literature from the two decades after the Second World War, as represented by the works of Walter Lippmann, Hans Morgenthau, and Gabriel Almond, posits a rather pessimistic view of public opinion on domestic and foreign policy issues. Studies on public opinion on foreign policy issues were concerned mainly with issues such as war, military intervention abroad, nuclear arms policy, international trade, defense spending, and foreign aid. Policy makers perceived these issues to be far removed from peoples' lives, and the public was seen as disinterested in these issues. Added to this was the belief that some of the foreign policy issues required secrecy, speed, and flexibility in the use of classified information.[12] Decision makers, therefore, felt that there was little need to engage public opinion, which they considered to be erratic, unstable, emotional, and volatile.[13]

The Vietnam War was a turning point at which policy makers began to understand that public opinion was important. Subsequent studies by liberal theorists, including Richard Aldrich, Benjamin Page, Robert Shapiro, Ore Holsti, John Mueller,

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[11] Ole R. Hosti, Public Opinion and American Foreign Policy, Revised Edition, Analytical Perspectives on Politics (Michigan: University of Michigan Press, 2004), 339.

[12] Ole R. Holsti, "Public Opinion and Foreign Policy," International Studies Quarterly 36 (1992): 439–466.

[13] Almond A. Gabriel, "Public Opinion and National Security," Public Opinion Quarterly 20, 2 (1956): 371–78.

and Bruce Jentleson, suggested that the public did have stable views and was capable of addressing serious foreign policy issues. In the post-Cold War era, researchers such as Richard Sobel, James Larson, Bruce Jentleson, Rebecca Britton, Eugene Wiittkoph, Miroslav Nincic, Bruce Russett, Ronald Hinckley, Peter Feaver, Christopher Gelpi, Kenneth Scheve, Matthew Sloughter, Richard Eichenberg, and Elisabeth Neuman studied issues like public tolerance of war causalities, international trade, and military involvement. Although no consensus exists amongst these scholars as to what determines people's attitudes towards these problems, most scholars "understand the public as reasoned and reasonable."[14]

Within the context of this persistent debate, there was agreement among scholars of public opinion and foreign policy about the sources of information about international events and foreign policy issues and the accessibility of this information to the public. Because many ordinary citizens were inattentive to international issues and foreign news, public opinion about foreign policy issues often was activated through elite discourse (e.g., policy making elite and opinion leaders) and by the media.[15] Extensive research has shown that the media is most able to activate opinion when these elite debates are presented as "frames" to which people are particularly receptive and which seem to have

[14] Christopher Gelpi, "Performing on Cue? The Formation of Public Opinion towards War," Journal of Conflict Resolution 54, 1 (2010): 88–116. For a detailed review on this subject read John H. Aldrich, Christopher Gelpi, Peter Feaver, Jason Reifler, and Kristin Thompson Sharp, "Foreign Policy and the Electoral Connection," Annual Review of Political Science 9 (2006): 477–450.

[15] Benjamin I. Page, Who Deliberates? Mass Media in American Society (Chicago: Chicago University Press, 1996), 1-17.

an impact on people's lives.[16] Framing may be seen as an attempt by leaders and other actors to insert into the policy debate organizing themes that will affect how the public and other actors such as the media will perceive an issue.[17] Political actors, who perceive the importance of media coverage in influencing policy outcomes, often try to advance their policy positions via greater media coverage and engage in what has been called "framing wars."[18] The assumption here is that widespread discussion of issues in the media will activate public opinion.

My dissertation focuses on a non-traditional security threat—infectious disease—that has significant impact on the daily lives of people.[19] On this issue, the relationship between public opinion and foreign policy in United States takes on "added rather than diminished significance," in two distinct ways, and the public is likely to "play a more autonomous role."[20] First, although scholars agreed that while some issues, such as military conflicts and resulting domestic costs and war causalities, attracted intense public attention, public opinion was, in general, considered to be important only in so far

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[16] Philip J. Powlick and Andrew Z. Katz, "Defining the American Public Opinion/Foreign Policy Nexus," Mershon International Studies Review 42, 1 (1998): 36.

[17] Alex Mintz and Steven B. Redd, "Framing Effects in International Relations," Synthese 135, 2 (1997): 193-213.

[18] Robert E. Entman, "Framing: Towards Clarification of a Fractured Paradigm," Journal of Communication 43, 4 (1993): 51–8.

[19] Michael C. Williams, "Words, Images, Enemies: Securitization and International Politics," International Studies Quarterly 47, 4 (2003): 511–31.

[20] Ole R. Hosti, Public Opinion and American Foreign Policy, Revised Edition, Analytical Perspectives on Politics (Michigan: University of Michigan Press, 2004).

it had electoral implications.[21] The public was assumed to be more easily manipulated on issues of wars and military crises abroad, than on domestic issues, that affected them directly.[22] The need for speed and secrecy in issues of war and military confrontation often was used as justification by policy makers for denying public engagement in foreign policy decision making. The same justification, however, cannot be used for policy making on an issue such as infectious diseases. On the contrary, on this issue policy makers consider an active, informed, and engaged public to be important, and public cooperation is actively sought. Infectious diseases are a major source of concern to people and government alike. They are potentially transferable from one person to the other and can cause death and disability, impose high health care costs, lead to loss of productivity, and thereby cause social and economic disruption.[23] Due to the transmissibility of infectious diseases and their direct impact on people, any public health intervention, support for surveillance, or policy decisions regarding funding, prevention, and control of global infectious diseases requires the active engagement of the American public.

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[21] Philip B. K. Potter and Matthew A. Baum, "Democratic Peace, Democratic Audience Costs and Political Communication," Political Communication 27, 4 (2010): 461. Vincent Price and John Zaller, "Who Gets the News: Alternative Measures of News Reception and their Implication for Research," Public Opinion Quarterly 57, 2 (1993): 133–64.

[22] David Domke, Erica S. Graham, Kevin Coe, Sue Lockett John, and, Ted Coopman, "Going Public as Political Strategy: The Bush Administration, an Echoing Press, and Passage of the Patriot Act," Political Communication 23, 3 (2006): 291–312.

[23] World Health Organization, WHO Global Burden of Disease: 2004 update. Available from:www.who.int/healthinfo/global_burden_disease/2004_report_update/en/index.html, last visited January 2, 2011.

Secondly, on issues of war and military crisis, local actors, including the executive branch of the government, members of the Congress, interest groups, media, and often academia, have traditionally dominated the elite discourse.[24] Challenges arising out of the spread of infectious diseases, however, have put focus on actors beyond the national states. Intergovernmental organizations such as the United Nations, the World Health Organization, and the World Bank have become increasingly prominent. These organizations have drawn attention to the impact of infectious diseases on human rights and economic development of countries and have urged collaboration and pooling of resources to fight the increased threat of epidemics. Many organizations that transcend national boundaries, including multinational corporations, pharmaceutical companies, epistemic communities, and civic society organizations, also have entered the debate on global and national health policies.[25] Multinational corporations are worried about the implications of infectious diseases on the growth of the economy, tourism, trade, and travel. Pharmaceutical companies are concerned that issues relating to health and medicine are influencing policies on trade, particularly trade negotiations with other countries and with multilateral organizations.[26] Health challenges have given rise to a new set of actors as well. For example, transnational groups and civic society

[24] A growing body of research documents how public support for military intervention increases if the public feels that the action had the approval of international organizations. See Joseph M. Grieco, Christopher Gelpi, Jason Reifler, Peter D. Feaver, "Let's Get a Second Opinion: International Institutions and American Public Support for War," International Studies Quarterly 55, 2 (2011): 563–83.

[25] Rene. Loewenson, Civil Society Influence on Global Health Policy (Training and Research Support Center ,Zimbabwe: World Health Organization: 2003) available at http://www.tarsc.org/WHOCSI/pdf/WHOTARSC4.pdf, last accessed 08/06/2011

[26] Ibid.

organizations (e.g., Health Action International) have also enriched and participated in the debate on global and national health policies.[27] Transnational civic groups' at the global level have given consideration to field of pharmaceuticals and equal access to treatment. To influence public opinion and enlist support for their proposed policies, these organizations emphasize different dimensions of infectious diseases (e.g., human rights and economic and biomedical issues) and frame issues in ways that strategically emphasizes their political positions.[28] On this issue, therefore, the public is exposed to frames espoused by domestic, transnational, and international organizations.

The primary purpose of this dissertation is to enhance our understanding of "framing effects," meaning changes in decisions or judgments resulting from different ways of presenting an issue, by exploring the ways in which public opinion responds to shifts in media framing. This study further explores the linkages between public opinion and domestic and foreign policy and assesses whether the public is able to make reasonable evaluations of the frames and the policy issues emphasized in the frames. This research is rooted in the broad literature proposing that the public responds in systematic and prudent ways to information presented on domestic and foreign policy issues.[29]

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[27] Gill Walt, Louisiana Lush, and Jessica Ogden, "International Organizations in Transfer of Infectious Diseases: Iterative Loops of Adoption, Adaptation, and Marketing," Governance 17, 2 (2004): 189 –210.

[28] Matthew C. Nisbet and Bruce V. Lewenstein, "Biotechnology and the American Media: the Policy Process and the Elite Press 1970-99," Science Communication 23, 4 (2002): 162.

[29] Bruce W. Jentleson, "The Pretty Prudent Public: Post Post-Vietnam American Opinion on the Use of Military Force," International studies Quarterly 36, 1 (1992): 49–74.

To examine the impact of issue framing on public attitudes towards infectious diseases, I studied three infectious diseases: Human Immunodeficiency Virus (HIV), Severe Acute Respiratory Syndrome (SARS), and the avian flu and four ways of framing them: biomedical, economic, security, and human rights problems. On June 5, 1981, the United States Centers for Disease Control and Prevention issued the first warning of HIV/AIDS in United States. SARS was first identified in Guangdong Province in Southern China in November 2002. Since then, it has spread to many countries in Southeast Asia and to Canada. In the United States, fewer cases of SARS have been reported. While the global spread of SARS was contained within 3 months, it had tremendous economic and political fallout and generated many debates about human rights issues. The avian flu refers to a highly contagious influenza A virus usually found in birds. Since 1997, confirmed cases of infection in humans have been reported in many countries outside the United States. In the United States, only poultry has been affected to date, and no cases of infection among humans have been reported.[30] Scientists and public health officials in the United States, however, fear that if the virus mutates to allow for transmission among humans, it could have devastating results.[31]Avian flu has affected the poultry industry in the United States. For example, in 2005, because of a Highly Pathogenic Avian Influenza (the "molecular" nonlethal HPAI) outbreak on a single United States farm in the summer of 2004, more than fifty countries imposed a ban on

[30] Centers for Disease Control and Prevention (CDC) Key Facts about Avian Influenza (Bird Flu) and Highly Pathogenic Avian Influenza A (H5N1) Virus, available at http://www.cdc.gov/flu/avian/gen-info/facts.htm, last accessed February 12, 2011.

[31] Julian Palmore, "A Clear and Present Danger to International Security: Highly Pathogenic Avian Influenza," Defense and Security Analysis 22, 2 (2006): 111–21.

United States poultry that resulted in a 3% decrease in total United States poultry exports for that year.[32] This clearly scared the 2.5 billion dollar poultry industry in the United States.

These three diseases were chosen as case studies for two primary reasons: They have greatly affected the United States, and they have their origins outside the United States. These infectious diseases have spread from countries in Africa and China to the United States and have raised serious biomedical, human rights, economic, and security concerns in the United States. Public health officials, international organizations, government agencies, and many non-governmental groups have drawn attention to the impact of infectious diseases on human rights and the economic development of countries, and they have urged global collaboration and pooling of resources to fight the increased threat of epidemics.

Although similar frames are present for all three diseases, the patterns of framing effects are different, and some frames are more influential than the others. For example, the security frame greatly influenced public concern about HIV/AIDS but not SARS and avian flu. The three diseases differ in terms of their origins, patterns of transmission, consequences for human health, and potential to inflict damage. These factors could also influence the response of the public to different conceptualizations of the infectious diseases studied.

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[32] Council for Agricultural science and Technology (CAST) .2006. Avian Influenza: Human Pandemic Concerns. CAST commentary QTA 2006-1 CAST, QTA 2006-2 Ames, Iowa, online at ,www.cast-science.org, last visited, 22 March, 2006

The secondary purpose of this dissertation is to use frames as conceptual instruments to analyze important changes in public health policy towards infectious diseases in United States in the post-Cold War era. Infectious diseases and epidemics are not new, but their "incidence in humans has increased within the past two decades or threatens to increase in the near future."[33] Infectious diseases are specified as "those caused by pathogenic microorganisms, such as bacteria, viruses, parasites or fungi; the diseases can be spread, directly or indirectly, from one person to another."[34] Newly emerging infectious diseases are those "infections that have newly appeared in a population." In addition to SARS and HIV/AIDS, which are new infectious diseases, other examples of emerging diseases in different parts of the world include Rift Valley fever, which is found in Africa and was identified in Saudi Arabia and Yemen in 2000; hantavirus pulmonary syndrome, which was first recognized in an outbreak in the southwestern United States in 1993; and hemolytic uremic syndrome, a food- or waterborne infection caused by certain strains of the common bacterium *Escherichia coli,* which were identified for the first time in 1982 in the United States. Influenza also remains a persistent concern, with worldwide epidemics (pandemics) of novel influenza varieties occurring, on average, several times in a century.[35] Avian influenza of subtype

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[33] Centers for Disease Control and Prevention, Addressing Emerging Infectious Disease Threats: A Prevention Strategy for the United States. (Atlanta: U.S. Department of Health and Human Services, Public Health Service, 1994).

[34] World Health Organization, Health Topics: Infectious Diseases, available at http://www.who.int/topics/infectious_diseases/en/, last accessed January 21, 2011.

[35] Stephen S. Morse, "SARS and the Global Risk of Emerging Infectious Diseases," (Zurich, Switzerland: International Relations and Security Network (ISN), 2006), available at Columbia International Affairs Online: Case Studies.

H5N1 (the so-called bird flu) was discovered after an outbreak in Hong Kong in 1997, with 18 human cases and 4 deaths reported.[36] Since then, H5N1 has continued to evolve in Asia. Infection has spread from infected poultry to humans in several countries, including Vietnam, Thailand, Indonesia, Cambodia, and China. Reemerging diseases are those "that have been around for decades but have now occurred in a different form or in a new geographic location."[37] Some examples of infectious diseases that have reemerged are monkey pox in the United States in 2003, West Nile virus in the United States in 1999, and yellow fever in Cote d'Ivoire and Togo in 2008.[38]

Study of the United States' response to plagues and infectious diseases show they have not always been high on the government's national security and foreign policy agenda.[39] The end of the twentieth century was a period of optimism and complacency, as infectious diseases were thought to be successfully eradicated due to vaccinations, antibiotics, antiviral drugs, and great advances in medical science.[40] For example, the World Health Organization officially certified in 1980 that small pox was eradicated from

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[36] WHO News: Avian Influenza Virus Reappears in Hong Kong Special Administrative Region, available at http://whqlibdoc.who.int/bulletin/2003/Vol81-No3/bulletin_2003_81 (3) _232.pdf, last accessed January 21, 2011. Also see Laurie Garrett, "The Next Pandemic?" Foreign Affairs 84, 4 (2005): 3–23.

[37] Anthony Fauci, "Emerging and Reemerging Infectious Diseases," Academic Medicine 80, 12 (2005): 1079–85.

[38] Ibid., 1080.

[39] Fitzhugh Mullan, Plagues and Politics: The Story of United States Public Health Service (New York: Basic Book Publishers, 1989), 14-40.

[40] Felissa R. Lashley and Jerry D. Durham, Emerging Infectious Diseases: Trends and Issues (New York: Springer, 2007), pp xvii.

the world.[41] In 1967, the United States Surgeon General, William H. Steward, proclaimed that "the war against infectious diseases had been won."[42] Laurie Garrett and several other researchers, however, pointed out that the belief that infectious diseases had been eradicated rested on two false assumptions.[43] One was that microbes could not evolve into new drug-resistant strains or develop new hosts, and the other was that infectious diseases could be contained at state borders.[44] What followed was exactly what some public health specialists, like Richard Krause, had feared.[45] Not only was microbial evolution taking place, thereby necessitating the need for new drugs and vaccines to control the infectious diseases, but increased global interconnectedness through transportation, trade, and tourism enabled infectious diseases to be spread over great distances.[46] More and more people crossing national borders everyday and unprecedented levels of air travel made it very difficult to geographically isolate and contain diseases in

[41] Mark A. Strassburg, "The Global Eradication of Small Pox," American Journal of Infection Control 10, 2 (1982): 53–9.

[42] Anthony A. Fauci, "Infectious Diseases: Considerations for the 21st Century," Clinical Infectious Diseases 32, 5 (2001): 675–85.

[43] Laurie Garrett, "The Return of Infectious Disease," Foreign Affairs 75, 1 (1996): 66–79.

[44] David M. Morens, Gregory K. Folkers, and Anthony S. Fauci, "The Challenge of Emerging and Reemerging Infectious Diseases," Nature 430, 6996 (2004): 242–49.

[45] Richard M Krause, The Restless Tide: The Persistent Challenge of the Microbial World (Bethesda: U.S. National Foundation For Infectious Diseases, 1981), 25-44.

[46] Giovanni Berlinguer, "Globalization and Global Health," International Journal of Health Services 29, 3 (1999): 579–95.

their countries of origins.[47] Screening at airports was a fruitless exercise, as the incubation period of many infectious diseases is more than 2 weeks and thus an infected person might not display any symptoms of the diseases. The result was a resurgence of highly lethal infectious diseases that had developed high resistance to antimicrobials and insecticides.[48] The emergence of Ebola in 1989 in Virginia in the United States therefore evoked great concern among public health specialists. Until 1989, Ebola had been found only in jungles of Africa. The New York Times ran the following editorial portraying the virus as a big threat to the United States:

> For much of this century the United States has served as "the world's policeman" in armed crises. Now, with the Cold War over, it may be time to put on the hat of "world's doctor," alone or in concert with others. As the danger of nuclear war recedes, we may have less to fear from rogue nations than from rogue viruses.[49]

Further, prominent publications such as "The Coming Plague," by Laurie Garrett, led to great awareness by politicians and the general public of the potential dangers incurred by new and emerging diseases. The rapid spread of HIV/AIDS coupled with co-infection with tuberculosis, the emergence of SARS, and the threat of an influenza pandemic in the future have forced foreign policy makers to deal with health issues and engage in

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[47] Laurie Garrett, "The Return of Infectious Disease," Foreign Affairs 75, 1 (1996): 66–79.

[48] David L. Heymann, "The Evolving Infectious Disease Threat: Implications for National and Global security," Journal of Human Development 4, 2 (2003): 194.

[49] Editorial, "Who Will Be the World's Doctor?" The New York Times, May12, 1995.

"microbialpolitik" (i.e., political strategies amongst states as they deal with pathogenic microbes).[50]

Slowly, a coalition of domestic actors that included political leaders, human rights activists, security agencies, public health experts, and think tanks began expressing serious concern about economic and security implications of emerging and reemerging diseases. These groups were also responding to the changing international environment and interacting with transnational forces and international organizations in an effort to capture public attention on issues closely related to infectious diseases.[51] Strategic actors had realized that they needed to frame issues in ways that would engage the American public and persuade policy makers to support their arguments. The next chapter presents the evolution of this debate in the context of three infectious diseases.

[50] David P. Fidler, "Microbialpolitik: Infectious Diseases and International Relations," American University International Law Review 14, 1 (1998): 1–53.

[51] Andrew Moravcsik, "Taking Preferences Seriously: A Liberal Theory of International Politics," International Organization 51, 4 (1997): 513–53.

II. FRAMES IN THE INFECTIOUS DISEASE DEBATE

This chapter traces the historical development of the prominence of the issue of infectious diseases and the key stages of policy development relevant to infectious diseases. The development of governmental policies and international laws and regulations concerning infectious diseases has not been a simple, straightforward, uncomplicated process. It has involved the collaborative action, and competition of multiple agencies and institutions as well as among policy makers, and scientists.[1]

`These organizations have defined the issue of infectious diseases in persuasive ways by emphasizing and focusing on different dimensions such as security, economic, human rights, and biomedical. The objectives of the different actors were similar: They aimed to create awareness of infectious diseases, mobilize public opinion and government resources to support funding for prevention and treatment of these diseases. Different actors, however, framed the issues in different ways to highlight different aspects and dimensions of the diseases. For example, public health professionals and researchers devoted themselves to studying the causes, transmission patterns, epidemiology, and treatment of these infectious diseases, whereas the United States government and international organizations increasingly began to focus on the security, human rights, and economic implications of the diseases. In general, therefore, the three infectious diseases on which the dissertation focuses (HIV/AIDS, Severe Acute Respiratory Syndrome (SARS), and the avian flu) have been commonly framed as

[1] Matthew C. Nisbet and Bruce V. Lewenstein, "Biotechnology and the American Media: The Policy Process and the Elite Press, 1970–1980," Science Communication 23, 4 (2002): 359–91.

biomedical, security, economic, and human rights concerns. These diseases have been the subject of much biomedical research, because of their contagiousness and lethality.

While scholars and policy makers have increasingly drawn linkages between infectious diseases and economic, security and human rights concerns, the biomedical frame has been dominant and constant. The continued evolution of many infectious diseases that can spread easily all around the globe has intensified advanced research on microbial genomes, epidemiology, transmission, microbial pathogens, human susceptibility to disease, and research on development of vaccines, medical supplies, and diagnostics.[2] All of this has had implications for the diversion of resources to medical infrastructure, and also for the increased importance of medical professionals and experts in the formulation of economic and security policies.[3] Needless to say, a great deal of the public discussion of these diseases naturally revolves around their epidemiology and other biological aspects. This emphasis is relatively invariant. The emphasis placed on other frames, however, varies over time. This chapter presents an historical overview of that variation. The remainder of this chapter will focus on the security, economic, and human rights frames.

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[2] Anthony S. Fauci, "Infectious Diseases: Considerations for the 21st Century," Clinical Infectious Diseases, 32(2001): 675-81.

[3] Stefen Elbe, "Pandemics on the Radar Screen: Health Security, Infectious Disease and the Medicalisation of Insecurity," Political Studies 59, 4 (2011): 848-66.

2.1. HIV/AIDS as a Security Threat

Human Immune deficiency Virus (HIV) damages a person's body by destroying specific blood cells (CD4+ T cells) that are crucial to helping the body fight diseases.[4] This causes a life-threatening condition called Acquired Immunity Deficiency Syndrome (AIDS). Since the 1980s, HIV/AIDS has become a worldwide epidemic and one of the most studied diseases in history. Research continues on many biomedical aspects of the disease as well as its origins.[5]

Since the beginning of the 1990s, scholars of international relations, foreign policy, and security have framed HIV/AIDS as a threat to human security, state security, and even international security because it threatened individuals and had the potential to destabilize states in the post-Cold War era.[6] Scholars of security issues and international

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[4] Basic Information about HIV/AIDS is available online from the Centers for Disease Control and Prevention: Department of Health and Human Services at http://www.cdc.gov/hiv/topics/basic/index.htm, last accessed February 2, 2010.

[5] It is widely accepted that HIV was originally harbored in chimpanzees inhabiting the western rain forests in Africa and that it crossed over into the human population as early as the 1940s. It moved slowly from West Central Africa's isolated land to its current status as a global pandemic.

[6] Some important works by academics include: Andrew T. Price Smith, "Ghosts of Kigali: Infectious Diseases and Global Stability at the End of the Century," International Journal 54, 3 (1999): 426-42; Andrew T. Price Smith, The Health of Nations: Infectious Disease, Environmental Change, and Their Effects on National Security and Development (Cambridge: MIT press, 2002), 117–41; Chris Bayer, "Accelerating and Disseminating across Asia," The Washington Quarterly Winter (2001): 211–25; Susan Peterson, "Epidemic Disease and National Security," Security Studies 12, 2 (2002/3): 43–81; Jack Chow, "Health and International Security," The Washington Quarterly (1996): 62–77; P. W. Singer, "AIDS and International Security," Survival 44, 1 (2002): 145–58; Stephen Elbe, "Changing Landscape of War in Africa," International Security 27 (2002): 167–71; Stephen Elbe, "AIDS, Security, Biopolitics," International Relations 19, 4

relations who framed HIV/AIDS as threats to individual, state, and international security did so as circumstances changed in the post-Cold War (i.e., domestic and non-military threats had increased as external military threats had decreased in importance). This new way of framing HIV/AIDS triggered a debate in the field of security studies, as some scholars disagreed with widening the concept of security to include issues such as the environment and infectious diseases.[7]

Scholars who argued that infectious diseases such as HIV/AIDS were a human security threat viewed HIV as a threat to the lives of individuals, their quality of living, and their capacity to participate in economic activities.[8] The term "human security" was first used officially in the 1994 Human Development Report of the United Nations

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(2000): 403–19; Jonathan B. Tucker, "Contagious Fears: Infectious Disease and National Security," Harvard International Review 23, 2 (2001): 82; David P. Fidler, "The Return of Microbial Politick," Foreign Policy (2001): 1–53; Stephen Morrison, "The African Pandemic Hits Washington," The Washington Quarterly 24, 1 (2001): 197–209; Dennis Pirages, "MicroSecurity: Disease Organisms and Human well Being," Washington Quarterly 18, 5 (1995): 9–14; Dennis Pirages, "Ecological Theory and International Relations," Indiana Journal of Global Legal Studies 5, 1 (1997): 53–64; Dennis Altman, "Understanding HIV/AIDS as a Global Security Issue," in Health Impacts of Globalization: Towards Global Governance, ed. K. Lee et al. (Basingstoke: Palgrave, 2003), 33–46; Gwyn Prins, "AIDS and Global Security," International Affairs 80, 5 (2004): 931–52; Robert. L. Ostergard, Jr., "Politics in the Hot Zone: AIDS and National Security in Africa," Third World Quarterly 23, 2 (2002): 333–50; David L. Heymann, "The Evolving Infectious Disease Threat: Implications for National and Global Security," Journal of Human Development 4, 2 (2003): 191–204; Lincoln Chen and Vasant Narasimhan, "Human Security and Global Health," Journal of Human Development 4, 2 (2003): 181–90.

[7] Daniel Deudney, "The Case Against Linking Environmental Degradation and National Security," Millennium 19, 3 (1990): 461–76; Walt Stephen, "The Renaissance of Security Studies," International Studies Quarterly 35, 2 (1991): 211–39.

[8] Peter Fourier and Martin Schonteich, "Africa's New Security Threat: HIV/AIDS and Human Security in Southern Africa," African Security Review 10, 4 (2001): 57.

Development Program (UNDP).[9] The concept of human security challenged the state-centric notion of security and made a case for individuals as objects of security and members of a transcendent human community with common global concerns.[10]

Political scientists who have drawn links between infectious diseases and threats to national and international security include Andrew Price Smith, Susan Peterson, Robert Ostergard, Gwyn Prins, Stephen Elbe, Dennis Altman, Peter Singer, Peter Chalk, and David Fidler. These scholars have analyzed infectious diseases (mainly HIV/AIDS) as threats to a state's capacity to govern in many distinct ways. They have been mainly concerned about the high rate of HIV infection in sub-Saharan Africa. High rates of infection in armies, state peacekeeping forces, and civilian personnel threatened domestic stability of these states and undermined both defense and civilian worker productivity, as it reduced life expectancy and killed skilled personnel in their most productive years.[11] High rates of infection affected the public health infrastructure of fragile economies and

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[9] United Nations Development Program (UNDP), Human Development Report (New York: Oxford University Press, 1994). Available online at http://hdr.undp.org/en/reports/global/hdr1994/chapters/, last accessed June 10, 2011. The term "human security" was first officially used in the 1994 Human Development Report of the UNDP, which defined human security as protection from a) chronic threats such as hunger, disease, and repression and b) sudden and harmful disruptions in daily life. Later, most proponents of human security defined human security as any threat to individuals, their communities, and their overall development.

[10] United Nations Commission on Human Security, Human Security Now: Protecting and Empowering People (New York: United Nations, 2003), 4–25; Ronald Paris, "Human Security: Paradigm Shift or Hot Air," International Security 26, 2 (2001): 87–102; Keith Krause, "Broadening the Agenda of Security Studies: Politics and Methods," Mershon International Studies Review 40 (1996): 229–54.

[11] Jennifer Brower and Peter Chalk, The Global Threat of Emerging and Reemerging Infectious Diseases: Reconciling U.S. National Security and Public Health Policy (Santa Monica: Rand Corporation, 2003), 1–7.

led to increased health care costs, medical expenses, and funeral costs for individuals and to reduced foreign investment and increased debt in affected countries such as Somalia, Botswana, Nigeria, Lesotho, Mozambique, Ethiopia, and many other countries in sub-Saharan Africa. All of these factors posed serious risk to these states.[12] As many states failed, the international security of states became threatened. Scholars of security studies feared it could lead to coups, ethnic struggles, struggles over resources, and increased flows of refugees into other countries. Another factor of concern in many African countries was that death of both parents left AIDS orphans or new "pools of combatants" that were easily susceptible to crime and violent activities.[13] In many countries of the African subcontinent, AIDS was used as a weapon of war, with the disease being deliberately transferred during rape.[14] These scholars did not, however, see the spread of HIV/AIDS in Africa as a direct security threat to the United States.

Conceptualization of HIV/AIDS as a threat to the United States came from governmental agencies in the United States that were studying the implications of the spread of HIV/AIDS in sub-Saharan Africa on the national security of the United States. Policy makers began to recognize the nexus between HIV/AIDS and national security in the United States. As Tim Werth put it:

> HIV/AIDS has potentially devastating impacts on whole sectors of societies. In the most vulnerable nations, these trends could have devastating consequences for sustainable development and contribute to

[12] Radhika Sarin, "A New Security threat: HIV/AIDS in the Military," World Watch 16, 2 (2003): 17–22.

[13] Peter W. Singer, "AIDS and International Security," Survival 44, 1 (2002): 145–58.

[14] Gwyn Prins, "AIDS and Global Security," International Affairs 80, 5 (2004): 931–52.

> conflict and instability. We must understand the pandemic for its ability to affect the social, economic, and political fabric of many nations and thus, its implications for U.S. foreign policy, American leadership, and global cooperation.[15]

For most policy makers, linking disease with security has been a "means of highlighting a particular problem, capturing scarce resources, and stepping up national, international and transnational response."[16] For example, Peter Pilot, executive director of the Joint United Nations Program on HIV/AIDS (UNAIDS), explained public health advocates' tendency to invoke security this way:

> Whether we conceptualize AIDS as a health issue only or as a development and human security issue is not just an academic exercise. It decides how we respond to the epidemic, how much is allocated to combating it, and what sectors of government are involved in this response.[17]

In the early 1990s, the Central Intelligence Agency (CIA) commissioned a study that projected 45 million deaths due to HIV/AIDS by 2000.[18] Many reports were published after the 1990 CIA memorandum that recognized the potential implications of

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[15] Tim Werth, foreword to Global HIV/AIDS: A Strategy for U.S. Leadership: A Consensus Report of the CSIS Working Group on Global HIV/AIDS, by Kimberley A. Hamilton and Carolyn A. Ducker (Washington D.C.: Center for Strategic and International Studies, 1994), vii.

[16] Emma Rothschild, "What is Security?" Daedalus 124, 3 (1995): 53–98.

[17] Joint United Nations Program on HIV/AIDS, "AIDS and Human Security (statement by Peter Pilot at the United Nations University, Tokyo, Japan, October 2, 2001). Available online at http://data.unaids.org/Media/Speeches01/Pilot_Tokyo_02Oct01_en.doc, last accessed July 6, 2010.

[18] United States Department of State, The Global AIDS Disaster: Implications for the 1990's (Washington D.C.: Department of State, 1992). Available online at: http://www.pbs.org/wgbh/pages/frontline/aids/docs/statedept.pdf, last accessed February 2, 2009.

the global spread of HIV/AIDS and other infectious diseases on the security of the United States. Such reports included those by the Institute of Medicine, the World Bank, the Center for Strategic and Security Studies, the National Science and Technology Council, the Committee on Engineering, Science, and Technology, and the Global Emerging Infectious Surveillance and Response System, which was set up by the Ministry of Defense.[19]

In 2000, the National Intelligence Estimate on "The Global Infectious Disease Threat and its Implications for the United States" was published.[20] It was the first time that a security agency (the National Intelligence Council (NIC)) had intervened in a health question. The report was viewed by the United States government as an important action on the part of the intelligence community, as it considered for the first time the national security dimensions of a non-traditional threat. It reviewed the most lethal diseases globally and by region, developed alternative scenarios about their future course, examined national and international capabilities to deal with them, and assessed their global social, economic, political, and security impacts. It then scrutinized the threat of

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[19] Joshua Lederberg, Robert E. Shope, and Stanley L., Jr. Oaks, eds., Emerging Infections: Microbial Threats to Health in the United States (Washington D.C.: Institute of Medicine/National Academy Press, 1992), 220–94. See also Report of the U.S. National Science and Technology Council Committee on International Science, Engineering and Technology Working Group on Emerging and Reemerging Infectious Diseases–A Global Threat (Washington D.C.: National Science and Technology Council, 1995).

[20] National Intelligence Council, The Global Infectious Disease Threat and Its Implications for the United States (Washington, D.C.: NIE-99-17D, 2000). Available online at http://www.dni.gov/nic/PDF_GIF_otherprod/infectiousdisease/infectiousdiseases.pdf, last accessed January 21, 2011.

infectious diseases from international sources to the United States. According to the report, new and emerging infectious diseases would pose a rising global threat and complicate United States and global security over the next 20 years, endanger United States citizens at home and abroad, threaten United States armed forces deployed overseas, and exacerbate social and political instability in key countries and regions in which the United States had significant interests. The report also warned that restrictive immigration controls and disputes over intellectual property rights for drugs could lead to friction between the United States and its key trading partners. In 2002, another report by the NIC projected that the alarming spread of HIV in countries of strategic interest to the United States (i.e., Russia, India, and China) could have economic, social, political, and military implications for the United States.[21] In addition to the security agencies, several think tanks and research organizations published reports focusing on the increased threat from biological weapons and infectious diseases.[22]

HIV/AIDS also received the attention of the UN Security Council. In his speech to the Security Council in 2000, then vice president Al Gore called for a "more expansive

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[21] National Intelligence Council, The Next wave of HIV/AIDS: Nigeria, Ethiopia, Russia, India and China (Washington D.C.: ICA 2000-4 D, 2002). Available online at http://www.dni.gov/nic/special_nextwaveHIV.html, last accessed February 18, 2010. Also see Nicholas Eberstadt, "The Future of AIDS," Foreign Affairs 81, 6 (2002): 22–45.

[22] In 2001, the Chemical and Biological Arms Institute and the Center for Strategic and International Studies International Security program issued a report titled "Health, Security and Global Leadership under the guidance of Jonathan Ban." Other reports include Jordan S. Kassalow, Why Health Is Important to U.S. Foreign Policy (New York: Milbank Memorial Fund and Council on Foreign Relations, 2001), available online at http://www.milbank.org/reports/Foreignpolicy.html, last accessed October 2, 2010; Peter Chalk and Jennifer Brower, The Global Threat of New and Reemerging Infectious Diseases: Reconciling U.S. National Security and Public Health Policy (Santa Monica: RAND Corporation, 2004), 140–66.

definition of security" that includes emerging and reemerging infectious diseases such as AIDS.[23] The UN Security Council met on January 2000 to discuss the impact of AIDS on peace and security in Africa. On July 17, 2000 the UN Security Council passed resolution 1308 regarding "the potentially damaging impact of HIV/AIDS on the health of international peacekeeping personnel, including support personnel."[24] By its resolution 26-S/2 (annex), the General Assembly, at its twenty-sixth special session held in New York from 25 to 27 June, 2001, adopted a resolution declaring HIV/AIDS to be an issue that "constitutes a global emergency and one of the most formidable challenges to human life and dignity, as well as to the effective enjoyment of human rights."[25]

Concern about economic and security implications of emerging and reemerging diseases was only one aspect of the increasing threat presented by microbes. Concern about the threat of bioterrorism also was increasing. During the Cold War, the control of biological weapons was strictly an arms control issue. In the 1990s, perturbed about the magnitude of the former Soviet Union's biological weapons program and concerns about a similar capacity in Iraq raised more general security concerns about biological

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[23] Vice President Al Gore's Statement at the Opening Session of the United Nations Security Council on AIDS in Africa on January 10, 2000 is available online at www.whitehouse.gov/ONAP/pub/vp_sc2.html; last accessed March 10, 2009.

[24] UN Security Council, Security Council Resolution 1308 (2000) on the responsibility of the Security Council in the maintenance of international peace and security: HIV/AIDS and international peacekeeping operations, July 17, 2000, S/RES/1308 (2000) is available online at http://www.unhcr.org/refworld/docid/3b00efd10.html, last accessed August 10, 2011.

[25] United Nations General Assembly, Declaration of Commitment on HIV/AIDS, S-26/2, August 2, 2001 is available online at http://www.un.org/ga/aids/docs/aress262.pdf, last accessed February 4, 2011.

warfare.[26] In 1975, despite the commencement of the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological and Toxin Weapons, there were no mechanisms for verifying the Convention's prohibition on the production, development, and stockpiling of biological weapons.[27] In response to negotiations for an additional protocol, the United States Congress passed the Chemical and Biological Weapons Act of 1991, which had provisions for economic sanctions and economic controls to curb the spread of biological weapons.[28] There was no domestic law, however, to control the spread of biological toxins by domestic groups within the state. The Biological Weapons Act and the Anti-Terrorism Act followed in 1989 and 1996,

[26] Robert P. Kadlec, Allan P. Zelicoff, and Ann M. Vrtis, **"**Biological Weapons Control: Prospects and Implications for the Future," Journal of the American Medical Association 278, 5 (1997): 351–56.

[27] Until recently, United States policy focused almost entirely on preventing the acquisition and use of biological weapons by other nations. To this objective, the United States government focused on three major strategies. First, the United States entered into a series of treaties and other international agreements designed to achieve biological disarmament and to stop the proliferation of biological arms to countries that did not yet have them. Second, the United States imposed economic and diplomatic sanctions on governments that continued their efforts to develop a biological arsenal. Third, the United States designed an elaborate system of export controls to prevent the transfer to other countries of United States goods and technologies that could be used in the development of biological weapons. These strategies originated when the United States, with seventy other nations, entered into the Biological Weapons Convention of 1992. Also see David P. Fidler, "Bioterrorism, Public Health and International Law," Chicago Journal of International Law 3, 1 (2002): 7–26.

[28] James R. Ferguson, "Biological Weapons and U.S. Law," Journal of the American Medical Association 278, 5 (1997): 357–59.

respectively.[29] Revisions were also made to the Biological Weapons Act to include action against any domestic group who "threatens" or "attempts" to use biological weapons.[30]

The terrorist acts of Aum Shinrikyo in Japan in the mid-1990s raised awareness of the threat posed by biological weapons. In this case a non-state actor had committed a major act of violence by releasing a chemical agent (Sarin) in Tokyo subway. Unlike the threats of biological and chemical weapons from states such as the former Soviet Union and Iraq, this event raised the possibility of threats from non-state actors and terrorists and their use of chemicals and biological agents as weapons of mass destruction.[31] Biological agents and weapons could now be used not just as an arsenal of war but also to spread terror.[32] The anthrax attacks that occurred in 2001 in the United States further demonstrated the potential for bioterrorism to inflict damage in a country.[33] All previous attempts by the United States to control the spread of biological and chemical weapons concentrated on preventing acquisition of biological and chemical weapons by states. The

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[29] In these ways, the Anti-Terrorism Act laid the groundwork for a broad regulatory system governing the acquisition, use, and transfer of biological agents posing a threat to public health and safety. It remained for the Centers for Disease Control and Prevention to translate this broad statutory command into specific rules and regulations.

[30] In particular, Congress directed the Centers for Disease Control and Prevention to establish a regulatory regime that would identity biological agents posing a threat to public health and regulate the transfer and use of such agents.

[31] David E. Kaplan, "Aum Shinrikyo," in Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons, ed. Jonathan B. Tucker (Cambridge: Belfer Centre for Science and International Affairs, 2000), 207–26.

[32] James R. Ferguson, "Biological Weapons and U.S. Law," Journal of American Medical Association 278, 5 (1997): 357–59.

[33] David P. Fidler, "Bioterrorism, Public Health, and International Law," Chicago Journal of International Law 3, 1 (2002): 7-25.

anthrax attacks delineated the importance of more caution on the part of domestic law enforcement agencies. It was agreed that that the first line of defense would be a strengthened public health system.[34] This required strengthening laboratory capacities, expanding the number of trained medical practitioners and epidemiologists, and improving planning and coordination among law enforcement, the public, and medical professionals.[35] Control of bioterrorism thus became a part of the national security, homeland security, and foreign policy of the United States.

The National Security Strategy of the United States, announced in September 2002, and the National Strategy for Homeland Security released in July 2002 emphasized the importance of strengthening the public health system against any future biological or chemical attacks.[36] The United States Global Pathogen Surveillance Act of 2002 acknowledged the universal nature of the infectious disease threat and admitted that "domestic surveillance and monitoring, while absolutely essential, are not sufficient to combat bioterrorism or ensure adequate domestic preparedness."[37] The Bush

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[34] David L. Heymann, Jerusha Achterberg, and Joelle Laszlo, Lessons From the Anthrax Attacks: Implications for U.S. Bioterrorism Implications: A Report on a National Forum on Biodefense (Washington, D.C.: Centre for Strategic and International studies, 2002).

[35] Ibid.

[36] President of the United States of America, National Security Strategy of the United States (September 2002), available online at http://www.whitehouse.gov/nsc/nss.pdf, last accessed January 14, 2005. President Bush also signed the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 to enhance the nation's ability to prevent, identify, and respond to bioterrorism.

[37] David P. Fidler and Lawrence O. Gostin, BioSecurity in the Global Age (Stanford: Stanford University Press, 2008), 157–58. Also available online at http://www.cbo.gov/ftpdocs/35xx/doc3510/S2487.pdf, last accessed February11, 2011.

administration launched the National Biosurveillance Initiative in 2004 and the National Biosurveillance Integration System in 2005 to strengthen the United States' capacities for surveillance and early warning of bioterrorist attacks and detection of outbreaks of infectious diseases.[38] Three other programs that were created to this end were the BioShield, BioSense, and BioWatch programs.[39] These programs established that

[38] National Biosurveillance Strategy for Human Health, United States Department of Health and Human Services, Center for Disease Control and Prevention, Office of Public Health Preparedness and Response, Biosurveillance Coordination Unit, February 2010, p. 14, available online at http://www.nyu.edu/intercep/lapietra/RAND_infectiousDiseaseandNationalSecurity.pdf, last accessed February 4, 2011. The implementation was to be overseen by the Office of Health Affairs (OHA), which was the Department of Homeland Security's (DHS) principal authority for all medical and public health matters. Within the OHA, the National BioSurveillance Integration Center's duty was to gather information from food, agricultural, public health, environmental monitoring, and the intelligence community within federal and state agencies and private sources to provide an early warning system for an outbreak or a bioterrorist attack. See, David P. Fidler, and Lawrence O Gostin, BioSecurity in the Global Age((Stanford: Stanford University Press,2008),187-257.

[39] Project BioSense was initiated in 2003 by the Centers for Disease Control and Prevention (CDC) to improve the United States' ability to monitor the health status of Americans by analyzing diagnosis from ambulatory care sites, lab testing orders, and sales of over-the-counter drugs. Project BioWatch was a cooperative effort among the DHS, EPA, and the CDC's Laboratory Response Network to provide an early warning system for bio-threats by placing pathogen censors in thirty cities to detect possible biological attacks in our cities. However, this did not detect virulent pathogens in the air. (Information about this is available online at http://www.niaid.nih.gov, last accessed June 8, 2009). Project BioShield was designed (under the Homeland security Appropriations Act 2003) to first, propel the development and procurement of "next generation" medical countermeasures—through special contract authority. Second, the Act authorized the National Institutes of Health through the National Institute of Allergy and Infectious Diseases to facilitate promising areas of research in medical countermeasures to these agents. Third, it established a new emergency use authorization for certain medical therapeutics not yet approved. Also see United States Congress House: Committee on Government Reform. Project BioShield: Contracting For the Health and Security of the American Public: Hearing before the Committee on Government Reform, House of Representatives, One Hundred Eighth Congress, First session, April 4, 2003 (Washington, D.C.: U.S. G.P.O., 2003), iii, 128 p; John Marburger, Keynote Address on National Preparedness, BioShield 2003 (Washington, D.C.: Office of Science and

surveillance and intervention were the two mainstays of the United States government's strategy to protect its country and people from the threat of bioterrorism and naturally occurring infectious diseases that have the potential to threaten or disrupt the social, economic, and political fabric of societies. David Fidler aptly named this strategy "BioSecurity."[40]

2.2. HIV/AIDS and the Economic Frame

As HIV/AIDS spread to countries around the world, policy makers and international organizations such as the World Health Organization (WHO) and the UN realized its devastating economic implications. They focused on the economic factors that contributed to the spread of HIV/AIDS, the economic devastation caused by HIV/AIDS in sub-Saharan Africa and in many other parts of the world, and the economic burden on national governments that treatment and management of the disease entails. Framing of HIV/AIDS as an economic issue helped highlight the need for more resources to fight the disease. As James Wolfensohn said in his address to the UN General Assembly Special Session regarding HIV/AIDS in 2001:

> HIV/AIDS is no longer just a health problem, but a global development problem, threatening to reverse many of the gains made over the last half

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Technology Policy, 2003), available online at http://www.humanitarian.net/biodefense/ref/marburger_biosecurity2003.pdf, last accessed February 4, 2011.

[40] Lawrence O. Gostin and David P. Fidler, "BioSecurity under the Rule of Law," Case Western Reserve Journal of International Law 38, 3&4 (2006–2007): 437–44.

> century. Every war needs a war chest, but that provided by the international community is woefully empty.[41]

Factors such as poverty, illiteracy, and migration, lack of preventive programs, an unsafe blood supply, prostitution of women in poor countries, and the high cost of treatment drugs were recognized as contributing to the spread of AIDS in poor countries of the world.[42] The economic devastation caused by HIV/AIDS has been well documented in many studies over the past 20 years.[43]

The WHO established the Global Program on AIDS in 1986 and UNAIDS was formed in 1996: These were the first multilateral responses to the epidemic. Together with other organizations, UNAIDS developed strategies to finance and provide technology to programs aimed at prevention and treatment of AIDS.[44] Several other initiatives, such as the Global Fund to Fight AIDS, Tuberculosis, and Malaria and the United States President's Emergency Plan for AIDS Relief, as well as philanthropic foundations, especially the Bill and Melinda Gates Foundation, are important actors

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[41] Andrew Kircher and James D. Wolfensohn, Voice For The World's Poor; Selected Speeches And Writings Of World Bank President James D. Wolfensohn, 1995–2005 (Washington, D.C.: World Bank Publications, 2005), 296.

[42] Peter Pilot, Michael Bartos, Peter D. Ghys, Neff Walker, and Bernhard Schwartlände, "The Global Impact of HIV/AIDS," Nature 410 (2001): 968–73.

[43] Channing Arndt and Jeffrey D Lewis, "The Macro Implications of HIV/AIDS in South Africa," Africa Region Working Paper Series, 9, World Bank, Africa Region Public Expenditures Effectiveness Project, November 2000. The Economic Impact of HIV/AIDS on Southern Africa, Brookings Conference, Report 9, September 2001.

[44] UNAIDS coordinates with the World Health Organization, World Bank, UN Children Fund, UN Development Program, and UN Educational, Scientific, and Cultural Organization as well as non-governmental organizations and philanthropic organizations. See David P. Fidler, "Caught between Paradise and Power," McGeorge Law Review 35 (2004): 124–24.

devoting resources to dealing with the HIV/AIDS pandemic. The United States was gravely concerned with the economic consequences of the growing problem of HIV/AIDS at home and in other parts of the world, and this was influential in the conceptualization of HIV/AIDS as a security threat by the United States government. One of the earliest reports that emphasized economic implications of spread of HIV/AIDS to United States was a publication in 1997 by the Institute of Medicine titled, America's Vital Interest in Global Health.[45] Both the Clinton and Bush administration recognized the growing costs of HIV/AIDS to United States government and in countries outside.[46] The Bush administration launched United States President's Emergency Plan for AIDS Relief (PEPFAR) and assistance to countries in Caribbean and Africa acknowledging that HIV/AIDS was an economic threat.[47] Much of the aid through PEPFAR was dispersed as bilateral aid efforts and this was seen as an exercise in power by many critics, as they argued for extending aid through multilateral institutions.[48]

[45] Board of International Health, Institute of Medicine, America's Vital Interest in Global Health: Protecting Our People, Enhancing Our Economy, and Enhancing our International Interests (Washington, D.C. National Academies Press, 1997):1-54.

[46] David E. Bloom and G. E. Carliner, "The Economic Impact of AIDS in the United States," Science 239, 4840 (1988): 604-10.

[47]United States President's Emergency Plan for AIDS Relief (PEPFAR). Available Online at http://www.pepfar.gov/about/index.htm, last accessed November 9, 2011.

[48] David P. Fidler, "Public Health and National Security in the Global age: Infectious Diseases, Bioterrorism, and Realpolitik," George Washington International Review 35 (2003): 787-856.

2.3. HIV/AIDS and Human Rights

International organizations and human rights activists groups have been particularly energetic in framing HIV/AIDS as a human rights issue in order to draw the attention of the world community to the plight of people infected with HIV/AIDS. The major human right concerns affecting those with HIV/AIDS are discrimination and lack of universal access to HIV prevention, treatment, care, and support.

The linkage between health and human rights is old. A huge step towards incorporating human rights into international law was taken when the Universal Declaration of Human Rights was signed by 48 UN member states in 1948.[49] Article 25 is of special importance to health care professionals. It states, in part:

> Everyone has the right to standard of living adequate for the health and well being of himself and his family, including food, clothing, and housing and medical care and necessary social services.[50]

The United Nations adopted the Universal Declarations of Human Rights as a statement of aspirations. The legal obligations of governments were to derive from formal treaties that member states would eventually sign and incorporate into domestic law.[51] The

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[49] Universal Declaration of Human Rights, G.A. res. 217A (III), U.N. Doc A/810 at 71 (1948). See David P. Fidler, "Fighting the Axis of Illness: HIV/AIDS, Human Rights, and U.S. Foreign Policy," Harvard Human Rights Journal 7 (2004): 99–136.

[50] United Nations General Assembly, Universal Declaration of Human Rights (New York: United Nations, 1948), available online at http://www.un.org/en/documents/udhr/index.shtml#a25, last accessed February 20, 2011.

[51] On December 16, 1966, both the International Covenant on Civil and Political rights and the International Covenant on Economic, Social, and Cultural Rights (ICESCR) were adopted by the General Assembly and offered for signature and ratification to member nations. Of special importance is General comment No.14 (ICESCR): The Right to the Highest Attainable Standard of Health, which stated that "health is a fundamental human

Universal Declaration of Human Rights and the two subsequent treaties (the International Covenant on Civil and Political rights and the International Covenant on Economic, Social, and Cultural Rights) form a global human rights framework for action and have a special relevance for global health.

The human rights concern in the early stage of the campaign for rights of people living with HIV/AIDS in the 1980s in the United States was linked to the rights of homosexuals, including protection of the civil and political rights of gays and lesbians and the fight against stigma and public discrimination in the work place. This campaign took place mainly in the developed world. Several human rights activists raised the issues of discrimination, imprisonment, segregation, and isolation of homosexuals, prisoners, migrants, sex workers, women, and children infected with AIDS.[52] HIV can be transmitted when specific body fluids of an infected person come into direct contact with mucous membranes, damaged tissue, or the blood stream (through the exchange of needles, tattooing, and blood transfusion).[53] Because of its association with behavior that may be considered socially unacceptable, HIV/AIDS is a stigmatized disease that results in discrimination against the HIV-positive population.

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right indispensable for the exercise of other human rights." The United States ratified the International Covenant on Civil and Political rights but not the latter. See George J. Annas, "Human Rights and Health–The Universal Declaration of Human Rights at 50," The New England Journal of Medicine, 339, 24 (1998): 1778–81.

[52] Lawrence O. Gostin, The AIDS Pandemic (Chapel Hill: University of North Carolina Press, 2004), 1–87.

[53] Basic Information about HIV/AIDS is available online from the Centers for Disease Control and Prevention: Department of Health and Human Services at http://www.cdc.gov/hiv/topics/basic/index.htm, last accessed February 2, 2010.

In 1987, the WHO's first global response to AIDS called for compassion and respect for the rights for people living with HIV/AIDS. It placed responsibility on the governments to protect the rights of people living with HIV/AIDS.[54] The WHO's framing of AIDS in terms of human rights allowed HIV/AIDS policies to become anchored in international law, thereby helping to make governments and intergovernmental organizations publicly accountable for their actions in the context of HIV/AIDS.[55]

To further assist governments, international organizations, non-governmental organizations, and civil society groups in creating a positive, rights-based approach to tackling AIDS, the UN Center for Human Rights and the WHO laid out guidelines on HIV/AIDS and human rights beginning in 1989 and further revised them in 1996 and 2002.[56] The Commission on Human Rights has asked states to take all necessary steps to ensure the respect, protection, and fulfillment of HIV-related human rights as contained in the guidelines and has urged states to ensure that their laws, policies, and practices comply with the guidelines.

Slowly, human rights concerns became linked to the issue of free and non-discriminatory access to medicines and treatment. These concerns have intensified because of deep poverty and widening inequalities within and across countries. The UN

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[54] World Health Organization, World Health Assembly, Resolution WHA 40.26, Global Strategy for the Prevention and Control of AIDS, Geneva, WHO, May 5, 1987.

[55] Sofia Gruskin, Laura Ferguson, and Dina O. Bogecho, "Beyond The Numbers: Using Rights-Based Perspectives to Enhance Antiretroviral Treatment Scale-Up."AIDS, 21 (2007):S13–S19.

[56] In 2002, the UNAIDS Reference Group on HIV and AIDS was formed as an independent advisory body to advise UNAIDS on all matters relating to HIV and human rights.

Assembly Special Session on HIV/AIDS made a key Declaration of Commitment on HIV/AIDS in 2001 that contains an entire section devoted to human rights.[57] The World Summit Outcome in June 2005 and the UNAIDS High-level Meeting on AIDS in 2006 and in June 2011 further resolved to provide universal access to antiretroviral drugs to treat HIV and to intensify efforts to eliminate AIDS.

As national governments and intergovernmental organizations grapple with these issues, a new set of transnational actors have begun to play an important role in solving these global health problems.[58] They extend widely from more formal organizations (e.g., multinational organizations and international non-governmental or civic society organizations) to loosely formed networks.[59] They try to influence national governments and international organizations such as the UN.

Transnational actors in the field of global health have been particularly effective in mobilizing resources and the attention of policy makers by framing issues of access

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[57] United Nations High Commissioner for Human Rights. Access to Medication in the Context of Pandemics Such as HIV/AIDS. Commission on Human Rights Resolution 2001/33.Geneva, Switzerland: United Nations High Commissioner for Human Rights; 2001. Available online at http://www.unhchr.ch/huridocda/huridoca.nsf/framepage/, last accessed April 7, 2009. Other relevant statements included the Millennium Development Goals signed in 2001; General Comment 14 of the Committee on Economic, Social and Cultural Rights; and the Commission on Human Rights resolutions on the right to the highest attainable standard of health and access to medication. Also see UNAIDS, High Level Meeting on AIDS, Political Declaration on AIDS, 31 May to 2 June, available online at http://www.un.org/ga/aids/coverage/FinalDeclarationHIVAIDS.html, last accessed February 11, 2011.

[58] Ilona Kickbusch, "The Development of International Health Policies–Accountability Intact?" Social Science and Medicine 51, 6, (2001): 979–89.

[59] Thomas Risse, "Transnational actors and World Politics," in Handbook of International Relations, eds. Walter Carlsnaes, Thomas Risse, and Beth A Simmons (London: Sage Publications, 2001), 255–74.

and treatment as human rights issues. In the early stages of their campaign, human rights activists protested against practices such as compulsory testing and quarantine advocated by public health officials in the developed world.[60] Unlike victims of other infectious diseases, AIDS patients were considered by some to have brought this disease upon themselves by engaging in sexual behavior that was socially unacceptable and/or by injecting illegal drugs. Human rights activists protested the resulting lack of political will and the apathy of government officials towards the disease, and they pressed officials to incorporate rights for HIV patients into their domestic legislation.[61] Beginning in 1987, human rights advocates such as Jonathan Mann framed this fight for civil, political, and social rights as a human rights issue for people living with HIV. He and his group, the Global AIDS Policy Coalition, focused on the marginalization, stigmatization, and discrimination that people with HIV/AIDS, mainly homosexuals, were subject to in relation to housing, access to education, health care, international travel, and access to treatment.[62] Mann and his group further framed the denial of these rights to HIV patients as an impediment to the realization of HIV prevention strategies.[63] Thus, the human

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[60] Sofia A. Gruskin and Tomasevski K. Hendricks, "Human Rights and Responses to AIDS," in AIDS in the World II, eds. Jonathan Mann and Daniel J. M. Tarantola (New York: Oxford University Press, 1996), 326–40.

[61] Lawrence O. Gostin, The AIDS Pandemic: Complacency, Injustice, and Unfulfilled Expectations (Chapel Hill: University of North Carolina Press, 2004), 61–89.

[62] Jonathan Mann, "Human Rights and AIDS: The Future of the Pandemic," in Health and Human Rights: A Reader, ed. J. Mann et al. (London: Routledge, 1999), 216–26.

[63] Sofia Gruskin and Daniel Tarantola, "Health and Human Rights" in Perspectives on Health and Human Rights, ed. Sofia Gruskin et al. (New York: Routledge, 2005), 3–58.

rights activists drew a strong linkage between the protection of human health against infectious diseases and the promotion of human rights.

As years passed, however, many AIDS activists alleged that addressing issues of stigma and discrimination was not enough.[64] The changing demographics and geographic pattern of AIDS, both within the United States and around the world, has redefined the nature of the rights demanded by human rights activists for HIV patients. As HIV spread in many poor and developing countries in Asia, Africa, and Eastern Europe, it became evident that it was not just the risky behavior of individuals that was causing AIDS. In fact, the most defenseless sections of society—poor women without access to education, employment, health care, and the legal system—were the ones more likely to be infected by AIDS.[65] As one of the foremost AIDS activists, Paul Farmer, wrote, "regardless of the message of public health slogans that AIDS is for everyone–some are at higher risk for HIV infection."[66] Even in the United States, the demographic profile of people infected with AIDS was changing: It was no longer affecting mainly white homosexual males but also prisoners, injection drug users, African American and Latino women, people living in inner cities, and poorer neighborhoods in America.[67]

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[64] Sofia Ruskin, Laura Ferguson, and Dina O. Bogecho, "Beyond The Numbers: Using Rights-Based Perspectives to Enhance Antiretroviral Treatment Scale-Up."AIDS, 21 (2007): S13–S19.

[65] Paul Farmer, "Pathologies of Power: Rethinking Health and Human Rights," American Journal of Public Health 89, 10 (1999): 1486–96.

[66] Paul Farmer, "Pathologies of Power: Rethinking Health and Human Rights," American Journal of Public Health, 89, 10 (1999): 264.

[67] Lawrence O. Gostin, The AIDS Pandemic (Chapel Hill: University of North Carolina Press, 2004), xix.

The advent of more effective antiviral medication accentuated those inequalities further, particularly in poorer nations of the world, which were hit hard by the epidemic.[68] As HIV/AIDS spread to some of the poorest countries in the world, issues of treatment and access to medicines arose. Effective treatment of HIV/AIDS required development of new drugs and vaccines as well as widespread access to them. However, there was a conflict between these two objectives.[69] The development of new drugs required enormous investment of both time and money into research by pharmaceutical companies, and the products were hence patented by the companies to recover their high development costs. These drugs were often unaffordable in poor countries, and this issue brought health advocacy groups and many non-state actors campaigning for universal access to treatment and drugs into direct conflict with the pharmaceutical industry.

Transnational groups have taken up the issue of providing access to antiretroviral (ARV) therapy drugs for the poor at affordable prices.[70] These groups include doctors, scientists, public health experts, and professional lawyers who provide the much-needed technical expertise in intellectual property related issues. They contribute to the ongoing

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[68] Paul Farmer, "Social Inequalities and Emerging Infectious Diseases," Perspectives 2, 4 (1996): 264–65.

[69] Carsten Fink, "Intellectual Property and Public Health: An Overview of the Debate with a Focus on U.S. Policy," Working Paper Number 146 (Washington D.C.: Center for Global Development, 2008), available online at http://www.cgdev.org/content/publications/detail/16228/, last accessed July 10, 2011.

[70] Epistemic communities have been defined as a "network of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain or issue-area." See Peter M. Haas, "Introduction: Epistemic Communities and International Policy Coordination," International Organization 46, 1 (1992): 1–35.

debate and also present their views at various AIDS conferences around the world. Many AIDS activists, " including Jonathan Mann (WHO), Peter Pilot (UNAIDS), Jeffery Sachs, Paul Farmer (physician and founder of Partners in Health), Tony Barnett, Laurie Garrett (Newsday), Barton Gellman (The Washington Post), Bono (Debt, AIDS, Trade, Africa), Alan Berkman (New York physician and social activist), Jamie Love (The Consumer Project on Technology), and John James (AIDS Treatment News)," expressed the view that ARV treatment should be extended globally, and they helped create a network of individuals committed to the cause.[71]

They also linked up with many advocacy networks.[72] Advocacy networks have played a very important role in the global campaign for treatment access by framing rights to treatment as an ethical, moral, and human rights issue and by linking up with international organizations and other actors in states or civil society to provide important solutions to policy issues.[73] Until 1996, the movement for greater access to medication was confined to Western countries. When the triple drug combination ARV therapy was introduced in 1996, it was reserved mainly for AIDS patients in developed countries.

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[71] Raymond A. Smith and Patricia D. Siplon, Drugs into Bodies: Global AIDS Treatment Activism (Westport: Praeger Publishers, 2006), 73–117; Ethan B. Kapstein and John Busby, "Making Markets for Merit Goods: The Political Economy of Antiretroviral," Global Policy 1, 1 (2010): 75–90.

[72] They have been defined as "forms of organizations characterized by voluntary, vertical and horizontal patterns of communication and exchange" and "who network with one another to share information and services, plead the causes of others and promote policy changes." See Margaret E. Keck and Kathryn Sikkink, Activists Beyond Borders (Ithaca: Cornell University Press, 1998), 1–38.

[73] Margaret E. Keck and Kathryn Sikkink, Activists Beyond Borders (Ithaca: Cornell University Press, 1998), 1–38.

Thereafter, many organizations in the United States, such as Health Gap, the Clinton Foundation, and Health Action International, reached out to organizations in other countries to fight for ARV medication for people in poor countries.[74]

Closely connected to this debate was the issue of evolving global intellectual property rights for pharmaceuticals.[75] According to the Trade Related Intellectual Property Rights regime (TRIPS), member countries of World Trade Organization (WTO) were to provide patent protection to countries (including the pharmaceutical sector) for 20 years.[76] The advocacy networks fought a long struggle against these provisions in an effort to promote drug access, which resulted in some concessions at the Fourth Ministerial Conference of the WTO at Doha in 2001. The Doha Declaration held that "the TRIPS agreement does not and should not prevent members from taking measures to protect public health."[77] This was a major victory, as it later led to the advocacy of

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[74] Some of the most prominent among them were Partners in Health, OXFAM, Global AIDS Alliance, Treatment Action Campaign in South Africa, Costa Rica-based Agua Buena Human Rights Association, Thai AIDS Treatment Action Group, and Doctors without Borders. See Raymond A. Smith and Patricia D. Siplon, Drugs into Bodies: Global AIDS Treatment Activism (Westport: Praeger Publishers, 2006), 73–117.

[75] Carsten Fink, "Intellectual Property and Public Health: An Overview of the Debate with a Focus on U.S. Policy," Working Paper Number 146 (Washington D.C.: Center for Global Development, 2008), available online at http://www.cgdev.org/content/publications/detail/16228/, last accessed July 10, 2011.

[76] Kenneth C. Shadlen, "The Political Economy of AIDS Treatment," International Studies Quarterly 51, 3 (2007): 559–81; Ethan B. Kapstein and John Busby, "Making Markets for Merit Goods: The Political Economy of Antiretroviral," Global Policy 1, 1 (2010): 75–90.

[77] See Duncan Matthews, "Is History Repeating Itself? The Outcome of Negotiating on Access to Medicines, the HIV/AIDS Pandemic and Intellectual Property Rights in the World Trade Organization," Law, Social Justice, and Global Development 1 (2004): 1–16. Available online at

"universal access to ARV treatment" at a UN General Assembly Special Session in 2006.[78]

2.4. SARS as a Security Threat

From its appearance in November 2002 to July 3, 2003, when the WHO officially declared it as contained, SARS took the world by surprise as it spread rapidly to many countries of the world. The SARS experience illustrated that lack of surveillance facilities and adequate response capability in a single country could threaten global public health security.[79] The WHO declared SARS to be "the first severe infectious disease to emerge in the twenty-first century, that poses a serious threat to global health security," in so far it "threatened the livelihood of populations, the functioning of health systems, and the stability and growth of economies."[80]

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http://www2.warwick.ac.uk/fac/soc/law/elj/lgd/2004_1/matthews/, last accessed March 10, 2011.

[78] UN General Assembly: Resolution adopted by the General Assembly: 60/262. Political Declaration on HIV/AIDS, June 2, 2006. Available online at http://data.unaids.org/pub/Report/2006/20060615_HLM_PoliticalDeclaration_ARES60262_en.pdf, last accessed July 14, 2007.

[79] David L. Heymann and Guenael Rodier, "Global Surveillance, National Surveillance, and SARS." Emerging Infectious Diseases 10, 2 (2004): 173.

[80] World Health Assembly, Severe Acute Respiratory Syndrome (SARS), WHA56.29, May 28, 2003. Also see, World Health Organization. World Health Report 2007: A Safer Future: Global Public Health Security in the 21st Century. Geneva: World Health Organization, page ix.

The WHO henceforth played an important role in controlling the spread of the disease by issuing unprecedented travel advisories to specific regions most impacted by SARS, by gathering a team of scientists, epidemiologists, and public health experts to immediately act on this emergency situation, and by working in close collaboration with health agencies in countries affected by SARS.[81] Framing SARS as a threat to global security also brought attention to the limitations that the WHO faces when trying to control the global spread of disease. Although the need for provisions to better deal with the spread of infectious diseases across borders already was being felt throughout the 1990s, the arrival of SARS accelerated the process.[82] The only set of international rules binding WHO members in terms of infectious diseases was the International Health Regulations (IHR), and they were applicable to only three communicable diseases: cholera, plague, and yellow fever.[83] Member states were under no obligation to report the emergence of new infectious diseases such as SARS and HIV/AIDS to the WHO, nor could the WHO or the UN intervene in these countries to prevent the movement of people or goods and avoid cross-border transmission. In 1990, the WHO initiated the

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[81] In May 2003, the World Health Assembly also came up with a resolution to control SARS and other emerging infectious diseases with international cooperation and multi-sectoral collaboration. See World Health Assembly, Severe Acute Respiratory Syndrome (SARS) WHA56.29, May 28, 2003. Available online at http://www.who.int/csr/sars/en/ea56r29.pdf, last accessed August 7, 2011.

[82] David P. Fidler, "Developments Involving SARS, International Law, and Infectious Disease Control At The Fifty-Sixth Meeting Of The World Health Assembly," American Society of International Law Insights June (2003). Available online at http://www.asil.org/insigh108.cfm, last accessed August 3, 2011.

[83] David P. Fidler, "SARS: Political Pathology of the First Post-Westphalian Pathogen," Journal of Law, Medicine and Ethics 31, 4 (2003): 485–505.

process of revising these regulations to be able to deal effectively with new emerging infectious diseases. In 2000, the Global Outbreak Alert and Response Network (GOARN) was set up as a technical collaboration of existing institutions and networks that pool human and technical resources for the rapid identification, confirmation, and response to outbreaks of international importance.[84]

Although GOARN played an important role in keeping the international community informed of disease outbreaks, the fact that it was up to countries to voluntarily disclose the outbreak of diseases other than the three IHR diseases limited its functioning. In 2004, the UN High-Level Panel on Threats, Challenges, and Change was instituted, and it listed infectious diseases as one of the threats facing countries worldwide.[85] The IHR was revised in 2005 to include threats from chemical and biological disasters. It also allowed the WHO to obtain information from non-state actors in countries where infections were occurring so that it could ensure security against the international spread of disease.[86]

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[84] David L. Heyman and Guenael Rodier, "Global Surveillance, National Surveillance, and SARS," Emerging Infectious Diseases 10, 2 (2004): 173–75. Available online at http://www.cdc.gov/ncidod/eid/vol10no2/03-1038.htm, last accessed August 7, 2011.

[85] Stephen J. Stedman, ed., A More Secured World: Our Shared Responsibility United Nations High-Level Panel on Threats, Challenges and Change (Geneva: United Nations Press, 2004).

[86] David P. Fidler, "Architecture amidst Anarchy: Global Health's Quest for Governance," Global Health Governance 1, 1(2007): 1–17.

2.5. SARS and the Economic Frame

Sever Acute Respiratory Syndrome (SARS) was contained within a few months, but it had significant economic consequences. The costs to the affected countries included expenditures for medical treatment as well as income lost as a result of sickness or morbidity.[87] The economic consequences were enormous for SARS due to extensive trade and financial linkages in a globalized world.[88] Tourism, retail trade, the airline industry, and small businesses closed as precautionary measures, and confidence in investment, delivery, and export declined in SARS affected countries.[89] Foreign direct investment in China suffered greatly.[90] The Canadian economy suffered due to travel advisories issued by the WHO alerting the rest of the world and Canadian authorities about the spread of SARS in Toronto and neighboring areas.[91] The WHO estimated the

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[87] Some significant studies on losses to individual countries are Ji Chou, Nai- Fang Kuo, and Su Ling Peng, "The Potential Impacts on the Taiwanese Economy of the Outbreak of SARS," Asian Economic Papers 3, 1 (2004): 84–99; Wen Hai, Zhong Zhao, Jian Wang, and Zhen-Gang Hou, "The Short-Term Impact of SARS on the Chinese Economy," Asian Economic Papers, 3, 1 (2004): 57–61.

[88] Jonk Wha Lee and Warwick J. McKibbin, "Globalization and Disease: Case of SARS," Asian Economic Papers 3, 1 (2004): 113–31.

[89] Mely Caballero-Anthony, "SARS in Asia: Crisis, Vulnerabilities, and Regional Responses," Asian Survey 45, 3 (2005): 482–84.

[90] Thomas Rawski, "SARS and China's Economy," in SARS in China: Prelude to Pandemic?, eds. Arthur Kleinman and James Watson (Stanford: Stanford University Press, 2006), 105–21.

[91] Syed Harris Ali and Roger Keil, "Global Cities and the Spread of Infectious Disease: The Case of Severe Acute Respiratory Syndrome (SARS) in Toronto, Canada," Urban Studies, 43, 3 (2006): 491–509.

cost of SARS to the Asian region at US$ 30 billion, whereas the Asian Development Bank's estimate was twice that amount.[92] Many industries in the United States with business processing units and manufacturing plants in Asia suffered huge losses.[93] The media reported instances of people shunning Chinese and Asian restaurants in the United States.[94] The economic impact on all countries due to SARS brought multinational organizations, business interests, and leaders of countries together to invest in global surveillance and improve the public health infrastructure of all countries of the world.

2.6. SARS and Human Rights

Although SARS was contained within 2 months, many human rights issues were raised by governments, international organizations, and activists groups. The most important issue within individual countries and in their international relations was the balancing of civil and political rights of individuals with the public health of people and communities. Public health experts and international organizations argued that based on the experience of HIV/AIDS, anthrax attacks, and SARS and in light of concerns about the possibility of an avian influenza outbreak in Asia, new international laws were needed

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[92] Asian Development Bank, "Assessing the Impact and Cost of SARS in Developing Asia," in Asian Development Outlook (Manila: Asian Development Bank, 2003). Available online at http://www.adb.org/Documents/Books/ADO/2003/update/sars.pdf, last accessed May 26, 2011.

[93] Rick Gladstone, "Five Questions for Robert A. Kapp: Tracking the Impact of SARS on Business with China," New York Times, April 27, 2003.

[94] Thomas Crampton, "Hong Kong Business People Shunned: A Side Effect of SARS," The New York Times, April 19, 2003.

to regulate the international spread of infectious diseases. The inapplicability of the existing IHR to deal with new emerging diseases and concerns about biological and chemical attacks made it necessary for international laws on infectious diseases to be revised. New rules were needed for international surveillance and global health security.[95]

The need to effectively balance public health with civil and political rights of individuals was given a prominent place in the revised health governance regime (i.e., the revised IHR).[96] The new revised IHR stated:

> that all state parties notify the WHO of all activities within their borders that may constitute a public health emergency of international concern, must be mindful of human rights, including civil and political rights when implementing any public health measure that may restrict people's freedom of movement and security of person.[97]

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[95] Countries had for years been worried about the spread of infectious diseases across borders. The first international sanitary conventions were organized in 1851, when the European powers agreed to alert each other about outbreaks of specified infectious diseases (cholera, yellow fever, plague, small pox, typhus, and relapsing fever) within their borders, and public health measures (such as quarantine and isolation) that restricted trade and travel were to be based on scientific and public health indices. The concern was mainly about disease from Asia and the Middle East. Slowly, states recognized the necessity of a central body to coordinate surveillance and associated information. The World Health Organization, formed in 1948, provided the much-needed regulatory authority. See David P. Fidler, "From International Sanitary Conventions to Global Health Security: The New International Health Regulations," Chinese Journal of International Law 4, 2 (2005): 325–92.

[96] David P. Fidler and Lawrence O. Gostin, "The New International Health Regulations: An Historic Development for International Law and Public Health," Journal of Law, Medicine and Ethics, 34, 1(2006): 85–94.

[97] See World Health Assembly, Revision of the International Health Regulations, WHA58.3, May 23, 2005. Available online at http://www.who.int/ipcs/publications/wha/ihr_resolution.pdf, last accessed August 11, 2011.

The new IHR also announced that "the implementation of these regulations shall be with full respect for the dignity, human rights and fundamental freedoms of persons."[98] Any public health measure that restricts individual mobility should be declared in the face of specific public health risks (Articles 23.2, 31.1, 31.2, and 43.1) and must be applied in a transparent and non-discriminatory way (Article 42).[99]

Another issue that SARS raised was that of the obligation of nation states to international health and international security.[100] This included the reporting of infectious diseases within their countries by state governments to the WHO. It was China's refusal to share details about the presence of SARS as early as 2002 in Guangdong Province that

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Public Health Emergency is defined as "an extraordinary event which is determined…(i) to constitute a public health risk to other States through the international spread of disease and (ii) to potentially require a coordinated international response" (Article 1.1).

[98] World Health Organization, International Health Regulations (2005) Second Edition (Geneva: WHO Press, 2008), 1–34. Available online at http://whqlibdoc.who.int/publications/2008/9789241580410_eng.pdf, last accessed August 8, 2011.

[99] See World Health Assembly, Revision of the International Health Regulations, WHA58.3, May 23, 2005. Available online at http://www.who.int/csr/ihr/WHA58-en.pdf, last accessed August 2, 2011. The new IHR also encompassed provisions with regards to human rights, such as informed consent and privacy. States cannot apply health measures to travelers without their prior express informed consent, except in situations that warrant compulsory measures (Articles 23.3 and 31.2). At the same time, the privacy and personal information of the detained traveler shall be kept confidential at all times (Article 45.2). According to the new IHR mandate, however, all confidentiality requirements and treatment of health data by state parties should be in accordance with national laws.

[100] David P. Fidler, "SARS and International Law," American Society of International Law Insights (2003). Available online at http://www.asil.org/insights/insigh101.htm, last accessed June 12, 2011.

was believed to be responsible for the spread of the disease.[101] The IHR provisions had not been revised by then, and China was not under any obligation to report any infectious diseases other than cholera, plague, and yellow fever to the WHO.[102]

During the SARS outbreak, public health measures employed to control its spread encountered opposition from some civil and political rights groups. The most important debate centered on the use of isolation and quarantine by governments to control the spread of the disease. No vaccine against SARS was available and little was known about the incubation period of the virus or how it was spread. It was known, however, that SARS was virulent and contagious, and medical experts believed that the most effective way to limit transmission was to isolate those who had been infected and to quarantine those who had been exposed. This approach brought into attention the legal status of quarantine decisions and the different kinds of human rights that could be violated by quarantine policies.[103] Containment measures in Canada, Asia, and to a lesser degree the United States provoked a long debate on the ethics, legality, and civil and political rights threatened by these measures.[104] In the United States, in response to the SARS outbreak and based on the recommendation of the Secretary of Health and Human Services,

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[101] WHO, "China: It is Cooperating Now," Straits Times, April 8, 2003.

[102] David P. Fidler, "SARS and International Law," American Society of International Law Insights, April (2003). Available online at http://www.asil.org/insights/insigh101.htm, last accessed January 11, 2010.

[103] Richard Schabas, "Is the Quarantine Act Relevant," Canadian Medical Association Journal 176, (2007): 1840–42.

[104] Lawrence O. Gostin, Ronald Bayer, and Amy L. Fairchild, "Ethical and Legal Challenges Posed By Severe Acute Respiratory Syndrome: Implications for the Control of Infectious Disease Threats," JAMA 290 (2003): 3229–37.

President Bush added SARS to the list of reportable diseases on April 4, 2003. Executive Order 13295 effectively revised the existing list of quarantinable communicable diseases by adding SARS to cholera, diphtheria, infectious tuberculosis, plague, smallpox, yellow fever, and viral hemorrhagic fevers.[105] This order granted legal authority to the Centers for Disease Control and Prevention (CDC) to "isolate, quarantine, or place the person under surveillance and … order disinfection" based on a reasonable belief that a person arriving in the United States or traveling in interstate commerce is infected or may have been exposed to SARS.[106] This triggered a debate involving legal experts and activist organizations such as the American Civil Liberties Union.[107] Rights to freedom of association with family or children and to work and earn an income were all at risk,[108] and this could, moreover, lead to mental anguish and stigma.[109] Another concern raised by the prospect of quarantine was that it could be discriminatory, particularly against

[105] Centers for Disease Control and Prevention, Executive Order 13295: Revised List of Quarantinable Communicable Diseases, available online at http://www.cdc.gov/ncidod/sars/executiveorder040403.htm, last accessed February 13, 2011.

[106] Ibid.

[107] David Tuller, "If SARS Hits U.S., Quarantine Could Too, The New York Times, December 9, 2003.

[108] Nola M. Ries, "Public Health law and Ethics: Lessons from SARS and Quarantine," Health Law Review 13 (2004): 3–5.

[109] Shawn Tracy, Elizabeth Rea, and Ross E.G. Upshar, "Public Perceptions of Quarantine: Community-based Telephone Survey Following an Infectious Disease Outbreak," British Medical Journal of Public Health 9, 470 (2009): 1–8.

racial minorities, migrant workers, and the poor.[110] Activist groups feared that vulnerable groups were more likely to be quarantined and denied access to medication and information as a precautionary measure against SARS.[111] Additional rights issues were related to compensation for people who were quarantined.[112] In fact, a major hurdle to convincing people to assenting to quarantine was loss of income during quarantine and loss of employment after quarantine because of absence or stigma associated with the disease.[113] Many human rights activists called for adequate laws to compensate the people concerned, arguing that "quarantines are measures designed to benefit a community as a whole while imposing costs on particular individuals."[114]

People infected with SARS and their relatives faced ostracization and, as a result, they often delayed seeking care and reporting their illness.[115] In the United States, Asian

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[110] Lesley A. Jacobs, "Rights and Quarantine During the SARS Global Health Crisis: Differentiated Legal Consciousness in Hong Kong, Shanghai, and Toronto," Law and Society Review 41 (2007): 89–90.

[111] Anne Loveband, "Nationality Matters: SARS and Foreign Domestic Workers' Rights in Taiwan province of China," International Migration 42, 5 (2004): 121–45.

[112] Lesley A. Jacobs, "Rights and Quarantine during the SARS Global Health Crisis: Differentiated Legal Consciousness in Hong Kong, Shanghai, and Toronto," Law and Society Review 41, 3 (2007): 511–52. Also see Michael J. Selgelid, "Ethics and Infectious Disease," Bioethics 19, 3 (2005): 272–89.

[113] Mark A. Rothstein, and Meghan K. Talbott, "Encouraging Compliance With Quarantine: A Proposal to Provide Job Security and Income Replacement," American Journal Of Public Health 97, S1 (2007): S49–S56.

[114] Ibid.

[115] Sing Lee, Shui-shan Lee, Corina Shuk-Ching Fung, and Pik-san Kwok, "Public Attitudes Toward SARS and Their Implications for Societal Preparedness for Other Emerging Infections," Social Medicine 3, 2 (2008): 57–63.

American communities were often shunned.[116] This was of concern to the public health officials who recognized it as a major obstacle in controlling transmission of the disease. The public health officers emphasized the importance of addressing this issue by preventing fear, stigmatization, and discrimination of certain sections of society through community outreach programs.[117]

Another human rights issue that was highlighted by the SARS outbreak was that of freedom of the press and media coverage of infectious disease.[118] Many scientists believed that the spread of SARS could have been contained had China reported it to the rest of the world instead of censoring its press about the outbreak of the disease in November 2002. Only much later, due to scrutiny by the international press, was China forced to admit to having cases of SARS within its territory. In its April 2003 issue, the Economist noted: "When news of the catastrophe broke, it was because scientists in free, neighboring countries had detected what the Communist authorities knew about, but had tried to conceal."[119]

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[116] Laura Eichelberger, "SARS and New York's Chinatown: The Politics of Risk and Blame during an Epidemic of Fear," Social Science and Medicine 65, 6 (2007): 1284–95.

[117] Bobbie Person, Francisco Sy, Kelly Holton, Barbara Govert, and Arthur Liang, NCID/SARS Emergency Outreach Team, "Fear and Stigma: The Epidemic within the SARS Outbreak," Emerging Infectious Diseases 10, 2 (2004): 358–63. Available online at www.cdc.gov/eid, last accessed August 3, 2011.

[118] Ronald Keith and Zhiqiu Lin, "SARS in Chinese Politics and Law," China Information 21, 3 (2007): 403–24.

[119] "The SARS Virus: Could it become China's Chernobyl?" The Economist, April 24, 2003.

2.7. Avian Flu as a Security Threat

In 2005, when avian flu was infecting poultry at an alarming rate around the globe, public health experts and scientists wrote extensively about how it could become a threat to international and national security.[120] The biggest concern was that a human influenza pandemic could occur. The few human cases reported had been the result of close contact with infected poultry, and scientists feared that genetic changes would allow the avian influenza A virus (H5N1) to achieve the potential for efficient and sustained transmission among humans. A human influenza pandemic could cause illness, death, and other economic and social costs throughout the world.[121] Scientists and epidemiologists who gathered at the American Association of the Advancement of Science meeting in February 2005 emphasized that the potential for the virus to mutate into a form allowing human-to-human transmittal was high, and a global influenza pandemic could occur if a new subtype of the H5N1 influenza A virus were introduced into the human population.[122] Policy makers responded to this threat immediately and

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[120] Julian Palmore, "A Clear and Present Danger to International Security: Highly Pathogenic Avian Influenza," Defense and Security Analysis 22, 2 (2006): 111–21.

[121] Writing Committee of the World Health Organization Consultation on Human Influenza A/H5, "Avian Influenza A (H5N1) Infection in Humans," New England Journal of Medicine 353 (2005): 1374–85.

[122] Studies were centered on virus mutation, both antigenic drift (normal process of mutation) and antigenic shift (sudden abrupt mutation). Conditions favorable to antigenic shifts have long been understood to involve humans living in close quarters with domestic poultry and pigs. Since pigs are prone to infection with both avian and mammalian viruses, including human strains, they can serve as "mixing vessels" for the scrambling of genetic material from human and avian viruses, resulting in the emergence of a novel subtype. Evidence is growing that for at least some of the 15 avian influenza

very effectively. President Bush unveiled the pandemic influenza plan to the National Institutes of Health.[123] The four basic strategies of the plan were to: strengthen domestic surveillance, stockpile antiviral drugs, speed up the development of vaccine technologies, and develop an emergency pandemic plan in conjunction with public health officials in all 50 states and local communities. Emergency plans across the nation were also needed as the nation prepared for other dangers, such as a terrorist attack using chemical or biological weapons.[124] The National Security Strategy of 2006 also outlined threats from avian flu. It stated:

> Globalization has exposed us to new challenges and changed the way old challenges touch our interests and values, while also greatly enhancing our capacity to respond. Examples include: public health challenges like pandemics (HIV/AIDS, avian influenza) that recognize no borders. The risks to social order are so great that traditional public health approaches may be inadequate, necessitating new strategies and responses.[125]

The threat of a worldwide pandemic also became a foreign policy concern for the United States government.

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virus subtypes circulating in bird populations, humans themselves can serve as "mixing vessels."

[123] Fred Charatan, "Bush Announces United States Plan for Flu Pandemic," British Medical Journal 331 (2005): 1103.

[124] Homeland Security Council (United States), National Strategy for Pandemic Influenza Implementation Plan (Washington, D.C.: Homeland Security Council, 2006). Available online at http://hosted.ap.org/specials/interactives/wdc/documents/pandemicinfluenza.pdf, last accessed June 6, 2010.

[125] White House National Security Strategy of the United States of America (Washington, D. C.: White House, 2006). Available online at the White House website, http://georgewbush-whitehouse.archives.gov/nsc/nss/2006/, last accessed October 20, 2007.

2.8. Avian Flu and the Economic Frame

The economic impact of the spread of avian flu was felt mainly by the world's multibillion-dollar poultry industry. International organizations such as the UN Food and Agricultural Organization (FAO) and the World Bank have released country and sector reports on the losses of poultry trade, travel, and tourism.[126] A report in 2007 estimated that around US $1.02 billion was disbursed and another US $1.68 billion had been committed, as of June 2007, to preparedness efforts.[127] These reports also estimated the long-term investment costs of containing the spread of bird flu. News reports also emphasized the actual costs incurred particularly by Asian economies that had been most affected by the spread of avian flu. These losses were based on estimates of direct morbidity due to HPAI caused by H5N1 virus, governmental expenditure to control the spread of avian flu(i.e., measures such as surveillance, vaccination of poultry, and hiring

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[126] Milan, Brahmbhatt, Avian Influenza: Economic and Social Impacts (Washington, D.C.: The World Bank Group, 2005). Available online at http://go.worldbank.org/YELWWUIAY0, last accessed August 2, 2011; Erik Bloom, Vincent de Wit, and Mary Jane Carangal-San Jose, Potential Economic Impact of an Avian Flu Pandemic on Asia: Policy Brief No. 42, (Manila: Economics and Research Department, Asian Development Bank, 2005). Available online at http://www.adb.org/Documents/EDRC/Policy_Briefs/PB042.pdf, last accessed September 11, 2006.

[127] CAB Reviews, "Impacts of Avian Influenza Virus on Animal Production in Developing Countries," Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources, 3, 080(2008). Available online at http://www.fao.org/docs/eims/upload//251044/aj201e00.pdf, last accessed November12, 2011.

workers for culling and clean up), and on reactions of markets, trade, and associated industries.[128]

2.9. Avian Flu and Human Rights

The spread of avian flu raised several human rights issues, including quarantine and isolation, compensation for farmers whose birds were culled in the public interest, and equitable distribution of vaccines. Because no human-to-human transmission of this disease has been established, there has not been any need to isolate and quarantine individual human beings. This has not, however, prevented the emergence of a debate both in the United States and in the world community.

President Bush's National Strategy of Pandemic Influenza, which was unveiled in November 2005, discussed quarantine and isolation as tools to contain the spread of the human influenza virus in case the United States was threatened by a pandemic.[129] This provoked a debate among human rights activists and legal experts on the likely adverse impact these measures would have on the rights of individuals. The activists also argued for legislation on compensation for lost income or jobs by quarantined individuals.[130]

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[128] Ibid.

[129] Homeland Security Council, National Strategy for Pandemic Influenza (Washington, D.C.: The White House Website, November 2005). Available online at http://georgewbush- whitehouse.archives.gov/homeland/pandemic-influenza.html, last accessed February 6, 2006.

[130] Mark A. Rothstein and Meghan K. Talbott, "Encouraging Compliance with Quarantine: A Proposal to Provide Job Security and Income Replacement," American Journal of Public Health 97, S1 (2007): S49–S56.

They argued that job security and income replacement laws would not only assure individuals of their rights but also encourage public cooperation and compliance with quarantine measures. This issue was also discussed by the world community. The revised IHR (2005) had provisions that would govern intervention strategies such as quarantine, isolation, border controls, and social distancing within countries if the world were faced with mutations in H5N1 that could allow human-to-human transmission of avian flu.[131]

The spread of bird flu has also raised two important human rights issues. First, it has raised issues of compensation for governmental destruction of private property, as the destruction of private property (e.g., infected poultry) is performed in the public interest. Compensation in this case has been defined as "indemnification of private actors for losses incurred as a result of public action undertaken to promote the public good, such as in the case of payments to farmers for culled birds."[132] Currently, the most effective way to contain avian flu is by culling poultry belonging to farmers in regions that are infected. Not paying adequate compensation not only infringes on the rights of farmers but also becomes a disincentive for farmers to notify authorities of disease outbreaks.[133] This

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[131] Eduardo Azziz-Baumgartner, Nicole Smith, Raquel González-Alvarez, Sharon Daves, Marcelle Layton, Nivaldo Linares, Nicole Richardson-Smith, Joseph Bresee, and Anthony Mounts, "National Pandemic Influenza Preparedness Planning," Influenza and Other Respiratory Viruses 3 (2009): 189–96.

[132] The International Bank for Reconstruction and Development/The World Bank, Enhancing Control of Highly Pathogenic Avian Influenza in Developing Countries: Issues and Good Practices (Washington D.C.: World Bank, 2006). Also available online at http://www.influenzaresources.org/files/9049-Compensation_Issues_and_Good_Practices.pdf, last accessed June 20, 2010.

issue has been raised by intergovernmental organizations such as the World Bank, the FAO, and the International Food Policy Research Institute, which have laid out guidelines on best practices for payment of compensation as part of Highly Pathogenic Avian Influenza eradication strategies.[134] The second human rights issue that has come up with regard to the spread of bird flu is the equitable distribution of vaccines. In 2006, the Indonesian government refused to share virus samples with the WHO's Global Influenza Surveillance Network unless developing countries, such as themselves, were assured of adequate vaccine supplies.[135] This decision was supported by several other states in Southeast Asia and caused global concern, as public health officials and scientific researchers required viral samples to conduct surveillance on changes in pathogen strains and accordingly develop vaccines to effectively address the threat of influenza.[136] Indonesia's decision was seen by many developed countries as a threat to the WHO's vision of global public health security and the provisions of the revised IHR

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[133] David P. Fidler, "Global Outbreak of Avian Influenza A (H5N1) and International Law," American Society of International Law Insights January (2004). Also available online at http://www.asil.org/insights/insigh125.htm, last accessed August 17, 2007.

[134] Christopher Delgado et al., Enhancing Control of Highly Pathogenic Avian Influenza in Developing Countries through Compensation: Issues and Good Practices (Washington D.C.: The International Bank for Reconstruction and Development/ The World Bank, 2006). Also available online at http://siteresources.worldbank.org/INTARD/Resources/HPAI_Compensation_Final.pdf, last accessed August 12, 2011.

[135] Zakki Hakim, "Indonesia Firm on Bird Flu Virus Dispute," The Washington Post, March 27, 2007.

[136] Richard Holbrooke and Laurie Garrett, "Sovereignty that 'Risks' Global Health," The Washington Post, August 10, 2008.

(2005).[137] The provisions of the revised IHR required WHO member states to submit to the WHO "public health information about events that may constitute a public health emergency of international concern."[138] On May 23, 2007, the World Health Assembly adopted a resolution on sharing influenza viruses and promoting access to vaccines in connection with pandemic influenza preparedness.[139] The episode involving Indonesia, however, highlighted the inconsistencies between the developed countries' proclamation of global health security as an ideal and the developing countries' need for access to medications, vaccines, and treatment.[140]

2.10. Conclusion

The above review indicates that many governmental and non-governmental agencies are involved in the campaign against the spread of infectious diseases. The security frame used by the national and international agencies stressed the dire

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[137] World Health Organization, The World Health Report 2007 - A Safer Future: Global Public Health Security in The 21st Century: Global Public Health in the Twenty First Century (Geneva: WHO Press, 2007), 1–69. Available online at http://www.who.int/whr/2007/whr07_en.pdf, last accessed January 6, 2011.

[138] David P. Fidler, "Influenza Virus Samples, International Law, and Global Health Diplomacy," Emerging Infectious Diseases 14, 1 (2008): 88–94.

[139] World Health Organization, World Health Assembly Pandemic influenza preparedness: Sharing of influenza viruses and access to vaccines and other benefits, WHA60.28, May 23, 2007. Available online at http://apps.who.int/gb/ebwha/pdf_files/WHA60/A60_R28-en.pdf, last accessed February 10, 2010.

[140] Andrew Lakoff, "Two Regimes of Global Health," Humanity: An International Journal of Human Rights, Humanitarianism, and Development 1, 1 (2010): 59–79.

consequences that would follow if action against diseases were not taken. Activists who framed infectious diseases as an ethical/human rights issue tried to evoke compassion towards the victims of disease, whose rights to health and good living were being denied. Some of these activists have been critical of "securitizing" infectious diseases, as it gives more power to the military and intelligence community at the expense of civil society. Human rights activists also fear that representing HIV/AIDS or other infectious diseases as a security threat diminishes the work of many activist organizations that are trying to normalize social apprehensions about people living with these diseases (mainly HIV/AIDS).[141] The economic frame, which identifies the alarming economic and financial losses that epidemics could incur, is promoted by individuals, multinationals, business interests, travel and tourism industries, and state governments that have a vested interest in the smooth running of the economy.

While infectious diseases were framed as economic risks, infringement of human rights, and security threats, the biomedical frame continued to persist as a backdrop against which these other frames emerged. The importance of medical technologies, in prevention, detection, and treatment of infectious diseases was widely emphasized by government officials and in the mainstream media.

The mass media is the primary arena in which these issues come to the attention of the public, interest groups, and policy makers. Given the influence of the media and the effect its coverage has on public opinion, the nature of media coverage and its impact on public opinion has become an important subject of study. There has been considerable

[141] Stefan Elbe," Should HIV/AIDS be Securitized? The Ethical Dilemmas of Linking HIV/AIDS and Security," International Studies Quarterly 50, 1 (2006): 119–44.

research on the role of the media- how it portrays or frames issues, and how audiences understand the issues framed in alternate ways by the media. The concept of framing has become particularly important in media research. The next chapter turns to the study of framing in more detail.

III. LITERATURE REVIEW AND RESEARCH DESIGN

Framing may be broadly defined as any attempt to influence public opinion through formulation of messages that offer different perspectives on some event. This chapter will examine some of the important debates about the impact of issue framing and the effectiveness of certain frames over others in influencing public opinion. The chapter will also outline the research design for the dissertation.

3.1. Framing and Framing Effects

The concept of "framing" and "framing effects" has been studied widely in the social sciences.[1] Studies of agenda setting and framing as developed in research on social movements, communication, and foreign policy all suggest that public opinion may be shaped by the way in which an issue is framed. Framing refers to, "efforts by leaders and other actors to insert into the policy debate organizing themes that will affect how the public and other actors, such as the media, will perceive an issue."[2] Framing effects occur when the media's decision to highlight or emphasize only certain aspects of an issue causes individuals to base their views and opinions on these salient aspects.[3]

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[1] For a review, see Dietram A. Scheufele and David Tewksbury, "Framing, Agenda Setting and Priming: The Evolution of Three Media Effects Models," Journal of Communication 57, 1(2007): 9–20; Bertram Scheufele, "Framing-effects Approach: A Theoretical and Methodological Critique," Communications 29 (2004): 401–28.

[2] Alex Mintz and Steven B. Redd, "Framing Effects in International Relations," Synthese 135, 2 (2003): 193–213.

[3] William A. Gamson and Andre Modigliani, "The Changing Culture of Affirmative Action," Research in Political Sociology 3 (1987): 143.

Communication scholars categorize framing effects as either "equivalency" framing effects or "emphasis" framing effects.[4] An equivalency framing effect is one that involves the use of different but analytically equivalent words or phrases (e.g., 5% fat or 95% fat free) to cause individuals to change their preferences.[5] Generally, equivalency framing effects occur when frames that cast "the same critical information in either a positive or negative light" cause individuals to alter their preferences.[6] Framing effects may challenge even the most basic axioms of the rational actor model of decision making.[7] They suggest that a person's preference and choice may change depending on the way in which a choice is presented, even if none of the objective features of the choice change. The term "framing effect" thus refers to changes in decision outcomes resulting from these alterations in the presentation of choices.[8] Tversky and Kahneman showed, for example, that people's choices could be reversed simply by presenting the outcome of decisions as either a gain or a loss.[9] Most studies on framing and framing

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[4] James N. Druckman, "The Implications of Framing Effects for Citizen Competence," Political Behavior, 23, 3 (2001): 225–48.

[5] Ibid., 228.

[6] Irwin P. Levin, Sandra L. Schneider, and Gary J. Gaeth, "All Frames are not Created Equal: A Typology and Critical Analysis of Framing Effects," Organizational Behavior and Human Decision Process, 76, 2 (1998): 150.

[7] Eldar Shafir and Robyn A. LeBoeuf, "Rationality," Annual Review of Psychology 53 (2002): 491–517.

[8] James N. Druckman, "The Implications of Framing Effects for Citizen Competence," Political Behavior 23, 3 (2001): 225–48.

[9] Amos Tversky and Daniel Kahneman, "The Framing of Decisions and the Psychology of Choice," Science, 211, 4481 (1981): 453–58.

effects in the field of foreign policy and international relations are studies of equivalency framing effects. For example, scholars analyzing foreign policy decision making have dealt with the outcomes associated with alternative courses of action, as gains or losses relative to a reference point.[10] Others have evaluated public support for humanitarian intervention in terms of gains and losses: Support increases when the public perceives minimization of losses to be the objective and it declines when the public assesses the goal to be seeking of gains.[11] In contrast, some scholars have found more support for humanitarian intervention when intervention is framed as creating gains.[12] In the field of health care and disease detection, most studies also have focused on framing of health messages as a gain(lives saved) or loss(lives lost), and the effectiveness of framing

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[10] William A. Boettcher, "The Prospects for Prospect Theory: An Empirical Evaluation of International Relations Applications of Framing and Loss Aversion," Political Psychology 25, 3 (2004): 331–62; Jack S. Levy, "Loss Aversion, Framing, and Bargaining: The Implications of Prospect Theory for International Conflict," International Political Science Review 17, 2 (1996): 179–95; Jack S. Levy, "Prospect Theory, Rational Choice, and International Relations," International Studies Quarterly 41, 1 (1997): 87–112; Nincic Miroslav, "Loss Aversion and the Domestic Context of Military Intervention," Political Research Quarterly 50, 1 (1997): 97–120; Barry O' Neill, "Risk Aversion in International Relations Theory," International Studies Quarterly 45, 4 (2001): 617–40; Daniel Masters and Robert M. Alexander, "Prospecting for War: 9/11 and Selling the Iraq War," Contemporary Security Policy 29, 3 (2008): 434–52.

[11] Hector Perla Jr., "Explaining Public Support for the Use of Military Force: The Impact of Reference Point Framing and Prospective Decision Making," International Organization 65, 1 (2011): 139–67.

[12] William A. Boettcher, "Military Intervention Decisions Regarding Humanitarian Crisis: Framing Induced Risk Behavior," The Journal of Conflict Resolution 48, 3 (2004): 331–55.

behavioral changes or in motivating testing for diseases for which early detection could enhance treatment.[13]

The emphasis framing effect occurs "when, in the course of describing an issue or event, a speaker's emphasis on a subset of potentially relevant considerations causes individuals to focus on these considerations when constructing their opinions."[14] Like equivalency framing effects, emphasis framing effects work by causing individuals to focus on certain aspects of an issue or problem instead of others. For example, if an organization argues for funding more research on vaccines to prevent infectious diseases because these diseases cause economic losses to the state and to individuals, it may cause people to evaluate their policies based on the economic implications of the disease. Unlike equivalency framing effects, the frames focus on different conceptualizations of the same issue rather than on mere changes in wording. Emphasis framing thus adds information, often suggesting underlying causes or remedies.[15] Hence, these frames are also referred to as issue- or content-related frames.[16] The individuals subject to these

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[13] Alexander Rothman, Amy E. Latimer, and Peter Salovey, "The Effectiveness of Gain Framed Messages for Encouraging Disease Prevention Behavior: Is All Hope Lost?" Journal of Health Communication 12, 7 (2007): 645–49; Anthony D. Cox and Dena Cox, "Communicating the Consequences of Early Detection: The Role of Evidence and Framing," The Journal of Marketing 65, 3 (2001): 91–103.

[14] James N. Druckman, "On the Limits of Framing Effects: Who Can Frame?" The Journal of Politics 63, 4 (2001): 1041–66.

[15] Robert M. Entman, "Framing: Towards Clarification of a Fractured Paradigm," Journal of Communication 43, 4 (2003): 51–8.

[16] Frank R. Baumgartner and Beth L. Leech, "Interest Niches and Policy Bandwagons: Patterns of Interest Group Involvement in National Politics," The Journal of Politics 63, 4 (2001): 1191–1213; Bertram Scheufele, "Framing Effects Approach: A Theoretical and Methodological Critique," Communications 29, 4 (2006): 401–28.

frames evaluate the strength of alternative policy conceptualizations. For example, foreign engagements have been framed as humanitarian interventions, as promoting American values, or sometimes as wasteful expenditures.[17] On the domestic front, several issues also have been debated in this way. For example, Ku Klux Klan rallies are framed as "exercises of free speech" or "threats to public safety," and welfare programs were framed as "giving away tax payers' dollars to lazy people" or "helping children who are innocent victims."[18]

In this dissertation I analyze different conceptualization of infectious diseases as security, economic, biomedical, and human rights concerns. The focus, therefore, is on emphasis framing and its impact on changes in public opinion. The goal is to identify which kinds of frames have the greatest influence on public opinion about infectious diseases. Other questions addressed in this dissertation include: What kinds of frames can persuade the public to change behavior and support funding and other policies regarding infectious diseases? Do different frames have varying impacts? If they do, which issue frame is the most compelling or persuasive in influencing public opinion to support governmental policies on infectious diseases and why? The next section presents some prominent and important debates about what kinds of frames influence public opinion and how framing effects take place. Several studies have focused on framing of infectious

[17] Richard K. Hermann, Philip E. Tetlock, and Penny S. Visser, "Mass Public Decisions to Go to War: A Cognitive-Interactionist Framework," American Political Science Review 93, 3 (1999): 553-71.

[18] Thomas E. Nelson and Zoe M. Oxley, "Issue Framing Effects on Belief Importance and Opinion," The Journal of Politics 61, 4 (1999): 1040–67; Thomas E. Nelson and Donald E. Kinder, "Issue Frames and Group Centrism in American Public Opinion," The Journal of Politics, 58, 4 (1997): 1055–78.

diseases and understanding public attitudes towards infectious diseases.[19] Most of these studies are descriptive in that they examine variations in media coverage of infectious diseases. These studies do not explore the impact of the frames on public opinion. None of the existing studies evaluated the impact of infectious disease framing on public opinion.

[19] Catherine A. Luther and Xiang Zhou, "News Framing of SARS in China and the United States," Journalism and Mass Communication Quarterly 82, 4 (2005): 857–72; Yan Tian and Concetta M. Stewart, "Framing the SARS Crisis: A Computer-Assisted Text Analysis of CNN and BBC Online News Reports of SARS," Asian Journal of Communication, 15, 3 (2005): 289–301; Tsung-Jen Shih, Rosalyna Wijaya, and Dominique Brossard, "Media Coverage of Public Health Epidemics: Linking Framing and Issue Attention Cycle Toward an Integrated Theory of Print News Coverage of Epidemics," Mass Communication and Society 11 (2008): 141–60; Michael F. Dahistrom, Anthony Dudo, and Dominique Brossard, "Precision of Information, Sensational Information, and Self-Efficacy Information as Message-Level Variables Affecting Risk Perceptions," Risk Analysis (2011); Nilanjana Bardhan, "Transnational AIDS-HIV News Narratives: A Critical Exploration of Overarching Frames," Mass Communication and Society 4, 3 (2001): 283–309; Jude Clark, "The Role of Language and Gender in the Naming and Framing of HIV/AIDS in the South African Context," Southern African Linguistics and Applied Language Studies 24, 4 (2006): 461–71; Rachel B. DeMotts and Lawrence P. Markowitz, "Framing the Epidemic: The Case of UNAIDS" (paper Presented at the 2004 Annual Meeting of the American Political Science Association, Chicago, IL, September 2–5, 2004), available online at http://cyber.law.harvard.edu/blogs/gems/politicshiv/demottsmarkowitz.pdf, last accessed August 5, 2011.

3.2. Studies on Emphasis Framing

A number of studies have examined the impact that emphasis frames have on people. Some of the early work on emphasis or issue framing was conducted in the 1980s and early 1990s in the fields of sociology and communication. Communication scholars posited that mere media attention to a particular issue (agenda setting) could influence public opinion.[20] For example, Iyengar argued that increased news coverage of the 1990–91 Persian Gulf crisis was associated with an increase in the proportion of survey respondents who considered it to be the most important issue facing the nation and who also gave foreign policy performance greater weight when evaluating the President.[21] Allen et al. (1994) argued that the media's pro-war footage of Operation Desert Storm and lack of coverage of any dissenting voices (i.e., those pointing out economic costs or

[20] Shanto Iyenger and Donald R. Kinder, News that Matters: Television and Public Opinion (Chicago: University of Chicago Press, 1987), 1–183; Maxwell McCombs, Setting the Agenda: The Mass Media and Public Opinion (Malden, MA: Blackwell Publishing, 2004), 1–134; Vincent Price, David Tewksbury, and Elizabeth Powers, "Switching Trains of Thought: The Impact of News Frames on Readers Cognitive Responses," Communication Research 24, 5 (1997): 481–506; John R. Zaller, The Origins and Nature of Public Opinion (London: Cambridge University Press, 1992), 1–97. Closely related to agenda setting was the concept that issues receiving more media coverage may be used by citizens to judge performance of their leaders and governing bodies (i.e., priming).

[21] Shanto Iyengar and Adam Simon, "News Coverage of the Gulf Crisis and Public Opinion: A Study of Agenda Setting, Priming and Framing," Communication Research 20, 3 (1993): 365–83.

loss of lives) resulted in overwhelming support by the Americans for the war.[22] Soroka's more recent work also established a strong connection between the importance of foreign affairs in the media and the prominence of foreign affairs in the minds of the public.[23]

Challenging the findings of these studies, some scholars have contended more recently that public opinion was influenced more by alternate representations of issues and the different ways those issues were framed than by mere increased coverage of an issue. Many studies evaluated important domestic and foreign policy issues.[24] In an experimental study, Paul Brewer found that participants who read news articles framing other countries as competitors with the United States held less favorable opinions about those countries. When they read news articles that depicted other countries as sharing a common interest with the United States, however, they viewed those countries positively.[25] The focus of these studies was mainly to determine whether framing effects

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[22] Barbara Allen, Paula O' Loughlin, Amy Jasperson, and John L. Sullivan, "The Media and the Gulf War: Framing, Priming, and the Spiral of Silence," Polity 27, 2 (1994): 255–84.

[23] Stuart N. Soroka, "Media, Public Opinion and Foreign Policy," The International Journal of Press/Politics 8, 1 (2003): 27–48.

[24] Fuyuan Chen and Heidi H. Edwards, "Economic Individualism, Humanitarianism, and Welfare Reform: A Value-Based Account of Framing Effects," Journal of Communication 55, 4 (2005): 795–809; Donald P. Haider-Markel and Mark R. Joslyn, "Gun Policy, Opinion, Tragedy, and Blame Attribution: The Conditional Influence of Issue Frames," Journal of Politics 63, 2 (2001): 520–543; Thomas E. Nelson, Zoe M. Oxley, and Rosalee A. Clawson, "Towards a Psychology of Framing Effects," Political Behavior 19, 3 (1997): 221–46; James N. Druckman, "Evaluating Framing Effects," Journal of Economic Psychology 22, 1 (2001): 91–101; Sean Aday, J. Cluverius, and S. Livingston, "As Goes the Statue, So Goes the War: The Emergence of the Victory Frame in Television Coverage of the Iraq War," Journal of Broadcasting and Electronic Media 49 (2005): 314–32 .

[25] Paul R. Brewer, "National Interest Frames and Public Opinion about World Affairs," Harvard International Journal of Press/Politics 11, 4 (2006): 89–102.

had a substantial effect on individuals' opinions when the individuals were exposed to only one type of frame. Most of these studies were conducted as controlled laboratory experiments. All subjects were assumed to be roughly equal at the beginning of the experiment. Subjects were randomly assigned rival frames (for example, either the positive or negative frame) but were not exposed to both frames and changes in responses (relative to their original views on the subject) were then assessed. The rival frames were supposed to push public opinion in opposing directions, and the framing effects were expected to be contrasts. The two different groups were expected to respond differently from each other. For example, in a study on land development dispute, the issue was framed as either an economic development issue or an issue of environmental concern. Individuals exposed to the developmental frame were significantly more likely to view developmental concerns as important and consequently allow the project to continue (compared to individuals who received the environmental frame).[26] Presumably, the subjects' overall opinions about the project were based on the increased importance they attached to economic development as a result of the frame.[27]

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[26] Thomas E. Nelson and Zoe M. Oxley, "Issue Framing Effects on Belief Importance and Opinion," The Journal of Politics 61, 4 (1999): 1040–67.

[27] There is a considerable amount of research on the limits of framing effects. For more literature on this, see James N. Druckman, "On the Limits of Framing Effects: Who can Frame?" The Journal of Politics 63, 4 (2001): 1041–66; Dennis Chong and James N. Druckman, "Framing Public Opinion in Competitive Democracies," American Political Science Review 101, 4 (2007): 637–56; Sophie Lecheler, Claes De Vreese, and Ruth Slothuus, "Issue Importance as a Moderator of Framing Effects," Communication Research 36, 3 (2009): 400–25.

In these studies, subjects were exposed to single frames. Thus, the experimenters were not able to determine what kinds of reactions would be evoked if subjects were exposed to dual or multiple frames at the same time, as usually happens in the real world. These studies, therefore, were unable to establish which kinds of frames were more powerful or influential in determining public preference for one frame over the other.[28] In response to this concern, scholars such as Paul Sniderman and Sean Theriault studied framing in competitive environments in which individuals were exposed to dual frames in equal quantities in controlled laboratory experiments. These scholars set out to prove that exposure to more than one frame would neutralize or cancel the effect of the other frame.[29] Norris, Aldrich, and Griffin extended this idea of competitive framing to the study of foreign policy. Aldrich and Griffin focused on different frames used by George Bush and John Kerry regarding the Iraq war.[30] While George Bush framed the Iraq war as a war on terrorism, John Kerry framed it as a distraction from fighting terrorism. Aldrich and Griffin found an even balance of public opinion. This occurred because the presence of competing frames mitigated the impact of the opposing frame. These studies, however,

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[28] James N. Druckman, "What's It All About?: Framing in Political Science," in Perspectives in Framing, ed. Gedion Keren (New York: Taylor and Francis, 2011), 279-302.

[29] Paul M. Sniderman and Sean M. Theriault, "The Structure of Political Argument and the Logic of Issue Framing," in Studies in Public Opinion: Attitudes, Non Attitudes, Measurement Error and Change, ed. Willem E. Saris and Paul M. Sniderman (Princeton: Princeton University Press, 2004), 337–58.

[30] John Aldrich and John D. Griffin, "The Presidencies and the Campaign: Creating Voter Priorities in the 2000 Election," in The Presidency and the Political System, ed. Michael Nelson (Washington D.C.: Congressional Quarterly Press, 2003), 239–56; Pippa Norris, "The Restless Searchlight: Network News Framing Of the Post Cold-War World," Political Communications 12, 4 (1995): 357–70.

failed to explain why in some cases one frame could be more influential than another. The studies also were conducted as laboratory experiments and thus were subject to the same criticisms of external validity. They failed to capture the effects of the manifold, more complex and variegated framing environments that citizens face in the real world.[31]

In more recent studies, subjects were exposed to multiple frames in varying quantities at the same time.[32] These studies were conducted either in an experimental setting or in a non-experimental setting like focus groups or by combining content analysis of news reports with survey research in order to understand the effects of framing on public attitudes.[33] In one such study, Wise and Brewer found that competitive framing of an issue such as a ban on trans fat mitigated framing effects of any single frame.[34] Other studies showed that in such a competitive environment, some frames were more persuasive than others and not all frames were successful in changing public opinion.[35] These findings, however, indicated that in a very competitive environment,

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[31] Donald R. Kinder, "Curmudgeonly Advice," Journal of Communication 57, 1 (2007): 155–62.

[32] Dennis Chong and James N. Druckman, "Framing Public Opinion in Competitive Democracies," American Political Science Review 101, 4 (2007): 637–55; Jill A. Edy and Patrick C. Meirick, "Wanted Dead or Alive: Media Frames, Frame Adoption, and Support for the War in Afghanistan," Journal of Communication 57, 1 (2007): 119–41.

[33] Mira Sitrovic, "Effects of Media Use on Audience Framing and Support for Welfare," Mass Communication and Society 3, 2 (2003): 269–96.

[34] David Wise and Paul R. Brewer, "Competing Frames for a Public Health Issue and their Effects," Mass Communication and Society 13 (2010): 435–57.

[35] James N. Druckman, "Competing Frames in a Political Campaign," in Winning with Words: The Origins and Impact of Framing, eds. Brian F. Schaffner and Patrick J. Sellers (New York: Routledge, 2010).

framing results were not as powerful as they were when subjects were exposed to single frames in laboratory settings.

There is no consensus among scholars about which frames will appeal most to the public and why some frames are more successful in persuading audiences when presented as part of multiple frames.[36] James Druckman recently pointed out that "work on how competition influences information processing and preference formation continues to be in its infancy" and "understanding what strengthens a frame is perhaps the most pressing question in framing research." [37] Scholars also have shown that frames may not necessarily be oppositional in nature and that audiences may adopt only a portion of frames.[38] In other words, they might embrace mixed frames.

Some scholars, including Shanto Iyenger, emphasize that the loudest or most prominent frames are most effective.[39] Iyengar defined prominent or the loudest frames as those frames that received the most coverage. Thus, they are more accessible and therefore more effective in influencing public opinion. Other researchers concluded that

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[36] Rodger A. Payne, "Persuasion, Norms and Frame Construction," European Journal of International Relations 7, 1 (2001): 44.

[37] James N. Druckman, "What's It All About?: Framing in Political Science," in Perspectives in Framing, ed. Gedion Keren (New York: Taylor and Francis, 2011).

[38] Jill A. Edy and Patrick C. Meirick, "Wanted, Dead or Alive: Media Frames, Frame Adoption and Support for the War in Afghanistan," Journal of Communication 57 (2007) 119–41.

[39] Shanto Iyengar, "The Accessibility Bias in Politics: Television News and Public Opinion," International Journal of Public Opinion Research 2, 1 (1990): 1–15; John Zaller and Stanley Feldman, "A Simple Theory of the Survey Response: Answering Questions versus Revealing Preferences," American Journal of Political Science 36, 3 (1992): 579–616.

framing effects depended on the strength of the frames rather than on their frequency. These scholars argued that some frames were stronger and more persuasive and thus had more impact than weak frames.[40] However, the definition of a strong frame varies.

Iyengar made another important contribution to the study of framing effects by distinguishing between "episodic" and "thematic" media frames. He found the former (which focused on individual cases rather than on broader social, economic, or political forces) to be more powerful in influencing public opinion.[41] Many scholars have used this typology to understand framing effects.[42] For example, a recent study of HIV/AIDS concluded that episodic framing of HIV/AIDS stimulates a positive response from African American men towards policies designed to fight AIDS.[43]

Still others concluded that the frame from the most credible source had the most impact on public opinion.[44] Most of these authors suggest that messages from sources

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[40] James N. Druckman, "What's It All About? Framing in Political Science," in Perspectives in Framing, ed. Gedion Keren (New York: Taylor and Francis, 2011).

[41] Shanto Iyenger, Is Anyone Responsible? How Television Frames Political Issues (Chicago: University of Chicago Press, 1991), 1–16.

[42] Lene Aaroe, "Investigating Frame Strength: The Case of Episodic and Thematic Frames," Political Communication 28 (2011): 207–26.

[43] Lester K. Spence, "Episodic Frames, HIV/AIDS, and African American Public Opinion," Journal of Health Politics, Policy 63, 2 (2010): 257–68.

[44] Patrick G. Coy and Lynne M. Woehrle, "Constructing Identity and Oppositional Knowledge: The Framing Practices of Peace Movement Organizations During the Persian Gulf War," Sociological Spectrum 16 (1996): 287–327; Robert D. Benford, "You Could be the Hundredth Monkey: Collective Action Frames and Vocabularies of Motive Within the Nuclear Disarmament Movement," Sociological Quarterly 34 (1993): 195–21; James N. Druckman, "On the Limits of Framing Effects: Who Can Frame?" The Journal of Politics 63, 4 (2001): 1041–66; Arthur Lupia, "Who Can Persuade Whom?

perceived as trustworthy, knowledgeable, and having a good political reputation were viewed more favorably by the audience. In their influential work, Lupia and McCubbins lay out the conditions under which uninformed subjects will be able to rely on cues from better informed speakers so as to express "informed" views.[45] In the field of foreign policy and international relations, many studies have concluded that on foreign policy issues of war and intervention, the President and his staff are perceived to be the most credible source. There is, however, a problem with this literature. Sometimes the views of the ruling elite are dismissed and less known organizations can frame issues and make them look more purposive.

While the President and his advisers often have an initial edge in controlling frames of foreign policy, they may lose it as the public becomes aware of realities of issues such as war.[46] Scholars of communication studies have also assessed the impact of on public opinion, of news channels, that are perceived to be more trustworthy, compared with less trustworthy news channels. In his study of public opinion on the war with Iraq,

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Implications from the Nexus of Psychology and Rational Choice Theory," in Political Psychology, ed. James H. Kuklinski (New York: Cambridge University Press, 2000), 51-88. Joanne M. Miller and Jon A. Krosnick, "News Media Impact on the Ingredients of Presidential Evaluations: Politically Knowledgeable Citizens are Guided by a Trusted Source," American Journal of Political Science 44, 2 (2000): 295–309; Jeffrey J. Mondak, "Source Cues and Policy Approval: The Cognitive Dynamics of Public Support for the Reagan Agenda," American Journal of Political Science 37, 1 (1993): 186–212.

[45]Arthur Lupia and Mathew C. McCubbins, The Democratic Dilemma: Can Citizens Learn What They Need to Know? (Cambridge: Cambridge University Press, 1998), 1–229.

[46] Robert M. Entman, "Theorizing Mediated Public Diplomacy: The U.S. Case," The International Journal of Press/Politics 13, 2 (2008): 87–102; Robert M. Entman, "Cascading Activation: Contesting the White House Frame after 9/11, "Political Communication 20, 4 (2003): 415–32.

Baum concluded that the audience was more likely to believe in the same news from Cable News Network than from Fox News Channel, as the latter was supposed to be biased towards the Republican view point and thereby was seen as less credible.[47] Some studies on framing effects have concluded that people agree more with messages coming from the political parties (perceived as credible sources) with which they identify.[48] Even here, however, the authors conclude that people support the party frame only if it is consistent with their own beliefs.

Most scholars of framing studies believe that frames with moral valence, such as equality, compassion, and humanitarianism, or values in democratic societies, such as freedom, individualism, and capitalism, are most accepted by the audience.[49] Framing of issues such as gay rights, welfare reform, stem cell research, and foreign aid as value frames have been studied by scholars such as David Domke, Dhavan Shah, Thomas

[47] Matthew A. Baum, "Trust and Perception: Powerful Factors in Assessing News About War: How the Public Responded to News Reporting About the Surge in Iraq was More About What the Audience Brought with Them than What They Took Away," Nieman Reports 64 (2010): 71.

[48] Rune Slothuus, "When Can Political Parties Lead Public Opinion? Evidence from a Natural Experiment," Political Communication 27, 2 (2010): 158–77.

[49] Dhavan V. Shah, David Domke, and Daniel B. Wackman, "To Thine Own Self be True: Values, Framing and Voter Decision Making Strategies," Communication Research 23, 5 (1996): 509–60; Paul. R. Brewer and Kimberly Gross, "Values, Framing and Citizens' Thoughts about Policy Issues: Effects on Content and Quantity," Political Psychology 26, 6 (2005): 929–48; Jamie N. Druckman and Kinder Nelson, "Framing and Deliberations: How Citizens' Conversations Limit Elite Influence," American Journal of Political Science 47,4 (2003): 726–45; Stanley Feldman and Marco R. Steenberger, "The Humanitarian Foundation of Public Support for Social Welfare," American Journal of Political Science 45, 3 (2001): 658–57; Fuyuan Shen and Heidi H. Edwards, "Economic Individualism, Humanitarianism and Welfare Reform: A Value-Based Account of Framing Effects," Journal of Communication 55, 4v(2005): 795–809; Stanley Feldman and John Zaller, "The Political Culture of Ambivalence: Ideological Responses to the Welfare State," American Journal of Political Science 31, 1 (1992): 268–307.

Nelson, and Donald Kinder. A value frame was defined by Paul Brewer as a type of frame that draws an association between a value and an issue that carries an evaluative implication: It presents one position on an issue as being right (and others as wrong) by linking that position to a specific core value.[50]

Most of these studies were conducted as laboratory experiments, although some involved focus groups.[51] These studies again had several flaws. First, when conducted as laboratory experiments, they lacked external validity. Most of these experiments were performed in single sessions, making it impossible to assess changes over a long period of time; however, the temporal component is important, as the same messages may not hold as much sway as they did when they were first exposed to frames.[52] Second, respondents often use their own moral values rather than taking their cue from frames. Findings from a recent study about public support for the war in Afghanistan contradict the previously understood relationship between frames and the moral valence ascribed to public issues. The study sought to understand audience support for the war in Afghanistan, when exposed to multidimensional war/crime frames, in the aftermath of

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[50] Paul R. Brewer, "Value Words and Lizard Brains: Do Citizens Deliberate About Appeals to their Core Values?" Political Psychology 22 (2001): 46; Paul R. Brewer, "Framing, Value Words and Citizens' Explanations of their Issue Opinions Political Communication 19, 3 (2002): 303–16; Thomas E. Nelson, Zoe M. Oxley, and Rosalee A. Clawson, "Towards a Psychology of Framing Effects," Political Behavior 19, 3 (1997): 221–46.

[51] Dennis Chong, "How People Think, Reason, and Feel about Rights and Liberties," American Journal of Political Science 37, 3 (1993): 867–99. In this study, Chong studied framing effects of rights of gays as equality of rights vs. morality issue.

[52] Dennis Chong and James N. Druckman, "Dynamic Public Opinion: Communication Effects Over Time," American Political Science Review 104, 4 (2010): 663–80.

the 9/11 attacks in the United States. The study revealed that "respondents may use their own moral compasses to evaluate and combine frame elements instead of deriving moral valences from the frames."[53]

Some scholars believe that frames consistent with people's existing beliefs and predispositions are more likely to find favor with the audience.[54] Many people reject a frame that contradicts their existing predispositions, be it on gay rights or race issues.[55] The problem with this observation lies in the difficulty of measuring existing beliefs and the values, especially when the dependent variable is public opinion measured in public opinion surveys. Other studies on persuasiveness of frames claim that frames have more impact if they highlight specific emotions.[56] Framing scholars like Dennis Chong and James Druckman argue that even in competitive environments certain messages are able to influence opinion in the desired direction. Along similar lines, a recent work on frame strength argues that a political argument is more persuasive "if it frames a problem and its proposed solution in a way that resonates with people's cognitive biases-loss aversion

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[53] Jill A. Edy and Patrick C. Meirick, "Wanted, Dead or Alive: Media Frames, Frame Adoption and Support for the War in Afghanistan," Journal of Communication 57, 1 (2007) 119–41.

[54] Kimberly Gross and Lisa D. Ambrosio, "Framing Emotional Response," Political Psychology 25, 1 (2004): 1–29.

[55] Paul R. Brewer and Kimberly R. Gross, "Values, Framing, and Citizens' Thoughts about Policy Issues: Effects on Content and Quantity," Political Psychology 26, 6 (2005): 929–48; Donald P. Haider- Markel, and Mark R. Joslyn, "Gun Policy, Opinion, Tragedy, and Blame Attribution: The Conditional Influence of Issue Frames," Journal of Politics, 63, 2 (2001): 520–43.

[56] James N. Druckman and Rose McDermott, "Emotion and the Framing of Risky Choice," Political Behavior 30 (2008): 297–321.

and in group bias."[57] Still other scholars have concluded that news frames are persuasive if they are "culturally congruent," which means they use "words and images highly salient in the culture, which is to say noticeable, understandable and emotionally charged."[58] Associated to this is Edy's conclusion that frames are very powerful in influencing public opinion if they have been used in the past or are part of a "collective memory."[59]

Another group of scholars concluded that those frames that resonated with people's personal experiences were more influential in influencing their attitudes. Graber concluded that the media impact depended on the importance of issues to the individual.[60] Gamson studied issues such as nuclear power, the Arab–Israeli conflict, affirmative action, and troubles in industry. He concluded that while media frames do play an important role, people "evaluate news in light of past learning and determine how well it

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[57] Kevin Arceneaux, "Cognitive Biases and the Strength of Political Arguments." Unpublished paper, Temple University. Available on Google scholar online at http://astro.temple.edu/~arceneau/argument_strength.pdf, last accessed October 9, 2010; Catherine A. Cortrell and Steven L. Neuberg, "Different Emotional Reactions to Different Groups: A Sociofunctional Threat based Approach to Prejudice," Journal of Personality and Social Psychology 88, 5 (2005): 770–89.

[58] Robert M. Entman, Projections of Power: Framing News, Public Opinion and U.S. Foreign Policy (Chicago: University of Chicago Press, 2004), 1–29.

[59] Jill A. Edy, Troubled Pasts: News and the Collective Memory of Social Unrest (Philadelphia: Temple University Press, 2006), 1–191.

[60] Doris A. Graber, Processing the News: How People Tame the Information Tide, 2nd ed. (New York: Longman, 1998), 1-320.

squares with the reality that they have experienced directly or vicariously."[61] Iyengar reached similar conclusions in his research on television news and agenda setting. According to his study, "personal experience and media agendas may interactively shape citizens' personal concerns."[62] Studies on emphasis framing in the field of foreign studies have consistently shown that the American public responds positively to frames that show "national interest" or promote "victory frames."[63] Bliech, who studied support for United States spending on HIV/AIDS, reached similar conclusions: Americans did not support spending on HIV/AIDS related projects (to prevent, treat and tackle the disease) for developing countries when the funding was framed as "foreign aid."[64] She concluded that the United States does not see other countries' problems as their own. Overall, support for funding for programs to tackle HIV/AIDS in developing countries was likely to improve only if more Americans were personally affected by the disease.

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[61] William A. Gamson, Talking Politics (New York: Cambridge University Press, 1992), 117–82.

[62] Roy L. Behr and Shanto Iyengar, "Television News, Real World Cues, and Changes in the Public Agenda," Public Opinion Quarterly 49, 1 (1985): 53.

[63] Sean Aday, J. Cluverius, and S. Livingston, "As Goes the Statue, So Goes the War: The Emergence of the Victory Frame in Television Coverage of the Iraq War," Journal of Broadcasting and Electronic Media 49,3 (2005): 314–32 .

[64] Sara Bleich, " Is it All in a Word?: The Effect of Issue Framing on Public Support for U.S. Spending on HIV/AIDS in Developing Countries," The Harvard International Journal of Press/Politics 12, 2 (2007): 120–32.

3.3. Research Design

The above review indicates there is no consensus among scholars if any particular frame is effective in all situations, and some feel that only an "operational approach of asking people directly to evaluate the relative strength of various frames" will allow assessment of frame strength.[65] Previous research on framing effects when participants are exposed to multiple frames points to two things: unequal effect of frames and that while framing has a substantial impact in influencing public opinion, it cannot be used as a tool to change public opinion in the desired direction in all situations.

I pose the following research questions. Does it matter if the framing of infectious diseases stresses medical dangers, economic costs, human rights infringement, or strategic threats? If it does, which issue frame is the most compelling or persuasive in influencing public perception of threat and concern over the disease? Previous research indicates that two factors may greatly enhance the impact of a frame. First, repeated exposure to a frame may enhance its accessibility and make it more persuasive. Second, perceived relevance of an issue frame may also increase its influence. Frames that are more directly related to the United States, for example, may have the effect of increasing public anxiety. Consistent with this, and building on previous research the following hypotheses were tested:

Hypothesis 1. Frames represented prominently in the media will tend to mobilize public support for policies associated with those frames. Increased repetition of the frame

[65] Dennis Chong and James N. Druckman, "A Theory of Framing and Opinion Formation in Competitive Elite Environments," Journal of Communication 57, 1 (2007): 99–118.

will enhance its effect. Frequent exposure to the frame will increase the accessibility and thereby the relevance of the issue and people will pay more attention to considerations underlying the issue. This claim relies on the accessibility and memory-based model of public opinion formation.

Hypothesis 2. When the medical and economic frames dominate media coverage, which is the most common scenario, people will be worried about the disease. They will be likely to support potentially inconvenient policies intended to address the dangers of the disease. On the other hand, when security and human rights frames dominate, which should be less often, people will be less worried and concerned about the spread of disease. In this case, people would be less likely to support inconvenient public policies because they will view these frames as less personally relevant.

To test these hypotheses, a content analysis of newspaper reports about infectious diseases was used to determine which frame was more prevalent at different times. Qualitative content analysis of health frames and a brief historical discussion of the resulting public opinion supplement this analysis. Public opinion poll data are used to present a measure of the public reaction to these frames.

Using Lexis-Nexis, I collected newspaper reports about three infectious diseases (HIV/AIDS, SARS, and avian flu) from The New York Times and The Washington Post. These newspapers were chosen as sources for three major reasons. First, newspapers are still a major source of information for millions of people in the United States.[66] Second,

[66] Steven Chaffee and Frank Stacey, "How Americans Get Political Information: Print versus Broadcast News," The Annals of the American Academy of Political and Social Science 546, 1 (1996): 48–58.

these newspapers devote substantial resources to coverage of national and international affairs and have a large reporting staff with expertise in science, technology, and medical issues.[67] Third, some national news sources like The New York Times and The Washington Post are considered the "gatekeeper" or "elite" sources of news, in that they influence news coverage made in other national and regional newspapers.[68] Analysis of these two newspapers gives an indication of reporting trends likely to be followed in other news reports.

The most prominent frames identified in the articles were the biomedical, economic, security, and human rights frames. In fact, the choice of these four frames emerges, in part, from pre-test content analysis showing that they are the most prominent infectious disease frames. Other frames, such as entertainment, political, and humanitarian, were not as common in the news stories. A fellow student was given ten percent of the stories (randomly selected) to code, and she recorded the data on a separate coding sheet. This test of inter-coder reliability showed an overall level of 86% agreement between me and the other student. Such reliability figures are considered to be acceptable by most communications scholars.[69]

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[67] Matthew C. Nisbet and Mike Huge, "Attention Cycles and Frames in the Plant Biotechnology Debate," Harvard International Journal of Press/Politics 11, 2 (2006): 2–40.

[68] Kathleen H. Jamieson and Karlyn K. Campbell, The Interplay of Influence: News, Advertising, Politics and the Mass Media (Belmont: Wadsworth Publishing, 2001), 1–368; David L. Paletz, The Media in American Politics; Contents and Consequences, 2nd ed. (New York: Longman, 2002), 72.

[69] Daniel Riffe, Stephen Lacy, and Frederick G. Fico, Analyzing Media Messages: Using Quantitative Analysis in Research (New Jersey: Lawrence Earlbaum Associates, 2005), 1-242.

The following themes were considered when coding for the biomedical frame: transmission and epidemiology of the disease; the possibility of it taking the form of an epidemic or pandemic; focus on different strains of viruses that caused these infectious diseases; diagnosis and symptoms of disease; cure, rehabilitation, and biophysical issues surrounding the disease; treatment/medication related to the disease; and employment of quarantine and isolation as intervention strategies to contain the disease. With regards to HIV/AIDS, debates about prevention and treatment (i.e., needle exchange, use of condoms, abstinence only, and blood transfusion) were considered. The role of the World Health Organization, Centers for disease Control and Prevention, National Institutes of Health, doctors, health care professionals, virologists, and scientists in relation to the disease was also indicators of the biomedical frame.

To measure the security frame, news reports were coded for mention of threat to the state's capacity (i.e., its military and peacekeeping forces, threat to state borders, and state institutions) due to the pandemic of HIV/AIDS, SARS, or avian flu. Mention of deliberate use of microbes to inflict bioterrorism was also included in the security frame.

The following themes defined the economic frame: indications that the spread of disease caused financial losses, decline in investments, investments, decline of gross domestic product, loss of exports, losses to manufacturing units, loss of trade and commerce, and decline in tourism; references to absenteeism at work, loss of skilled workers, and health insurance payments as a result of the disease; and mention of costs and expenses to the federal and state governments or global funds to fight the disease and financial costs of vaccine research and production incurred by pharmaceutical industries.

Economic factors leading to the spread of disease were also coded, including: smuggling of uninspected meat/chicken to avoid custom duties; prostitution or forced sex on women; poverty causing people to sell blood infected with HIV in poor countries where blood often is not screened for infection; slums, squalor, urbanization, and nutritional deficiencies leading to the spread of infectious diseases; and changes in land use or economic development associated with disease transmission. Finally, stories about economic activities such as human encroachment on forests, which can bring humans into closer contact with insects and animals carrying disease, and stories that mentioned a mention of lack of infrastructure (e.g., roads) and higher tariffs (if they are a hurdle in the shipment and transfer of medicine to poorer countries), were also coded for the economic frame.

The key words in the human rights frame for HIV/AIDS were stigmatization and discrimination against people infected with the disease. Also coded were stories about protests by the homosexual population of the United States against mandatory screening of blood when donating blood; protests against the "partner notification program" in the case of HIV/AIDS, as it was seen as a violation of a person's right to privacy and confidentiality; and protests by patients and their families about being denied access/privileges to public amenities, education opportunities, housing, and employment.

The human rights issues debated in the media regarding SARS and avian flu differed somewhat from those surrounding HIV/AIDS. Demands for freedom of the press and against censorship by countries (like China) that censored news about the outbreak of disease in their country were voiced. As immigrants and travelers were screened at airports, many of them protested that their privacy was being violated. Human rights

groups protested mandatory quarantine and isolation in some countries as infringement of peoples' civil and political rights. In the case of avian flu, the issue of compensation to farmers whose poultry was culled was raised by many private and international organizations. Coverage of issues such as these was also coded for the human rights frame.

3.4. Conclusion

This study seeks to enhance our understanding of public attitudes and public opinion towards infectious diseases and the policies that people are likely to support. By relying on content analysis and public opinion data, it also addresses some of the limitations of past laboratory studies.[70] Beyond the well known external validity problem, laboratory experiments used in the study of framing effects also tend to rely on a single exposure to a single frame, whereas people are exposed to multiple frames over an extended period of time, from various sources, in real world settings.

This study will shed light on how public opinion is activated by different frames. It contributes to the growing literature on understanding the strength of frames in competitive settings. This study also seeks to improve our understanding of the relationship between public opinion and domestic and foreign policy. It addresses the extent to which the public is capable of making informed choices when presented with information on issues that are of concern to both domestic and foreign policy makers.

[70] Donald R. Kinder, "Curmudgeonly Advice," Journal of Communication 57, 1 (2007): 155–62.

The next three chapters focus on three infectious diseases (HIV/AID, SARS, and avian flu) as test cases to study the impact of media frames on public opinion.

IV. CASE STUDY: SEVERE ACUTE RESPIRATORY SYNDROME

On March 15, 2003, the World Health Organization (WHO) issued a global alert and emergency guidelines for airlines and travelers about a new atypical pneumonia of unknown etiology affecting people in China, Hong Kong, and Vietnam.[1] It was considered a deadly respiratory disease with the potential of developing rapidly into a global pandemic. By March 24, 2003, the Centers for Disease Control and Prevention (CDC) confirmed that Severe Acute Respiratory Syndrome (SARS) was caused by a new strain of virus (the corona virus) most frequently associated with upper respiratory infections.[2] Both the local and international media reported extensively on the disease. According to the WHO, 8,098 people worldwide became sick with SARS during the 2003 outbreak, and 774 of those affected died. In the United States, only 8 people had laboratory evidence of SARS-corona virus infection. All of these people had traveled to other parts of the world where SARS was present.[3] By the end of June 2003, no new cases were reported, and the WHO declared the global outbreak to be over. "With the last known chain of transmission interrupted in Taiwan, the whole world can breathe an initial sigh of relief," said Dr David Heymann, the WHO executive director for the

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[1] World Health Organization, Global Alert and Response (GAR): World Health Organization Issues Emergency Travel Advisory. Geneva, Switzerland. March 15, 2003. Available online at http://www.who.int/csr/sarsarchive/2003_03_15/en/, last Accessed August 10, 2010.

[2] Joseph Sriyal Malick, Edwin Peiris, Sik To. Lai, Leo Lit Man Poon, Yang Guan, Loretta Y.C. Yam, Wilina Lim, et al., "Corona Virus as a Possible Cause of Severe Acute Respiratory Syndrome," Lancet 361 (2003): 1319–25.

[3] Centers for Disease Control and Prevention, Department of Human Health and Services Fact Sheet: Basic Facts about SARS. May 3, 2005. Available online at http://www.cdc.gov/ncidod/sars/factsheet.htm, last accessed August 7, 2011.

Communicable Diseases Cluster.[4] The number of newspaper stories about SARS decreased when the WHO withdrew its travel alerts towards the end of June.

Throughout the outbreak, the media reported on the biomedical aspects, economic consequences, security concerns, and human rights issues related to the disease. SARS was recognized by the WHO as the first severe infectious disease to emerge in the twenty-first century.[5] In an age of travel and increased global trade, it spread at an alarming rate from Asia to other parts of the world.[6] It was seen as a mysterious disease that spread very efficiently from person to person, and there was no known vaccine or cure for the disease. As leading laboratories and public health practitioners devoted themselves to understanding the cause of SARS and to studying the genetic sequence of the corona virus that was thought to cause it, newspapers reported overwhelmingly on the biomedical aspects of the disease and the prospects for a cure. Medical news was notably dominant throughout the outbreak. Certain events, such as the WHO's global health alert

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[4] World Health Organization. Global Alert and Response (GAR): Update 96–Taiwan, China: SARS Transmission Interrupted in Last Outbreak Area. July 5, 2003. Available online at http://www.who.int/csr/don/2003_07_05/en/index.html, last accessed August 12, 2010.

[5] World Health Assembly. Severe Acute Respiratory Syndrome (SARS). Resolution of the Fifty-Sixth World Assembly. 10th Plenary Meeting WHA 56.29 (4), May 28, 2003.Available online at http://www.who.int/csr/sars/en/ea56r29.pdf, last accessed August12, 2010.

[6] Global HIV/AIDS and Severe Acute Respiratory Syndrome (SARS): Hearing before a Subcommittee of the Committee on Appropriations, United States Senate, One Hundred Eighth Congress, First Session, Special Hearing, April 8, 2003 (Washington, D.C.: Eisenhower Government Publications, 2003). Available online at purl.access.gpo.gov, last accessed March 23, 2007.

and advisories against traveling to many countries, led to increased news reporting. The following news story, which appeared on April 7, 2003 in The New York Times, discusses the medical aspects of the disease:

> Public anxiety about SARS appears to be increasing, with a hotline at the federal Centers for Disease Control and Prevention in Atlanta receiving more than 1,000 calls a day late last week. People of all ages have caught SARS. The illness typically starts like any other acute respiratory infection: with a fever, chills, headache, malaise and dry cough. Chest X-rays tend to show what doctors call "atypical pneumonia" in a lower lobe of a lung. In the following days, a victim may develop difficulty breathing as the pneumonia spreads to another lobe.
>
> About five to seven days after onset, the symptoms improve in about 80 to 90 percent of patients and worsen in the remainder. Many of the sickest patients require intensive care, even to the point of being connected to a respirator. Why some people improve and others die is not known. So far, it appears that people most susceptible to severe symptoms are 40 or older and those who have had a chronic disease in the past. Aside from regular nursing care and help in breathing, there is no effective treatment, and recovery seems to depend on a patient's own immune system. No one is certain what causes SARS, but a microbe known as a corona virus is the chief suspect, most likely a new strain that originated in Guangdong province.[7]

At that time, there was no vaccine or treatment for SARS, and the disease was extremely contagious. There were reports in the newspapers of people stigmatizing and discriminating against people infected by SARS. Such stories were reported mainly from countries such as Hong Kong, China, and Canada, where SARS was more widespread.[8] In the United States, debates about the linkage between human rights and SARS centered

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[7] Denise Grady, "Fear Reigns as Dangerous Mystery Illness Spreads," The New York Times, April 7, 2003.

[8] Centers for Disease Control and Prevention (CDC). Fact Sheet on Isolation and Quarantine. May 3, 2005. Available online at http://www.cdc.gov/ncidod/sars/isolationquarantine.htm, last accessed August 10, 2006.

on the issue of isolation and quarantine.[9] In the absence of a vaccine and a definite cure for SARS, the media in the United States widely endorsed the views of the CDC and the WHO that the best way to stop the spread of this contagious disease was to practice isolation and quarantine.[10] On April 4, 2003, United States President George W. Bush issued an executive order that added SARS to the CDC's list of quarantinable diseases. This order gave the CDC the authority to isolate persons who might have been exposed to the disease.[11] This drew protest from civil rights activists, who argued that such laws might curtail peoples' civil liberties. The following news story that appeared in The New York Times is illustrative of the debate that ensued:

> A lesson of the SARS outbreak is that we in the United States need to compromise on civil liberties to confront health risks more effectively. After 9/11, the Bush administration wisely pushed a Model Emergency Health Powers Act as a template for legislation by the states. Such legislation would permit governors to respond to health crises with a state of emergency in which they could impose quarantines, order vaccinations and the destruction of dangerous property, limit people's movements and ration medicine, and seize anything from dead bodies to private hospitals. The steps are tough and sobering, but would apply only in desperate circumstances and within safeguards. So far only 22 states have passed this kind of law, and California, New York and Texas have all spurned it. One main obstacle has been shrieks of protest by civil libertarians, whom I'm usually sympathetic to — but not this time. Aside from terrorism, 30 new diseases have popped up in the last quarter-century, from avian flu to AIDS. This is an age of global disease, when viruses flit across continents.

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[9] Centers for Disease Control and Prevention (CDC). Fact sheet on Isolation and Quarantine. May 3, 2003. Available online at http://www.cdc.gov/ncidod/sars/isolationquarantine.htm, last accessed October10, 2010.

[10] Nicholas D. Kristof, "Lock Them Up," New York Times, May 2, 2003.

[11] White House. Executive Order: Amendment to E.O. 13295 Relating to Certain Influenza Viruses and Quarantinable Communicable Diseases. April 1, 2005. Available online at http://www.whitehouse.gov/news/releases/2005/04/20050401-6.html, last accessed October 10, 2010.

> If you disagree, how about if I visit your neighborhood the next time I'm back from an Ebola outbreak in Congo and feeling feverish?[12]

According to the CDC website, because there was limited transmission of the SARS virus, neither individual- nor population-based quarantine was recommended. Therefore, the issue of SARS as a threat to human rights was not as prominent as the biomedical and economic news about SARS.

As SARS hit Asia and Canada in June 2003, there was tremendous economic fallout, as these countries had extensive commercial links with the rest of the world. The spread of SARS disrupted retail, manufacturing, trade, tourism, and travel.[13] The media reported extensively on the economic consequences of the disease both during the outbreak and in the period following the outbreak:

> SARS is not just a health problem. As fear and shutdowns curtail travel, it is devastating the Asian economy. It may seem heartless to look at a terrifying disease, for which there is neither a vaccine nor a cure, through the lens of cash. But as widespread suffering has failed to persuade leaders in both poor and rich countries to finance public health, perhaps an economic argument will carry more weight.[14]

In fact, in the two months after the SARS outbreak, the economic frame became the dominant frame. Newspapers reported extensively on losses suffered by airlines and the retail and manufacturing sectors. In October, there was a renewed interest in SARS in the media because it was anticipated that SARS might reemerge during the influenza

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[12] Nicholas D. Kristof, "Lock Them Up," The New York Times, May 2, 2003.

[13] National Intelligence Council, "SARS: Down but Still a Threat," Intelligence Community Assessment, Washington, D.C. 2003. Available online at http://www.dni.gov/nic/PDF_GIF_otherprod/sarsthreat/56797book.pdf, last accessed October 2, 2010.

[14] Editorial, "The Cost of SARS," The New York Times, May 1, 2003.

season. News stories that gave information on preparedness efforts of the CDC, the WHO, virologists, and laboratories around the world were published in newspapers. At this point in time, there was a renewed emphasis on the discussion on SARS with a focus on scientific and medical issues.

SARS emerged in the aftermath of the events of September 11, 2011, the anthrax scare, and growing concern among policy makers in the United States about the malevolent use of microbes by rogue states and terrorist groups. The security frame, however, was not one of the dominant frames during or after the SARS outbreak. Newspapers published a few news stories that called SARS a threat to regional and national security in Asia, and in the United States some public health officials and scientists raised fears about bioterrorism.[15] Some news reports called for greater surveillance "to protect against the growing danger of potentially devastating pandemics, either occurring naturally or because of bioterrorism."[16] According to the Washington-based Jamestown Foundation, at least one Russian scientist has suggested a link between SARS and bio-war, but the mainstream media did not pick up this story.[17] In other words,

[15] Donald A. Henderson, "Bioterrorism as a Public Health Threat," Emerging Infectious Diseases 4, 3 (1998): 488-92.

[16] Rob Stein, "SARS Prompts WHO to Seek More Power to Fight Disease; Proposals Include Visits to Nations Threatened by an Epidemic," The Washington Post, May18, 2003.

[17] Allan Cantwell Jr., "SARS, Bioterrorism and the Media," New Dawn 79 (2003): 79.Available online at http://www.newdawnmagazine.com/articles/SARS,%20Bioterrorism%20and%20the%20Media.html, last accessed October 10, 2010.

the mainstream media in the United States did not link SARS with bioterrorism. In fact, there were only a few stories that framed SARS as a security threat. For example:

> SARS, a respiratory infection with an overall death rate of 11 percent and one 50 percent or higher among people 60 and older, is of paramount concern. The longstanding threat of bioterrorism turned real with the deliberate release of anthrax spores in 2001. When SARS suddenly appeared, there was speculation that it was bioterrorism. Experts dismissed that. No one was "smart enough to invent a SARS from scratch," said Dr. Joshua Lederberg, a Nobel Prize-winning microbiologist. Now, he said, "SARS may end up being a biological weapon. No one knows when or where the next plague may be from a newly discovered infectious agent or a natural mutation that produces a new version of an old microbe. It may even escape from a laboratory."[18]

The examples from news reports cited above show that the media not only extensively covered the SARS outbreak but it also framed SARS in different ways. The volume and nature of media messages therefore needs to be examined to understand its impact on public perception and awareness of SARS. The remainder of this chapter is divided into four parts: The first part presents the results of the content analysis of newspaper reports on SARS. The second presents an analysis of public opinion data collected by the Harvard School of Public Health (project on the Public and Biological Security) and the Robert Wood Johnson Foundation. These data were retrieved from the Kaiser Family Foundation's Health Poll Search database. Additional data were collected from surveys conducted by the Pew Research Foundation. The third section reports correlation analysis of media coverage about SARS with survey data. Finally, the fourth

[18] Lawrence K. Altman, "Where is the Next Plague?" The New York Times, November 14, 2003.

section discusses the effects of agenda setting and framing on the public's evaluation of different frames relevant to SARS.

4.1. Content Analysis of Newspaper Reports

To investigate in detail the prominence and content of news coverage of SARS, I conducted a content analysis of news stories about SARS published in The New York Times and The Washington Post. Using the Lexis-Nexis academic database, I collected news articles between March 1, 2003 and December 30, 2004. The search stipulated that the term "SARS" must be present in the "headline or lead paragraph" with "at least three occurrences" in the article to ensure that SARS was the focus of the article. Obituaries were excluded from the search process. The New York Times returned 550 stories in the time period March 16, 2003 and June 26, 2004, and The Washington Post returned 370 stories between March 20, 2003 and May 5, 2004. Because the stories returned by Lexis-Nexis were not ordered in any way other than by date, every fourth story was included in the pool. A total of 224 news stories were coded. The stories were identified, sampled, and coded for different frames (biomedical, economic, human rights, and security) included in the stories. Table 4.1 shows the total number of articles (coded) for each newspaper and for the two newspapers combined. In further analysis, news data from both newspapers were combined.

Each news articles was coded at the sentence level. Each frame was considered to be a variable and was assigned a numerical value based on the number of times the frame was mentioned in a given news article. For example, if the biomedical frame was

mentioned twice, it was given a score of 2. This numerical score was then converted into a weighted measure for each frame, which is defined as the ratio of the number of times a given frame is mentioned in the news article and the total number of sentences in the news article. The weighted measure was used primarily for two reasons: 1) to normalize the measure so that it is comparable across news articles of varying lengths, and 2) to allow comparison of the relative scores across frames in a given news article.

Table 4.1: Data Sources and Overall Coverage

Newspaper	Number of Articles	Start date	End date
The New York Times	136	3/16/03	6/26/04
The Washington Post	88	3/20/03	5/1/04
Overall	224	3/16/03	6/26/04

The stories also were coded as follows for the region or country that was the focus of the story: USA, countries other than USA, global impact, or geographic region not mentioned. As SARS spread to different geographic regions of the world, local and international media covered the epidemic. Table 4.2 shows the frequency of the analyzed articles that were related to each geographic location. Both newspapers published more stories about the impact of SARS on Asia and countries other than the United States to which SARS had spread than about its impact on the United States. This fact is important in understanding the public reaction to SARS in the United States. More than half the stories in both the newspapers discussed the impact of the spread of SARS in Asia and Canada. Only 26% of the total coverage discussed the impact of SARS on the United

States. Seventeen percent of the total news coverage, however, discussed the global impact of SARS in an increasingly interconnected world.

Table 4.2: Frequency of News Content by Geographic Location

Newspaper	Geographic Location					
	United States	Other countries	Global impact	Not mentioned	Start date	End date
The New York Times	36 (25.2%)	83 (58.0%)	22 (15.4%)	2 (1.4%)	3/16/03	6/26/04
The Washington Post	24 (28.9%)	41 (49.4%)	18 (21.7%)	0 (0.0%)	3/20/03	5/1/04
Overall	60 (26.5%)	124 (54.9%)	40 (17.7%)	2 (0.9%)	3/16/03	6/26/04

4.2. Data Analysis: The Mean Ratios of Four Coverage Types/Newspapers

The data were analyzed using descriptive statistics as well as comparative statistics such as Analysis of Variance (ANOVA). All analyses were conducted using Excel and SPSS. The data were analyzed in great detail to evaluate the pattern of coverage and to understand changes in media coverage over time. News data overall (The New York Times + The Washington Post) were analyzed for type of coverage (Table 4.3), mean ratios of coverage type for regions coded (Table 4.4), and comparison of coverage during and after the outbreak (Table 4.5). To investigate the monthly and weekly trends in newspaper coverage of SARS, the data were further analyzed using monthly (Appendix Table A4.1; Figure 4.1) and weekly intervals (Appendix Table A4.2; Figure 4.2; Table 4.6).

Because the news articles were coded for content or type of coverage and weighted for length, the news data were further analyzed with a focus on different types of coverage. Table 4.3 displays the mean ratios for all four types of coverage. The biomedical and economic frames were the most prominent in news reports about SARS.

Table 4.3: Mean Ratios for Each Coverage Type in both Newspapers Combined

Number of Articles	Frame					
	Biomedical	Economic	Security	Human Rights	Start date	End date
224	0.366	0.154	0.040	0.026	3/16/03	6/26/04

Mean ratios of the four coverage types also were computed for each region for the overall sampled period (Table 4.4). The biomedical frame was the dominant frame in news reports that discussed the impact of SARS on the United States and on other countries. The economic frame was the second most prominent frame. The security and human rights frames were less important.

Table 4.4: Mean Ratios for Coverage Type by Region

Region	Biomedical	Economic	Security	Human Rights	Time Interval
USA	0.27	0.17	0.05	0.06	3/16/03–6/26/04
Other countries	0.36	0.19	0.04	0.02	3/20/03–5/1/04
Global impact	0.46	0.09	0.04	0.00	3/16/03–6/26/04
Not mentioned	0.67	0.00	0.00	0.00	3/16/03–6/26/04

Further analysis of the media data on SARS included comparing the four frames over the entire time period to determine whether the media coverage focused primarily on one of the four frames or on a few or all of the four frames and determining if there was a difference in the relative weight of these four frames during the SARS outbreak and after it was over. The analysis was performed by breaking the total sampling period into two phases: the period of outbreak (March 16–June 30, 2003) and the period after the outbreak (July 1, 2003–June 26, 2004).

A one-way ANOVA was used to test for differences in the ratios among the four frames over the entire sampling period, during the outbreak, and after the outbreak (Table 4.5). During the entire sampling period, the least squares mean values were 0.37, 0.15, 0.04, and 0.03 for the biomedical, economic, security, and human rights ratios, respectively. The least squares mean is the best linear-unbiased estimate of the subpopulation means (i.e., the means for each frame). It thus represents the relative weight of each frame in media coverage. Comparison among the least square means values of the four frames revealed that the biomedical ratio was the most prominent frame ($p < 0.0001$). The economic ratio was the second highest, and it was significantly higher than the security and human rights ratios ($p < 0.0001$). Thus, all pairwise comparisons are significant at the $p<0001$ level except for the comparison of the amount of human rights and security coverage (which did not differ significantly) and the medical and economic coverage (which differed with a significance level of $p<.002$). The human rights ratio and security ratios did not significantly differ, and both were minimal compared to the economic and biomedical ratios.

Table 4.5: Comparison of the Four Frames over the Entire Sampling Period

Least Square Mean of the Four Frames				
Sampled Period	Economic	Human Right	Medical	Security
Entire Sampled Period 3/16/03-6/26/04	0.15	0.03	0.37	0.04
During Outbreak (3/16/03-6/30/03)	0.15	0.03	0.38	0.05
Post Outbreak (7/1/03-6/26/04)	0.18	0.00	0.32	0.02

To determine whether the relative weight of these four frames in media coverage showed similar patterns during the SARS outbreak and after it, the analysis was performed separately for these two periods. During the SARS outbreak (March 16, 2003–June 6, 2003) the least squares mean values of the biomedical, economic, security, and human rights ratios were 0.38, 0.15, 0.05, and 0.03, respectively. The biomedical frame again was the dominant frame, and its ratio was significantly higher than those of the other three frames ($p < 0.0001$). The economic ratio was the second highest, and it was significantly higher than the security and human rights ratios. The security and human rights ratios were both minimal and did not differ significantly. During the post-outbreak period (July 1, 2003–June 24, 2004), the same relative ranks were maintained. The only difference in the post-outbreak period was that the least squares mean value for the biomedical frame decreased slightly (from 0.38 to 0.32) and the value for the economic ratio increased slightly (from 0.15 to 0.18). These changes in value occurred because media coverage shifted from the biomedical issues to the economic fallout of the disease as estimates of losses were made after the outbreak.

Overall, for both phases the biomedical frame was the predominant frame, followed by the economic frame. Both security and human rights frames were less

significant in the news coverage of SARS, with the human rights ratio being the smallest among the four frames.

4.3. Changes in Media Coverage over Time

The changes in media coverage in terms of the number of articles published (including ratios of the four frames) were summarized using monthly and weekly intervals over the course of the outbreak period to examine the trends at a much more detailed level. During the entire sampling period, there were on average five articles about SARS per week. The period from April 13 to May 24, 2003 was one of "saturation coverage."[19] During this period, the level of coverage jumped to four times the average level, with each newspaper publishing as many as 25 articles about the spread of SARS.

Figure 4.1 show the monthly trend of changes in frames. The SARS timeline of key events is also plotted in the graph to show the key events that triggered a change in the nature of media coverage. The figure illustrates that the biomedical and economic frames were the two dominant frames in media coverage. In contrast, the security and human rights frames were much less prominent in the media coverage. On March 12, 2003, the WHO issued its first global alert about SARS. At the same time, the biomedical frame dominated about half of the media coverage (ratio = 0.48) over the entire month.

[19] Daniel Drache and Seth Feldman, "Media Coverage of the 2003 Toronto SARS Outbreak: A Report on the Role of Press in a Public Crisis," in Robarts Centre Research Papers (Toronto: York University Press, 2003), 1–18. Available online at http://www.yorku.ca/robarts/projects/global/papers/gcf_mediacoverageSARSto.pdf, last accessed October 10, 2010.

When news about the biomedical aspects of the disease declined, the economic impact and the losses incurred by countries due to SARS began to be widely reported. By the beginning of June, the economic frame exceeded the biomedical frame and became the prominent frame for about 2 months. After the beginning of August 2003, the biomedical frame again exceeded the economic frame and remained the dominant frame throughout the remainder of the study period. The monthly average of the biomedical, economic, security, and human rights ratios were 0.11–0.52, 0.00–0.43, 0.00–0.08, and 0.00–0.04, respectively. Notably, the biomedical ratio was at its lowest levels when the economic ratio climbed to its highest levels during one month beginning on July 16, 2003. The decline in SARS-related biomedical news could have been triggered by the WHO's announcement in July that SARS had officially been contained worldwide and that no new cases were being reported. As SARS was no longer a health emergency, the media coverage shifted its focus from biomedical coverage to the economic impact of the disease.

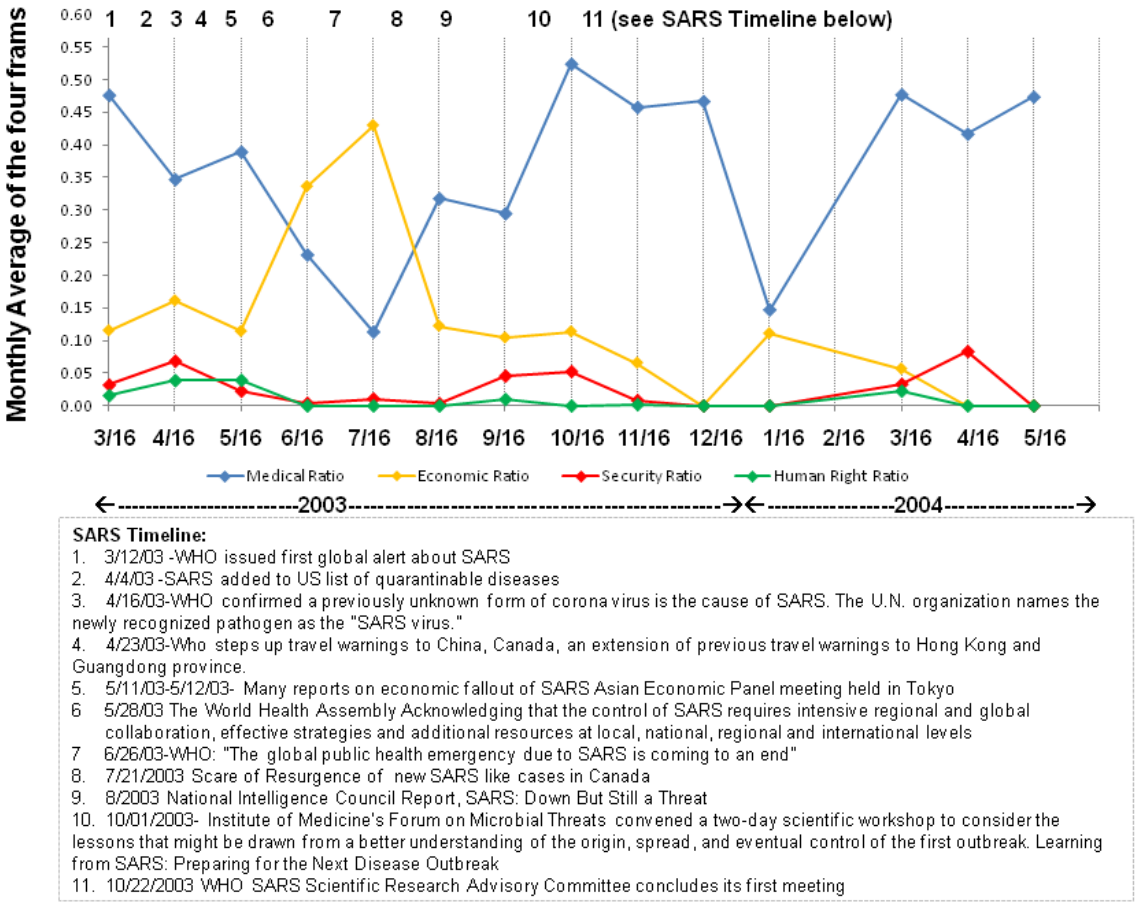


Figure 4.1: Changes in Media Coverage over Time at Monthly Intervals

The same analysis was conducted at weekly intervals, and the change over time plot (Figure 4.2) clearly shows three sub-periods (Appendix Table A4.2). The first phase encompassed the period of intense outbreak and rapid spread of the disease from Asia to other parts of the world. The biomedical frame was the dominant frame during this entire period. The second phase took place from the second week of June to the end of August. During this time period, both the CDC and the WHO began to lift their travel advisories against countries in Asia, as no new SARS cases were reported. Despite the lack of new cases, the media continued to actively report on SARS, particularly the economic and

political impact of the disease. During this phase, there was a shift in media framing and the economic frame became the dominant one. In this phase, the mean ratio for the economic frame was the highest, and it exceeded the biomedical frame. In both the first and second phases, few stories reinforced the human rights and disease linkage or framed SARS as a security issue. The third phase in this analysis began around the end of August 2003 and ended in June 2004. During this period, biomedical issues once again dominated the media stories about SARS. This is because most media stories discussed the efforts of the WHO, the CDC, and scientific committees around the world to be prepared in case SARS returned in the winter to coincide with influenza.[20]

[20] Karen S. Monaghan, SARS: Down but Still a Threat, National Intelligence Council. August 2003.Available online at, http://www.odci.gov/nic, last accessed July 12, 2009; WHO Scientific Research Advisory Committee on Severe Acute Respiratory Syndrome (SARS); Report of the First Meeting, Geneva, Switzerland, 20-21, October, 2003. Available online at http://www.who.int/csr/resources/publications/SRAC-CDSCSRGAR2004_16.pdf, last Accessed August 10, 2010; Stacey Knobler, Adel A. F. Mahmoud, Alison Mack, Laura Sivitz, and Kelly Oberholtzer, eds, Learning from SARS: Preparing for the Next Disease Outbreak, Workshop Summary, Board on Global Health, Institute of Medicine (Washington D.C.: National Academies Press, 2004).

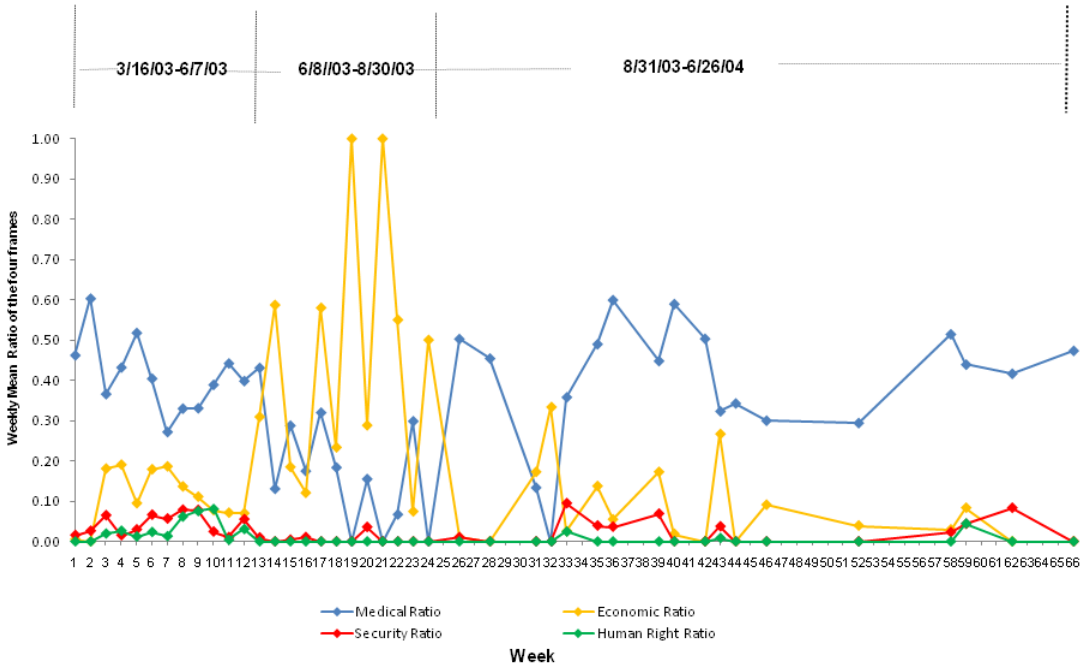


Figure 4.2: Changes in Media Coverage over Time at Weekly Intervals

The media coverage over time (weekly trend) was further analyzed using ANOVA followed by Tukey's test. The test indicated that the biomedical frame was the dominant frame during the first phase (Table 4.6). The economic and biomedical frames were equally prominent during the second sub-period, as no significant differences were found between them ($p = 0.7194$); the least squares mean value for the economic frame, however, was higher than that for the biomedical frame (0.32 vs. 0.25). Significant differences existed between each pairwise comparison, except for security versus human rights.

Table 4.6: Comparison of Four Frames during the Three Phases (Weekly Trend)

Least Square Mean of the Four Frames				
Sampled Period	Economic	Human Right	Biomedical	Security
Sub-Period 1 (3/16–6/7/03)	0.13	0.04	0.38	0.05
Sub-Period 2 (6/8/03–8/30/03)	0.32	0.00	0.25	0.01
Sub-Period 3 (8/30/03–6/26/04)	0.13	0.00	0.36	0.02

4.4. Public Opinion Analysis

The public opinion surveys were drawn from a secondary database corresponding to the time period in which these news stories were published. Public opinion data were collected mainly from the I Poll data bank, Polling the Nation, and the Health Poll Search of the Kaiser Family Foundation. All three are databases contain polling data on health-related issues from major polling organizations such as Gallup, The Pew Research Center, and the Harvard School of Public Health. All survey results are based on representative national samples of adults aged 18 or older. With very few exceptions, the sample sizes of these surveys were at least 1,000 respondents. Shifts in public opinion towards infectious diseases were assessed by considering exact and similarly worded questions about issues related to SARS.[21] Specifically, these questions measured the

[21] Shirley Ho, Dominique Brossard, and Dietram A. Scheufele, "The Polls—Trends Public Reactions to Global Health Threats and Infectious Diseases," Public Opinion Quarterly 71, 4 (2007): 671-92.

following: a) willingness to support harsh public health measures such as quarantine to curb the spread of disease; b) precautionary steps taken and behavioral changes made in personal lives due to fear of the disease; and c) concerns about the spread and likelihood of contracting the disease. Positive responses to these questions would indicate a higher level of awareness and concern about the disease in response to media coverage of SARS.

The data were analyzed using descriptive statistics. A z-test was used to compare the proportion of subjects who responded positively or negatively in each survey. Survey responses were grouped together to form positive or negative responses. For example, survey responses such as "very worried" and "somewhat worried" or "extremely likely" and "very likely" were grouped together. All analyses were carried out using Excel and SPSS. Z-test scores $\geq$ the absolute value of 1.96 at the 95% confidence interval were considered to be statistically significant.

Four sets of questions (see Appendix Table A4.3) were examined in the category of *willingness to change behavior and support quarantine*. All four surveys were conducted in April 2003 and repeated in May 2003. Three sets of questions were about the public's willingness to support quarantine. More than 90% of the surveyed population supported quarantine and over 80% of the sampled population did not see it as a threat to their personal rights. Moreover, the percentage of responses (positive or negative) did not vary much when the surveys were repeated in May (± 2%). In the fourth survey, respondents were asked specifically if they were more likely to seek medical help if they or their families experienced flu-like symptoms. Sixty-nine percent of the surveyed population gave a positive response. According to z-test results, a significant number of

people supported quarantine. This likely is related to the increased news coverage presenting SARS as a highly infectious disease both prior to and at the time the surveys were conducted.

Nine survey questions (see Appendix Table A4.4) related to *actual behavioral changes made* also were examined. The respondents were surveyed between April 11 and 13, 2003. The same sets of questions were repeated in another survey conducted between May 2 and 6, 2003. The average percentage of positive responses dropped from 12% to 8%, and the average percentage of negative responses increased from 87% to 91% between surveys in April and May. A significantly higher percentage of people did not change their behavior. Thus, news of the spread of SARS did not bring about changes in the daily behavior of people. This may be partly attributed to the fact that news of the SARS outbreak was reported mainly in China, Southeast Asia, and Canada. In the United States, only eight people were confirmed to have SARS based on laboratory tests, and no one died from it. Thus, very few people in the United States contracted SARS. This was in sharp contrast to the large number of reported cases in other countries.

Three sets of questions (see Appendix Table A4.5) were examined to evaluate the *concern among Americans about the spread of SARS*. The first set of questions asked respondents if they were worried that they or someone in their family would be exposed to SARS. The first survey was conducted between April 5 and 6, 2003, and it was repeated every subsequent week in the months of April and May. The surveys conducted in April and May showed that on average 32% of the population was worried about being exposed to SARS. This indicates a reasonably high level of concern. Another survey with very similar wording was repeated in November 2003, and it indicated that 40% of

people were worried. By this time media reporting about SARS had dropped considerably. However, this survey coincided with the influenza season and people were concerned about the return of SARS or a related illness.

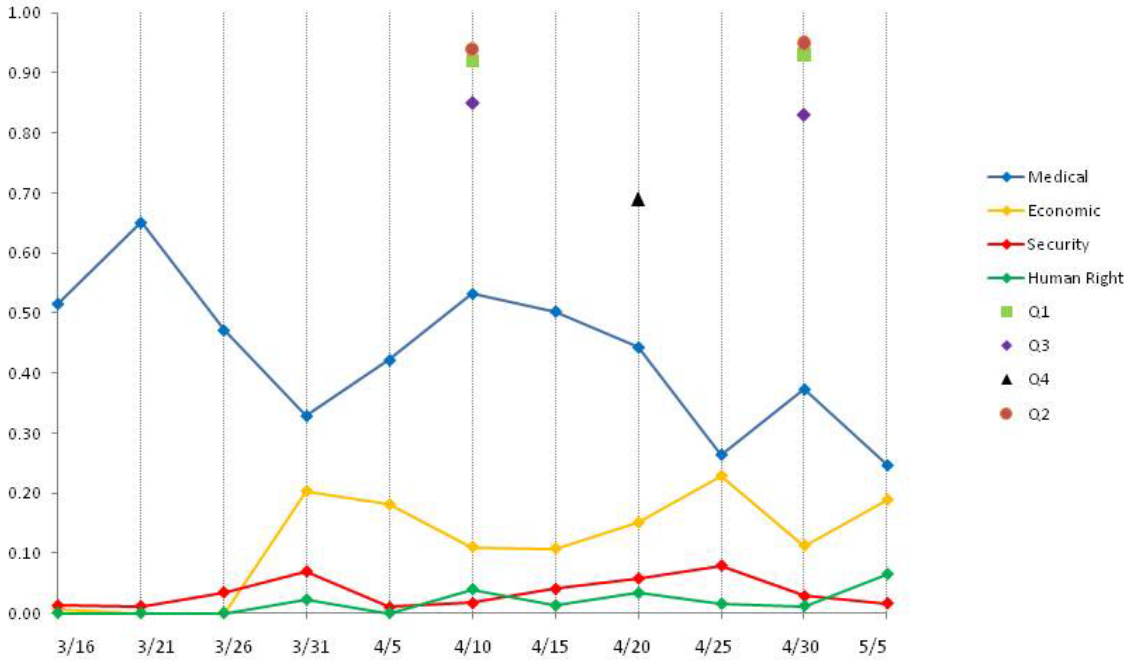
The second set of survey responses analyzed came from surveys conducted in December 2003 and repeated in November 2004. The surveys asked people if they were concerned that they or members of their family would be exposed to SARS. 28% of respondents feared SARS in December 2003. However, the numbers declined to 14% in the December 2004 survey. Both of these surveys were conducted when the coverage of SARS had declined considerably.

A third set of questions was studied to assess changes in perception about the threat posed by the new disease from Asia. Respondents were questioned about the likelihood that they or their families might actually be exposed to SARS. The first set of surveys was conducted between April 11 and 15, 2003. In this survey, 25% of the people felt that SARS was likely to spread. The percentage of positive responses declined steadily to 14% (April 25–30, 2003), 16% (May 2–3, 2003), 8% (June 18– to July2, 2003), 8% (January 7–11, 2004), and 7% (August 25–29, 2004). The high level of initial concern can be attributed to the media reports of people dying from SARS in Asia and that there was no cure or vaccine to protect people from SARS. The numbers would have been significantly higher had the disease spread to the United States and infected a large number of people.

4.5. Relationship between Media Coverage and Public Opinion

To understand the relationship between changes in media coverage of SARS and changes in public opinion, further correlation analyses were conducted. The three public opinion measures studied were willingness to support harsh public health measures, actual behavioral changes made, and recognition of SARS as a threat.

Public opinion polls that asked people whether or not they were *willing to support harsh public health measures* such as quarantine were first conducted in April 2003 and repeated in May 2003. To examine the correlation between media frames and public opinion, news coverage data from the corresponding time period (March 16, 2003 to June 5, 2003) were included in the analysis. A 5-day interval was chosen to examine the changes over time in the two sets of data. The percentage of positive responses within the four frames of media coverage is shown in Figure 4.3(also see Appendix A4.6). There was no change in public opinion when the survey was repeated in May. As far as the media coverage is concerned, the biomedical ratio decreased from 0.53 to 0.37. The economic ratio showed a modest increase between April and May but then dropped to its original level of 0.11. The human rights and security ratios were very small and changed very little. These results show that changes in frames did not correlate with changes in public opinion. The overall support, however, for harsh measures such as quarantine and isolation was very high and stable at 95% during the sampled period. Thus, the total ratio of coverage with a focus on biomedical aspects and economic implications of the disease seems to have influenced public opinion.



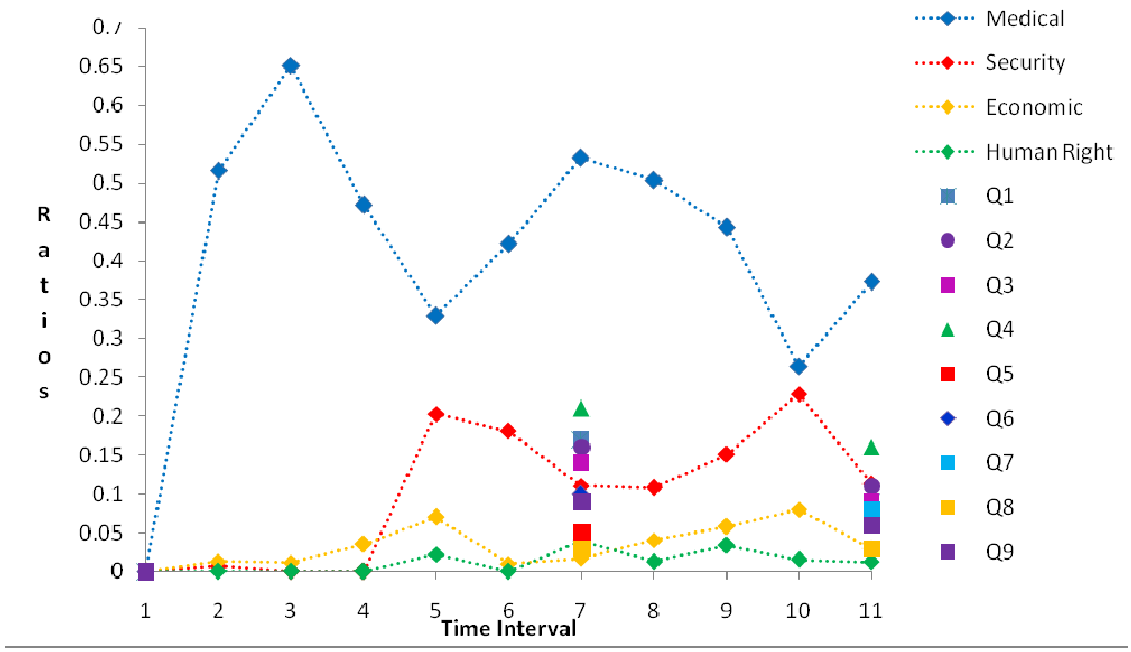
Note: Q1. Suppose you were exposed to someone who had SARS but you didn't know if you had the disease. Would you be willing to be quarantined in your home for 10 days in order to prevent spreading the disease? Q2. Suppose you were exposed to someone who had SARS but you didn't know if you had the disease. Would you be willing to be quarantined for 2 or 3 weeks in a health care facility to prevent spreading the disease? Q3. Recently, President George W. Bush signed an executive order adding SARS to the list of diseases for which people can be quarantined. Do you think this order threatens your personal rights and freedoms? Q4. Having heard about SARS, would you say you are much more likely to seek medical help, a little more likely to seek help, or it has not affected whether you would seek help if you or a family member got flu-like symptoms?

Figure 4.3: Changes in Media Coverage and Willingness to Change Behavior

To examine the relationship between media coverage and public opinion data about *actual behavioral changes made in response to SARS*, a total of nine survey questions were analyzed. A table was constructed displaying mean ratios from media coverage and mean percentage of positive/negative responses in 5-day intervals (Appendix Table A4.7 and Figure 4.4). The questions asked respondents if they had taken any precautionary measures or made changes in their behavior to prevent SARS. For

seven out of nine questions, the mean percentage of "yes" answers dropped from 12% to 8% between April and May when the surveys were administered. During the same time period, the biomedical ratio decreased from 0.53 to 0.37. The economic ratio first increased and then dropped to the original level of 0.11. The human rights and security ratios were very small and showed very little change. Changes in public opinion seemed to correspond to a decrease in biomedical news, as it was the dominant frame when the first round of survey questions was administered. Moreover, all nine questions were largely related to health and biomedical issues. It is reasonable to conclude, therefore, that the public response to these questions reflected the change in the biomedical ratio.

To examine the relationship between media coverage and *public perception of SARS as a threat*, a table of mean ratios from media coverage and mean percentage of positive responses in the threat category at weekly intervals was constructed (Appendix Table A4.8). The Pearson correlation coefficient was computed for the first question in the "threat" category for the period between March 30 and May 24, 2003 because many surveys were administered during this period. None of the correlations was significant. The percentage of positive responses regarding worry over being exposed to SARS, however, had the highest correlation with the economic ratio. The level of worry showed a very small negative correlation with the biomedical frame (Table 4.7 and Figure 4.5).

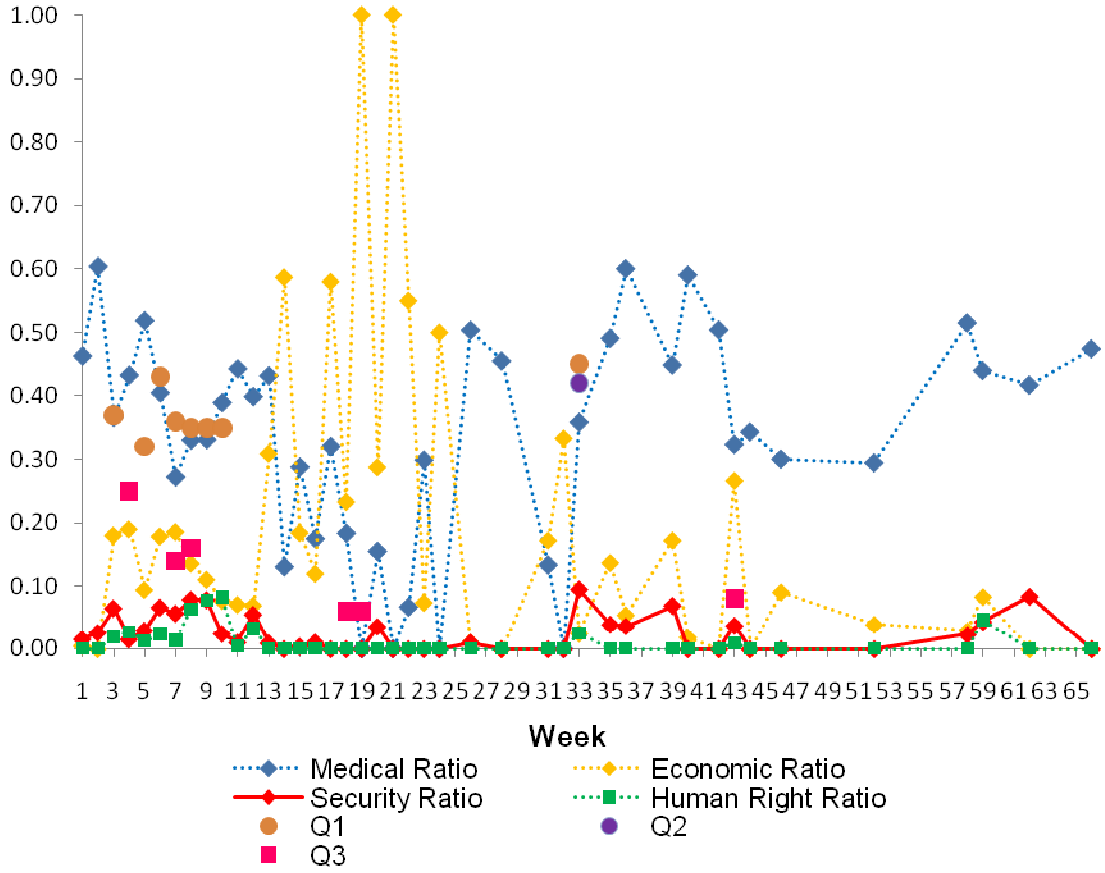


Note: Q1. Have you avoided international air travel? Q2. Have you avoided people you think may have recently visited Asia? Q3. Have you avoided Asian restaurants or stores? Q4. Have you used a disinfectant at home or at work to protect against SARS? Q5. Have you talked with your doctor about health issues related to SARS? Q6. Have you avoided public events? Q7. Have you consulted a website for information about how to protect yourself against SARS? Q8. Have you or someone in the family purchased a face mask? Q9. Have you carried something to clean any object you think might have come in contact with someone who has SARS?

Figure 4.4: Changes in Media Coverage and Behavioral Changes Made

Table 4.7: Correlation between Worry about Exposure to SARS and Media Coverage

Frame	Pearson correlation coefficients (p-value)
Biomedical	–0.2087 (p = 0.6534)
Economic	0.6542 (p = 0.1109)
Security	0.40198 (p = 0.3714)
Human Rights	–0.21427 (p = 0.6445)



Note: Q1. How worried are you that you or someone in your family will be exposed to SARS? Q2. How worried are you that you or someone in your family will be exposed to SARS? Q3. Do you think that SARS is very likely to affect you or someone in your immediate family in the next 12 months?

Figure 4.5: Changes in Media Coverage and Perception of SARS as a Threat

4.6. Relationship between Media Coverage and Public Opinion (Coverage on United States)

The above analysis did not reveal any significant correlation between changes in media coverage and public response to SARS. To determine if news coverage about SARS that focused on its impact on the United States had a higher correlation with the survey question assessing perception of the threat from SARS, Pearson correlation

coefficients were computed (see Appendix Table A4.9). None of the correlations were significant. The percentage of positive responses indicating the level of worry about being exposed to SARS, however, showed a small positive correlation with the biomedical frame (r = 0.2456) and the economic frame (r = 0.2267) and a small negative correlation with the human rights frame (Table 4.8).

Table 4.8: Correlation between Worry about Exposure to SARS and Media Reports of the Impact of SARS on the United States

Frame	Pearson correlation coefficients (p-value)
Biomedical	0.2456 (p = 0.5956)
Economic	0.2267 (p = 0.6250)
Security	0.0793 (p = 0.8658)
Human Rights	–0.2317 (p = 0.6172)

4.7. Discussion and Conclusion

In this study, I assessed whether news coverage during and after the outbreak of SARS increased the anxiety of Americans about the disease and led to support for measures such as quarantine.[22] In March and the beginning of April in 2003, the story

[22] Robert J. Blendon and John M. Benson, "The Public's Response to SARS in Toronto and United States," Clinical Infectious Diseases 38 (2004): 925–31; Robert J. Blendon, C.M. DesRoches, John M. Benson, M.J. Herrmann, E. Mackie, and K.J. Weldon,

was developing and being brought to the attention of the public. Extensive reporting about how SARS had affected various parts of the world evoked public concern about the disease, and this concern was evident in many surveys administered in April 2003. One-third of the respondents were gravely concerned about the disease. The responses (willingness to support quarantine and perception of threat) did not change much between when the surveys were first administered in April 2003 and when they were repeated in May 2003.[23] While high percentages of people were worried in May, the number of positive responses did not increase in May. The time period from April to May was one of "saturation coverage." There was a steady decline both in news coverage and in public perception of threat of the disease after that time.

In this study I also sought to understand if certain ways of representing or framing the disease evoked greater concern among the public, which in turn would lead them to make behavioral changes in their personal lives and support harsher public health measures such as quarantine. The results of the analysis substantiate the hypothesis that frames represented predominantly in the media will influence public opinion. The correlation analysis revealed a correlation between the economic frame and the percentage of positive responses expressing worry about being exposed to SARS. SARS caused significant economic losses in Asia and in countries linked commercially to Asia and Canada. The economic frame was the second most prevalent frame throughout the

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Working Papers Project on the Public and Biological Security Harvard School of Public Health: Americans' response to SARS (I), April 29, 2003. Available online at http://www.hsph.harvard.edu/research/horp/files/WP9SARSUS1.pdf, last accessed October 11, 2010.

[23]Ibid.

sampled period (Tables 4.5 and 4.6). A very small negative correlation was found between the biomedical frame (predominant frame) and overall worry about the disease. This can be attributed to the fact that the actual number of people infected with SARS was very low in the United States. According to the CDC website, from November 2002 through July 2003 a total of 8,098 people worldwide became sick with SARS that was accompanied by either pneumonia or respiratory distress syndrome (probable cases).[24] Through July 2003, 192 cases had been reported in the United States, including 159 suspected and 33 probable cases.[25] Of the 33 probable cases, only 8 were confirmed in the laboratory as SARS infections. There were no reported cases of SARS-related deaths in the United States. Another explanation for why the biomedical frame did not increase worry about the disease could be that while the media reported a lot on the biomedical aspects of the disease, it also described how the United States public health system was equipped and well prepared to control the disease following the distribution of anthrax-tainted mail in 2001.[26] Table 4.2 clearly shows that close to 50% of total stories focused on the impact of SARS on countries outside the United States; only 26% of the total coverage discussed the possible and actual impact on the United States.

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[24] Centers for Disease Control and Prevention. Fact Sheet: Basic information about SARS. May 3, 2005. Available online at http://www.cdc.gov/ncidod/sars/factsheet.htm, last accessed August 10, 2009.

[25] Ibid.

[26] World Health Organization. SARS: Status of the Outbreak and Lessons for Immediate Future, Communicable Disease Surveillance and Response. Geneva, Switzerland. May 20, 2003. Available online at http://www.who.int/csr/media/sars_wha.pdf, last accessed September 27, 2009.

A separate correlation analysis was conducted for stories that discussed the impact of SARS in the United States and levels of worry about the disease (Table 4.8). In this analysis both the biomedical and economic frames showed a small positive correlation with people's worry that they or their families might be exposed to SARS. This finding further confirms the second hypothesis that biomedical and economic frames, when predominant, will influence people to support inconvenient measures such as quarantine and isolation. This is because these issues are of personal relevance to them. Peoples' worry about being exposed to the disease will make them support quarantine. Public opinion polls indicated strong public support for the use of quarantine when required. The overall support for harsh biomedical intervention strategies such as quarantine and isolation was very high and stable at 95% during the sampling period (Appendix Table A4.3). The news media emphasized the severity of the highly infectious disease and its consequences to human health. When respondents were asked if they had made changes in their behavior or taken precautionary steps to prevent SARS, the responses were mixed. Few Americans purchased face masks or consulted a doctor. However, many consulted a website, used disinfectant at home, and avoided international travel and contact with people who they thought had traveled to Asia. These responses appeared to follow changes in the biomedical frame (Appendix Table A4.4). Although SARS did not become a public health crisis in the United States, the country experienced an economic impact of the outbreak. Not only were the direct costs of quarantine, and screening at airports significant, but many airlines, tour operators, and companies that had offshore offices and manufacturing units in Asia suffered considerable economic

losses.[27] The economic coverage became more prominent as these losses mounted, and in turn a corresponding worry and increased concern over the disease occurred. The security and human rights frames were not prominent and people did not see them as relevant.

Thus, I conclude that framing and agenda setting are important in bringing the public's attention to issues and in creating an initial awareness of the issue. However, it seems likely that the public's response is mediated by perceptions of relevance. In this case, successful efforts to limit the spread of SARS in the United States may have reduced Americans' perceptions that the biomedical frame was relevant, compared with the economic frame.

[27] Karen S. Monaghan, Intelligence Community Assessment: SARS Down but Still a Threat. Office of the Director of National Intelligence. August 23, 2003. Available online at http://ww.dni.gov/nic/special_sarsthreat.html, last accessed August 10, 2010.

V. CASE STUDY: AVIAN FLU

While Severe Acute Respiratory Syndrome (SARS) received immense media coverage because it was new and had tremendous potential for human-to-human transmission, another more lethal virus, avian influenza A (also called H5N1), and its potential to cause a human influenza pandemic garnered considerable media attention between 2004 and 2007. H5N1 is particularly contagious among birds and therefore is also known as bird flu. H5N1 was first identified in poultry in Guangdong Province, China in 1996 and in humans in Hong Kong in 1997.[1] It was only at the end of 2003 and in early 2004 that the virus was reported in poultry, wild birds, cats, and some other mammals in other countries.[2] In several countries in Southeast Asia and China, cases of human infections were also reported.[3] Most infections in humans, however, resulted from direct contact with infected poultry, and no human-to-human transmission of the virus occurred.[4] By the summer of 2005, H5N1 began spreading beyond Asia.[5] Although the

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[1] WHO, Global Alert and Response (GAR): H5N1 Avian Influenza: Timeline of Major Events. Available online at http://www.who.int/csr/disease/avian_influenza/2010_10_20_h5n1_avian_influenza_timeline_updates.pdf, last accessed November 11, 2010.

[2] Ibid.

[3] Ibid.

[4] CDC: Key Facts about Avian Influenza (Bird Flu) and Avian Influenza A (H5N1) Virus. Available online at http://www.cdc.gov/flu/avian/gen-info/facts.htm, last accessed August 9, 2011.

[5] WHO Global Alert and Response (GAR): H5N1 avian Influenza: Timeline of Major events. Available online at http://www.who.int/csr/disease/avian_influenza/2010_10_20_h5n1_avian_influenza_timeline_updates.pdf, last accessed November 8, 2010.

United States experienced only few incidents, scientists and public health officials in the United States feared that if the virus mutated to allow for transmission among humans, it could have devastating results.[6] The big worry was that H5N1 might have the capacity to undergo antigenic shift, which refers to the swapping of genetic material with human influenza viruses to produce a highly pathogenic microbe transmissible from person to person.[7] The potential for antigenic shift was real, because influenza viruses mutate rapidly and can acquire genes from viruses that infect other animal species.[8] Laboratory analysis of the H5N1 virus samples from 2004 from Vietnam showed that they were different from virus samples from 1997 and 2003 from Hong Kong, which indicates that the virus had mutated.[9] The experience with SARS had shown the public that in an increasingly interconnected world, the next infectious disease could travel fast from one country to another. Both the print and visual media covered stories about avian flu and shaped public perception about it.

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[6] Julian Palmore, "A Clear and Present Danger to International Security: Highly Pathogenic Avian Influenza," Defense and Security Analysis 22, 2 (2006): 111-21.

[7] Eileen Salinsky, "Tick–Tock: Preparing for the Next Influenza Pandemic," National Health Policy forum, Background Paper, August 24, 2004: 3-22. This information is also available in a WHO Fact sheet for Avian Influenza, available online at http://www.who.int/mediacentre/factsheets/avian_influenza/en/, last accessed November 11, 2010.

[8] Ibid.

[9]WHO, Global Alert and Response (GAR): Avian Influenza A (H5N1) Infection in Humans: Urgent Need to Eliminate the Animal Reservoir-Update 5, January 22, 2004. Available online at http://www.who.int/csr/don/2004_01_22/en/index.html, last accessed August 22, 2011.

Content analysis of media reports has shown that news about avian flu was framed in several ways, including biomedical aspects, economic consequences, security concerns, and human rights issues. In the initial phase of the outbreak, the biomedical frame was dominant in the news media. In the year 2004, bird flu was found in many countries in Asia. As it continued its geographic expansion, it was also "undergoing genetic diversity expansion."[10] The public health agencies in the United States began monitoring it very closely, and the media in the United States began extensive reporting on the subject. The media reports sought to understand the general biomedical aspects of the disease and urged the development of flu vaccines and preparedness against the disease:

> Health authorities in Vietnam are investigating 30 suspected cases of bird flu in people. Fourteen have died, most of them children under age 1. In six cases, laboratory testing identified a strain of avian influenza designated H5N1. The H and N denote two proteins, hemagglutinin and neuraminidase, that sit on the outer shell of the virus. Together, they provide a virus's chemical appearance to the immune system. The particular combination of H and N is the key to a strain's identity and the first hint of whether it might be a danger to people. There are 15 forms of hemagglutinin and nine of neuraminidase in the most populous class of flu viruses — influenza A. The less common and less dangerous influenza B has only one type of H and N. When a virus with a new H-N combination appears, immunity built up to older ones is no help. What follows can be a worldwide epidemic — assuming the virus also grows well in people and is spread easily in coughs and sneezes. Virologists once believed these "reassortments" occurred only in pigs, because that species is capable of being infected by both human and avian flu. With the 1997 Hong Kong cases,

[10] Mark Henderson, "Bird Flu Mutation Adds to Threat of Human Pandemic'," The Sunday Times, March 21, 2006.

> however, it was clear reassortments might also occur in a person simultaneously infected by both. The chance of that occurring depends on how much avian flu is around. What scares scientists this winter is that it is all over the place —- in flocks in Japan, Vietnam, and South Korea and now in Thailand. "It is an unprecedented situation with H5N1 virus in so many countries around Asia," Webster said. "The extent of the spread of this virus has not been seen before.[11]

As avian flu spread throughout Asia in late 2003 and in 2004, economic losses to the poultry industry became apparent, and the implications of the spread of avian flu to the poultry industry began to get some media coverage. During the weeks of February 11–17, 2004, March 10–16, 2004, and April 7–13, 2004 (Table 5.8, Figure 5.3), the economic issues were dominant in the media. This was the time when small outbreaks of low pathogenicity avian influenza were reported in flocks of chickens in Texas, Delaware, Pennsylvania, and Maryland and in live markets in New Jersey in the United States.[12] This had a big impact on the poultry trade in the United States, as many countries announced bans on imports from the United States.[13] The government and poultry industry officials decided to invest in expanding testing for bird flu to cover most of the poultry raised in the United States.[14] Similar bans were applied by other countries

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[11] David Brown, "A Horror Script for Health Officials; Bird Flu Poses Global Epidemic Threat," The Washington Post, January 24, 2004.

[12] Michelle Garcia, "In New Jersey, Bird Flu Appears in Live Market," The Washington Post, February 13, 2004.

[13] Nurith C. Aizenman, and Nelson Hernandez, "Avian Flu Cases Strike Fear in Delmarva; Delaware Outbreak Imperils Farms; Bans Imposed on U.S. Poultry," The Washington Post, February 11, 2004.

[14] AP, "Officials Seek Approval to Begin Wider Testing for Bird Flu," The New York Times, March 14, 2004.

on poultry imports from Asian countries that experienced outbreaks of avian flu. The following news story that appeared in The New York Times in April 2005 dealt with the economic fallout of the disease:

> What is striking in the last two months, though, is the prominence with which avian flu, often called bird flu, is being mentioned as a risk as well. CLSA Asia-Pacific Markets, the Asian investment banking arm of Cr?t Agricore of France, estimated in a report on Monday that the disease had already cost Asian nations $8 billion to $12 billion, mostly from the deaths or destruction of 140 million chickens and other poultry. But the cost would be greater if the disease gained the ability to spread easily from person to person, a possibility that is not factored into current stock and other asset prices, said Christopher Wood, CLSA's chief equity strategist. It would be a regional panic and potentially a global panic," he said, adding, "There's no way markets can discount this.[15]

Fears about the spread of bird flu increased in 2005, as avian flu spread from Asia to the bird populations in Europe and the Middle East. At the same time, new scientific research also increased concerns about the capacity of H5N1 to set off an influenza pandemic. Researchers found that the influenza virus that caused the 1918–1919 pandemic appeared to have been an avian-like virus that adapted to humans.[16] A study published in January 2005 indicated that the case of a girl passing on the virus to her mother may be the first published account of human-to-human transmission.[17] Scientists and public health officials had been stating for years that prevention of the spread of avian influenza was paramount to protecting both public and human health. As the virus

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[15] Keith Bradsher, "International Business; Some Asian Bankers Worry about the Economic Toll from Bird Flu," The New York Times, April 4, 2005.

[16] Jeffery K. Taubenberger et al., "Characterization of the 1918 Influenza Virus Polymerase Genes," Nature 437 (2005): 889-93.

[17] Kumnuam Ungchusak et al., "Probable Person-To-Person Transmission of Avian Influenza A (H5N1)," New England Journal of Medicine 352, 4 (2005): 333-40.

spread at an unprecedented rate to many countries outside Asia in the middle of 2005, the United States Congress, the President, and public health specialists became actively engaged in the fight against bird flu.[18]

In the first week of June 2005, the security frame gained prominence as some public health specialists lobbied for a Manhattan Project for the 21st century: to defend against destruction caused by infectious disease and biological weapons.[19] During the weeks of October 19–25, 2005 and November 2–15, 2005 (Table 5.10), both the security and economic frames were more prominent in the media than the biomedical frame. President Bush announced the International Partnership on Avian and Pandemic Influenza (IPAPI) at the United Nations General Assembly on September 14, 2005. This partnership sought to bring together countries that shared a set of core principles to generate and coordinate political momentum for addressing avian and pandemic influenza.[20] In a speech given to the National Institutes of Health in November 2005, President Bush issued the National Strategy for Pandemic Influenza and unveiled a $7.1 billion flu-fighting plan.[21] The National Security Strategy (2006) of the United States also

[18] Gardiner Harris, "Fear of Flu Outbreak Rattles Washington," The New York Times, October 5, 2005.

[19] "Senate Leader Backs Initiative on Biodefense," The New York Times, June 2, 2005.

[20] United States Department of Health and Human Services: HHS Pandemic Influenza Plan, November 2005. Available online at http://www.hhs.gov/pandemicflu/plan/appendixh.html, last accessed November 11, 2005.

[21] Donald G. Mcneil, Jr., "Ideas & Trends; Hitting the Flu at Its Source, Before It Hits US," The New York Times, November 6, 2005.

outlined threats from avian flu.[22] In December 2006, Congress passed and the President signed "The Pandemic and All Hazards Preparedness Act," which called for the establishment of the National Health Security Strategy. This was a period of intense reporting on the avian flu. Thus, although biomedical issues remained dominant in 2005 and 2006, economic and security concerns about the bird flu were also voiced in the media.

Similar trends were seen in 2006. During the weeks of January 18–26, 2006, February 15–21, 2006, March 1–14, 2006, March 22–28, 2006, and April 12–18, 2006 (see Appendix Table A5.5), the economic and biomedical frames dominated the media reporting. As bird flu spread to different countries, poultry trade all over the world was greatly affected.[23] The media reported about how economic investment was needed to step up public health preparedness, disease surveillance, and research in the development and production of vaccines and antiviral drugs. International organizations emphasized the need for investment to contain bird flu in poorer farms and backyard kitchens in Southeast Asian countries. All of this required international cooperation among countries and international agencies. International organizations such as the United Nations Food and Agricultural Organization (FAO), the World Health Organization (WHO), and the World Organization for Human Health (OIE) called for more international pledges and

[22] White House, National Security Strategy of the United States of America (2006) Washington (D. C.): White House. Available online at http://georgewbush-whitehouse.archives.gov/nsc/nss/2006/, last accessed November 1, 2010.

[23] Todd Zaun, "Head of Farm in Bird Flu Outbreak Is Found Dead," The New York Times, March 8, 2004.

mobilization of resources to help contain the disease.[24] The avian flu was framed as a threat to national and international security to raise the salience of the issue and to mobilize more resources in the fight against avian flu. The news story below is an illustration of the security frame:

> When we think of the major threats to our national security, the first to come to mind are nuclear proliferation, rogue states and global terrorism. But another kind of threat lurks beyond our shores, one from nature, not humans — an avian flu pandemic. An outbreak could cause millions of deaths, destabilize Southeast Asia (its likely place of origin), and threaten the security of governments around the world. So far, H5N1 has not been found in the United States. But in an age when you can board planes in Bangkok or Hong Kong and arrive in Chicago, Indianapolis or New York in hours, we must face the reality that these exotic killer diseases are not isolated health problems half a world away, but direct and immediate threats to security and prosperity here at home.[25]

Because the virus did not establish human-to-human transmission and no isolation or quarantine was actually enforced, concerns about civil and political rights were not a big topic in news reports. Human rights concerns over compensation to farmers for destruction of their poultry, however, were raised.[26] International organizations such as the FAO, the WHO, and the OIE issued a joint statement asking the international community to support poor farmers in small countries affected by avian flu.[27] The

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[24] Keith Bradsher, "Conferees Call for More Money to Fight Bird Flu," The New York Times, January 18, 2006.

[25] Barack Obama and Richard Lugar, "Grounding a Pandemic," The New York Times, June 6, 2005.

[26] David P. Fidler, "Global Outbreak of Avian Influenza A (H5N1) and International Law," ASIL Insights, January 2004. Available online at http://www.asil.org/insigh125.cfm, last accessed November 9, 2011.

[27] WHO, Press Release: Unprecedented Spread of Avian Influenza Requires Broad Collaboration-FAO/OIE/WHO Call for International Assistance, January 27, 2004.

farmers who had to kill their infected and exposed birds and poultry needed to be compensated for loss of their property:

> Bird flu has not yet turned into a pandemic, but it is already killing the meager hopes of some of the world's poorest people for a marginally better life. When poultry become infected with the deadly strain of avian influenza (H5N1), it is essential that all birds nearby be culled to prevent further spread**.**
>
> The Indonesian government pledged to pay about $1.50 for each bird infected with the H5N1 virus, a sum that may approximate the bird's fair market value. But most birds that have been killed under this policy are healthy, so their owners, most reports suggest, will receive nothing. Families whose birds are found to be infected with the virus may suffer even more. People in Cambodia, China and India whose poultry have been blamed for avian influenza outbreaks have often been subject to extreme stigma and isolation, and there have even been reports of suicides by desperate farmers.
>
> Indonesia's avian influenza budget for the coming year is reported to be less than $50 million. Clearly, without donor assistance, the government cannot afford to compensate families and farmers fairly. Developing a program to compensate poor families in countries with limited resources is an enormous challenge.[28]

Another rights issue raised by many developing countries was that of equitable access to vaccines. The time period from May 2006 to December 2007 was one of increased research on vaccines, antiviral drugs, and public health preparedness by governments all over the world, particularly in the United States. The media, therefore, reported mainly on biomedical issues such as transmissibility, lethality, virology, public

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Available online at http://www.who.int/mediacentre/news/releases/2004/pr7/en/, last accessed November 11, 2011.

[28] Ruth R. Faden, Patrick S. Duggan, and Ruth Karron, "Who Pays to Stop a Pandemic," The New York Times, February 7, 2007.

health infrastructure, and epidemiology. Continuing with its efforts to address the threat of avian flu, on April 17, 2007, the United States Food and Drug Administration (FDA) announced its approval of the first vaccine to prevent human infection with one strain of the avian influenza H5N1 virus.[29] This was the time when the media reported on Indonesia's decision to withhold sharing of virus samples from the WHO, alleging that Indonesia was not assured of access to vaccines and antiviral drugs if a human pandemic of influenza occurred.[30] Thailand had raised similar issues in January 2007, and the WHO reacted to it with a joint statement between Indonesia and WHO member states, and agreed to work

> to assess and develop potential mechanisms, including Material Transfer Agreements, that could promote equitable distribution and availability of pandemic influenza vaccines developed and produced from these viruses.[31]

In May 2007, the World Health Assembly adopted a resolution about sharing influenza viruses and promoting access to vaccines in relation to the avian flu.[32] This

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[29] FDA Approves First U.S. Vaccine for Humans Against the Avian Influenza Virus H5N1. April 19, 2007. FDA U.S. Food and Drug Administration. Available online at http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/2007/ucm108892.htm, last accessed October 11, 2010

[30] Donald G. Mcneil Jr., "Indonesia May Sell, Not Give, Bird Flu Virus to Scientists," The New York Times, February 7, 2007.

[31] Joint Statement from the Ministry of Health, Indonesia and the World Health Organization Regarding the Sharing of Avian Influenza Viruses and Pandemic Vaccine Production, February 16, 2007, Statement WHO/2. Available online at http://www.who.int/mediacentre/news/statements/2007/s02/en/index.html, last accessed November 13, 2010.

[32] World Health Assembly, "Pandemic Influenza Preparedness: Sharing of Influenza Viruses and Access to Vaccines and other Benefits," WHA60.28, May 23, 2007. Adopted at the 60th World Health Assembly (Geneva: World Health Organization, May 23, 2007*)*.

issue was further addressed on June 15, 2007, when revised International Health Regulations, substantially updated since 1969, took effect. They aimed to help protect the world from a host of emerging diseases and health threats, such as pandemic influenza and bioterrorism.[33]

The excerpts from news reports cited above show that the media not only covered the avian flu outbreak extensively but also framed avian flu in different ways. The volume and nature of media messages, therefore, can be evaluated to identify the media's impact on public perception and awareness of avian flu. The stories were identified, sampled, and coded for four different frames presented in the stories (i.e., biomedical, economic, human rights, and security). The prominence of each frame was identified over time, and the stories were coded for the region of the world that was the focus of the news article. This chapter is divided into four parts. The first part presents the results of the content analysis of newspaper reports about avian flu, and the second part describes public opinion data collected by the Harvard School of Public Health (Project on the Public and Biological Security) and the Robert Wood Johnson Foundation. These data were retrieved from the Kaiser Family Foundation and the Health Poll Search data base. Additional data were taken from surveys conducted by the Pew Research Foundation and polls conducted by the Associated Press and CNN. Public opinion polls also were analyzed to determine if shifts in media frames in stories about avian flu influenced

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Available online at http://www.who.int/gb/ebwha/pdf_files/, last accessed March 25, 2011; David P. Fidler and Lawrence O' Gostin, "The WHO Pandemic Influenza Preparedness Framework," JAMA 306, 2 (2011): 200-1.

[33] Revision of the International Health Regulations, 58th World Health Assembly, WHA58.3, Agenda item 13.1 (May 23, 2005). Available online at http://www.who.int/csr/ihr/en/, last accessed November 13, 2010.

changes in public behavior and attitudes towards the disease. The third section, presents a correlation analysis of media coverage of avian flu with survey data about avian flu during the corresponding time period. The final section discusses the evidence supporting the premise that agenda setting and framing affected the public's evaluation of different news frames on avian flu.

5.1. Content Analysis of Newspaper Reports

To investigate in detail the prominence and content of news coverage of avian flu, I conducted a content analysis of stories about avian flu published in The New York Times and The Washington Post. Using the Lexis-Nexis academic database I collected news articles between January 1, 2004 and December 12, 2007. The search stipulated that the term "bird flu" or "avian flu" be present in the "headline or lead paragraph" with at "least three occurrences in the article" to ensure that avian flu was the focus of the article. Obituaries were excluded from the search process. The New York Times returned a total of 388 articles and The Washington Post returned 263 articles. Because the stories returned by Lexis-Nexis were not ordered in any way other than by date, every fourth story was included in the pool. Table 5.1 shows the total number of articles for each newspaper and for the two newspapers combined. The data from both newspapers were combined for further analysis.

Each news story was coded at the sentence level. Each frame was considered to be a variable and was assigned a numerical value based on the number of times the frame was mentioned in a given news article. For example, if the biomedical frame was

mentioned twice, it was given a score of 2. This numerical score was then converted into a weighted measure for each frame, which is defined as the ratio of the number of times a given frame is mentioned and the total number of sentences in the news article. The weighted measure was used to normalize the measure so that it would be comparable across news articles of varying lengths and so that I could compare the relative scores across frames in a given news article.

Table 5.1: Data Sources and Overall Coverage

Newspaper	Number of Articles	Time Interval
The New York Times	99	1/18/04–11/22/07
The Washington Post	62	1/14/04–12/11/07
Overall	161	1/14/04–12/11/07

The stories also were coded as follows for the region or country that was the focus of the story: United States, countries other than the United States, global impact, or geographic region not mentioned. Table 5.2 shows the frequency of articles that were analyzed that were related to each geographic location. About half of the articles in each newspaper focused on regions other than the United States. There were, however, a number of stories that discussed the global impact of avian flu in an increasingly interconnected world.

Table 5.2: Frequency of News Content by Geographic Location

Newspaper	Geographic Location				
	USA	Other countries	Global impact	Not mentioned	Time Interval
The New York Times	23 (21.7%)	62 (58.5%)	17 (16.0%)	4 (3.8%)	1/18/04 – 11/22/07
The Washington Post	26 (41.9%)	29 (46.8%)	7 (11.3%)	0 (0.0%)	1/14/04 – 12/11/07
Overall	49 (29.2%)	91 (54.2%)	24 (14.3%)	4 (2.4%)	1/14/04 – 12/11/07

5.2. Data Analysis: The Mean Ratios of the Four Coverage Types/Newspapers.

The data were analyzed using descriptive statistics as well as comparative statistics such as Analysis of Variance (ANOVA). All analyses were conducted using Excel and SPSS. The data were analyzed to evaluate the pattern of coverage and to understand changes in media coverage over time. News data overall (The New York Times + The Washington Post) were also analyzed for type of coverage (Table 5.1).

Because the news articles were coded for content or type of coverage and weighted for length, the news data were further analyzed with a focus on different types of coverage. Mean ratios of the four coverage types were computed for each region for the overall sampling period (Table 5.3). The biomedical ratio was the highest in all news stories in all geographic areas: the United States (0.33), countries other than the United States (0.44), and stories that discussed the global impact of the avian flu (0.49). The economic ratios were the next most important, followed by the security and human rights ratios.

Table 5.3: Mean Ratios for Coverage Type by Region

Region	Biomedical Ratio	Economic Ratio	Security Ratio	Human Rights Ratio	Time Interval
United States	0.33	0.25	0.09	0.01	2/5/04–7/11/07
Other countries	0.44	0.15	0.03	0.01	1/14/04–11/22/07
Global impact	0.49	0.26	0.02	0.01	1/25/04–12/11/07
Not mentioned	0.37	0.25	0.03	0.00	10/28/05–8/1/06

Table 5.4 summarizes the mean ratios of the four coverage types. The coverage patterns for the two newspapers were similar. Overall, the biomedical ratio was higher (0.410) than the economic ratio (0.189), and the security and human rights ratios were less than 0.05 during the sampling period. As with SARS, the biomedical frame was dominant.

Table 5.4: Mean Ratios for Coverage Type in The New York Times and The Washington Post (combined)

Newspaper	No. of Articles	Frame				
		Bio-medical	Economic	Security	Human Rights	Time Interval
Overall	161	0.410	0.189	0.046	0.011	1/14/04-12/11/07

A one-way ANOVA followed by Tukey's post hoc test was used to test for differences in ratios among the four frames over the entire sampling period (Table 5.5). The least squares mean values were 0.41, 0.19, 0.05, and 0.01, respectively, for the biomedical, economic, security, and human rights ratios. The least squares mean value is

the best linear-unbiased estimate of the subpopulation means (i.e., the means for each frame). It represents the relative weight of each frame in the media coverage. Comparison among the least squares mean values of the four frames shows that the biomedical ratio was the most prominent, as its value was significantly higher than those of the other three frames ($p < 0.0001$). The economic ratio was the next highest, and it was significantly higher than the security and human rights ratios ($p < 0.0001$). The human rights and security ratios did not differ significantly, and they were both minimal ($p \leq 0.05$) compared to the economic and biomedical ratios.

Table 5.5: Comparison of Four Frames over Entire Sampling Period (1/14/04–12/11/07)

Frame	Least Squares Mean	Economic	Human Rights	Biomedical	Security
Economic	0.19	----------	<.0001	<.0001	<.0001
Human Rights	0.01	<.0001	----------	<.0001	0.3403
Biomedical	0.41	<.0001	<.0001	----------	<.0001
Security	0.05	<.0001	0.3403	<.0001	----------

5.3. Changes in Media Coverage of Avian Flu over Time

The changes in media coverage in terms of the number of articles published and the ratios of the four frames were analyzed at quarterly, monthly, and weekly intervals. Appendix Table A5.1 and Figure 5.1 show the quarterly averages of the four frames. Figure 5.1 also compares the geographic focus of the stories over time. The pie charts show changes in the relative proportion of articles focusing on the three different regions

over time. In 2004, more than half of the articles focused on countries other than the United States. All articles in the second quarter focused entirely on the impact of avian flu on countries other than the United States. In 2005 the percentage of articles discussing the impact of on avian flu on the United States and the globe increased. The majority of the articles, however, focused on the impact of avian flu on other countries. This was true because countries in Asia, Europe, and the Middle East were most affected by avian flu. The same trend continued in the first three quarters of 2006. In the last quarter of 2006, 75% of the articles concerned the impact of the disease on the United States. In the second quarter of 2007 100% of the articles did focus on United States

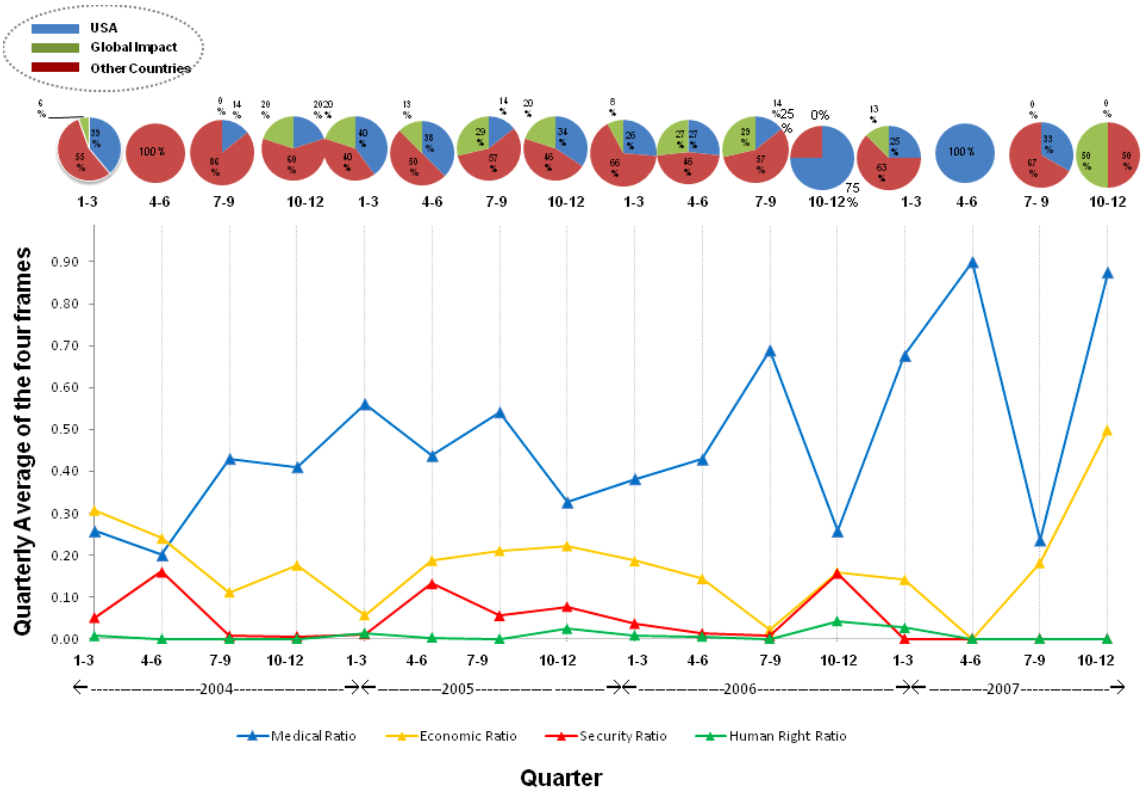


Figure 5.1: Changes in Media Coverage over Time at Quarterly Intervals

In the first quarter of 2004, 63% of the articles focused on other countries, in the second quarter 100% of the articles dealt with the impact of avian flu on the United

States, and in the third quarter 67% of news coverage was about other countries. In the last quarter of 2007, half of the articles discussed the global impact of avian flu and how the Asian economies were affected by the spread of this disease.

To examine changes over time in a more detailed manner, media coverage data were analyzed on monthly and weekly intervals. Figures 5.2–5.5 show weekly changes in the four frames over a period of 4 years (see also Tables A5.2, for monthly changes, and Tables 5.3-5.6, for weekly changes, in the Appendix).

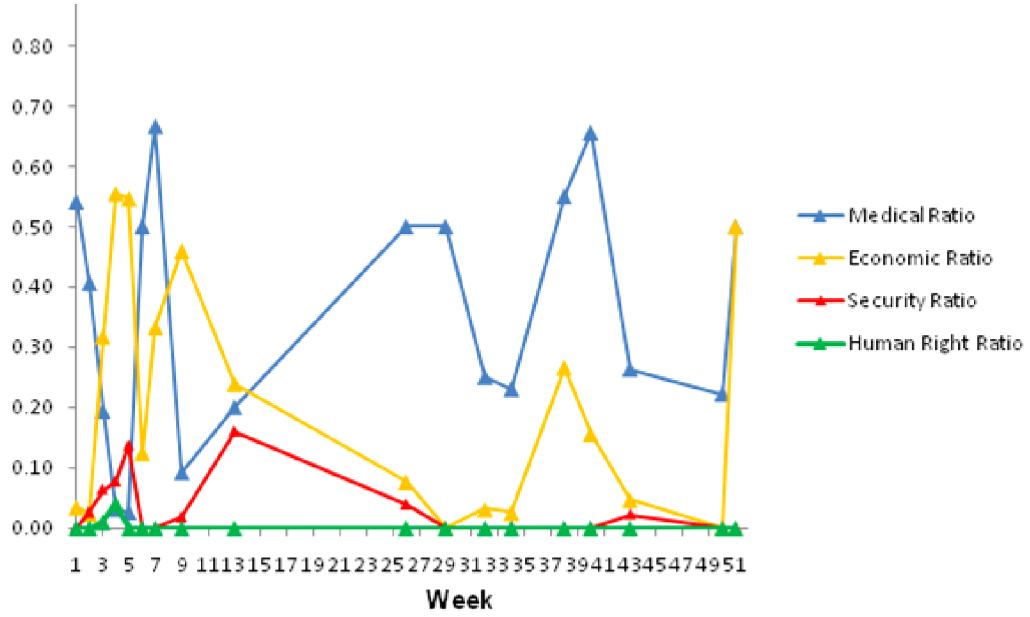


Figure 5.2: Media Coverage Changes over Time: Weekly Averages of the Four Media Frames in 2004

In 2004, the biomedical frame dominated the media reporting, except from January 28 to February 17 (see weeks 3–5 in Appendix Table 5.3, and Figure 5.2) and March 10–16 and April 7–13 (weeks 9 and 13 in Appendix Table 5.3 and Figure 5.2). Between January 28 and February 3, the economic ratio exceeded the biomedical ratio. In week 5, both the economic and security ratios exceeded the biomedical ratio, and the

economic frame was clearly dominant this week (0.55). Between March 10 and March 16, the economic ratio was about five times the biomedical ratio, and during the week of April 7 to April 13 (0.09 vs. 0.46), the biomedical and economic ratios were both prominent (0.20 and 0.24, respectively). Overall, 28 articles related to avian flu were published in the two newspapers in 2004, with fewer than three articles published each week during this year. A one-way ANOVA followed by Tukey's post hoc test was used to test for differences in ratios among the four frames in 2004 (Table 5.6). Overall, the two newspapers devoted on average 31% of the coverage of avian flu to the biomedical frame and 24% to the economic frame. There was no significant difference between the biomedical and economic ratios and between the security and human rights ratios. The biomedical and economic ratios, however, were both significantly higher than the security and human rights ratios. This indicates that the economic and biomedical frames were the dominant frames in 2004. The news coverage was also focused mainly on countries outside the United States.

Table 5.6: Comparisons of the Four Frames in 2004

Least Squares Mean Values of the Four Frames				
	Economic	Human Rights	Biomedical	Security
	0.24	0	0.31	0.04
p-values for Mean Ratio Pair Wise Comparisons among the Four Frames				
	Economic	Human Rights	Biomedical	Security
Economic Ratio		<.0001	0.4736	0.0003
Human Rights Ratio	<.0001		<.0001	0.8896
Biomedical Ratio	0.4736	<.0001		<.0001
Security Ratio	0.0003	0.8896	<.0001	

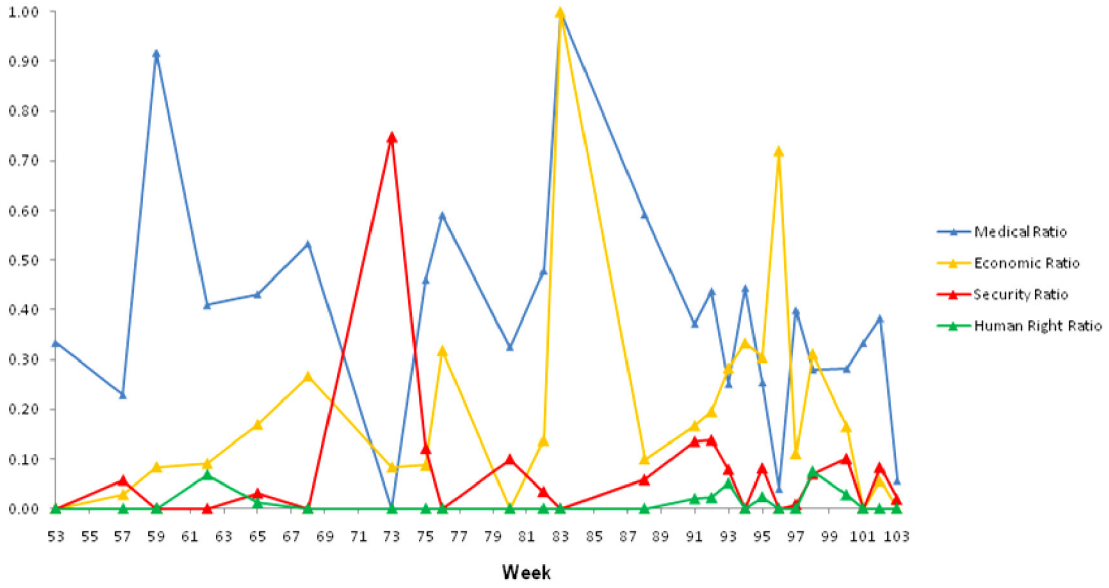


Figure 5.3: Media Coverage Changes over Time: Weekly Averages of the Four Media Frames in 2005

In 2005 (Appendix Table A5.4 and Figure 5.3), the biomedical frame dominated media reporting, except in June 1–7, October 19–25, November 2–11, and November 23–29. In the first week of June, the security frame was dominant. For October 19–25, November 2–11, and November 23–29, the economic ratio exceeded the biomedical ratio. For November 9–15, the economic ratio was about 18 times the biomedical ratio, and was the dominant frame in the media reporting during this time period. Overall, however, the biomedical frame dominated the media coverage in 2005. ANOVA followed by Tukey's test (Table 5.7) showed that the biomedical ratio was significantly higher than those of the other three frames, and the economic ratio was significantly higher than the security and human rights ratios. There was no significant difference between the human rights and security ratios. Overall, there were 25 articles about avian flu published in 2005.

Table 5.7: Comparisons of the Four Frames in 2005

Least Squares Mean Values of the Four Frames				
	Economic	Human Rights	Biomedical	Security
	0.2	0.02	0.39	0.08
p-values for Mean Ratio Pair Wise Comparisons among the Four Frames				
	Economic	Human Rights	Biomedical	Security
Economic Ratio		<.0001	<.0001	0.0044
Human Rights Ratio	<.0001		<.0001	0.373
Biomedical Ratio	<.0001	<.0001		<.0001
Security Ratio	0.0044	0.373	<.0001	

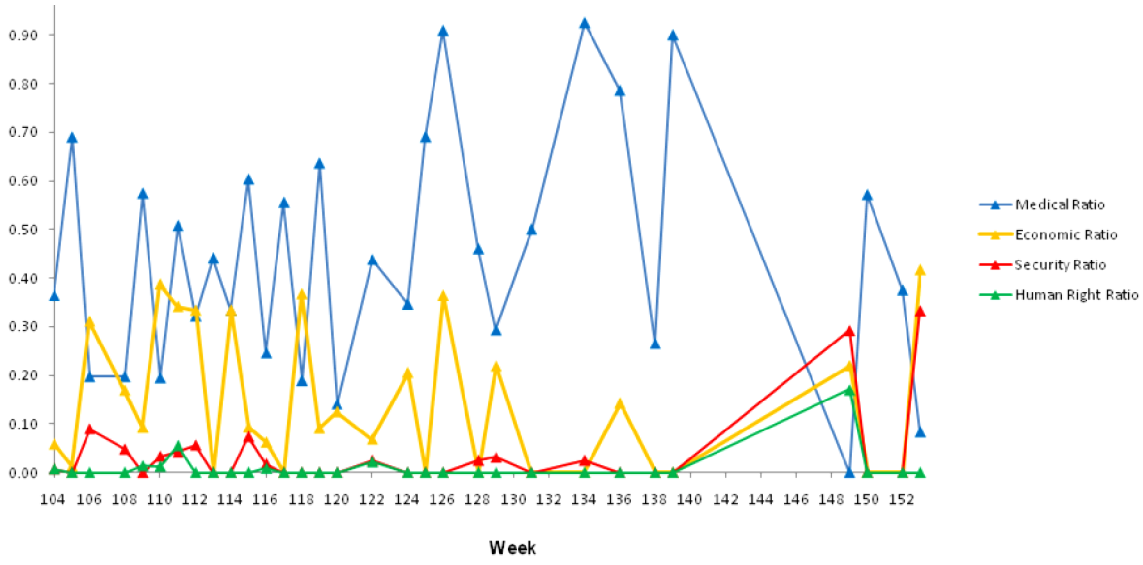


Figure 5.4: Media Coverage Changes over Time: Weekly Averages of the Four Media Frames in 2006

In 2006 (Appendix Table A5.5 and Figure 5.4), the biomedical frame dominated the media reporting, except for the periods of January 18–24, February 15–21, March 1–14, March 22–28, April 12–18, and December 13–19. For January 18–24, February 15–21, March 1–14, March 22–28, and April 12–18, the economic and biomedical frames

were both prominent in the media. Between December 13 and 19, the economic and security frames dominated the media reporting. Thus, biomedical and public health issues were both prominent in media, except for brief periods between December 13 and 19, 2006 and between July 11 and 17, 2007. In December 2006, the National Security Strategy discussed the threat from avian flu. This provoked some discussions about health and security in the media. In July 2007, the state of Virginia banned all live poultry sales and shows for the rest of the month after suspected avian flu antibodies were discovered in a flock of 54,000 turkeys on a Shenandoah County farm, and this dominated the news stories on avian flu at this time.[34] Overall, the biomedical frame dominated the media coverage in 2006. ANOVA followed by Tukey's test (Table 5.8) revealed that the biomedical ratio was significantly higher than those of the other three frames; the economic ratio was significantly higher than the security and human rights ratios. There was no significant difference between the human rights and security ratios. Overall, 50 articles were published about avian flu in 2006, which was twice the number in 2005.

Table 5.8: Comparisons of the Four Frames in 2006

Least Squares Mean Values of the Four Frames				
	Economic	Human Rights	Biomedical	Security
	0.15	0.01	0.42	0.03
p-values for Mean Ratio Pair Wise Comparisons among the Four Frames				
	Economic	Human Rights	Biomedical	Security
Economic Ratio		<.0001	<.0001	0.0003
Human Rights Ratio	<.0001		<.0001	0.8264
Biomedical Ratio	<.0001	<.0001		<.0001
Security Ratio	0.0003	0.8264	<.0001	

[34] Staff Reporter, "Possible Bird Flu Leads to Live Poultry Sales Ban," The Washington Post, July 7, 2007.

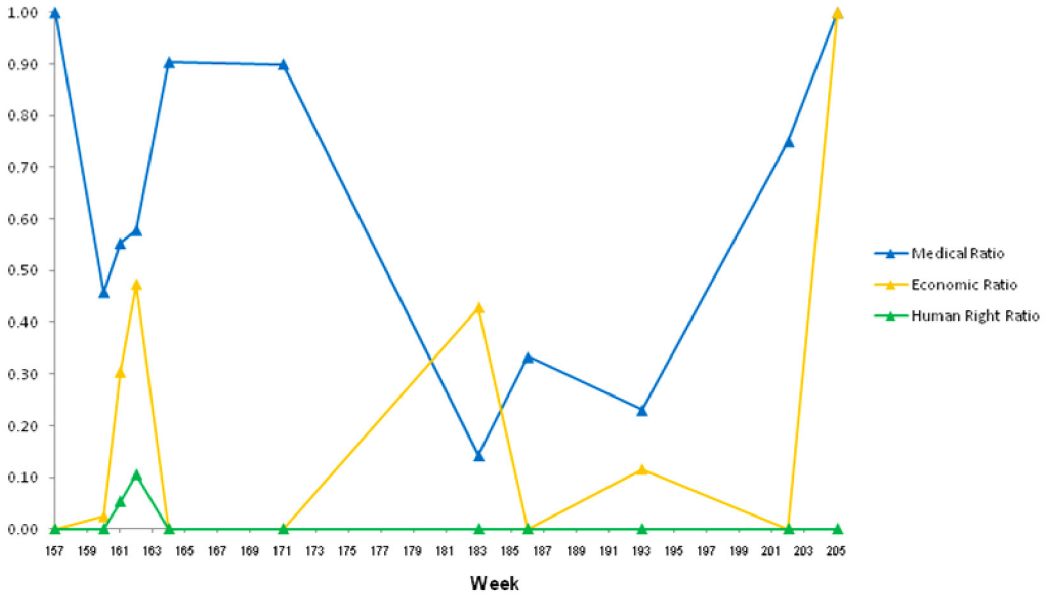


Figure 5.5: Media Coverage Changes over Time: Weekly Averages of the Four Media Frames in 2007

In 2007 (Appendix Table A5.6 and Figure 5.5), the weekly average for the security ratio was zero. It was, therefore, excluded from Figure 5.5. Between July 11 and 17,the economic ratio was about three times the biomedical ratio, and between December 12 and 18, the economic ratio equaled the biomedical ratio. Other than these two weeks, the biomedical ratio was dominant throughout the year. There were only 14 articles about avian flu published in 2007, indicating a considerable decline in coverage. ANOVA followed by Tukey's test (Table 5.9) showed that the biomedical ratio was significantly higher (<.0001) than other three frames. Moreover, there was no significant difference among the economic, human rights, and security ratios.

Table 5.9: Comparisons of the Four Frames in 2007

Least Squares Mean Values of the Four Frames				
	Economic	Human Rights	Biomedical	Security
	0.19	0.02	0.63	0.00
p-values for Mean Ratio Pairwise Comparisons among the Four Frames				
	Economic	Human Right	Medical	Security
Economic Ratio		0.2071	<.0001	0.1495
Human Rights Ratio	0.2071		<.0001	0.9982
Biomedical Ratio	<.0001	<.0001		<.0001
Security Ratio	0.1495	0.9982	<.0001	

ANOVA followed by Tukey's test with year as a fixed effect was used to determine whether coverage for each frame changed significantly over the years 2004–2007. Table 5.10 gives the least squares mean values for each frame by year and the p-value for the significance test. No significant difference among years was detected for the economic, security, and human rights ratios. The biomedical ratio, however, had significantly higher values in 2007 compared to 2004, 2005, and 2006.

Table 5.10: Comparisons of Each Frame (2004–2007)

Least Squares Mean by Year				
Year	Biomedical Ratio	Economic Ratio	Security Ratio	Human Rights Ratio
2004	0.31	0.24	0.04	0.00
2005	0.39	0.20	0.08	0.02
2006	0.42	0.15	0.03	0.01
2007	0.63	0.19	0.00	0.02
p-value for effect year (each frame tested individually)				
Biomedical Ratio	2004	2005	2006	2007
2004		0.5949	0.2922	0.0024
2005	0.5949		0.9322	0.0185
2006	0.2922	0.9322		0.0461
2007	0.0024	0.0185	0.0461	
Economic Ratio	2004	2005	2006	2007
2004		0.8535	0.3336	0.8985
2005	0.8535		0.7098	0.9990
2006	0.3336	0.7098		0.9532
2007	0.8985	0.9990	0.9532	
Security Ratio	2004	2005	2006	2007
2004	1	2	3	4
2005		0.3624	0.9969	0.6287
2006	0.3624		0.0985	0.0524
2007	0.9969	0.0985		0.6456
Human Rights Ratio	0.6287	0.0524	0.6456	
2004		0.3174	0.9156	0.7262
2005	0.3174		0.5202	0.9973
2006	0.9156	0.5202		0.9136
2007	0.7262	0.9973	0.9136	

5.4. Public Opinion Analysis

The public opinion surveys were drawn from a secondary database corresponding to the time period during which these news stories were published. Public opinion data

were collected mainly from the I Poll data bank, Polling the Nation, and the Health Poll Search of the Kaiser Family Foundation. These three databases provide access to more than a million surveys on various topics conducted in the United States by different survey organizations. The Kaiser Family Foundation is the leading organization for health policy analysis, and it routinely conducts surveys on health-related topics. All survey results are based on representative national samples of adults aged 18 or older. With very few exceptions, the sample sizes of these surveys were at least 1,000 respondents. Shifts in public opinion towards infectious diseases were reviewed by analyzing exact and similarly worded questions about issues related to avian flu. Specifically, these questions assessed the following: a) willingness to support harsh public health measures such as quarantine and to make changes in daily behavior to curb the spread of disease; b) precautionary steps taken and behavioral changes made in personal lives due to fear of the disease; c) concerns about the spread of the disease and the likelihood of contracting the disease; and d) support for federal funding to improve the country's ability to respond to new infectious diseases.

The data were analyzed using descriptive statistical methods. The z-test was used to compare the proportion of subjects who responded positively or negatively in each survey. Survey responses were grouped together to form positive or negative responses. For example, survey responses such as “very worried” and “somewhat worried” or “extremely likely” and “very likely” were grouped together. All analyses were conducted using Excel and SPSS/PASW. Z-test scores greater than or equal to the absolute value of 1.96 at the 95% confidence interval were considered to be statistically significant.

Eighteen questions were analyzed in the category of *willingness to support harsh public health measures*, which examined support for quarantine and protective behavior (Appendix Table A5.7). The surveys were conducted between August 2005 and April 2006. The responses were combined to compute the percentage of positive opinion. The first set of questions were similarly worded and asked the sampled respondents their opinion about quarantine. On average, 82.6% of the public expressed support for quarantine (a statistically significant value). The next series of survey questions assessed public opinion about willingness to take protective steps (e.g., washing hands more frequently, avoiding travel, and wearing masks) if a human case of the avian or bird flu was reported in their state. On average, 79.1% of the public expressed their willingness to take various protective steps to prevent avian flu. A higher percentage of subjects expressed willingness to take protective measures, except for wearing a mask. Only 52% of subjects were willing to wear masks, which was not statistically significant.

Four sets of survey questions on *actual behavioral changes made* were examined in the second category of questions (Appendix Table A5.8). The respondents were surveyed from January to April 2006. A higher percentage of people did not change their behavior compared to those who did. News of the spread of avian flu did not bring about changes in the daily behavior of people. On average, 80.6% of the sampled population denied implementing precautionary behavior.

Six sets of questions were examined to understand *Americans' concern about the spread of the disease* (Appendix Table A5.9). The first set of questions asked Americans if they were worried that they or someone in their family would be victims of bird flu. The first survey was conducted between October 21 and 23, 2005, and it was repeated on

December 9–11, 2005, January 12–25, 2006, and March 10–12, 2006. A significantly higher percentage of subjects were not worried about actually contracting avian flu. On average, only 23.5% of subjects expressed that they were worried they would be victims of bird flu. It is likely that the ability of the United States public health system to effectively deal with SARS made people confident or "desensitized."[35] The second set of questions asked Americans how worried or concerned they were that they or someone in their family would be exposed to bird flu. Eight surveys were included in this set. The surveys were administered between November 3–6, 2005 and January 18–22, 2007. In the first survey, 38% of the respondents were concerned about bird flu. For the first seven surveys, on average 34.1% of subjects were worried, whereas in the last survey (January 18–22, 2007), 60% of subjects were worried A third set of questions assessed the perceived likelihood of bird flu striking the United States. Four surveys were included in this set. Surveys administered on October 21–23, 2005, March 2–5, 2006, and April 25–27, 2006 showed that a significantly higher percentage of subjects thought that the bird flu virus was likely to strike the United States. An average of 67.7% of subjects chose "very likely" or "somewhat likely" when asked about the likelihood of bird flu striking the United States. The last survey, which was administered on December 31, 2006, showed that 50% of respondents thought bird flu would strike the United States in 2007. This illustrates a decrease in concern (from 64% to 50%) from the last survey conducted in April 2006. The fourth set of questions also assessed Americans' concern about the disease. These questions were worded differently and asked if Americans were concerned

[35] Shirley S. Ho, Dominique Brossard, Dietram A. Scheufele., "The Polls—Trends Public Reactions to Global Health Threats and Infectious Diseases," Public Opinion Quarterly 71, 4 (2007): 678.

that the United States might be part of an avian flu pandemic in the near future. An average of 64% of subjects showed concern, and a significantly higher percentage of subjects expressed concern compared to expressing no concern at all. The fifth question asked a similar question, but it was worded differently: It asked Americans how concerned they were about a pandemic outbreak of avian or bird flu. The first survey was administered between January 17 and 25, 2006, and it showed that 62% of subjects were "very concerned" or "somewhat concerned." In a survey conducted between June 7 and 21, 2006, 51% of subjects were "very concerned" or "somewhat concerned," which was not a significantly high value. The sixth set of questions asked how concerned Americans were about the spread of bird flu in the United States. All five surveys in this set showed that a significantly higher percentage of subjects expressed concern. The last set of questions asked Americans if they thought there was more likelihood of cases of avian or bird flu among wild birds, chickens, or other farm-raised poultry or among humans in the United States during the next 12 months. On average, 58% of Americans thought it was very likely or somewhat likely that more cases would occur among wild birds, 43% thought it was very likely or somewhat likely that there would be more bird flu cases among chickens, and only 34% believed it was very likely or somewhat likely that there would be more bird flu cases among humans.

Four sets of questions were examined to understand *Americans' support for funding to fight infectious diseases such as the avian flu* (Appendix Table A5.10). The first question asked respondents if they supported government investment in the development and production of vaccines to prevent avian flu. The mean percentage supporting the investment on vaccine research was 92.5% in the two surveys conducted

in August 2005 and April 2006. The support for this issue was considerable and high. The second set of questions asked Americans if they were worried that the government was not doing enough to protect its citizens from infectious diseases. Nationally, 60% of respondents felt that the government was not doing enough in January 2005. The percentage of people worried about the issue increased to 63% when the poll was repeated in January 2006. In both surveys, a significantly higher percentage of people expressed that they were "worried" compared to "not worried." The third set of questions also explored public opinion about government spending on avian flu. The questions specifically asked the public whether the United States spends too much, too little, or about the right amount of money to protect citizens against bird flu. In January 2006, only 36% of subjects thought that the United States was spending the right amount. In January 2007, 32% felt the United States spent the right amount of money. When asked if the United States was spending too much, in January 2006 only 6% agreed. The percentage of people who felt the United States government was spending "too much" increased to 20% in January 2007 and in the same survey, 24% felt that the government was spending "somewhat more" than enough. Between January 2006 and January 2007, the sense of urgency about the threat from avian flu seems to have declined. The fourth question asked Americans if they thought it was important to improve the country's ability to respond to new infectious diseases such as SARS and the avian flu. The surveys were conducted in May 2006 and April 2007. More than 80% of the respondents thought this was an extremely or very important thing to do in both the surveys. This was a statistically significant positive response.

The time period between October 2005 and December 2006 was one of increased media reporting on avian flu. The United States government and the media emphasized not just the biomedical aspects but also the economic and security concerns that arose due to the spread of avian flu. Increased media reporting probably led to the high level of support for policies such as quarantine and funding for research on vaccines against avian flu. This initial awareness did not, however, lead to increased worry or personal concern about respondents and their families being victims of avian flu or being actually infected or dying from the disease. As a result, the American public did not make too many precautionary changes in their lives to protect themselves from bird flu.

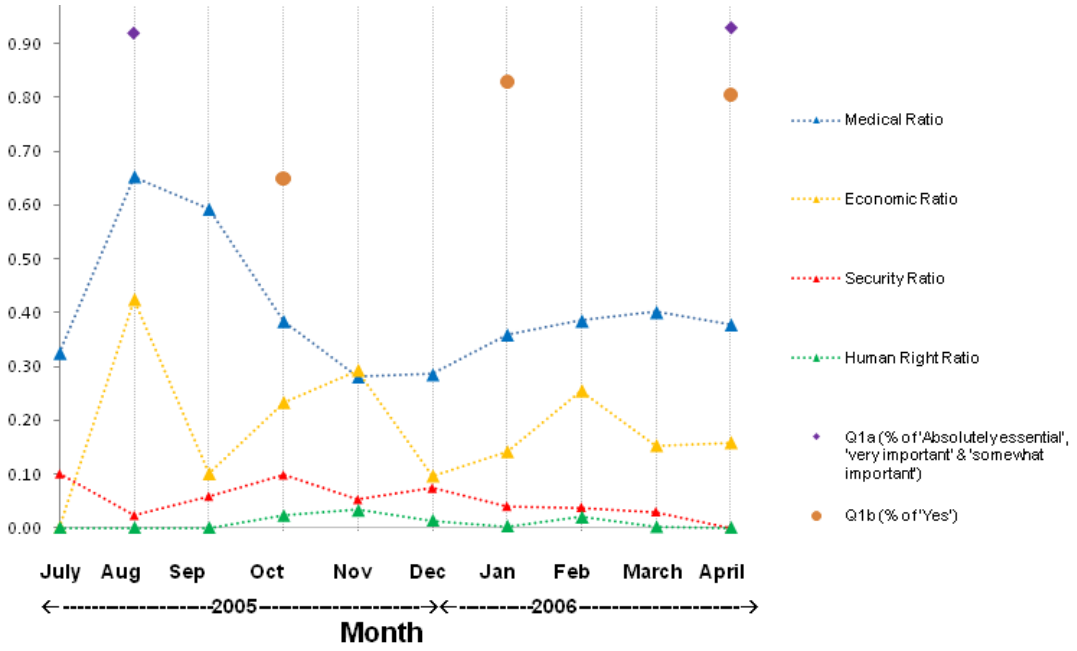
5.5. Relationship between Media Coverage and Public Opinion

To understand the relationship between changes in media coverage of avian flu and changes in public opinion, data were analyzed using descriptive statistical methods. The correlation coefficient was computed and a test of significance was performed for the correlation between media coverage and percentage of positive responses for the following survey topics: worry about being the victim of the bird flu virus, worry about being exposed to the bird flu, and likelihood of the bird flu virus striking the United States. All analyses were performed using Excel and SPSS.

Public opinion polls that questioned whether people were *willing to support quarantine* were conducted first on August 3–5 2005 and repeated on October 11–12, 2005, January 17–25, 2006, and April 25–27, 2006. Questions that examined people's willingness to make changes in daily behavior other than quarantine to curb the spread of

disease also were included in the analysis. To assess whether changes in the media coverage on avian flu had an impact on the percentage of people who were willing to make changes in daily behavior, a plot showing news coverage data from the corresponding time period (July 2005–April 2006) and percentage of respondents supporting quarantine was constructed (Appendix Table A5.12). Questions about willingness to avoid travel, wearing a mask, etc. (Q2–Q17, Appendix Table A5.7) were not included in the analysis because these questions were not asked repeatedly over a period of time. A monthly interval was chosen for the analysis in order to examine the changes over time in the two sets of data. The percentage of positive responses was plotted for the four frames in media coverage (Figure 5.6). In the survey, the same question was repeated with different types of responses. For example, Q1a showed the percentage of positive responses calculated as the percentage of "absolutely essential," "very important," and "somewhat important" responses, and Q1b showed the percentage of positive responses calculated as the percentage of "yes" or "favor" responses. There was no change in the percentage of positive responses when the survey was repeated in October 2005 and April 2006 with response options of "absolutely essential," "very important," "somewhat important," "not important," and "not important at all." The percentage choosing "absolutely important" increased from 25% to 30% (Appendix Table A5.7). The percentage increased considerably from 65% to 83% between October 2005 and January 2006 when the same question was asked with response options of "yes" or "no." As far as the media coverage was concerned, the biomedical ratio decreased from 0.65 to 0.38 between August 2005 and April 2006. The economic ratio also decreased from 0.42 to 0.16. The human rights and security ratios were very small and

changed little. From October 2005 to January 2006, all media coverage had decreased, whereas public opinion about supporting quarantine increased from 65% to 83%. In this case perhaps less coverage increased concern about the disease. Continuous reporting on avian flu increased the publics' attention and support for quarantine measures, and after some time it stabilized. Eighty percent of the sampled population supported quarantine in April 2006, which was a very slight decrease from January 2006. Overall support for quarantine and isolation measures was high during the sampling period.



Note: Q1. Do you agree that quarantining is important to limit the spread of avian flu?
Figure 5.6: Changes in Media Coverage and Willingness to Change Behavior

Four sets of questions (Appendix Table A5.13) were examined to see if Americans made any *significant behavioral changes or took any precautionary measures* to protect themselves against avian flu. The first two sets of questions were asked only once. Therefore, change over time could not be assessed. Only the third question was

included in the analysis (Figure 5.7). This question asked whether the public had taken any steps to prevent contracting the bird flu. The first survey was conducted between February 28 and March 3, 2006, and it was repeated between April 18 and 20, 2006. The percentage of "yes" responses to the question dropped from 15% to 9%. During the same time period, there was not much change in any of the frames, but the number of articles on bird flu decreased from 12 to 6. Perhaps the decrease in volume of reporting influenced public opinion. From February to March, the economic ratio decreased from 0.25 to 0.15. Due to the limited number of surveys on this issue, however, it is very difficult, if not impossible, to further evaluate how the media coverage shaped public opinion on actual behavioral changes made.

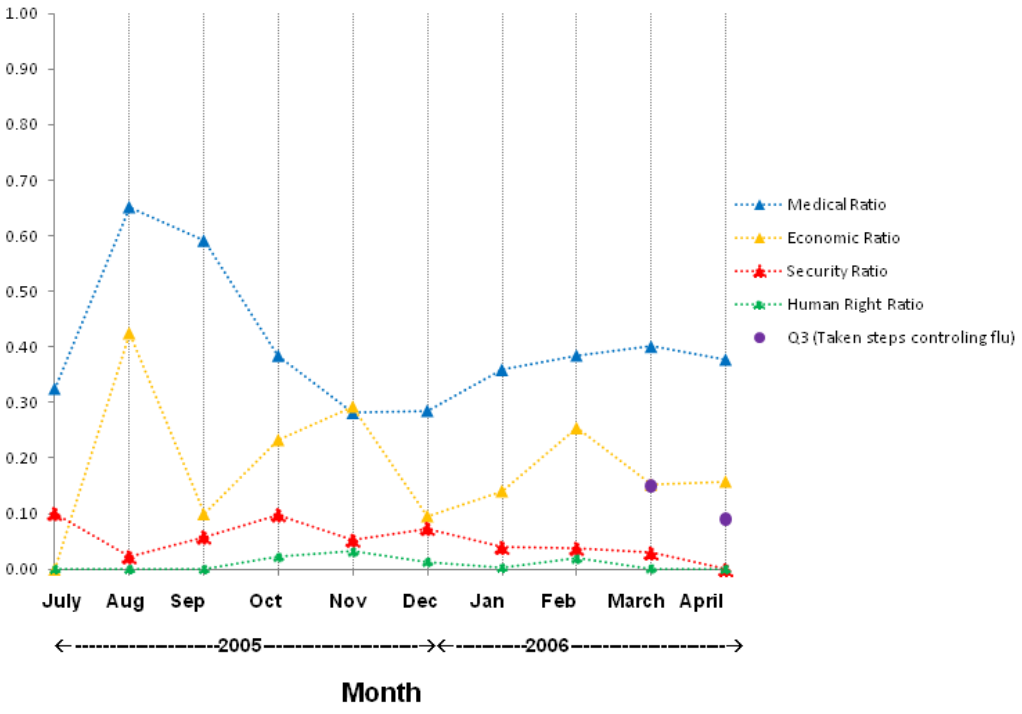
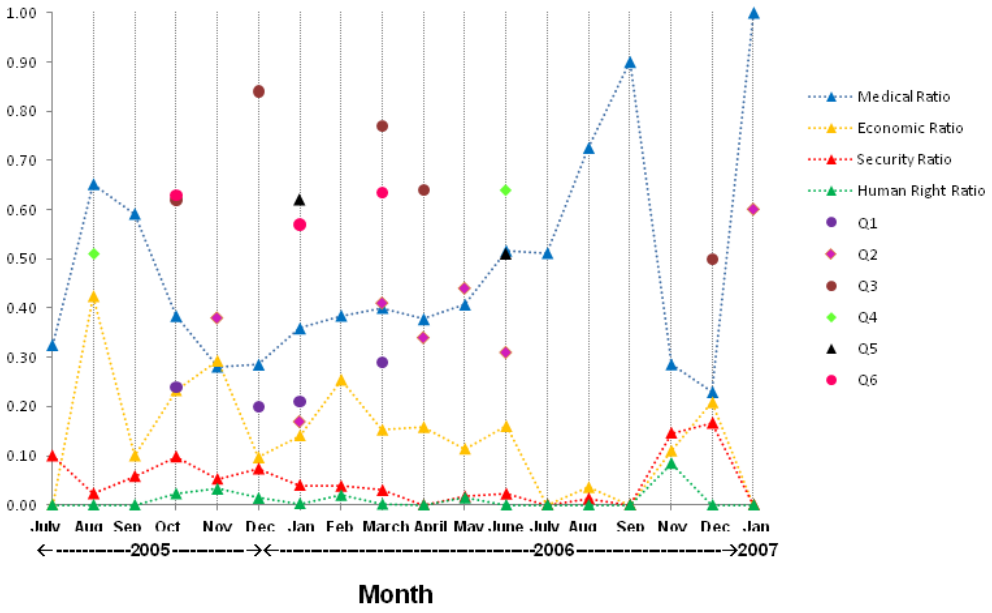


Figure 5.7: Changes in Media Coverage and Behavioral Changes Made

Seven questions were used to evaluate the *perceived likelihood of the spread of avian flu among humans* (Appendix Table A5.13 and Figure 5.8). The Pearson

correlation coefficient was computed for the first three questions, as surveys were continuously collected during this time period (Table 5.11). The percentage of people worried about avian flu was significantly correlated ($p = 0.0754$) with the biomedical ratio for Q2 (Appendix Table A5.9). The Pearson correlation coefficient ($r = 0.70741$) was indicative of a positive correlation and shows that the higher the biomedical ratio, the higher the level of people's concern that they would be exposed to avian flu. Positive responses about the perceived likelihood that the bird flu virus from other countries would strike the United States were significantly correlated with the economic ratio ($p = 0.0666$). The Pearson correlation coefficient was –0.85225, which indicates that the percentage of respondents who thought that bird flu would strike the United States was negatively correlated with the economic ratio (i.e., the more media reported on economic-related issues, the less likely the public thought it was that avian flu would strike the United States). The Pearson correlation coefficient was 0.81839 for the correlation between the percent of respondents worried about being a victim of the bird flu virus (Q1) and the biomedical ratio. This indicates that the higher the biomedical ratio, the higher the level of worry by the general public. Both Q1 and Q2 (Appendix Table A5.9) had a positive correlation between the level of worry and the biomedical ratio, and the correlation was significant for Q2.



Note: Q1. Are you worried that you or someone in your family will be the victim of the bird flu virus? Q2. How worried /concerned are you that you or someone in your family will be exposed to the bird flu? Q3. How likely do you think it is that the bird flu virus will strike the United States? Q4. How concerned are you that the United States will be part of an avian flu pandemic? Q5. How concerned are you about a pandemic outbreak of avian or bird flu in many countries at the same time? Q6. How concerned are you about the spread of bird flu in the United States? Q7. How likely do you think it is that there will be cases/more cases of avian or bird flu among in the United States during the next 12 months?

Figure 5.8: Changes in Media Coverage and Perception of Avian Flu as a Threat

Table 5.11: Correlations between Levels of Worry about Being Exposed to Avian Flu and Media Coverage: Pearson Correlation Coefficients (p-value)

Frame	Q1(worried about being a victim of the bird flu)	Q2 (worried about being exposed to the bird flu)	Q3 (bird flu virus will likely strike the United States)
Biomedical	0.81839	0.70741	0.33591
	(p=0.1816)	(p=0.0754)	(p=0.5805)
Economic	0.36343	–0.51197	–0.85225
	(p=0.6366)	(p=0.2401)	(p=0.0666)
Security	–0.33907	–0.50173	–0.58353
	(p=0.6609)	(p=0.2513)	(p=0.3017)
Human Rights	–0.21537	0.07355	0.12158
	(p=0.7846)	(p=0.8755)	(p=0.8456)

Four questions were studied to understand *public support for federal funding* to improve the country's ability to respond to new infectious diseases (Appendix Table A5.14 and Figure 5.9). The first question asked the public how important it was to invest government dollars in the development and production of avian flu vaccines. The question was asked in August 2005 and again in April 2006. The percentage of subjects responding in the affirmative increased from 61% to 65% over the 8 month. At the same time, the biomedical ratio dropped from 0.65 to the lowest point in November (0.28), and then it increased to 0.38 in April 2006. The economic ratio dropped and increased several times, but overall it dropped from 0.42 to 0.16. The security and human right ratios were small and did not change much. It is very difficult to determine how each frame influenced public opinion because only two surveys were conducted over this 8 month. The slight increase in the percentage of people supporting the production of vaccines may

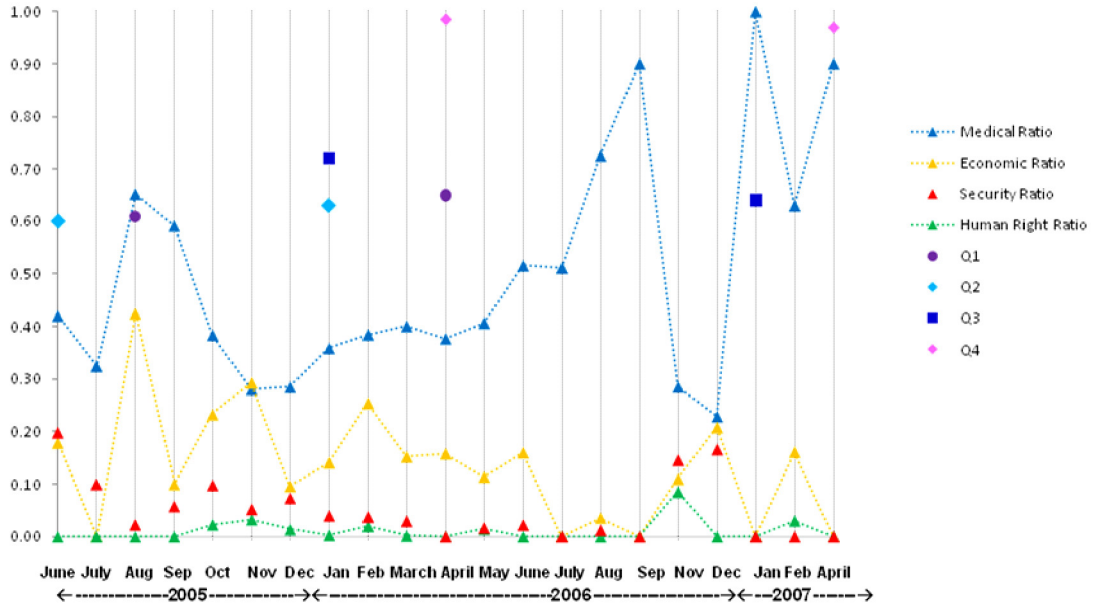
have resulted from the cumulative effect of media reporting over this period of time rather than having responded to any particular frame.

The next question asked whether the public was worried that the United States may not be doing enough to prevent contagious diseases such as SARS, lethal flu, and mad cow disease that originated in other countries. The question was first asked in June 2005, and 60% of respondents expressed worry. When the same question was repeated in January 2006, the percentage of respondents who were worried had increased slightly to 63%. At the same time, both the biomedical and economic ratios had dropped and increased multiple times. Given the fact that there were only two surveys conducted over the 7 month period, it is very difficult to determine how each media frame shaped public opinion. The slight increase in overall level of worry that occurred between June 2005 and January 2006 was similar to the trend seen in the responses to the previous question.

The third question asked if the United States was spending too much, too little, or about the right amount of money to protect the country against avian flu. The percentage of respondents supporting investment was 72% in January 2006. When the same question was repeated in January 2007, 64% of respondents supported investment. Again, only two surveys were conducted to address this issue, which makes it very difficult to correlate this change with any media frame.

The fourth question asked people if they thought it was important to improve the country's ability to respond to new infectious diseases such as SARS and avian flu. The survey was conducted first in March 2006, and it was repeated in April 2007. The responses were roughly the same and overall showed very high support. This result

illustrates that most Americans supported the idea of improving the country's ability to respond to new infectious diseases.



Note: Q1. How important will it be to invest government dollars in the development and production of avian flu vaccines? Q2. Are you worried that the United States may not be doing enough to prevent contagious diseases such as SARS, lethal flu, and mad cow disease that come from other countries? Q3.Do you think the United States is spending too much, too little, or about the right amount of money to protect the country against the avian or bird flu? Q4. Do you think it is important to improve the country's ability to respond to new infectious diseases such as SARS (severe acute respiratory syndrome) and avian flu?

Figure 5.9: Changes in Media Coverage and Public Support for Funding

5.6. Discussion and Conclusion

In this study I assessed whether increased news coverage of avian flu increased the worry of Americans about the disease. Public concern about the threat of an avian flu

pandemic did increase in the years 2005–2006. The percentage of people worried that they or a family member might get sick from avian flu in the next 12 months increased from 12% in 2003 to 21% in 2006.[36] This was perhaps in response to increased media reporting on the possibility of a pandemic. This study has also shown that the volume of news coverage about avian flu increased in 2005 and 2006 and that news stories focused more on the impact of the disease on the United States (Figure 5.1). Until 2004, most stories about avian flu discussed its impact on Asia. As in the case of SARS, the geographical focus of the story evidently became important in determining people's concerns about the disease.

This study also sought to determine whether certain ways of framing the disease evoked greater concern among people and led them to make behavioral changes in their personal lives, support harsher public health measures such as quarantine, and support government investment. A trend towards significant positive correlation ($r = 0.70741$, $p = 0.0754$) between an increased biomedical ratio and the level of worry about bird flu was detected (Table 5.11). Although avian flu is primarily a disease of birds, scientists and public health officials feared that it might mutate in a way that could allow human-to-human transmission. In October 2005, two research studies warned that there were similarities between the deadly Spanish flu virus of 1918 that killed nearly 50 million

[36] Robert J. Blendon, John M. Benson, and Kathleen J. Weldon, Pandemic Influenza and the Public: Survey Findings, Harvard School of Public Health (HSPH) Project on the Public and Biological Security/International Communications Research, Conducted January 17–26, 2006. Presented at the Institute of Medicine on October 26, 2006. Available online at http://www.hsph.harvard.edu/press/releases/blendon/Avian_Flu_Charts.ppt, last accessed November 10, 2011.

people and the H5N1 strain slowly spreading through Asia.[37] This, along with media reports of the spread of bird flu to regions outside Asia and the knowledge that no vaccine was available to protect against the flu, caused fear and concern among the public. Although there were a few infections reported in poultry in February 2004 in the United States, the situation did not become an epidemic, as had happened in Asia. Had there been human cases of the flu in the United States or a major disruption of the economy or the public health system, the numbers might have changed drastically. As a reaction to the increased concern about avian flu, most people supported quarantine and were willing to take protective measures and change their behavior.

The percentage of respondents who thought that bird flu would strike the United States was negatively correlated with the economic ratio ($r = –0.85225$, $p = 0.0666$, Table 5.11). This can be attributed to the fact that it was mainly the Asian economies that suffered losses from the spread of bird flu. The financial cost of culling chickens and taking control of the situation was borne by Asian economies. Although the United States poultry industry did suffer losses in early 2004, there was no major impact at the macro level and the economic losses were very sector specific. In stories centered on the United States, the focus was less on actual economic losses and more on preparedness efforts, government expenditure, and the financial commitment of the government to address the threat of bird flu. IPAPI was announced by President Bush at the United Nations General Assembly on September 14, 2005 to improve international surveillance, transparency, timeliness, and response capabilities and facilitate sharing of epidemiological information

[37] David Brown, "Changes Cited In Bird Flu Virus," The Washington Post, October 6, 2005.

and samples critical for the response effort. The United States Congress also launched a $3.8 billion preparedness effort. President Bush issued the National Strategy for Pandemic Influenza on November 1, 2005. The Strategy outlined the coordinated federal government effort to prepare for pandemic influenza, and it unveiled a $7.1 billion flu-fighting plan. This likely instilled confidence in the public about the government's preparedness to fight the avian flu.

Two hypotheses were tested in this chapter. First, frames represented prominently in the media will tend to mobilize public support for policies associated with those frames. This study indicates that the biomedical frame was the predominant frame in media reports in the sampled period 2004–2007 (Tables 5.4–5.9 and Figure 5.1-5.3). The study also highlights a strong correlation between the biomedical frame and the American public's worry about the disease and their concern about the likelihood that the disease would strike the United States. The surveys were conducted mainly between December 2005 and in 2006 and the beginning of 2007. Figure 5.1 clearly indicates that between 2005 and the second quarter of 2007, the volume of stories that discussed the impact of avian flu on the United States and the globe as a whole increased. In the second quarter of 2007 all articles dealt with the impact of the disease on the United States. In February 2005, a news story reported that at the national meeting of the American Association for the Advancement of Science, scientists stated that they believed it highly likely that a virus that has swept through chickens and other poultry in Asia would genetically change into a flu that can be transmitted among people.[38] At the same time, Cambodia and

[38] AP, "CDC chief: Bird flu could become Epidemic," USA Today February 22, 2005.

Indonesia reported their first human cases of avian flu, which turned out to be fatal.[39] By November 2005, the WHO's official count of human cases of H5N1 reached 122, with 62 deaths in Vietnam, Thailand, Indonesia, and Cambodia.[40] This was followed by news reports of the spread of avian flu to countries such as China, the Russian Federation, Turkey, Italy, and many other countries around the globe. This was also a time when the United States President and Congress launched several initiatives. The Pandemic and All Hazards Preparedness Act was adopted by Congress in December 2006. With this law, Congress mandated for the first time in United States history that the federal government prepare a National Health Security Strategy to guide improvement of the country's public health emergency preparedness and response capabilities.

The second hypothesis tested was that when the biomedical and economic frames dominate media coverage, which is the most common scenario, people will be more worried about the disease. They will be likely to support potentially inconvenient policies intended to address the dangers of the disease. The survey reports show high support for vaccine production and research and willingness on the part of the American public to undertake precautionary measures to deal with the disease. The public did not see the human rights and security frames as relevant. The security frame was more prominent in media stories about bird flu than it was for SARS. It did not, however, show any significant correlation with worries about bird flu. The human rights frame was not very

[39] WHO, GAR, Cumulative Number of Confirmed Human Cases of Avian Influenza A/ (H5N1) Reported to WHO, November 1, 2005. Online available at http://www.who.int/csr/disease/avian_influenza/country/en/, last accessed September27, 2011.

[40] Ibid.

prominent in news stories about bird flu. Part of the reason for this is that the bird flu did not infect humans in the United States, and there were no major issues arising over access to antiviral drugs and vaccines or about quarantine and isolation.

VI. HUMAN IMMUNE DEFICIENCY VIRUS AND ACQUIRED IMMUNE DEFICIENCY SYNDROME

Unlike SARS and the avian flu, Human Immune Deficiency Virus/ Acquired Immune Deficiency Syndrome (HIV/AIDS) is an infectious disease that became a health epidemic in the United States. The media in the United States has been reporting on AIDS since it was first identified in 1981, although the nature of coverage has changed over time. The media has been an active participant in the efforts of governments and the United Nations (UN) to educate people about HIV/AIDS.[1] The first known news report on what was later known to be AIDS was published on June 5, 1981 in the Centers for Disease Control and Prevention's (CDC) Morbidity Mortality Weekly Report (MMWR).[2] The Los Angeles Times and the Associated Press covered it on the same day. The New York Times published its first news report on AIDS on July 3, 1981.[3]

In the United States, media coverage of HIV/AIDS in the first 22 years since its discovery was focused mainly on its impacts on the United States.[4] In the late 1990s, however, the media began presenting news about HIV/AIDS with a global perspective.

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[1] Matt James, Tina Hoff, Julia Davis and Robert Graham, **"**Leveraging the Power of the Media to Combat HIV/AIDS," Health Affairs 24, 3 (2005): 854-57.

[2] Centers for Disease Control and Prevention, "Pneumocystis Pneumonia — Los Angeles," Morbidity and Mortality Weekly Report 30, 21 (1981): 1-3. Available online at http://www.cdc.gov/mmwr/preview/mmwrhtml/june_5.htm, last accessed July 12, 2011.

[3] Kaiser Family Foundation, Global HIV/AIDS Time line. Available online at http://www.kff.org/hivaids/timeline/hivtimeline.cfm, last accessed, December 11, 2010.

[4] Mollyann Brodie, Elizabeth Hamel, Lee Ann Brady, Jennifer Kates, and Drew E. Altman, "AIDS at 21: Media Coverage of the HIV Epidemic 1981-2002," Columbia Journalism Review Supplement, March/April (2004): 1-18. Available online at http://www.kff.org/kaiserpolls/upload/AIDS-at-21-Media-Coverage-of-the-HIV-Epidemic-1981-2002-Supplement-to-the-March-April-2004-issue-of-CJR.pdf, last accessed September 21, 2011.

Not only did the geographic focus of the news stories widen, but the topics of stories also changed to reflect changes in policy debates, both on the domestic and international fronts. Until about 1999, the media served to educate the public about HIV/AIDS. Foremost were the stories on HIV prevention and testing.[5] Stories discussed the epidemiology of the disease and the efforts that were needed to prevent transmission. Next followed news reports about research on HIV drugs, protease inhibitors, treatment, and vaccine research. A number of stories focused on the origin of AIDS.[6] Stories about these issues and the various health agencies involved in the research continuously appeared in the media in the years that followed. Medical advances, debates about the association between HIV and AIDS, and the scientific breakthrough involving antiretroviral drugs were highlighted.[7] Once antiretroviral drugs (ARVs) were available, research on side effects of the drug and their administration was conducted. Because these drugs were not a complete cure, research on vaccines was always emphasized. As AIDS spread around the globe, with more and more infections being reported every year, stories about prevention, transmission, and treatment remained dominant in the 1980s and 1990s period. The following news story is typical of media reports about HIV/AIDS:

> As it invades the body, the virus that causes AIDS unleashes a domino effect of destruction at the molecular level within immune system cells,

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[5] Ibid.

[6] David Brown, "Chimps Tested in Quest for AIDS Virus Origin; Animals Sampled Without Human Contact," The Washington Post, January 18, 2002.

[7] Karen E. Johnson, "AIDS as a National Security Threat; Media Effects and Geographical Imagination," Feminist Media Studies 2, 1 (2002): 81-96; Timothy E. Cook and David C. Colby, "The Man Mediated Epidemic: The Politics of AIDS on National Network News," in AIDS: The Making of a Chronic Disease, eds. Elizabeth Fee and Daniel M. Fox (Berkeley: University of California Press, 1992), 84-122.

> ultimately leading to cellular suicide. Now researchers from the University of California at San Diego have used sophisticated technology to track with unprecedented precision the progression of cellular damage that follows infection with H.I.V.
>
> They revealed the sequence of events and the mechanisms employed by the virus to kill the very cells charged with defending the body against such invaders: immune cells called CD4 T-cells. "They are like the conductor of the immune response," said Dr. Jacques Corbeil, an assistant professor of medicine at the university's School of Medicine and the lead author of the study, which was reported last week in the journal Genome Research.
>
> H.I.V. invades and swiftly overpowers the immune cells' DNA, inserting its own viral blueprints into the cellular machinery, poisoning genes and altering the cellular energy source, the researchers reported. It then suppresses the immune cells' DNA repair mechanisms and induces the cell suicide process called apoptosis, they said." When we looked at the data, we realized how much H.I.V. packs a punch," Dr. Corbeil said. The destruction of the immune cells robs the body of its ability to defend itself, eventually leading to the collapse of the immune system.[8]

Beginning in 2000, media attention shifted to the growing HIV crisis outside the United States, especially in Africa. Several reports were published that stressed the idea that new and emerging infectious diseases such as HIV posed a threat to citizens of the United States at home and abroad, threatened the United States armed forces deployed overseas, and accentuated social and political instability in key regions where the United States had significant interests.[9] At this time, the political community in the United States

[8] "Tracking H.I.V.'s Lightning Attack on Cells," The New York Times, June 19, 2001.

[9] David F. Gordon, The Global Infectious Disease Threat and Its Implications for the United States, NIE 99 17-D (Washington D.C.: National Intelligence Council, 2000), 1-58. Available online at http://www.dni.gov/nic/PDF_GIF_otherprod/infectiousdisease/infectiousdiseases.pdf, last accessed January 11, 2011.

framed HIV/AIDS as a national security threat. It was reported as a security threat widely in the media. The first such news article appeared in The Washington Post:

> Convinced that the global spread of AIDS is reaching catastrophic dimensions, the Clinton administration has formally designated the disease for the first time as a threat to U.S. national security that could topple foreign governments, touch off ethnic wars and undo decades of work in building free-market democracies abroad.[10]

Conceptualization of HIV/AIDS as a threat to national and international security by policy makers in Washington D.C. generated a debate both in academia and in policy circles. There were some who disagreed:

> That terming the disease a national security threat seems alarmist, even selfish. The United States should be part of the global battle against AIDS, even lead if necessary, but it should do so out of a sense of humanity, not fear.[11]

Framing of HIV/AIDS as a security threat helped mobilize financial resources and attract much needed attention from the international community to the catastrophic impact of HIV and AIDS throughout the world.[12] Political leaders and international organizations around the world began to recognize the frightening dimensions and enormous costs of the global AIDS epidemic.[13] Economic issues were discussed even prior to the year 2000. Most stories, however, dealt with funding and financing the

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[10] Gellman Barton, "AIDS is Declared Threat to Security," The Washington Post, April 30, 2000.

[11] Editorial, "Right Crusade, Wrong Reason," Denver Rocky Mountain News, May 2, 2000.

[12] Stephen Elbe, "Should HIV/AIDS Be Securitized? The Ethical Dilemmas of Linking HIV/AIDS and Security," International Studies Quarterly 50, 1 (2006): 119–44.

[13] Editorial, "The Global Plague of AIDS," The New York Times, April 23, 2000.

domestic battle against AIDS, costs of prescription drugs, and philanthropic fundraising efforts.[14] After 2000, the economic impact of AIDS began to be emphasized in news stories. More funds were needed to combat the growing AIDS epidemic. The following news story published in The Washington Post is illustrative of such sentiments:

> Last year AIDS killed almost 3 million people around the world. More than 5 million were newly infected with HIV in 2000, nearly 4 million of them in Africa. In Eastern Europe and South and Southeast Asia, there is evidence that the disease is taking deadly hold. Closer to home, AIDS has become the major cause of death among men in the Caribbean under 45.
>
> As world finance and development ministers gather in Washington this weekend for key meetings with the World Bank, International Monetary Fund and the Group of Seven, these facts should command their attention. What they underscore is that HIV/AIDS is no longer just a health problem but a global development problem, threatening to reverse many of the development gains made over the past half-century. More than that, it is an international security problem. As Kofi Annan and others have said, what we need is a war chest and a war strategy.
>
> Money alone will not solve the problem, but it is a vital part of the solution. Total global support for HIV/AIDS in developing countries last year was probably under $ 1 billion, less than a third of the estimated need in Africa alone.
>
> For this reason, the bank supports the calls for the establishment of a global fund to address prevention, care and treatment of HIV/AIDS, TB, malaria and other infectious diseases within the context of meeting a series of key targets known as the international development goals. Rich countries must set an example by putting up funds and offering help to those who speak out. Let us join with the G-7 and the U.N. system to

[14] Mollyann Brodie. Elizabeth Hamel, Lee Ann Brady, Jennifer Kates, and Drew E. Altman, "AIDS at 21: Media Coverage of the HIV Epidemic 1981-2002," Columbia Journalism Review Supplement, March/April (2004): 1-18. Available online at http://www.kff.org/kaiserpolls/upload/AIDS-at-21-Media-Coverage-of-the-HIV-Epidemic-1981-2002-Supplement-to-the-March-April-2004-issue-of-CJR.pdf, last accessed September 21, 2011.

> commit to a global fund. Let us make this a pivotal moment in the fight against HIV/AIDS.[15]

Compared to the previous case studies of SARS and the avian flu, for which human rights issue were not paramount, linkages between human rights and HIV/AIDS have been the focus of media stories since the 1980s. From 1981 to 1999, the media published stories about discrimination against homosexuals in job settings and housing in the United States. Stories about various domestic organizations, such as the AIDS Coalition to Unleash Power (ACT UP), rallying for availability of treatment and reduced prices for drugs for people living with AIDS within the United States also were covered.[16] Since 1999, news stories began to cover debates over reduced prices for prescription drugs and access to ARVs at the global level.[17] Stories about the plight of minorities, women, drug users, prostitutes, and AIDS orphans, who were stigmatized and often had no access to treatment and education about prevention, also were published.[18] For example:

> Access for All, the theme of next month's International AIDS Conference in Bangkok, sets an appropriately high standard for the world's response to the pandemic. Unfortunately, all too many prevention and treatment programs fail to address the needs of most of those living with the virus, especially in Africa: women and girls. It's time to design programs targeted to the risks that women and girls face in a world of AIDS.

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[15] David Brown, "Global Push against 3 Diseases Urged; WHO Calls on Rich Nations to Fund AIDS, Tuberculosis, Malaria Fight," The Washington Post January 31, 2002.

[16] James D. Wolfensohn, "A War Chest to Fight AIDS," The Washington Post, April 28, 2001.

[17] Ethan Kapstein and Joshua W. Busby, "Making Markets for Merit Goods: The Political Economy of Antiretrovirals," Global Policy 1, 1 (2009): 75-90.

[18] Editorial, "The Feminization of AIDS," The New York Times, December 13, 2004.

> Most prevention messages, and certainly those favored by the Bush administration, focus on the "ABC" approach to fighting HIV-AIDS: abstinence, be faithful, and use condoms. While important messages, these things are often not within women's power to control.
>
> Sixty percent of those living with HIV in sub-Saharan Africa are women and girls. Girls between the ages of 15 and 19 are infected at rates as much as five times higher than boys their age. This disproportionate impact is linked to social and economic factors that severely undermine women's control over their sexual lives. In a climate where sexual abuse and exploitation of women and girls are widespread and usually goes unreported, how can they practice abstinence? When married women, many of whom were child brides, have been faithful to the husbands who are infecting them, how do messages about monogamy help them protect themselves?[19]

The news stories mentioned above indicate that HIV/AIDS has been framed in different ways and that many groups and institutions besides the community of scientists, epidemiologists, and public health professionals have been able to push the global scourge of HIV/AIDS onto the political and public agenda in the United States. Epistemic communities and civil society organizations have taken up the issue of pharmaceuticals and treatment access for all. The UN and the World Health Organization (WHO) have also emphasized the economic, security, and human rights dimension of AIDS.

To help understand the changing nature of media coverage of AIDS, I conducted content analysis of media reports (1999–2007); the results are presented in the first part of this chapter. National surveys conducted by various organizations have shown that news media is the major source of information about HIV/AIDS for the public. According to national surveys conducted in the United States in 2003, 72% of Americans

[19] Janet Fleischman, "Beyond 'ABC': Helping Women Fight AIDS," The Washington Post, June 29, 2004.

identified print and visual media as their primary source of information about HIV/AIDS.[20] In 2004, 71% of respondents got information about HIV/AIDS from the media.[21] In 2006, 61% of respondents identified the media as the major source of news about HIV/AIDS.[22] In a survey conducted in June 2011, media remained the top source of information about HIV/AIDS across racial/ethnic and all age groups. The second part of this chapter presents an analysis of public opinion polls to determine whether shifts in media framing of HIV/AIDS led to changes in public behavior and attitudes towards the disease. Public opinion data were collected by the Harvard School of Public Health (Project on Public and Biological Security) and the Robert Wood Johnson Foundation. These data were retrieved from the Kaiser Family Foundation's Health Poll Search database. Additional data were collected from surveys conducted by the Pew Research Foundation and polls conducted by the Associated Press and CNN. The third section of the chapter describes a correlation analysis of media coverage of HIV/AIDS versus survey data about HIV/AIDS during the corresponding time period. The fourth section discusses the effects of agenda setting and framing on the public's evaluation of different frames relevant to HIV/AIDS.

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[20] The Henry Kaiser Family Foundation, The Media and HIV/AIDS: Making a Difference (Geneva: Joint United Nation Program on HIV/AIDS: 2004), 1-25. Available online at http://www.kff.org/hivaids/upload/The-Media-and-HIV-AIDS-Making-a-Difference.pdf, last accessed July 11, 2011.

[21] Henry J. Kaiser Family Foundation, "Survey of Americans on HIV/AIDS—Part One: Global HIV/AIDS," June 2004. Available online at www.kff.org/kaiserpolls/pomr060204pkg.cfm, last accessed August 17, 2011.

[22] Henry J. Kaiser Family Foundation, "Survey of Americans on HIV/AIDS," May 2006. Available online at http://www.kff.org/kaiserpolls/upload/7513.pdf, last accessed August 11, 2011.

6.1. Content Analysis of Newspaper Reports

Using the Lexis-Nexis academic database, samples for this study were drawn from two major national newspapers (The New York Times and The Washington Post) between June 1, 1999 and June 30, 2007. The search process was different for this case study than in the cases of SARS and avian flu. The process was refined to obtain the most relevant results, as more than 3,000 stories were found during the original search. The term HIV/AIDS was added to the controlled vocabulary search, in addition to the requirement that it be present in the "headline or lead paragraph" and in at "least five occurrences in the article." Obituaries and letters to the editor were excluded from the search. In the initial search of The New York Times returned 1,088 stories, and that of The Washington Post returned 972 stories. Because the stories returned by Lexis-Nexis were not ordered in any way other than the date, every fourth story was included in the pool (Table 6.1). Four frames (biomedical, economic, human rights, and security) were identified in the news stories. Coding criteria similar to those used for SARS and avian flu were used for HIV/AIDS.

6.2. Data Analysis: The Mean Ratios of Four Coverage Types/Newspapers

The data were analyzed using descriptive statistics as well as comparative statistics such as Analysis of Variance (ANOVA). All analyses were conducted using Excel and SPSS. The overall level of coverage was first examined in terms of number of articles. Table 6.1 shows the total number of articles for each newspaper and for the two

newspapers combined during the sampling period of June 1, 1999 through June 30, 2007. The two newspapers had similar numbers of articles published and similar average word counts.

Table 6.1: Data Sources and Overall Coverage

Newspaper	Number of Articles	Start date	End date
The New York Times	243	6/22/1999	6/30/2007
The Washington Post	296	6/1/2009	6/29/2007
Overall	539	6/1/2009	6/30/2007

As HIV spread to different geographic regions, local and international media covered these stories. Each of the news stories on HIV from The New York Times and The Washington Post was coded as follows for the region or country that was the focus of the story: USA, countries other than USA, global impact, or geographic region not mentioned. Table 6.2 shows the frequency of articles relevant to each geographic location.

Table 6.2: Frequency of News Content by Geographic Location.

	Geographic Location					
Newspaper	USA	Other countries	Global impact	Not mentioned	Start date	End date
New York Times	101 (39.0%)	124 (47.9%)	30 (11.6%)	3 (1.5%)	6/22/1999	6/30/2007
The Washington Post	106 (34.6%)	140 (45.8%)	46 (15.0%)	14 (4.6%)	6/1/2009	6/29/2007
Overall	207 (36.6%)	264 (46.7%)	76 (13.5%)	18 (3.2%)	6/1/2009	6/30/2007

About half of the articles in each newspaper focused on regions other than the United States. A higher percentage of stories focusing on the United States were published in The New York Times than in The Washington Post. There were also a number of stories that discussed the global impact of HIV in an increasingly interconnected world.

Because the news articles were coded for content or type of coverage and weighted for length, the news data were further analyzed with a focus on different types of coverage. Mean ratios of the four coverage types were computed for each region and are listed in the Table 6.3. The biomedical ratio was highest (0.30) in articles focused on the impact of HIV/AIDS on the United States, whereas the biomedical ratio was lowest (0.19) in articles focused on other countries. The mean biomedical ratio was 0.25 for the global impact context. The mean economic ratio was lowest (0.13) in articles focused on the United States, and the articles that focused on other countries and the overall global impact had similar economic ratios (0.25–0.26). The mean human rights ratio was similar for all three geographic categories (0.08–0.11), and the mean security ratio was very small for all three categories (< 0.05).

Table 6.3: Mean Ratios for Coverage Type by Region

Region	Biomedical Ratio	Economic Ratio	Security Ratio	Human Rights Ratio	Start date	End date
USA	0.30	0.13	0.01	0.11	6/1/1999	6/30/2007
Other countries	0.19	0.26	0.01	0.10	6/19/1999	6/18/2007
Global impact	0.25	0.25	0.04	0.08	8/19/1999	6/29/2007
Not mentioned	0.25	0.20	0.01	0.10	7/1/1999	6/30/2007

Table 6.4 summarizes the mean ratios for the four coverage types. The coverage patterns for the two newspapers were similar. Overall, the biomedical ratio was highest (0.26), the mean economic ratio was 0.20, the mean human rights ratio was 0.10, and the security ratio was very small (0.01).

Table 6.4: Mean Ratios for Coverage Type in The New York Times and The Washington Post

Newspaper	Number of Articles	Frame				Time Interval
		Biomedical Ratio	Economic Ratio	Security Ratio	Human Rights Ratio	
The New York Times	243	0.27	0.23	0.01	0.11	6/22/1999-6/30/2007
The Washington Post	296	0.25	0.17	0.01	0.08	6/1/1999-6/29/2007
Overall	539	0.26	0.20	0.01	0.10	6/1/1999-6/30/2007

A one-way ANOVA followed by Tukey's test was used to test for differences in ratios among the four frames over the entire sampling period. Overall, the two newspaper sampled devoted on average 26.0% (Table 6.5) of their coverage to the biomedical frame. The biomedical frame remained a central focus throughout the entire sampling period, and it had significantly higher coverage than the other three frames ($p < 0.0001$). The economic frame had the second highest coverage (20.0%), and it was significantly higher than those of the security and human rights frames ($p < 0.0001$). The human rights frame had the next highest coverage (10.0%), and it was significantly higher than that of the security frame ($p < 0.0001$).

Table 6.5: Comparison of the Four Frames over the Entire Sampling Period

P-values for Mean Ratio Pairwise Comparisons Among the Four Frames (HIV)						
Entire Sampling Period	Frame	Least Square Mean	Economic	Human Rights	Biomedical	Security
6/1/99–6/30/07	Economic	0.20		<.0001	<.0001	<.0001
	Human Rights	0.10	<.0001		<.0001	<.0001
	Biomedical	0.26	<.0001	<.0001		<.0001
	Security	0.01	<.0001	<.0001	<.0001	

6.3. Changes in Media Coverage over Time

The changes in media coverage in terms of the number of articles published and the ratios of the four frames were summarized over semiannual and quarterly intervals. Appendix Table 6.1 and Figure 6.1 show semiannual averages of the four frames, and Appendix Table 6.2 and Figure 6.2 show quarterly averages of the four frames.

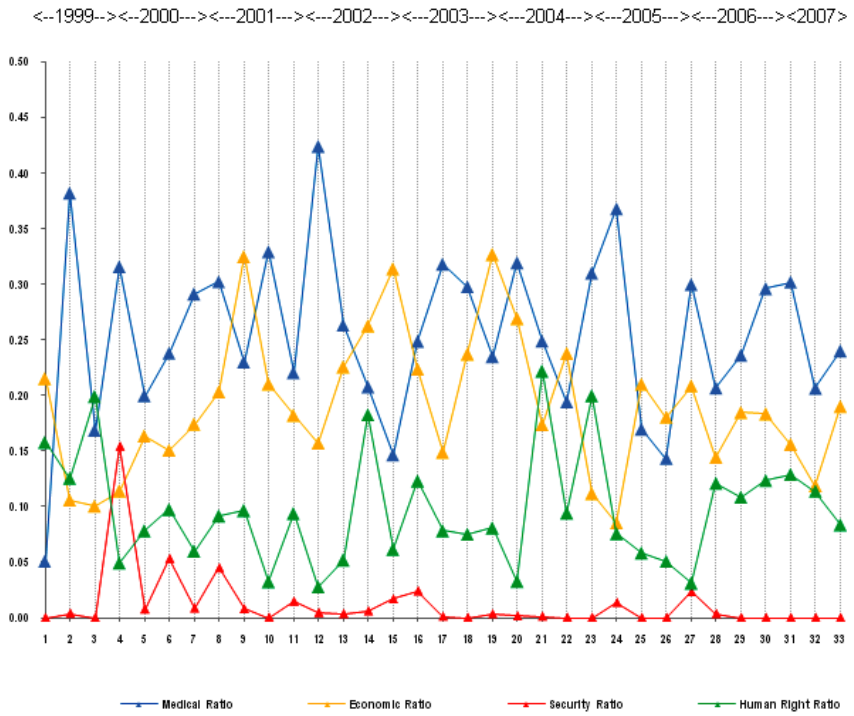


Figure 6.1: Changes in Media Coverage over Time at Quarterly Intervals

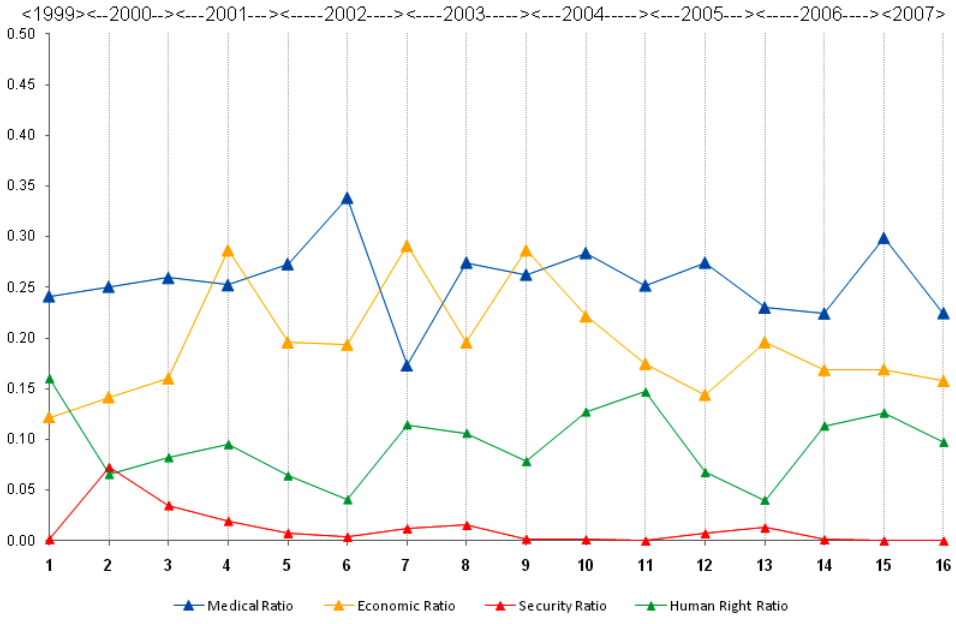


Figure 6.2: Changes in Media Coverage over Time at Semiannual Intervals

On a semiannual basis, the biomedical ratio gradually increased from the second half of 1999 until the second half of 2001. It dropped slightly at the beginning of 2001 and then increased to the highest level at the beginning of 2002. It dipped again to the lowest level during the second half of 2002. Over the time interval studied, the biomedical ratio increased and decreased four times until the first half of 2007. Overall, the highest level was 0.34 during the first few months of 2002 and the lowest level was 0.17 during the second half of 2002. The economic ratio was lowest (0.12) during the first half of 1999, and then it increased during the second half of 1999 though the first half of 2001. It reached its peak value (0.29) three times: at the beginning of 2001, during the second half of 2002, and during the second half of 2003. The human rights ratio was highest (0.16) during the second half of 1999, and then it went up and down multiple times. The lowest level (0.04) was recorded during the second half of 2005. The security ratio was always small. Its peak (0.07) occurred during the first half of 2001; otherwise it was always less than 0.05.

The data analysis at quarterly intervals (Appendix Table A6.2 and Appendix Figure 6.1) further revealed that the biomedical ratio was the highest among the frames studied throughout the entire sampling period, with the exception of April–June and October–December, 1999; April–June, 2001; October–December, 2002; October–December, 2003; July–September, 2004; and April–September, 2005. During April–June, 1999, both the economic and human rights ratios were higher than the biomedical ratio. In October–December, 1999, the human rights ratio was the highest, and in April–June, 2001, October–December, 2002, October–December, 2003, July–September, 2004, and April–September, 2005, the economic ratio was highest among the frames studied.

A closer look at these data tables illustrates that biomedical issues were always dominant. The security frame also was prominent in 2001. It is important that the economic frame was dominant in the second half of 1999 and in 2001, 2002, 2003, and 2005 because one of the arguments given for declaring HIV a security threat was that it posed grave economic consequences. HIV was securitized in 2000–2001. This galvanized the attention of policy makers in the United States and of international organizations, which pledged huge amounts of money and also called for more economic funds to fight the disease. This was also the time when several news stories focused on the economic causes of the disease (e.g., why poor and uneducated women and men were infected by the disease). This was also the time when biomedical issues were less prominent and security and economic framings of the disease were dominant in media stories. The human rights issue peaked at the time when ARVs went on the market and then remained a constant issue in the human rights debate linked to HIV. Effective treatment against these infectious diseases required development of new drugs and vaccines, and widespread access of these drugs and medicines. However, there was a conflict between these two objectives.[23] The development of new drugs required heavy investment in research by pharmaceuticals. Often it took more than twelve years to pass through all the stages of drug development and the only way for them to recover these high costs were to patent these drugs and charge high prices for these drugs. These drugs were often unaffordable by poor countries, and this issue brought health advocacy groups and many

[23] Carsten Fink, "Intellectual Property and Public Health: An Overview of The Debate With A Focus on U.S. Policy," Working Paper Number146, June 2008, Center For Global Development. Online available at http://www.cgdev.org/files/16228_file_IP_and_Public_Health_FINAL.pdf, last accessed September2, 2011.

non state actors campaigning for universal access to treatment and drugs in direct confrontation with the pharmaceutical industries.

To examine the media volume (number of articles published) and the relative proportion of articles focusing on each geographic region, a bar chart was constructed at semiannual intervals (Figure 6.3). On average, 34 articles were published in each half year, out of which 13 articles focused on the United States, 17 articles focused on other regions, and 5 articles focused on the global impact of the disease. Since 2000, the media has covered the impact of HIV/AIDS on countries outside the United States. This does not mean, however, that reports about HIV in the United States declined. HIV continued to be an important health topic in news reports.

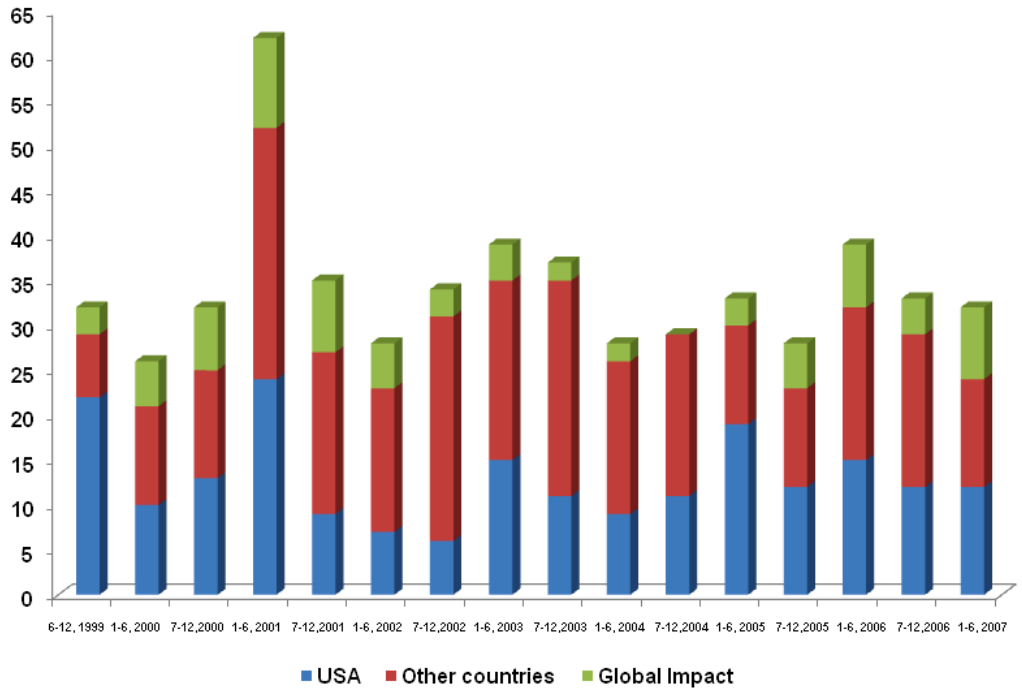


Figure 6.3: Number of Articles Focusing on the Impact of HIV/AIDS on different Geographic Regions over Time at Semiannual Intervals.

6.4. Public Opinion Analysis

The public opinion survey data were drawn from a secondary database corresponding to the time period during which these news stories were published. Public opinion data were collected mainly from the I Poll data bank, Polling the Nation, and the Health Poll Search of the Kaiser Family Foundation. All survey results are based on representative national samples of adults aged 18 or older. With very few exceptions, the sample sizes of these surveys were at least 1,000 respondents. Shifts in public opinion about infectious diseases were evaluated by analyzing exact and similarly worded questions about issues related to HIV. [24] Specifically, these questions assessed: a) willingness to support harsh public health measures such as quarantine and to make changes in daily behavior to curb the spread of disease; b) precautionary steps taken and behavioral changes made in personal lives due to fear of the disease; c) concerns about the spread of the disease and likelihood of contracting the disease; and d) support for federal funding to improve the country's ability to respond to new infectious diseases.

The data were analyzed using descriptive statistical methods. The z-test was used to compare the proportion of subjects who responded positively or negatively in each survey. Survey responses were grouped together to form positive or negative responses. For example, survey responses such as "very worried" and "somewhat worried" or "extremely likely" and "very likely" were grouped together. All analyses were carried out

[24] Shirley S. Ho, Dominique Brossard, and Dietram A. Scheufele, "The Polls—Trends Public Reactions to Global Health Threats and Infectious Diseases," Public Opinion Quarterly 71, 4 (2007): 671-92.

using Excel and SPSS/PASW. Z-test scores $\geq$ the absolute value of 1.96 at the 95% confidence interval were considered to be statistically significant.

Five survey questions were examined to determine if Americans were *willing to make changes in their behavior to avoid risk of infection with HIV/AIDS* (Appendix Table A6.3). The surveys were conducted between August 2002 and April 2006. Participants were asked if they needed more information about how to use condoms, how to talk with children about HIV, where to get tested for HIV, how to talk with a doctor or health care provider about HIV, and how to talk with a partner about HIV. On average, 75% of respondents answered "no," which is significantly higher than the percentage of subjects choosing "yes." The average percentage of subjects who thought they needed more information about how to talk with children about HIV was approximately 39% and that for where to get tested for HIV was about 28%. The percentage of respondents, asking for more information about how to use condoms, and how to talk with doctors or partners was rather low (about 14–19%).

Four sets of questions were examined to determine if Americans had *undertaken precautionary steps to prevent contracting HIV/AIDS* (Appendix Table A6.4). These surveys were conducted between February 2000 and April 2006. The first set of questions asked whether the subjects had been tested for HIV. The questions were worded in slightly different ways (i.e., if people had ever been tested, whether they had been tested within the past 12 months or within the past 2 years). All surveys except the one conducted between December 10, 2002 and January 19, 2003 showed that a significantly higher percentage of respondents had never been tested for HIV (on average ~35% answered "Yes"). In the survey conducted between December 10, 2002 and January 19,

2003, a significantly higher percentage of respondents had been tested for HIV (~64% answered "Yes"). The second question asked whether the subjects had ever talked with a doctor or health care provider about HIV and AIDS. A similar trend was observed for this question: A higher percentage of subjects answered "Yes" (50%) in the survey conducted between December 10, 2002 and January 19, 2003, whereas in the three surveys conducted between August 14 and October 26, 2000, March 15 and May 11, 2004, and March 24 and April 18, 2006, a significantly higher percentage of subjects answered "no" average, only ~35% answered "Yes"). The third question asked whether the respondents and their partners ever had a conversation about whether to get tested for HIV/AIDS. In the survey conducted between December 10, 2002 and January 19, 2003, 51% of respondents answered "Yes" and 49% answered "No." In the March 15–May 11, 2004 survey, a higher percentage of subjects answered "No" (~54%). The last question asked participants whether they had ever talked about HIV or AIDS with (their) children. All three surveys showed a significantly higher percentage of subjects responding positively. This is indicative of the public's concerns about HIV as far as children are concerned. This response is consistent with responses to the second question in the "willingness to change behavior" category, which asked parents if they needed more information about talking with children about AIDS.

Ten sets of questions were evaluated to examine concern about *the spread of the disease and the perceived likelihood of being exposed to HIV/AIDS* (Appendix Table A6.5). The surveys were conducted between September 1997 and May 2007. The first set of questions asked whether HIV was a more urgent problem or a less urgent problem for the United States than it was a few years ago. The surveys were worded slightly

differently. Respondents were asked if the problem was more urgent, a bigger problem, or if the number of HIV infections had increased. On average, about 50% of subjects agreed that HIV was a more urgent or a bigger problem. More respondents thought HIV infections had increased than decreased in the survey conducted between March 24 and April 18, 2006. A significantly higher percentage of subjects thought the HIV problem was the same or a lesser problem in the survey conducted between April 23 and May 6, 2007.

The second question asked subjects if they thought the United States today was making progress or losing ground as far as the problem of HIV was concerned. The first survey was conducted from June 13 to June 23, 2002. No significant difference was found between subjects who thought the country was making progress vs. not making progress. When the same question was asked between March 15 and May 11, 2004, October 4 and October 9, 2005, and March 24 and April 18, 2006, a significantly higher percent of subjects did not think the United States was making progress. The third question sought public opinion about the magnitude of the HIV problem. A significantly higher percentage of subjects thought HIV was a very big or a moderately big problem. A lesser percentage of subjects thought HIV was a small problem or not a problem at all.

The fourth question asked whether respondents were personally worried or concerned about HIV. A significantly higher percentage of subjects chose "not too concerned" or "not concerned at all" compared to the percentage of subjects who were "very concerned" or "somewhat concerned" for the question asked at 10 different times. On average, 32% of subjects chose "very concerned" or "somewhat concerned." The fifth question asked whether parents were concerned about their sons or daughters being

infected with HIV. On average, 66% of subjects were very concerned or concerned or thought that the HIV problem was a major problem for teens. The percentage of people who were "very concerned" and "concerned" or thought HIV was a "major problem" was significantly higher than the percentage of respondents who were "not concerned," "not concerned at all," or considered it a "minor problem" and "not a problem at all."

The sixth question asked Americans about the most urgent health problem facing this nation today. On average, 19% stated that HIV was the most urgent health problem. In the survey conducted in 2000, HIV was ranked second to cancer. In 2002, it was ranked fourth in order of urgency. HIV was seen as the second most urgent health problem in surveys in 2004 and 2005. In a 2006 survey, it was ranked as the third biggest health problem facing the nation. The seventh question asked respondents if they viewed HIV as a serious issue. On average, 95% of respondents thought HIV was a very serious or somewhat serious issue.

The final three sets of questions sought public opinion about HIV in countries outside the United States. The eighth question examined public opinion about the most urgent health problem facing the world today. In 2000, HIV was viewed as the most urgent health problem facing the world. In subsequent surveys conducted in 2002, 2004, and 2006, it was ranked as the second most urgent problem facing the world. On average, 38% of subjects chose HIV as the most urgent health problem. The percentage of subjects who chose HIV as the most urgent problem was highest in the survey conducted between July 18 and July 21, 2002. In this survey, about half of respondents chose HIV as the most urgent health problem among the major health problems listed. The ninth question sought to determine if the public viewed HIV as an epidemic in countries outside the

United States. On average, 69% of respondents viewed HIV as an epidemic, and this was a statistically significant result. The last question asked the public whether they thought the world was making progress or losing ground in the fight against HIV/AIDS. A significantly higher percentage of subjects thought the world was at about the same place or losing ground compared to the percentage of subjects who thought the world was making progress on HIV.

Four sets of questions were examined to assess *support for federal spending on programs aimed at prevention and treatment of HIV* (Appendix Table A6.6). These surveys were conducted between September 1997 and April 2007. The first question sought to compare the amount of money the federal government spends on HIV/AIDS to the amount spent on other health problems, such as heart disease and cancer. On average, 39% of subjects thought the federal government spent too little money on HIV. The second question asked about public opinion on federal funding for AIDS prevention and treatment in general. On average, 48% of subjects thought that the federal government spent too little. The percentage of people who supported more spending increased steadily from 39% in 2002 to 52% in 2004 and to 63% in 2006.[25] The third question asked whether spending more money on HIV/AIDS prevention in the United States would lead to meaningful progress in slowing the epidemic. A significantly higher percentage of respondents (about 60%) in surveys conducted between March 15 and May 11, 2004 and March 24 and April 18, 2006 thought that spending money would lead to meaningful progress, whereas in the survey conducted between October 4 and October 9,

[25] Henry J. Kaiser Family Foundation, "Survey of Americans on HIV/AIDS," May 2006. Available online at http://www.kff.org/kaiserpolls/upload/7513.pdf, last accessed August 11, 2011.

2005, a significantly higher percentage (about 56%) of subjects thought spending money "would not make much difference." The fourth question assessed the importance that the public attached to improving treatment and prevention of HIV and AIDS. The majority of subjects (approximately 96%) thought it was important ("extremely important," "very important," and "somewhat important") for all surveys conducted between March 30 and April 3, 2005, March 31 and April 4, 2006, and April 11 and April 15, 2007.

6.5. Relationship between Media Coverage and Public Opinion (Overall Samples)

In this part of the analysis, the relationship between the media coverage and public opinion was examined through graphs and Pearson correlation analysis. I have included the data from time period when both media coverage and public opinion data were available and divided the common time period into monthly, weekly or quarterly intervals, as appropriate. The mean ratios for the four frames from media coverage and the mean percentage of positive responses were computed within each time section and both mean values were plotted in the same graph with line chart (media coverage) and scatter plot (public opinion). The key events in the HIV/AIDS time line were also plotted in the graph to help interpret the trend of change in both media coverage and public opinion both qualitatively and quantitatively. The Pearson correlation coefficient was computed whenever appropriate in order to determine whether a significant correlation between one of the media frames and public opinion exists. All analysis was done on Excel and SPSS. All four measures of public opinion were examined in relation to media coverage a) willingness to take precautionary measures, b) actual behavior changes made,

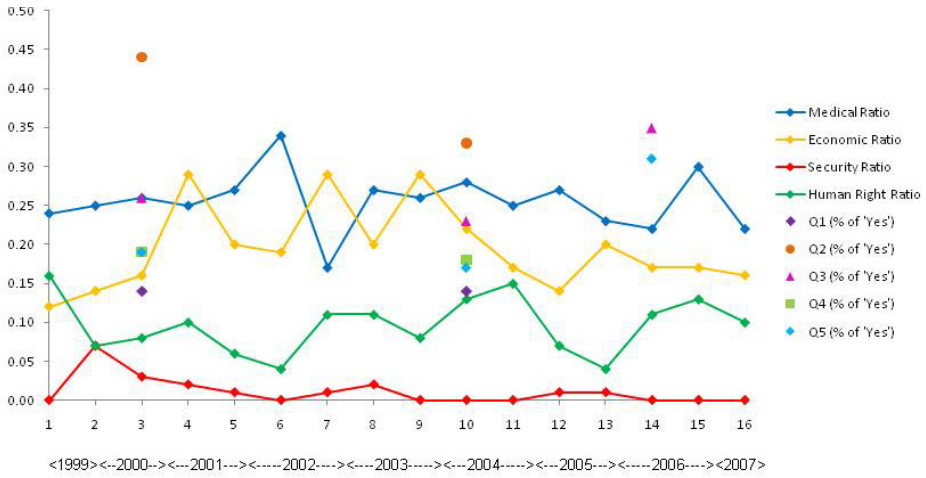
c) perception of HIV/AIDS as threat, and d) support for federal funding on prevention and treatment of HIV/AIDS.

Surveys were conducted to assess *people's willingness to undertake precautionary measures or make behavioral changes* as a way of preventing HIV/AIDS. Respondents were questioned (Appendix Table A6.7) about whether they needed more information about five issues (Q1: how to use condoms, Q2: how to talk with children about HIV/AIDS; Q3: where to get tested for HIV; Q4: how to talk with a doctor or health care provider; Q5: how to talk with a partner about HIV and AIDS). Surveys were conducted between August 14 and October 26, 2000 and March 15 and May 11, 2004. Additionally, Q3 and Q5 were repeated between March 24 and April 18, 2006. To assess whether changes in media coverage of HIV had an impact on the percentage of people who needed more information about these aspects of HIV, a plot of news coverage data versus percentage of people requiring more information (i.e., those who answered "yes") was constructed. A semiannual interval was used in order to examine the change over time in the two sets of data (See Appendix Table A6.7 and Figure 6.6).

The first question asked whether the public needed more information about how to use condoms. The percentage of respondents who answered "yes" to this question did not change from 2000 to 2004 (both 14%). The percentage of people who answered "yes" to the other four questions was lower in 2004 compared to 2000. In particular, the percentage of respondents needing more information about how to talk with children about HIV/AIDS dropped from 44% to 33%. During the same period, the biomedical ratio increased from 0.24 to 0.32 and the economic ratio increased from 0.15 to 0.27, whereas the security and human rights ratios both declined (from 0.05 to 0.00 and from

0.10 to 0.03, respectively). During the survey conducted between March 24 and April 18, 2006, both Q3 and Q5 had the highest percentage of "Yes" responses among the three surveys. The percentage of people who answered "Yes" to the need for more information on testing for HIV was rather low (< 20%) in the surveys. In contrast, Americans felt that they needed more information about how to talk to children about HIV/AIDS. There was also an increase in media reports that infections among teenagers was on the rise in the United States between 2004, and 2007.[26] The percentage of "yes" answers about how to talk to a partner about the disease was low (< 20%) during the first two surveys, but it increased to 31% during the third survey conducted in 2006.

[26] Sewell Chan, "Rise Seen in H.I.V. Infections among Young Men," The New York Times September11, 2007; Susan Levine, "D.C. Criticized for Not Treating AIDS as a Citywide Health Crisis; Report Describes Problem as Epidemic, Response as Anemic," The Washington Post August10, 2005.

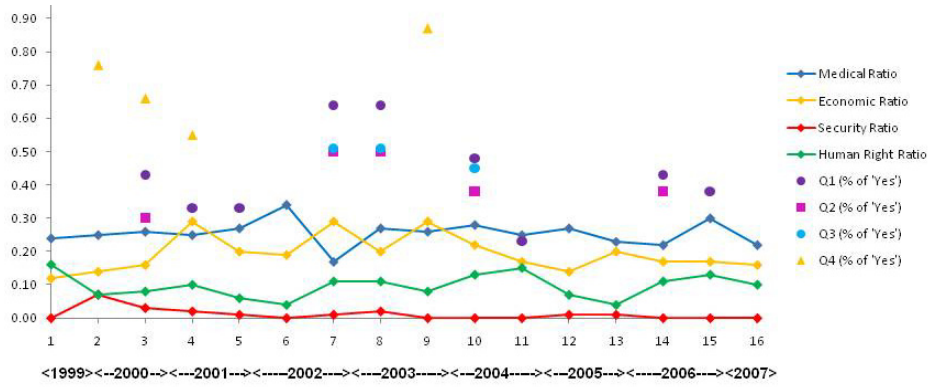


Note: Q1.Do you need more information about how to use condoms to protect against HIV? Q2.Do you need more information about how to talk with children about HIV? Q3.Do you need more information about where to go to get tested for HIV? Q4.Do you need more information about how to talk with your doctor or health care provider about HIV? Q5. Do you need more information about how to talk with your partner about HIV?

Figure 6.4: Change in Media Coverage over Time and Public Opinion about Willingness to Change Behavior

A total of four questions were analyzed to examine actual behavioral changes made by the American public to prevent infection from HIV (Appendix Table A6.8). These questions asked respondents if they had ever been tested for HIV or talked about HIV with their doctors, partners, or children. The highest percentage of "yes" answers to the first three questions (been tested, talked to a doctor, or talked to a partner) occurred in the survey conducted between December 10, 2002 and January 19, 2003. The fourth question asked whether the respondents had ever talked to their children about HIV, and the highest percentage of "yes" answered occurred in the survey conducted between September 29 and October 23, 2003. The observed changes in public opinion do not seem

to correspond strongly to any changes in media reports over time, as the media coverage was relatively stable over the years. The public opinion data are too limited to reveal correlations because the survey duration was rather long (e.g., February 7 to September 4, 2000) and the time interval between surveys was rather large (> 1 year). It is only possible to examine the relationship between media coverage and public opinion if more public opinion data collected over a shorter time interval (for example, every month or quarter of the year) become available.



Note: Q1. Have you, yourself, ever been tested for HIV? Q2. Have you ever talked with a doctor or health care provider about HIV and AIDS? Q3. Have you and your partner ever had a conversation about whether to get tested for HIV/AIDS? Q4. Have you personally ever personally talked about HIV or AIDS with (your) child or not?

Figure 6.5: Changes in Media Coverage over Time and Public Opinion about Actual Behavioral Changes over Time

Ten questions were used to examine *how concerned Americans were about HIV* (Appendix Table A6.9 and Figure 6.8). Question 3 was excluded from the correlation analysis because only one survey was conducted in 1998 and no media data were available for 1998. On average, about half of the respondents considered HIV an urgent

problem for United States during the entire sampling period. The percentage of positive responses does not appear to correspond to changes in the media frame, as the media coverage was relatively stable over the sampling years.

The second question asked respondents if the United States was making progress in controlling HIV or was losing ground. The question was repeated four times in June 13–June 23, 2002, March 15–May 11, 2004, October 4–October 9, 2005 and March 24–April 18, 2006. The highest percentage of positive response (making progress) was found during survey conducted in 2002 (49%), and then this percentage continuously remained consistent, during the surveys conducted in 2004 (47%), 2005 (41%), and 2006 (40%). During the same period of time, the biomedical ratio also dropped from 0.34 in the first half of 2002, to 0.28 in the first half of 2004, to 0.23 in the second half of 2005, and finally to 0.22 in the first half of 2006. At this time, the economic, security, and human rights ratios increased or dropped multiple times. Correlation analysis showed a positive significant correlation between the biomedical ratio and percentage of positive responses to perceived progress on the disease. ($r = 0.9621$, $p = 0.0379$, Table 6.8).

The third question asked the respondents if they saw the spread of HIV and other infectious diseases as a big or small problem. The question was asked twice during August 19–September 8, 2002 and April 23–May 6, 2007. In the first survey, 83% of respondents thought HIV was a very big or moderately big problem, and in the second survey 81% of respondents thought HIV was a very big or moderately big problem. During the same period of time, the security and human rights exhibited a very minor change, but the biomedical ratio was higher and the economic ratio was lower during the

second survey period. Because only two surveys were conducted within a time interval of ~5 five years, the data are too limited to safely draw any conclusion about the correlation.

The fourth question asked the respondents if they were personally concerned about HIV. The survey was repeated between September 17 and October 19, 1997, February 7 and September 4, 2000, August 14 and October 26, 2000, January 25 and January 28, 2001, June 13 and June 23, 2002, November 3 and November 5, 2003, March 15 and May 11, 2004, March 15 and May 11, 2004, July 19 and July 21, 2004, and March 24 and April 18, 2006. On average, 32% of respondents indicated that they were very concerned or somewhat concerned about HIV. The percentage of positive responses, especially in surveys in 2000 and 2001 was significantly positively correlated with the security ratio ($r = 0.7410$, $p = 0.0354$, Table 6.8).

The fifth question asked how concerned the respondents were about a son or daughter becoming infected with HIV. The question was repeated in surveys administered between August 14 and October 26, 2000, September 29 and October 23, 2003, March 15 and May 11, 2004, and March 24 and April 18, 2006. The highest percentage of "very concerned" and "somewhat concerned" responses occurred during the first survey conducted in 2000. On average, 66% of subjects chose "very concerned" or "somewhat concerned" in this series of surveys.

The sixth question asked Americans what they perceived as the most urgent health problem facing the United States today. The question was repeated in surveys conducted between August 14 and October 26, 2000, June 13 and June 23, 2002, March 15 and May 11, 2004, October 4 and October 9, 2005, and March 24 and April 18, 2006. The highest percentage of respondents choosing HIV as the most urgent problem

occurred in the survey conducted in 2000. Although statistical analysis did not show any significant correlation between public opinion and media coverage for the fifth and sixth questions, framing of HIV in Africa as a threat to security in the United States by policy makers and academia highlighted the urgency of the situation to the public in 2000. There has however been a steady decline in public naming HIV/AIDS as the most urgent problem facing United States. Data on HIV/AIDS by ethnicity and race has however shown that Latinos and Black Americans are more likely than White Americans to see HIV/AIDS as a more urgent health problem in the country.[27]

The seventh question asked respondents how serious a problem they thought HIV/AIDS was in the United States. Despite perceptions of progress in treatment of HIV, many Americans still recognize the seriousness of HIV as a disease. The question was asked between July 13 and July 17, 2001, July 10 and July 11, 2002, July 19 and July 21, 2004, May 10 and May 16, 2004, and June 23 and June 28, 2005. In all of the surveys, the percentage of positive responses was very high (94–96%). No significant correlation was found between public opinion and any particular media frame for this question. However, the high percentage of positive responses suggests that the high volume of media coverage of economic, security, and human rights aspects of HIV highlighted the seriousness of the issue.

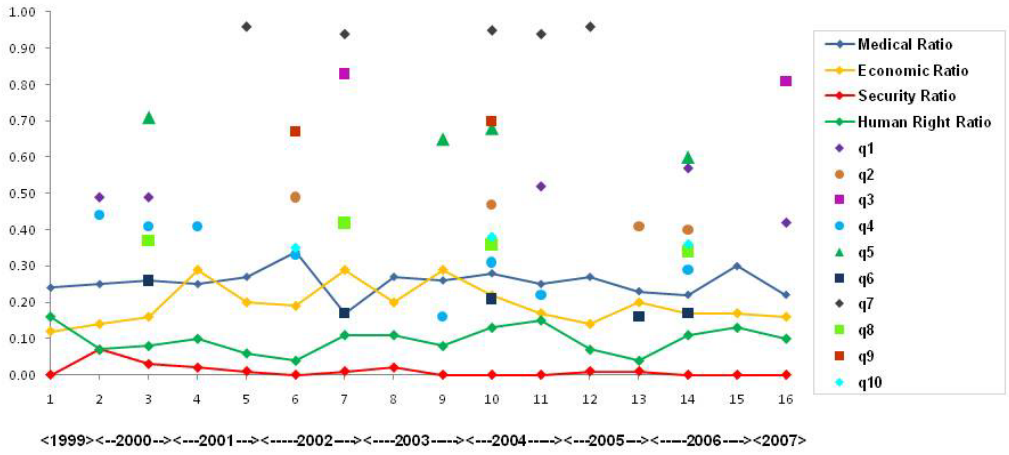
The eighth question asked the respondents what they perceived as the most urgent health problem facing the world today. The question was repeated from August 14 to

[27] The Henry J. Kaiser Family Foundation , HIV/AIDS at 30: A Public Opinion Perspective, A Report Base on Kaiser Family's Foundation's 2011 Survey of Americans on HIV/AIDS," June 2011. Available online at http://www.kff.org/kaiserpolls/upload/8186.pdf, last accessed September 25, 2011.

October 26, 2000, June 13 to June 23, 2002, July 18 to July 21, 2002, March 15 to May 11, 2004, and March 24 to April 18, 2006. On average, 37% of subjects chose HIV as the most urgent health problem. The highest percentage of respondents choosing HIV was 42% in the 2002 survey, and the lowest was 34% in the 2006 survey. Statistically, no significant correlation was found between public opinion and any particular media frame for this question. However, a significant amount of media coverage about the spread of HIV/AIDS around the globe seemed to have influenced public opinion in the United States.

The ninth question asked Americans if they viewed the HIV problem worldwide as an epidemic or as a pandemic. The question was asked first between June 13 and June 23, 2002, and it was repeated in a survey conducted between March 15 and May 11, 2004. In 2002 and 2004, 67% and 70% of the respondents surveyed viewed HIV as an epidemic. No significant correlation was found between public opinion and media coverage for this question. The last question asked the public if they thought the world today was making progress on controlling the spread of HIV. The question was repeated in surveys conducted from June 13 to June 23, 2002, March 15 to May 11, 2004, and March 24 to April 18, 2006. The percentage of positive responses (more urgent problem in the world) increased significantly between 2000 and 2002. Conceptualizing of HIV/AIDs as a security threat could have influenced the public in United States. In all three surveys, only 35–38% of the respondents thought that the world was making progress. More than 50% of respondents felt that the situation in the world was about the same or not improving. No significant correlation was found between public opinion and changes in media coverage for this question. Once again, however, the increased media

coverage of HIV/AIDS around the world seems to have influenced public opinion about the worsening HIV situation in the world.



Note: Q1.Do you think HIV is a more urgent problem or a less urgent problem, or is it the same for this country, than it was a few years ago? Q2.Thinking about the way the problem of HIV/AIDS affects the United States today; do you think the problem is about the same as it has been, that the U.S. today is making progress in this area, or that the U.S. today is losing ground? Q3.Please tell me if you think it is a very big problem, a moderately big problem, a small problem or not a problem at all, the spread of HIV/AIDS and other infectious diseases. Q4. Bearing in mind the different ways people can be infected with HIV--how concerned are you personally about becoming infected with HIV? Q5.How concerned are you about a son or daughter becoming infected with HIV? Q6.What do you think is the most urgent health problem facing this nation today? Q7. How serious a problem would you say HIV/AIDS is? Q8. What do you think is the most urgent health problem facing the world today? Q9 .Which one of the following two statements comes closer to your views? The HIV/AIDS problem worldwide is best described as 'an epidemic.' HIV/AIDS is a serious problem, but it is an exaggeration to call it 'a pandemic.' Q10.Do you think the problem of HIV/AIDS is about the same as it has been, that the world today is making progress in this area, or that the world today is losing ground?

Figure 6.6: Changes in Media Coverage and Public Opinion about HIV as a Threat

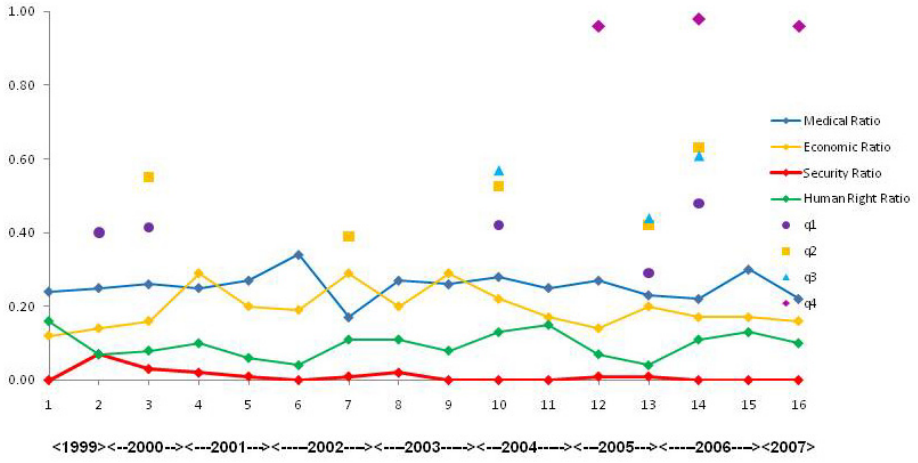
Table 6.6: Correlation Analysis Results for Media Coverage and Percentage of Positive Responses

Correlation between percentage of positive responses vs. media coverage (Pearson correlation coefficients (p-value))	Q2 (Is the United States making progress on the HIV problem?)	Q4 (How concerned are you about the HIV problem?)
Biomedical	0.9621	0.02756
	(p=0.0379)	(p=0.9484)
Economic	0.48849	-0.33981
	(p=0.5115)	(p=0.4102)
Security	-0.48961	0.7410
	(p=0.5104)	(p=0.0354)
Human Rights	-0.0803	-0.34711
	(p=0.9197)	(p=0.3996)

Note: Only questions with at least one significant correlation with media coverage are shown.

Four sets of questions asked between 1999 and 2007 were examined to study changes in *public support for federal funding* on programs aimed at treatment and prevention of HIV (Appendix Table A6.10). The first two questions asked respondents if they supported spending on HIV prevention and treatment. The third question asked if respondents thought that spending more money on HIV would lead to meaningful progress in slowing the epidemic. The fourth question asked respondents if improving treatment and prevention of HIV and AIDS was important. The highest percentage of positive responses for the first three questions occurred in the survey conducted during the first half of 2006. The second highest percentage of positive responses for the first and third questions occurred during the first half of 2004. The fourth question was

repeated three times during the first half of 2005, 2006, and 2007. More than 96% of responses were positive in all three surveys. This indicates that the general public favored funding of HIV/AIDS treatment and prevention programs. Because the time interval between surveys is rather large and the media coverage remained stable over the years, there is no clear correlation between media coverage and opinion.



Note: Q1.Do you think federal spending on AIDS is too high, low or about right compared to other diseases? Q2. Do you think the federal government spends too much money on AIDS, too little money, or about the right amount? Q3.Do you think that spending more money on HIV/AIDS prevention in the United States will lead to meaningful progress in slowing the epidemic, or that spending more money won't make much difference? Q4.Do you think improving treatment and prevention of HIV and AIDS is important national priority?

Figure 6.7: Changes in Media Coverage over Time and Public Support for Funding

6.6. Relationship between Media Coverage and Public Opinion (Coverage of the United States)

A similar correlation analysis was performed to examine the impact of media coverage of HIV/AIDS within the United States on public opinion (Table 6.6). A separate

analysis was conducted to assess whether media coverage that focused only on HIV within the United States had a different impact on public opinion. This analysis was done to test the hypothesis that the public in the United States is more concerned about any infectious disease if it is shown to affect the United States and its people in many different ways. 207 of the 565 articles focused on the impact of HIV on the United States.

Correlation analysis was conducted for question, assessing American perception of threat from the disease. Only three questions showed a significant correlation. Responses to Q3 (Appendix Table A6.5), which asked respondents, "Will spending more money on HIV/AIDS prevention in the United States lead to meaningful progress in slowing the epidemic?" were positively correlated with the human rights ratio. Responses to Q7 (Appendix Table A6.5), which asked the public, "How serious a problem would you say HIV/AIDS is in the United States?" was negatively correlated with the human rights ratio. This could be attributed to the fact that most stories that addressed the rights issue in the United States were about the rights of black women and homosexuals. Responses to Q 8 (Appendix Table A6.5), which asked Americans, "What is the most urgent health problem facing the world today?" were positively correlated with the economic ratio. This could be due to the fact that most of the stories with an economic frame focused on developing countries.

Table 6.7: Correlation Analysis for Changes in Media Coverage (United States) only and Percentage of Positive Responses.

Correlation between % of positive responses vs. media coverage (Pearson Correlation Coefficients (p-value))	Q7: How serious a problem would you say HIV/AIDS is as a public health problem in United States?	Q8. What do you think is the most urgent health problem facing the world today?	Q3.Do you think that spending more money on HIV/AIDS prevention in the United States will lead to meaningful progress in slowing the epidemic, or that spending more money won't make much difference?
Biomedical	0.84957 (p=0.0684)	–0.54918 (p=0.4508)	0.03683 (p=0.9765)
Economic	–0.70965 (p=0.1794	0.97061 (p=0.0294)	–0.08352 (p=0.9468)
Security	0.17678 (p=0.7761	0.57132 (p=0.4287)	NA NA
Human Rights	-0.92825 (p=0.0228)	0.63864 (p=0.3614)	0.99854 (p=0.0344)

Note: Questions repeated at least thrice were included in the analysis. NA: security ratio was zero

6.7. Discussion and Conclusion

This study assessed whether increased news coverage of HIV/AIDS influenced Americans' perception, awareness, and concern about the disease. The detailed analysis of various surveys presented above confirms that the public is concerned about the disease and sees it as a serious public health issue, both in the United States and around the globe. One thing that has remained consistently high is the public's support for funding of treatment and prevention programs on HIV. Since 1997, the majority of the American public feels that American domestic spending on fighting HIV/AIDS epidemic

is too low. Even when asked if federal spending on HIV/AIDS was too low compared to money spent on other diseases, the percentage of respondents who viewed it as too low has never dipped below 50%.[28] Between 2004 and 2006, the percentage saying that the federal government spends too little money on HIV/AIDS in general increased from 52% to 63%, and the share saying spending on HIV/AIDS is too low compared with other diseases increased from 42% to 48% (Appendix Table A6.6). Americans are also supportive of funding for HIV prevention and treatment overseas and at home. This study also sought to understand whether certain ways of representing or "framing" the disease evoked greater concern and led people to make behavioral changes in their personal lives and support government funding on research on AIDS vaccine, treatment and prevention programs on the disease domestically and globally. Two hypotheses were proposed in this context. First, the frames represented prominently in the media will tend to mobilize public support for policies associated with those frames. In this study the biomedical frame was the dominant frame throughout the sampled period, followed by the economic frame. Statistical analysis revealed a positive correlation between increased coverage of biomedical news about HIV and perceived sense of progress in treatment of disease (Table 6.6). This is in contrast to the findings on studies of SARS and avian flu. This can be attributed to the fact that most biomedical coverage of HIV/AIDS since 1999 has focused on discovery of ARVs and how they can increase the longevity of patients living

[28] Kaiser Family Foundation, "Public Opinion on the HIV/AIDS Epidemic in the United States," Spotlight, August 2006. Available online at http://www.kff.org/spotlight/hivus/upload/HIV_US_Epidemic_outline.pdf, last accessed January 1, 2011.

with HIV.[29] As news focused more and more on the growing epidemic in Asia, Eastern Europe, and Africa, Americans at home felt more and more that AIDS was a less urgent biomedical problem for them.[30] The HIV/AIDS epidemic has hit African Americans and Latinos much more than whites, and thus the former are more likely to view this disease as an urgent problem. Survey data have shown, however, that while the share of African Americans and Latinos who consider HIV/AIDS to be the most urgent health problem facing the nation is higher than that for whites, the percentage of African Americans and Latinos who believe HIV/AIDS is an urgent health problem has also declined over time. This is despite the fact that CDC estimates that there are 50,000 new infections in the United States and more than 50% of these are among Black men and women in United States.[31] Blacks accounted for 57% of deaths due to HIV in 2007, whereas 13% of Latinos died of AIDS in 2007.[32] Despite rising figures of HIV infections, even the African Americans and Latino population in the United States see the nation as making progress on AIDS.[33] Advances in treatment of AIDS have greatly reduced AIDS related mortality, and perinatal transmission, and people in United States now live with AIDS

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[29] Editorial, "AIDS: The Perils of Progress," The Washington Post, June 10, 2002.
[30] Lawrence K. Altman, "Spread of AIDS Fast Outpacing Response," The New York Times, November 26, 2003; Nicholas Eberstadt, "The Future of AIDS," Foreign Affairs 81, 6 (2002): 22-45.

[31] Irene H. Hall, Ruiguang Song, and Philip Rhodes, "Estimation of HIV incidence in the United States," JAMA 300, 5(2008): 520-29.

[32] Centers for Disease Control and Prevention, "HIV Surveillance- United States 1998-2008," Morbidity and Mortality Weekly Report 21, 60(2011): 689-98.

[33] Editorial, "AIDS Won't Wait," The Washington Post, April 30, 2003.

much longer than they did in 1980s.[34] In fact there were reports of Americans resorting to risky sexual behavior as they feared the disease even less.[35] Thus, the biomedical frame did not lead people to undertake significantly high behavioral changes. The concern among parents of teenagers among all Americans has however, remained high.

The second hypothesis proposed that Americans will see security and human rights frames as less relevant, compared to biomedical and economic frames (which will be more dominant in news reports). This analysis, however, revealed a positive correlation between the security frame and the level of personal concern about HIV/AIDS among Americans (Table 6.6). Though security frame was not the dominant frame in the overall sampled period, it was the dominant frame in 2000, and 2001, and all surveys on AIDS in these years showed increased worry about the disease. This is a very important finding, as it was the first time a disease was framed as a threat to national and international security. Until 1999, AIDS was considered a "gay plague" that affected only homosexuals in the United States.[36] Framing HIV/AIDS as a security concern with grave economic consequences had a tremendous impact on Americans. It showed the public that in a global world, diseases in any other part of the world could impact Americans at home. Thus, while not the most repeated frame, the security frame was understood as relevant by the American public.

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[34] Centers for Disease Control and Prevention, "HIV Surveillance- United States 1998-2008," Morbidity and Mortality Weekly Report 21, 60(2011): 689-98.
[35] Opinion, "Complacency amid the AIDS Epidemic," The New York Times September1, 1999.

[36] Ceci Connolly, "Choice for AIDS Panel Withdraws After Criticism," The Washington Post, January 24, 2003.

To further test the second hypothesis, a separate correlation analysis was conducted using public opinion data about AIDS and media stories that focused exclusively on the impact of HIV/AIDS on the United States (Table 6.7). The analysis showed a positive correlation between the economic frame and the perception among Americans that HIV/AIDS was the most urgent problem facing the world. Stories with an economic focus exhorted developed countries like the United States not to be indifferent to AIDS, which was described as the greatest humanitarian crisis of all time.[37] A number of stories debated President Bush's "abstinence only" funding programs and noted how they were unfair to many stigmatized minorities, including sex workers and children orphaned by AIDS in developing countries.[38] At the same time, several stories discussed how the AIDS epidemic had the potential to impact Americans in the United States. This also influenced Americans' views on the urgency of the AIDS problem worldwide.[39]

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[37] Editorial, "Retreat on Fighting Global HIV/AIDS," The New York Times, June 21, 2002; Sebastian Mallaby, "An Optional Catastrophe," The Washington Post, October 14, 2002; Caryle Murphy, "McCarrick Enlists Catholics in Fight against HIV/AIDS," The Washington Post, May23, 2003.

[38] Peter Slevin and Ceci Connolly, "Powell Urges Condom Use; View Differs From Bush's and Irks Conservatives," The Washington Post, February 15, 2002.

[39] According to a survey conducted by the Chicago Council on Foreign Relations in June 2002 on "a list of possible threats to the vital interest of the United States in the next ten years," a very strong 68% rated "AIDS, the Ebola virus, and other potential epidemics" as a critical threat (29% said it was "important but not critical," 29% while only 3% said it was "not important." Chicago Council of Global Affairs, Public Opinion Surveys: Worldview(Chicago: Chicago Council of Global affairs, 2002). Online available at http://www.thechicagocouncil.org/UserFiles/File/POS_Topline%20Reports/POS%202002/Public%20Topline%20Report%20Worldviews%202002.pdf, last accessed September22, 2011.

The analysis also revealed a positive correlation between the human rights frame and American support for spending more money on AIDS prevention to slow the epidemic in the United States. While news stories that drew linkages between HIV/AIDS and human rights in countries outside the United States were about medical patents and access to HIV drugs, stories that discussed human rights and AIDS in the context of the United States were more about rights of stigmatized minorities such as gays, drug addicts, prisoners, homeless people, and black women infected with AIDS.[40] Many news stories discussed how the stigma surrounding AIDS prevented many people from getting tested for the virus.[41] This led to increased transmission of infection to newborn babies and to men or women who did not know the HIV status of their partners. Emphasis was given to preventive efforts such as supplying clean needles and syringes to drug addicts, providing routine testing for pregnant women and gay and bisexual men, providing greater availability of condoms, and providing sex education and abstinence programs for teenagers.[42] Several stories described the plight of rural communities that lacked medical facilities to treat AIDS patients.[43] Also influencing public opinion were stories that

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[40] Avram Goldstein, "High Rate of Infection Found in Md. Prisons," The Washington Post, May 7, 2003; Lisa Frazier, "AIDS's Somber Reminder; Quilt Holds Urgent Message for African Americans," The Washington Post, December 1, 1999.

[41] David Brown, "U.S. Recommends Routine Testing For the AIDS Virus," The Washington Post, September22, 2006.Marc Santora, "City AIDS Report Highlights Risk to Black Men and Women," The New York Times, February4, 2006.

[42] Ceci Connolly, "CDC Urges Routine HIV Testing; New Screening Procedures Aimed Especially at Pregnant Women," The Washington Post, April 18, 2003; Editorial, "Modifying the State laws," The New York Times, February 6, 2006; Editorial, "Playing Games With AIDS," The New York Times, September 26, 2006.

[43] Steven Gray, "Outcasts in the Country," The Washington Post, June 10, 2000.

discussed discrimination in the work places and providing housing for AIDS patients.[44] New stories carried demands made by AIDS advocacy groups for health care and scientific research on HIV treatment and prevention in the United States and abroad.[45] Americans supported funding for prevention and treatment from HIV/AIDS, as they understood (as reinforced in the human rights frame linked to HIV) that poverty, inequality of incomes, stigmatization and discrimination against AIDS patients needed to be addressed. Several AIDS activists like Jonathan Mann and his group further framed the denial of these rights to HIV patients as an impediment to the realization of HIV prevention strategies.[46] Thus, the human rights frame had a considerable influence on Americans when the frame emphasized the suffering due to AIDS of Americans. At the same time, respondents believed that not all Americans were at risk of contracting the disease. Perhaps for this reason, the study showed a negative correlation between the human rights ratio and perceived seriousness of the disease among the American public.

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[44] Sewell Chan, "Metro Briefing New York: Albany: Sate Reverses Housing Decision For Tenants With H.I.V.," The New York Times, February 28, 2007.
[45] Karlyn Barker , "98 Arrested in Capitol Hill AIDS Protest; Marchers Seek More Funds for Care, Research," The Washington Post, May 21, 2004.

[46] Sofia Gruskin and Daniel Tarantola, Health and Human Rights in Perspectives on Health and Human Rights edited Sofia Gruskin, Michael A. Grodin, George J. Annas, Stephen P. Marks(Routledge, New York: 2005), 3-58

6.8. Limitations of the Study

The goal of this study was to analyze changes in media coverage about HIV/AIDS and the correlation between such changes and the percentage of positive responses over time in surveys about the disease. Correlations could not be established accurately between some of the variables. This could be because the HIV issue is far more complicated than a simple linear model can explain. The epidemiology and transmission routes of HIV infection differ from those of the other infectious diseases studied (SARS and avian flu). These differences make the general population feel far less vulnerable to HIV infection and shape people's attitudes about the disease. Unlike SARS and avian flu, which took people around the globe by surprise, HIV/AIDS has been around for more than 20 years, and a sense of apathy and complacency has arisen among many people. The term "AIDS fatigue" has been coined to describe this phenomenon. These factors mean that it is not so easy to determine the direct impact of media framing on people's concerns about HIV.

A second limitation of the study is that the secondary surveys available covered a wide time interval (half a year to one year), which made it difficult to study short-term changes in media coverage. If more surveys with a monthly or quarterly interval were available, the correlation between media coverage and changes in public opinion could be examined in more detail.

VII. CONCLUSION

In this dissertation I investigated whether Americans' attitudes and opinions about infectious diseases were influenced by how the issue was framed. The content analysis of news reports about SARS, avian flu, and HIV/AIDS highlighted an evolving debate over how to understand the problem of infectious diseases. To examine potential framing effects on public reactions to infectious diseases, I studied nationally representative surveys about infectious diseases retrieved from survey data banks.

I posed two main questions in this dissertation: Which frame was the most powerful and influential in shaping public opinion about global infectious diseases, and what explains varying patterns of responses to framing of three different infectious diseases? The two main hypotheses tested were as follows: 1) The frames that are represented predominantly in the media will tend to mobilize public support for policies associated with those frames, and 2) when economic and biomedical issues are dominant, people will be more likely to support inconvenient policies such as quarantine and support federal funding of programs aimed at combating infectious diseases because they will see these issues as more personally relevant compared to security and human rights frames.

7.1. Research Findings

My analysis produced three major findings. First, the biomedical frame was the dominant frame in all three case studies, and the economic frame was the second most represented frame. The human rights and security frames were less prominent in all the

three case studies. Second, framing effects were present, although the degree of the respondents' opinion changes was not particularly large. Finally, different frames seemed to evoke a differing pattern of responses about the three different infectious diseases.

The varying patterns of responses can be explained in several ways. In the case of SARS, the biomedical frame dominated in terms of overall coverage during the sampling period, but it was the economic frame (the second most represented frame) that was positively correlated ($r = 0.6542$, Table 4.7) with levels of worry about the disease. There are two plausible explanations for why the biomedical frame did not evoke a very powerful response among Americans. First, while the media reported extensively on the biomedical aspects of SARS, it also described how the United States public health system was equipped and well prepared to control the disease following the incident of anthrax-tainted mail in 2001.[1] Second, through July 2003, 192 cases had been reported in the United States, including 159 suspected and 33 probable cases.[2] Of the 33 probable cases, only 8 were confirmed in the laboratory as SARS. There were no reported cases of SARS-related deaths in the United States. The economic coverage of SARS became more prominent in the post-outbreak era as news stories focused on losses to various sectors of the economy in an increasingly interconnected world. Stories that framed SARS as an economic issue, focused on losses incurred not only by the travel and tourism industry but also by other industries and corporations that had offshore and manufacturing units in

[1] World Health Organization. SARS: Status of the Outbreak and Lessons for Immediate Future, Communicable Disease Surveillance and Response. Geneva, Switzerland. May 20, 2003. Available online at http://www.who.int/csr/media/sars_wha.pdf, last accessed September 27, 2009.

[2] Ibid.

Asia.[3] News stories also reported approximately $50 billion in losses to the global economy, mainly from losses in tourism, trade, and the retail industry.[4] Other stories reported on disease-related medical costs. The economic frame may not only have raised the general level of concern among the American public, therefore, but may also have done so in a way to which many Americans saw as personally relevant.

In the case of avian flu, the biomedical frame was dominant throughout the sampled period. Around 50% of the news stories were on biomedical aspects of avian flu. Statistically significant correlations were found between increased medical news coverage and respondents' level of worry about being exposed to avian flu. Between 2005 and 2007, media reports highlighted the spread of avian flu to countries around the world and reported on cases of transmission to humans.[5] Both The New York Times and The Washington Post published many stories stating that avian flu killed 100% of

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[3] Colin Campbell, "The SARS Epidemic; Economic Impact of New Disease, From Near Outbreak to Far Away," The New York Times, May 18, 2003.

[4] Summary of Probable SARS Cases with Onset Illness from 1 November 2002 to 31 July 2003, (Epidemic and Pandemic Alert and Response (EPR), September 2003). Available online at http://www.who.int/csr/sars/country/table2003_09_23/en, last accessed March 25, 2006. Also see Asian Development Bank, Assessing the Impact and Cost of SARS in Developing Asia. Asian Development Outlook 2003, Update, 2003. Available online at http://www.adb.org/documents/books/ado/2003/update/sars.pdf, last accessed March 25, 2006.

[5] The WHO's official count of human cases of H5N1 reaches 122, with 62 deaths, in Vietnam, Thailand, Indonesia, and Cambodia (WHO, Cumulative Number of Confirmed Human Cases of Avian Influenza A/(H5N1) Reported to WHO, November 1, 2005. In August 2006 it was reported that 232 people in 10 countries had contracted bird flu and 134 had died. Online available at Online available at http://www.who.int/influenza/resources/documents/TrackingHistoryH5N1_20080131.pdf , last accessed November6, 2011.

infected domesticated chickens and depicting the deadly scenario that would occur if the constantly evolving bird flu virus became capable of human-to-human transmission. Several studies discussing the possibility that the virus would mutate into a flu that could be transmitted among people were published and discussed in the media.[6] The scientific community and public health specialists were not the only ones highlighting concerns over the spread of bird flu. The media reported extensively on the concerns of the President of the United States and the United States Congress about avian flu.[7] Thus, the biomedical frame invoked a general public danger (relevant to all people). Moreover, because there was no known cure for avian flu, all people were equally susceptible to it. In this sense, media coverage of avian flu contrasts with that of SARS. In the latter case, occurring shortly after the anthrax scare, coverage highlighted the extent of preparation to manage the spread of the disease. In the case of avian flu, after 2005, confidence in such preparations had apparently subsided, and the coverage tended to stress the dangers.

The study of HIV/AIDS revealed different results. As in the other cases, the biomedical frame was the most common in media reports. Moreover, the correlation between the biomedical frame and the perception of progress in fighting the disease was high. One explanation for these results is that HIV/AIDS has been in the news since 1980. In the 1980s, a great deal of research was conducted to identify the origins and transmission routes of HIV. Over time, HIV/AIDS lost its reputation as a mystery illness

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[6] Michael Osterholm, "Preparing for the Next Pandemic," New England Journal of Medicine 352(2005): 1839-42.

[7] In December 2006, the Congress passed and the President signed "The Pandemic and All Hazards Preparedness Act," which called for the establishment of the National Health Security Strategy.

for people in the United States. Since 1987, when antiretroviral treatment was approved by the FDA and as widespread combination antiretroviral therapy was made more widely available to people infected with HIV, the number of people dying from the disease has declined substantially. A decade of surveys conducted by the Kaiser Family Foundation has shown a decreased sense of concern among people in the United States about the disease. In 1987, two-thirds of Americans (68%) surveyed felt that HIV/AIDS was the most urgent health problem facing the country.[8] The numbers have declined steadily since then. In 1990, the share of people naming HIV/AIDS as the most urgent health issue declined to 49%. In 2000, the percentage was 25%, and it decreased to 21% in 2004, 17% in 2005, and 7% in 2009.[9] Although these values are higher for the African American community and the Latino community compared to the white community, they also have declined over time, even though sections of these communities have been severely affected by the disease. As news stories focused on scientific advancements in the treatment of HIV and the availability of antiretrovirals to more and more people in the United States, a sense of complacency took root. The decreased sense of urgency seems to parallel a perceived sense of progress.[10] People now view HIV more as a chronic and manageable disease than as a death sentence, despite the fact that HIV still cannot be cured.

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[8] The Henry J. Kaiser Family Foundation , HIV/AIDS at 30: A Public Opinion Perspective, A Report Base on Kaiser Family's Foundation's 2011 Survey of Americans on HIV/AIDS," June 2011. Available online at http://www.kff.org/kaiserpolls/upload/8186.pdf, last accessed September 25, 2011.

[9] Ibid.

[10] Ibid.

HIV/AIDS was presented as a security issue in new stories in 2000 and 2001, and this is the time period when surveys revealed an increased concern about the disease among Americans in general. The percentage of positive responses to questions on personal concern about HIV/AIDS especially in surveys in 2000 and 2001 was positively correlated with the increase in security coverage. According to polls conducted by Kaiser Family Foundation (Table A6.5) in January 2001, nearly 26% of the surveyed population was personally concerned about HIV, an increase from 19% in 2000, and 24% in 1997. Until 1999, AIDS was considered by most Americans to be a "gay plague."[11] Framing HIV/AIDS as a security concern with grave economic consequences probably triggered increased concern about HIV/AIDS. It showed the public that in a global world, diseases in any other part of the world could impact Americans at home. The HIV/AIDS pandemic in Africa, which was spreading fast to other countries of the world where the United States had strategic interests, was framed as a security threat to Americans at home. As university researchers and national and international security agencies sounded the alarm, the public responded with increased worry.

A separate correlation analysis of news stories discussing the impact of HIV/AIDS specifically on the United States showed that, unlike the cases of SARS and avian flu, framing HIV/AIDS as a human rights issue also evoked powerful responses. Human rights activists in the United States took up the issue of civil and political rights of homosexuals and protested against stigmatization, marginalization, and discrimination of people infected with HIV/AIDS. They pressed the United States government to

[11] Ceci Connolly, "Choice for AIDS Panel Withdraws After Criticism," The Washington Post, January 24, 2003.

incorporate rights for HIV patients into domestic legislation.[12] Slowly, human rights concerns became linked to the issue of free and non-discriminatory access to medicines and treatment. In the United States, the demographic profile of people with HIV/AIDS also changed over time. It no longer affected only white homosexual males but also prisoners, injection drug users, African American and Latino women, and people living in inner cities and poorer neighborhoods in America. Many news stories discussed how stigma surrounding AIDS prevented many people from getting tested for AIDS.[13] This led to increased transmission of infection to newborn babies and to men or women who did not know the HIV status of their partners. Several stories described the plight of rural communities that lacked medical facilities to treat AIDS patients.[14] These news stories produced two contrasting effects. While, Americans sympathized with people suffering from HIV/AIDS, and supported increased spending on HIV/AIDS prevention and treatment; at the same time most people probably believed that AIDS is a disease caused by certain behaviors and that the general population is not at risk of being infected**.** Media coverage dealing with the impact of HIV/AIDS on human rights in the United States was, therefore, positively correlated with Americans' support for increased federal funding for HIV/AIDS prevention in the United States, and showed a negative correlation between

[12] Lawrence O. Gostin, The AIDS Pandemic (Chapel Hill: University of North Carolina Press: 2004), 61-89.

[13] David Brown, "U.S. Recommends Routine Testing For the AIDS Virus," The Washington Post, September22, 2006.Marc Santora, "City AIDS Report Highlights Risk to Black Men and Women," The New York Times, February4, 2006.

[14] Steven Gray, "Outcasts in the Country," The Washington Post, June 10, 2000.

the human rights ratio and perceived seriousness of the disease among the American public.[15]

The economic frame was positively correlated with the perception that HIV/AIDS was the most urgent health problem in the world. After 2000, more than half of the news stories on HIV/AIDS in the newspapers were about the spread of HIV in countries outside the United States. A number of stories debated President Bush's "abstinence only" funding programs and suggested that they were unfair to stigmatized minorities, including sex workers and children orphaned by AIDS in developing countries.[16] News stories emphasized not only the economic impact of the spread of the disease but also how certain economic factors (e.g., poverty, illiteracy, and prostitution) in poor countries were responsible for the spread of the disease. International organizations and government agencies urged developed countries to make financial contributions to prevent the spread of HIV and to provide treatment for poor people affected by the disease. At the same time, several stories discussed how the AIDS epidemic had the potential to impact Americans in the United States. This might have persuaded Americans that HIV/AIDS was the most urgent health problem in the world.

The three diseases differ in terms of their origins, pattern of transmission, consequences for human health, and potential to inflict damage. These differences may account for different public health intervention strategies and elicit different responses from people. HIV can be transmitted when specific body fluids of an infected person

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[15] Ibid., Preface

[16] Peter Slevin and Ceci Connolly, "Powell Urges Condom Use; View Differs From Bush's and Irks Conservatives," The Washington Post, February 15, 2002.

come into direct contact with mucous membranes, damaged tissue, or the blood stream (e.g., through exchange of needles, tattoos, blood transfusion) of another person.[17] What makes HIV different from other infectious diseases is its cultural variation: Certain subpopulations (homosexuals, drug addicts, and sex workers and their partners) have been most affected by the disease.[18] Public health officials distinguish such "communicable" diseases from "contagious" diseases.[19] While many human-to-human transmissible diseases may be categorized as communicable, diseases such as SARS and avian flu are considered to be contagious because they can be transmitted much more rapidly through close proximity and/or bodily contact. While anyone and everyone may be at risk of being infected with a respiratory disease, only certain behavior and bodily contacts can cause the HIV virus to be transmitted.

Nevertheless, across all three diseases, certain common framing effects emerged. The biomedical frame was readily available and accessible to the public, as biomedical issues were predominantly displayed and repeated in media reports. Except in the case of SARS, this frame was generally associated with greater public worry and more support for inconvenient public policies. The economic frame produced a similar effect. And the human rights and security frames, in general, had less influence on public opinion, perhaps because people found them less personally relevant or perhaps because they were

[17] Centers for Disease Control and Prevention, Department of Health and Human Services, Facts on HIV Prevention. Available online at http://www.cdc.gov/hiv/resources/qa/transmission.htm, last accessed March 25, 2010.

[18] Bruce R. Levin, James J. Bull, and Frank M. Stewart, "Epidemiology, Evolution, and Future of the HIV Pandemic," Emerging Infectious Diseases 7, 3 (2001): 505-11.

[19] John T. Jacob, "Human Rights and Public Health during Pandemic Influenza," Indian Journal of Medical Ethics, 3, 1 (2006): 2-3.

more contested issues. In case of HIV/AIDS, however, security and human rights did matter.

7.2. Implications of the Study

This dissertation uses a research design that studied framing effects (measured by changes in responses to survey responses) when respondents were exposed to multiple frames over a period of time. Unlike many previous experimental studies of framing effects in which respondents were exposed to opposing frames in measured quantities, this study sought to understand framing effects when respondents were exposed to multiple frames in real world conditions.[20] Case studies of three infectious diseases explored changes in framing in terms of the number of articles published and the ratios of the four frames at quarterly, monthly, and weekly intervals. As hypothesized, some frames seemed to invoke more worry and concern over the disease than others. Increased prominence (frequency) of some frames also increased public anxiety. This finding supports Shanto Iyengar's observation that repeated exposure to a frame, such as frequently hearing a news story emphasizing economic losses increases the accessibility of the frame and enhances its effect.[21] When any concept is recently or frequently

[20] Experimental studies have the built in advantage of controlling the environment in which media effects take place and making sure no other factor leads to changes in media effects.

[21] Shanto Iyengar, "Accessibility Bias in Politics: Television News and Public Opinion," International Journal of Public Opinion Research 2, 1(1990):1-15.

repeated, it comes easily to one's mind when making judgments on a policy.[22] Other frames, even if they were not the most frequently appearing frames, apparently prompted concern over the disease because they were perceived to be more relevant or stronger frames.[23] In this fashion, the economic frame may have increased public anxiety about SARS when coverage pertained specifically to the United States. The findings of this study are generally consistent with those of Paul Brewer, David Wise, Paul Sniderman, and Sean Theriault, who posited that framing results are not as robust when respondents are exposed to dual or multiple frames (compared with single frames). On the other hand, this study of infectious disease framing does not support the claim that exposure to competing frames necessarily mitigates the impact of any one frame. As Rodger Payne puts it:

> No frame is an omnipotent persuasive tool that can be decisively wielded and it would be virtually impossible to know in advance if an apparently compelling frame in one situation would also prove persuasive when applied to an analogous case [24]

The analysis of the three case studies suggests that some frames are more powerful and persuasive than others. The findings are also consistent, therefore, with the work of James

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[22] Nira Liberman, Jens Forster, and Tory E. Higgins, "Completed vs. Interrupted Priming: Reduced Accessibility from post-Fulfillment Inhibition," Journal of Experimental Social Psychology 43 (2007): 258-64; Susan T. Fiske and Shelley E. Taylor, Social Cognition, From Brains to Culture (Boston: McGraw Hill Higher Education, 2008), 1-540.

[23] Dennis Chong and James N. Druckman, "Framing Theory," Annual Review of Political Science 10, 1(2007): 103-26.

[24] Rodger A. Payne, "Persuasion, Frames and Norm Construction," European Journal of International Relations 7, 1 (2001): 44.

Druckman and Dennis Chong, who stated that even when multiple frames are present, some frames are likely to be more persuasive than others.

Most previous studies of the relationship between public opinion and foreign policy have focused on issues of war, military intervention, international trade, and foreign aid. These are all domains in which public opinion was not considered to be an important determinant in the formulation of government policies. Yet scholars have increasingly pointed out that the boundaries between domestic policy and international policy have become blurred, particularly in an era of globalization.[25] A better understanding of the consequences of issue framing thus has important implications that spill across the boundaries separating domestic public health policy and foreign policy. Issue framing is likely to be relevant to international agreements about surveillance, border controls, immigration issues, and distribution of vaccines and antiviral drugs to control transnational diseases.[26] Moreover, public support, compliance, and trust are extremely important for the effectiveness of policies on naturally occurring infectious disease and the threat of a bioterrorist attack on the country. In the case of an epidemic or a bioterrorist attack, national governments may have to enforce inconvenient measures such as quarantine and increased domestic surveillance. These measures might invite the wrath of civil rights activists or other people unwilling to comply. For all of these

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[25] Jessica Tuchman Matthews, "Redefining Security," Foreign Affairs 68, 2(1989): 129-54; Karen T. Litfin, "Advocacy Coalitions along the Domestic- Foreign Frontier: Globalization and Canadian Climate Change Policy," Policy Studies Journal 28, 1(2000): 236-52.

[26] Paul Burstein, "Bringing the Public Back in: Should Sociologists Consider the Impact of Public Opinion on Public Policy?" Social Forces 77, 1(1998): 27-62.

reasons, it is important to know what kind of media messages or frames appeal most to the public.

Curiously, security framing in stories about SARS and avian flu was less prominent than one might have expected. Since the end of the Cold war, the debate about new security threats has dominated the field of security studies. Some scholars have argued for widening the field of security studies to include issues such as the environment and infectious diseases. Others have been critical of widening the concept of security to include non-traditional threats such as infectious diseases.[27] The defining moment in this debate was the declaration of HIV/AIDS as a threat to international security by the United Nations Security Council in 2000. HIV/AIDS was framed as a comprehensive threat to citizens, economies, the military, public health, social instability, peacekeeping forces, and state institutions. Doing so was an effective means of mobilizing the enormous resources and leadership of the United States government and international organizations in dealing with this issue. Over the years, security became a contested concept, as many schools of thought conceptualize security in a variety of ways.[28] For example, some AIDS activists were critical of conceptualizing HIV/AIDS as a security issue. They felt, "portraying the illness as an overwhelming 'threat' works against

[27] Daniel Deudney, "The Case Against Linking Environmental Degradation and National Security," Millennium 19, 3 (1990): 461-76.

[28] Steve Smith, "The Contested Concept of Security," in Critical Security Studies in World Politics, ed. Ken Booth (Boulder: Lynne Rienner, 2005), 27-62; Amitav Acharya, "Human Security: East versus West," International Journal 61, 3 (2001): 442-60.

ongoing efforts to normalize social perceptions regarding HIV/AIDS."[29] Some also objected that framing certain infectious diseases as security threats would divert resources overwhelmingly to research on those diseases at the expense of many other, more lethal diseases that affect primarily the poorest countries of the world.[30] A decade after HIV/AIDS was securitized as a threat to national and international security, several academic and policy studies have questioned whether linkages between HIV/AIDS and state security may have been overdrawn.[31] While these debates played out mainly in academia, the absence of a clear security framing effect suggests that the debate never gained much public traction.

In any case, the security frame was not very prominent overall in stories about SARS or avian flu. Few news reports drew linkages between SARS and threat to the state and its institutions, although many stories discussed SARS as a serious threat in so far as it spread rapidly, killed individuals, and caused economic disruption in some of the most robust economies of the world. The security frame was somewhat more prominent in news coverage about avian flu. Between June 2005 and May 2006, there were several news reports framing avian flu as a security threat. The National Security Strategy of the United States (2006) outlined threats from pandemic diseases such as avian flu, which recognized no borders. President Bush reportedly considered using the military to enforce

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[29] Stefan Elbe, "Should HIV/AIDS be Securitized? The Ethical Dilemmas of Linking HIV/AIDS and Security," International Studies Quarterly 50, 1(2006): 119-44.

[30] Simon Rushton, "Global Health Security: Security for Whom? Security from Whom?" Political Studies 59, 4(2011): 779-96.

[31] Colin Mcinnes and Simon Rushton, "HIV, AIDS, and Security: Where are we now?" International Affairs 86, 1(2010): 225-45.

quarantine in the event of a pandemic.[32] The security frame did not, however, have much impact on public perception of threat from avian flu. Despite the big debate in the field of security studies about expanding the notion of security to include non-traditional security threats, the literature on non-traditional security threats published since the end of the Cold War does not seem to be securitized in American public opinion.

One possibility is that an "overdose" of news coverage about other security threats, particularly after the 9/11 terrorist attacks, may have led to security fatigue on the part of the American people.[33] People in the United States seem to understand the importance of global infectious disease as a biomedical and economic issue and to support surveillance, vaccine research, and quarantine. A similar pattern may exist, moreover, in the relationship of climate change and global warming to national security.[34] Despite considerable research into the security implications of climate change and global warming, which could involve mass climate-driven migration and increased instability in states, public opinion surveys have repeatedly shown that the American public is not

[32] David Brown, "Military's Role in a Flu Pandemic," The Washington Post October 5, 2005.

[33] Susan D. Moeller, Compassion Fatigue: How the Media Sell Disease, Famine, War and Death (New York: Routledge, 1999), 7-80.

[34] Josh Busby, Climate Change and National Security: an Agenda for Action (New York: Council on Foreign Relations, 2007), 1-40; Center For Naval Analyses, National Security and the Threat of Climate Change (Virginia: CNA Corporation, 2006). Available online at http://www.cna.org/sites/default/files/National%20Security%20and%20the%20Threat%20of%20Climate%20Change%20-%20Print.pdf, last accessed November 10, 2011.

convinced that climate change is a serious threat to the United States.[35] In a Gallup Poll survey conducted in 2010, 48% of the population felt that threat from climate change was exaggerated; this was an increase from 39% in 2009 and 31% in 1991 when the question was first asked by Gallup Poll.[36] Such observations have prompted considerable work on what kind of frames could influence American public opinion and make issues such as global warming and climate change more salient to Americans.[37] For example, scholars of environmental studies have suggested ways to frame climate change to illustrate a more local and regional impact in order to make the frame personally relevant. Other scholars have recommended framing climate change as a threat to human security to address issue of human vulnerabilities and to raise concern among people about environmental issues.[38] This study suggests that although framing effects can be powerful, even concerted efforts at policy framing, such as those to "securitize" non-traditional security issues, can be very difficult to accomplish.

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[35] Security Council Holds First-Ever Debate on Impact of Climate Change on Peace, Security, Hearing Over 50 Speakers. United Nations, April 17, 2007. Available online at http://www.un.org/News/Press/docs/2007/sc9000.doc.htm, last accessed November 10, 2011.

[36] Lydia Saad, Increased Numbers Think Global Warming is Exaggerated, March 11, 2009, Gall Up. Online available at http://www.gallup.com/poll/116590/Increased-Number-Think-Global-Warming-Exaggerated.aspx, last accessed November 9, 2011.

[37] George Lakoff "Why it Matters How We Frame the Environment," Environmental Communication 4, 1(2010): 70-81.

[38] Nicole Detraz, "Threats or Vulnerabilities? Assessing the Link between Climate Change and Security," Global Environmental Politics11, 3(2011):104-20.

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APPENDIX

The Appendix has tables that were useful in Chapters 4, 5, and 6. They could not be included in the chapters, as they are lengthy and detailed. Nevertheless, they are important to understanding the empirical analysis in this dissertation. The tables listed below display changes in media coverage for all the three infectious diseases, at weekly, monthly, and yearly intervals.

Appendix Tables A4.1-A4.2 discusses changes in media coverage about SARS over time at monthly and weekly intervals between March15, 2003 and June30, 2004. Appendix Tables A5.1 and A5.2 display changes in media coverage on avian flu at monthly and quarterly intervals between January 1, 2004 and December 31, 2007. Appendix Tables A5.3, A5.4, A5.5 and A5.6 show weekly coverage of media frames in 2004, 2005, 2006 and 2007 respectively. Appendix TableA6.1 and A6.2 display Changes in media coverage on HIV/AIDS over time at Semi Annual and Quarterly Intervals between June30, 1999 and December 31, 2007.

Public Opinion polls were analyzed and studied in great details. The following tables have details of survey questions and recorded responses.TablesA4.3, A4.4, A4.5 contain questions on public support for quarantine, actual behavioral changes made, and recognition of SARS as threat respectively. Table A5.7 display a list of questions regarding willingness to change behavior in response to news about avian flu. Table A5.8 has questions about actual behavioral changes made in response to news about avian flu. TableA5.9 shows questions about recognition of avian flu as a threat table and Table A 5.10 lists all questions about support for funding for research on avian flu.

Table A6.3 contains a list of questions regarding willingness to change behavior in response to news about HIV/AIDS. Table A6.4 lists questions about actual behavioral changes made in response to news about HIV/AIDS. Table A6.5 lists questions about recognition of HIV/AIDS as a threat. Table A6.6 lists questions on support for federal funding on HIV/AIDS. Figure A6.4: show changes in media coverage over time and public opinion on support for funding. Figure A6.3 shows changes in media coverage over time and public opinion HIV/AIDS as threat Figure A6.2 shows changes in media coverage over and public opinion about actual behavioral changes FigureA6.1 shows changes in media coverage over time and public opinion about willingness to change Behavior. All the four figures show changes in media coverage in response to news stories about impact of HIV/AIDS on United States.

Table A4.1: Changes in Media Coverage about SARS over Time
(Monthly Intervals)

Time Interval	No. of Articles	Medical Ratio	Economic Ratio	Security Ratio	Human Rights Ratio
3/16/03–4/15/03	37	0.48	0.12	0.03	0.02
4/16/03–5/15/03	88	0.35	0.16	0.07	0.04
5/16/03–6/15/03	42	0.39	0.11	0.02	0.04
6/16/03–7/15/03	12	0.23	0.34	0.00	0.00
7/16/03–8/15/03	10	0.11	0.43	0.01	0.00
8/16/03–9/15/03	9	0.32	0.12	0.00	0.00
9/16/03–	5	0.29	0.10	0.05	0.01

10/15/03					
10/16/03–1/15/03	2	0.52	0.11	0.05	0.00
11/16/03–2/15/03	9	0.46	0.07	0.01	0.00
12/16/03–1/15/04	2	0.47	0.00	0.00	0.00
1/16/04–2/15/04	2	0.15	0.11	0.00	0.00
3/16/04–4/15/04	4	0.48	0.06	0.03	0.02
4/16/04–5/15/04	1	0.42	0.00	0.08	0.00
5/16/04–6/15/04	1	0.47	0.00	0.00	0.00

Note: The ratio for each frame for a given news article was calculated as the number of times a given frame was mentioned divided by the total number of sentences in that news article, and the mean ratio for each frame in a given monthly interval was calculated as the average of the ratios for all news articles published in the monthly interval.

Table A4.2: Changes in Media Coverage about SARS over Time (Weekly Intervals)

Time Interval	No. of Articles	Medical Ratio	Economic Ratio	Security Ratio	Human Rights Ratio
3/16/03–3/22/03	4	0.46	0.01	0.02	0.00
3/23/03–3/29/03	4	0.60	0.00	0.03	0.00
3/30/03–4/5/03	9	0.37	0.18	0.06	0.02
4/6/03-4/12/03	11	0.43	0.19	0.02	0.03
4/13/03–4/19/03	15	0.52	0.09	0.03	0.01
4/20/03–4/26/03	27	0.40	0.18	0.07	0.02
4/27/03–5/3/03	25	0.27	0.19	0.06	0.01
5/4/03–5/10/03	21	0.33	0.14	0.08	0.06
5/11/03–5/17/03	14	0.33	0.11	0.08	0.08
5/18/03–5/24/03	18	0.39	0.08	0.02	0.08
5/25/03–5/31/03	8	0.44	0.07	0.01	0.00
6/1/03–6/7/03	5	0.40	0.07	0.05	0.03
6/8/03–6/14/03	6	0.43	0.31	0.01	0.00
6/15/03–6/21/03	2	0.13	0.59	0.00	0.00

6/22/03–6/28/03	4	0.29	0.18	0.00	0.00
6/29/03–7/5/03	3	0.17	0.12	0.01	0.00
7/6/03–7/12/03	2	0.32	0.58	0.00	0.00
7/13/03–7/19/03	4	0.18	0.23	0.00	0.00
7/20/03–7/26/03	1	0.00	1.00	0.00	0.00
7/27/03–8/2/03	3	0.15	0.29	0.04	0.00
8/3/03–8/9/03	1	0.00	1.00	0.00	0.00
8/10/03–8/16/03	2	0.07	0.55	0.00	0.00
8/17/03–8/23/03	3	0.30	0.07	0.00	0.00
8/24/03–8/30/03	1	0.00	0.50	0.00	0.00
9/7/03–9/13/03	3	0.50	0.01	0.01	0.00
9/21/02–9/27/03	1	0.45	0.00	0.00	0.00
10/12/03–10/18/03	2	0.13	0.17	0.00	0.00
10/19/03–10/27/03	1	0.00	0.33	0.00	0.00
10/28/03–11/3/03	2	0.36	0.03	0.09	0.03
11/11/03–11/17/03	1	0.49	0.14	0.04	0.00
11/18/03–11/25/03	1	0.60	0.05	0.04	0.00
12/10/03–12/16/03	1	0.45	0.17	0.07	0.00
12/17/03–12/23/03	3	0.59	0.02	0.00	0.00
12/31/03–1/6/04	2	0.50	0.00	0.00	0.00
1/7/04–1/13/04	2	0.32	0.27	0.04	0.01
1/14/04–1/20/04	3	0.34	0.00	0.00	0.00
1/28/04–2/3/04	2	0.30	0.09	0.00	0.00
3/12/04–3/18/04	1	0.29	0.04	0.00	0.00
4/25/04–5/1/04	2	0.51	0.03	0.02	0.00
5/2/04–5/8/04	2	0.44	0.08	0.04	0.05
5/23/04–5/29/04	1	0.42	0.00	0.08	0.00
6/20/04–6/26/04	1	0.47	0.00	0.00	0.00

Note: The ratio for each frame for a given news article was calculated as the number of times a given frame was mentioned divided by the total number of sentences in that news article, and the mean ratio for each frame in a given weekly interval was calculated as the average of the ratios for all news articles published in the weekly interval.

Table A4.3: Questions Regarding Willingness to Change Behavior in Response to News about SARS

Q1. Suppose you were exposed to someone who had SARS but you didn't know if you had the disease. Would you be willing to be quarantined in your home for10 ten days in order to prevent spreading the disease?		
Survey date (Harvard/ICR)	April 11–15, 2003	May 2–6, 2003
Yes	92%	93%
No	7%	5%
Don't know	1%	2%
Q2. Suppose you were exposed to someone who had SARS but you didn't know if you had the disease. Would you be willing to be quarantined for 2 or 3 weeks in a health care facility to prevent spreading the disease?		
Survey date (Harvard/ICR)	April 11–15, 2003	May 2–6, 2003
Yes	94%	95%
No	4%	3%
Don't know	2%	2%
Q3. Recently, President George W. Bush signed an executive order adding SARS (Severe Acute Respiratory Syndrome) to the list of diseases for which people can be quarantined. Do you think this order threatens your personal rights and freedoms?		
Survey date (Harvard/ICR)	April 11–15, 2003	May 2–6, 2003
No	85%	83%
Yes	13%	13%
Don't know	2%	2%
Q4. Having heard about SARS, would you say you are much more likely to seek medical help, a little more likely to seek help, or it has not affected whether you would seek help if you or a family member got flu-like symptoms?		
Survey date (Associated Press/ICR)	April 21–24, 2003	
Much more likely	39%	
A little more likely	30%	
Would have no effect	29%	
Don't Know	2%	

Note: A significantly higher percentage of subjects was willing to be quarantined at home or in a health care facility, thought adding SARS to the list of disease for which people can be quarantined did **not** threaten their personal rights and freedoms, and was more likely see help when they/their family member got flu-like symptoms according to z test results (z score > 1.96 or < –1.96).

Table A4.4: Questions about Actual Behavioral Changes Made in Response to News about SARS

Q1. Have you avoided international air travel (that is airline travel outside the United States) in the past 12 months because of SARS?		
Survey date (Harvard/ICR)	April 11–15, 2003	May 2–6, 2003
Yes	17%	9%
No	82%	91%
Don't know	1%	0%
Q2. Have you avoided people you think may have recently visited Asia?		
Survey date (Harvard/ICR)	April 11–15, 2003	May 2–6, 2003
Yes	16%	11%
No	82%	87%
Don't know	2%	3%
Q3. Have you avoided Asian restaurants or stores?		
Survey date (Harvard/ICR)	April 11–15, 2003	May 2–6, 2003
Yes	14%	9%
No	86%	90%
Don't know	0%	0%
Q4. Have you used a disinfectant at home or at work to protect against SARS?		
Survey date (Harvard/ICR)	April 11–15, 2003	May 2–6, 2003
Yes	21%	16%
No	78%	83%
Don't know	0%	0%
Q5. Have you talked with your doctor about health issues related to SARS?		
Survey date (Harvard/ICR)	April 11–15, 2003	May 2–6, 2003
Yes	5%	6%
No	94%	93%
Don't know	0%	0%
Q6.Have you avoided public events?		
Survey date (Harvard/ICR)	April 11–15, 2003	May 2–6, 2003
Yes	10%	7%
No	89%	92%
Don't know	0%	0%
Q7. Have you consulted a website for information about how to protect yourself against SARS?		

Survey date (Harvard/ICR)	April 11–15, 2003	May 2–6, 2003
Yes	9%	8%
No	90%	91%
Don't know	0%	0%
Q8. Have you or someone in the family purchased a face mask?		
Survey date (Harvard/ICR)	April 11–15, 2003	May 2–6, 2003
Yes	3%	3%
No	96%	96%
Don't know	1%	0%
Q9. Have you carried something to clean any object you think might have come in contact with someone who has SARS?		
Survey date (Harvard/ICR)	April 11–15, 2003	May 2–6, 2003
Yes	9%	6%
No	90%	94%
Don't know	1%	0%

Note: A significantly higher percentage of subjects did not avoid international air travel, did not avoid people they thought may have recently visited Asia, did not avoid Asian restaurants or stores, did not use a disinfectant at home or work to protect against SARS, did not consult with their doctor about health issues related to SARS, did not avoid public events, did not consult a website, did not purchase a face mask, and did not carry something to clean any objects they thought might have come in contact with someone who has SARS according to z test results (z score > 1.96 or < –1.96).

Table A4.5: Questions about Recognition of SARS as a Threat

Q1. How worried are you that you or someone in your family will be exposed to SARS? Data are from CNN/USA TODAY/GALLUP (04/05/03–04/06/03, 04/14/03–04/16/03, 04/22/03–04/23/03) and Pew Research Centre/Princeton Survey Research Associates (04/30/03–05/04/03)

Survey date	April 5–6, 2003	April 14–16, 2003	April 22–23, 2003	April 30–May 4, 2003
Very worried	10%	10%	11%	9%
Somewhat worried	27%	22%	32%	28%
Not too worried	39%	43%	36%	29%
Not worried at all	24%	24%	21%	34%
No opinion	0%	1%	0%	0%

Q2. How worried are you that you or someone in your family will be exposed to SARS? Data are from Pew Research Centre/Princeton Survey Research Associates (04/30/03), CBS News/The New York Times (05/09/03–05/12/03), Stony Brook Centre For Survey Research (05/01/03–05/20/03), Gallup (11/03/03–11/05/03)

Survey date	April 30–May 4, 2003	May 9–12, 2003	May 1–20, 2003	November 3–5, 2003
Very worried	12%	8%	8%	15%
Somewhat worried	23%	27%	27%	30%
Not too worried	31%	35%	35%	26%
Not worried at all	32%	30%	29%	29%
No opinion	2%	1%	1%	0%

Q3. How concerned are you that you or a family member will get SARS in the next 3 months? Data are from Harvard ICR (12/12/03–12/16/03, 10/29 /04–11/9/04)

Survey date	December 12–16, 2003	October 29–November 9, 2004
Very concerned	16%	10%
Somewhat worried	14%	11%
Not too worried	28%	25%
Not worried at all	42%	47%
No opinion	1%	7%

Q4. Do you think that SARS is very likely to affect you or someone in your immediate family in the next 12 months? Data are from the Harvard School of Public Health Project on Public and Biological Security/ICR

Survey date	April 11–15, 2003	April 25–30, 2003	May 2–6, 2003	July 18–22, 2003	January 7–11, 2004	August 25–29, 2004
Very likely	5%	3%	3%	2%	4%	2%
Somewhat likely	20%	11%	13%	4%	4%	5%
Not too likely	42%	33%	37%	29%	33%	31%
Not likely at all	31%	46%	44%	62%	57%	56%
No opinion	2%	7%	3%	3%	3%	6%

Note: A significantly higher percentage of subjects did not worry about being exposed to SARS, did not have concern that they or a family member would get SARS in the next 3 months, and did not think SARS was very likely to affect them or someone in their immediate family according to z test results (z score > 1.96 or < –1.96).

Table A5.1: Changes in Media Coverage over Time (Quarterly Intervals)

Time Interval (Months, Year)	No. of Articles	Biomedical Ratio	Economic Ratio	Security Ratio	Human Rights Ratio
1–3, 2004	17	0.26	0.31	0.05	0.01
4–6, 2004	1	0.20	0.24	0.16	0.00
7–9, 2004	6	0.43	0.11	0.01	0.00
10–12, 2004	4	0.41	0.18	0.01	0.00
1–3, 2005	5	0.56	0.06	0.01	0.01
4–6, 2005	8	0.44	0.19	0.13	0.00
7–9, 2005	7	0.54	0.21	0.06	0.00
10–12, 2005	35	0.33	0.22	0.08	0.02
1–3, 2006	36	0.38	0.19	0.04	0.01
4–6, 2006	17	0.43	0.14	0.01	0.01
7–9, 2006	7	0.69	0.02	0.01	0.00
10–12, 2006	4	0.26	0.16	0.16	0.04
1–3, 2007	8	0.68	0.14	0.00	0.03
4–6, 2007	1	0.90	0.00	0.00	0.00
7–9, 2007	3	0.24	0.18	0.00	0.00
10–12, 2007	2	0.88	0.50	0.00	0.00

Note: The ratio for each frame for a given news article was calculated as the number of times a given frame was mentioned divided by the total number of sentences in that news article, and the mean ratio for each frame in a given quarterly interval was calculated as the average of the ratios for all news articles published in the quarterly interval.

Table A5.2: Changes in Media Coverage over Time (Monthly Intervals)

Time Interval	No. of Articles	Medical Ratio	Economic Ratio	Security Ratio	Human Rights Ratio
Jan, 2004	7	0.37	0.10	0.03	0.00
Feb, 2004	8	0.20	0.45	0.08	0.01
Mar, 2004	2	0.09	0.46	0.02	0.00
Apr, 2004	1	0.20	0.24	0.16	0.00
Jul, 2004	2	0.50	0.04	0.02	0.00
Aug, 2004	1	0.25	0.03	0.00	0.00
Sep, 2004	3	0.44	0.19	0.00	0.00
Oct, 2004	1	0.66	0.16	0.00	0.00
Nov, 2004	1	0.26	0.05	0.02	0.00
Dec, 2004	2	0.36	0.25	0.00	0.00
Jan, 2005	1	0.33	0.00	0.00	0.00
Feb, 2005	3	0.69	0.07	0.02	0.00
Mar, 2005	1	0.41	0.09	0.00	0.07
Apr, 2005	3	0.47	0.20	0.02	0.01
June, 2005	5	0.42	0.18	0.20	0.00
Jul, 2005	2	0.33	0.00	0.10	0.00
Aug, 2005	3	0.65	0.42	0.02	0.00
Sep, 2005	2	0.59	0.10	0.06	0.00
Oct, 2005	15	0.38	0.23	0.10	0.02
Nov, 2005	12	0.28	0.29	0.05	0.03
Dec, 2005	8	0.29	0.10	0.07	0.01
Jan, 2006	11	0.36	0.14	0.04	0.00
Feb, 2006	13	0.38	0.25	0.04	0.02
Mar, 2006	12	0.40	0.15	0.03	0.00
Apr, 2006	6	0.38	0.16	0.00	0.00
May, 2006	6	0.41	0.11	0.02	0.01
June, 2006	5	0.52	0.16	0.02	0.00
Jul, 2006	2	0.51	0.00	0.00	0.00
Aug, 2006	4	0.73	0.04	0.01	0.00
Sep, 2006	1	0.90	0.00	0.00	0.00
Nov, 2006	2	0.29	0.11	0.15	0.09
Dec, 2006	2	0.23	0.21	0.17	0.00
Jan, 2007	1	1.00	0.00	0.00	0.00
Feb, 2007	7	0.63	0.16	0.00	0.03
Apr, 2007	1	0.90	0.00	0.00	0.00
Jul, 2007	1	0.14	0.43	0.00	0.00

Aug, 2007	1	0.33	0.00	0.00	0.00
Sep, 2007	1	0.23	0.12	0.00	0.00
Nov, 2007	1	0.75	0.00	0.00	0.00
Dec, 2007	1	1.00	1.00	0.00	0.00

Note: The ratio for each frame for a given news article was calculated as the number of times a given frame was mentioned divided by the total number of sentences in that news article, and the mean ratio for each frame in a given monthly interval was calculated as the average of the ratios for all news articles published in the monthly interval.

Table A5.3: Media Coverage: Weekly Average of the Four Media Frames in 2004

Time Interval	No. of Articles	Medical Ratio	Economic Ratio	Security Ratio	Human Rights Ratio
1/14/04–1/20/04	2	0.54	0.03	0.00	0.00
1/21/04–1/27/04	3	0.41	0.02	0.03	0.00
1/28/04–2/3/04	3	0.19	0.32	0.06	0.01
2/4/04–2/10/04	2	0.03	0.56	0.08	0.04
2/11/04–2/17/04	3	0.03	0.55	0.14	0.00
2/18/04–2/24/04	1	0.50	0.13	0.00	0.00
2/25/04–3/2/04	1	0.67	0.33	0.00	0.00
3/10/04–3/16/04	2	0.09	0.46	0.02	0.00
4/7/04–4/13/04	1	0.20	0.24	0.16	0.00
7/7/04–7/13/04	1	0.50	0.08	0.04	0.00
7/28/04–8/3/04	1	0.50	0.00	0.00	0.00
8/18/04–8/24/04	1	0.25	0.03	0.00	0.00
9/1/04–9/7/04	1	0.23	0.03	0.00	0.00
9/29/04–10/5/04	2	0.55	0.27	0.00	0.00
10/13/04–10/19/04	1	0.66	0.16	0.00	0.00
11/3/04–11/9/04	1	0.26	0.05	0.02	0.00
12/22/04–12/28/04	1	0.22	0.00	0.00	0.00
12/29/04–12/31/04	1	0.50	0.50	0.00	0.00

Note: The ratio for each frame for a given news article was calculated as the number of times a given frame was mentioned divided by the total number of sentences in that news article, and the mean ratio of each frame in a given weekly interval was calculated as the average of the ratios for all news articles published in the weekly interval.

Table A5.4: Media Coverage: Weekly Average of the Four Media Frames in 2005

Time Interval	No. of Articles	Medical Ratio	Economic Ratio	Security Ratio	Human Rights Ratio
1/12/05–1/18/05	1	0.33	0	0	0
2/9/05–2/15/05	1	0.23	0.03	0.06	0
2/23/05–3/1/05	2	0.92	0.08	0	0
3/16/05–3/22/05	1	0.41	0.09	0	0.07
4/6/05–4/12/05	2	0.43	0.17	0.03	0.01
4/27/05–5/3/05	1	0.53	0.27	0	0
6/1/05–6/7/05	1	0	0.08	0.75	0
6/15/05–6/21/05	2	0.46	0.09	0.12	0
6/22/05–6/28/05	2	0.59	0.32	0	0
7/20/05–7/26/05	2	0.33	0	0.1	0
8/3/05–8/9/05	2	0.48	0.14	0.03	0
8/10/05–8/16/05	1	1	1	0	0
9/14/05–9/20/05	2	0.59	0.1	0.06	0
10/5/05–10/11/05	4	0.37	0.17	0.14	0.02
10/12/05–10/18/05	5	0.44	0.2	0.14	0.02
10/19/05–10/25/05	3	0.25	0.28	0.08	0.05
10/26/05–11/1/05	3	0.44	0.33	0	0
11/2/05–11/8/05	4	0.25	0.3	0.08	0.02
11/9/05–11/15/05	1	0.04	0.72	0	0
11/16/05–11/22/05	3	0.4	0.11	0.01	0
11/23/05–11/29/05	4	0.28	0.31	0.07	0.08
12/7/05–12/13/05	4	0.28	0.16	0.1	0.03
12/14/05–12/20/05	1	0.33	0	0	0
12/21/05–12/27/05	2	0.38	0.06	0.08	0
12/28/05–1/3/06	1	0.06	0	0.02	0

Note: The ratio for each frame for a given news article was calculated as the number of times a given frame was mentioned divided by the total number of sentences in that news article, and the mean ratio of each frame in a given weekly interval was calculated as the average of the ratios for all news articles published in the weekly interval.

Table A5.5: Media Coverage: Weekly Average of the Four Media Frames in 2006

Time Interval	No. of Articles	Medical Ratio	Economic Ratio	Security Ratio	Human Rights Ratio
1/4/06–1/10/06	4	0.36	0.06	0.01	0.01
1/11/06–1/17/06	2	0.69	0.01	0.00	0.00
1/18/06–1/24/06	4	0.20	0.31	0.09	0.00
2/1/06–2/7/06	3	0.20	0.17	0.05	0.00
2/8/06–2/14/06	3	0.57	0.09	0.00	0.01
2/15/06–2/21/06	4	0.19	0.39	0.03	0.01
2/22/06–2/28/06	3	0.51	0.34	0.04	0.06
3/1/06–3/7/06	3	0.32	0.33	0.06	0.00
3/8/06–3/14/06	3	0.44	0.00	0.00	0.00
3/15/06–3/21/06	1	0.33	0.33	0.00	0.00
3/22/06–3/28/06	4	0.60	0.09	0.07	0.00
3/29/06–4/4/06	2	0.25	0.06	0.02	0.01
4/5/06–4/11/06	2	0.56	0.00	0.00	0.00
4/12/06–4/18/06	2	0.19	0.37	0.00	0.00
4/19/06–4/25/06	1	0.64	0.09	0.00	0.00
4/26/06–5/2/06	1	0.14	0.13	0.00	0.00
5/10/06–5/16/06	4	0.44	0.07	0.03	0.02
5/24/06–5/30/06	2	0.35	0.21	0.00	0.00
5/31/06–6/6/06	1	0.69	0.00	0.00	0.00
6/7/06–6/13/06	1	0.91	0.36	0.00	0.00
6/21/06–6/27/06	2	0.46	0.00	0.03	0.00
6/28/06–7/4/06	2	0.29	0.22	0.03	0.00
7/12/06–7/18/06	1	0.50	0.00	0.00	0.00
8/2/06–8/8/06	2	0.93	0.00	0.03	0.00
8/16/06–8/22/06	1	0.79	0.14	0.00	0.00
8/30/06–9/5/06	1	0.27	0.00	0.00	0.00
9/6/06–9/12/06	1	0.90	0.00	0.00	0.00
11/15/06–11/21/06	1	0.00	0.22	0.29	0.17
11/22/06–11/28/06	1	0.57	0.00	0.00	0.00
12/6/06–12/12/06	1	0.38	0.00	0.00	0.00
12/13/06–12/19/06	1	0.08	0.42	0.33	0.00

Note: The ratio of each frame for a given news article was calculated as the number of times a given frame was mentioned divided by the total number of sentences in that news article, and the mean ratio of each frame in a given weekly interval was calculated as the average of the ratios for all news articles published in the weekly interval.

Table A5.6: Media Coverage: Weekly Average of the Four Media Frames in 2007

Time Interval	No. of Articles	Medical Ratio	Economic Ratio	Security Ratio	Human Rights Ratio
1/10/07–1/16/07	1	1.00	0.00	0.00	0.00
1/31/07–2/6/07	2	0.46	0.02	0.00	0.00
2/7/07–2/13/07	2	0.55	0.30	0.00	0.05
2/14/07–2/20/07	1	0.58	0.47	0.00	0.11
2/28/07–3/6/07	2	0.90	0.00	0.00	0.00
4/18/07–4/24/07	1	0.90	0.00	0.00	0.00
7/11/07–7/17/07	1	0.14	0.43	0.00	0.00
8/1/07–8/7/07	1	0.33	0.00	0.00	0.00
9/19/07–9/25/07	1	0.23	0.12	0.00	0.00
11/21/07–11/27/07	1	0.75	0.00	0.00	0.00
12/12/07–12/18/07	1	1.00	1.00	0.00	0.00

Note: The ratio of each frame for a given news article was calculated as the number of times a given frame was mentioned divided by the total number of sentences in that news article, and the mean ratio of each frame in a given weekly interval was calculated as the average of the ratios for all news articles published in the weekly interval.

Table A5.7: Questions Regarding Willingness to Change Behavior in Response to News about Avian Flu

Q1. Do you agree that quarantining is important to limit the spread of avian flu? Data are from Wall Street Journal Online/Harris Interactive (08/03/05–08/05/05)(04/25/06–04/27/06), Fox Broadcasting Company (10/10/05–10/11/05), Harvard/ICR (01/17/06–01/25/06), Associated Press/IPSOS (04/18/06–04/20/06).

Survey date	Aug 3-5, 2005	Apr 25-27, 2006
Absolutely essential	25.0%	30.0%
Very important	40.0%	38.0%
Somewhat important	27.0%	25.0%
Not important	6.0%	4.0%
Not at all important	2.0%	2.0%

Survey date	Oct 11-12, 2005	Jan 17- 25, 2006	Jan17-25, 2006	Jan17-25, 2006	Jan17-25, 2006
Yes	65.0%	78.0%	83.0%	96.0%	75.0%
No	21.0%	14.0%	14.0%	4.0%	24.0%
Don't know	13.0%	9.0%	3.0%	1.0%	1.0%

Survey date	April 18-20, 2006	Apr 18-20, 2006
Favor	79.0%	82.0%
Oppose	19.0%	17.0%
Not sure	2.0%	1.0%

Q2. Would you do any of the following if a human case of the avian or bird flu was reported in your state? Data are from Harvard/ICR Q1: Avoid public event,, Q2: Get Tamiflu or other antiviral drugs Q3: Wash hands more frequently Q4: Warn others about avian or bird flu Q5: Reduce or avoid travel Data are from Harvard/ICR.

Question	1	2	3	4	5
Survey date	Jan 17-25, 2006	Jan 17- 25, 2006	Jan 17- 25, 2006	Jan 17- 25, 2006	Jan 17- 25, 2006
Yes	71.0%	68.0%	90.0%	94.0%	75.0%
No	28.0%	30.0%	9.0%	4.0%	24.0%
Don't know	1.0%	3.0%	0.0%	1.0%	1.0%

Q3.Would you do any of the following if a human case of the avian or bird flu were reported in your state? Data are from Harvard/ICR.

	Q7: Avoid traveling to that part of the world	Q8: Warn people about traveling to these parts of the world	Q9: Consult a website for information	Q10: Talk with your doctor about health issues	Q11: Wear a face mask

Survey date	Jan 17-25, 2006	Jan 17- 25, 2006	Jan 17- 25, 2006	Jan 17- 25, 2006	Jan 17- 25, 2006
Yes	81.0%	94.0%	79.0%	84.0%	52.0%
No	16.0%	5.0%	20.0%	15.0%	46.0%
Don't know	3.0%	1.0%	1.0%	1.0%	2.0%

Q4.Would you do or support any of the following if a human case of the avian or bird flu were reported in your state? Data are from Harvard/ICR (01/17/06–01/25/06), Associated Press/IPSOS (04/18/06–04/20/06)(04/18/06-04/20/06)(04/18/06-04/20/06).

	Q12: Stock up on things	Q14:Closing schools	Q15:Offering people experimental vaccines	Q16: Closing the borders
Survey date	Jan 17- 25, 2006	Apr 18- 20, 2006	Apr 18-20, 2006	Apr 8-20, 2006
Yes	85.0%	69.0%	65.0%	74.0%
No	14.0%	29.0%	34.0%	25.0%
Don't know	1.0%	2.0%	1.0%	1.0%

Would you do any of the following if a human case of the avian or bird flu were reported in your state? Data are from Wall Street Journal Online /Harris Interactive (04/25/06–04/27/06)(04/25/06–04/27/06)

	Q16: Stockpile critical medical supplies	Q17: Stockpile antiviral drugs
Survey date	Apr 25-27, 2006	Apr 25-27, 2006
Absolutely essential	25.0%	29.0%
Very important	34.0%	37.0%
Somewhat important	31.0%	28.0%
Not important	7.0%	5.0%
Not at all important	2.0%	2.0%

Note: A significantly higher percentage of subjects was willing to be quarantined or thought quarantining is important and were willing to take actions (all actions listed in Q2–Q10 and Q12–17) according to z test results (z score > 1.96). No significance was found for Q11.

Table A5.8: Questions about Actual Behavioral Changes Made in Response to News about Avian Flu

Q1. Have you talked with your doctor about the use of Tamiflu or other antiviral drugs for the treatment of avian or bird flu? Data are from Harvard/ICR		
Survey date	Jan 17- 25, 2006	
Yes	4.0%	
No	96.0%	
Don't know	0.0%	
Q2. Have you decreased the amount of chicken or turkey you eat because of concern about bird flu? Data are from Fox News/ODI		
Survey date	Feb 28-Mar 3, 2006	
Yes	10.0%	
No	88.0%	
Don't know	2.0%	
Q3. Have you taken any steps to prevent contracting bird flu? Data are from Fox News/ODI (02/28/06–03/03/06), Associated Press/IPSOS Public Affairs (03/18/06–03/20/06)		
Survey date	Feb 28-Mar 3, 2006	Apr 18-20, 2006
Yes	15.0%	9.0%
No	82.0%	91.0%
Don't know	3.0%	0.0%
Q4. Have you taken any of the following steps to prepare for a possible outbreak of bird flu among humans? Data are from Associated Press/IPSOS Public Affairs (04/18/06–04/20/06), Wall Street Journal Online /Harris Interactive (04/18/06–04/20/06)		
Survey date	Apr 18-20, 2006	Apr 18-20, 2006
Stockpiling food and water	67.0%	7.0%
Made plans to work from home	44.0%	3.0%
Made plans to keep children home	33.0%	
Asked your doctor for prescriptions for Tamiflu or other antiviral drugs	22.0%	
Looked for information		18.0%
Talked about pandemic		18.0%
Adjusted travel plans		6.0%
Prepared plan if pandemic happens		5.0%
Changed eating habits		3.0%
None of these		68.0%

Note: A significantly higher percentage of subjects did **not** take actual steps (e.g., asked doctor about Tamiflu, decreased the amount of chicken or turkey eaten, stockpiled food and water, worked at home, avoided travel, etc) to prepare for a possible outbreak of bird flu according to z test results (z score > 1.96 or < –1.96).

Table A5.9: Questions about Recognition of Avian Flu as a Threat

Q1. Are you worried that you or someone in your family will be the victim of the bird flu virus? (Survey by Cable News Network, USA Today. Data are from conducted by Gallup Organization (10/21/05–10/23/05), CNN/USA Today (12/09/05–12/11/05), Harvard/ICR (01/17/06–01/25/06), CNN/USA Today (03/10/06–03/10/06).

Survey date	Oct 21-23, 2005	Dec 9-11, 2005	Jan17-25, 2006	Mar 10-12, 2006
Worried	24.0%	20.0%	21.0%	29.0%
Not Worried/Not concerned	75.0%	78.0%	78.0%	70.0%
No opinion	1.0%	2.0%	1.0%	1.0%

Q2. How worried /concerned are you that you or someone in your family will be exposed to the bird flu? Data are from Pew/Princeton Survey Research Associates (11/3/05–11/6/05), Harvard/ICR (01/17/06–01/25/06), ABC News (03/02/06–03/05/06), Associated Press/IPSOS (04/03/06–04/05/06).

Survey date	Nov 3-6, 2005	Jan17-25, 2006	Mar2-5, 2006	Apr 3-5, 2006
Worried (concerned) a great deal	11.0%	4.0%	13.0%	11.0%
Worried (concerned) somewhat	27.0%	13.0%	28.0%	23.0%
Not too worried (concerned)	38.0%	3.0%	36.0%	37.0%
Not concerned		78.0%		
Not worried (concerned) at all	23.0%		23.0%	29.0%
No opinion/don't know	1.0%	1.0%		

Survey date	Apr 18-20, 2006	May 2 -14, 2006	Jun 7-21, 2006	Jan 18-22, 2007
Most concerned				9.0%
Worried (concerned) a great deal/a lot/Very worried (concerned)	11.0%	13.0%	12.0%	16.0%
Worried (concerned) somewhat	23.0%	31.0%	19.0%	35.0%
Not too worried (concerned)	37.0%	29.0%	24.0%	22.0%
Not concerned				
Not worried (concerned) at all	29.0%	26.0%	43.0%	18.0%

No opinion/don't know		1.0%	1.0%		
Q3. How likely do you think it is that the bird flu virus will strike the United States? Data are from CNN/USA Today (10/21/05–10/23/05), CNN/USA Today (12/09/05–12/11/05), ABC News (03/02/06–03/05/06), Wall Street Journal Online /Harris Interactive (04/25/06–04/27/06), AOL/IPSOS (12/31/06).					
Survey date	Oct 21-23, 2005	Dec 9-11, 2005	Mar 2-5, 2006	Apr 25-27, 2006	Dec. 31, 2006
Very likely (concerned)	16.0%		30.0%	20.0%	12.0%
Somewhat likely (concerned)	46.0%		47.0%	44.0%	38.0%
Not too likely (concerned)	29.0%		16.0%	24.0%	36.0%
Not likely (concerned) at all	7.0%		5.0%	7.0%	12.0%
No opinion/Don't know/Not sure	2.0%	2.0%	1.0%	6.0%	2.0%
Will not strike		14.0%			
Minor outbreak		63.0%			
Major outbreak		13.0%			
Crisis		8.0%			
Q4. How concerned are you that the United States will be part of an avian flu pandemic? Data are from Wall Street Journal Online/Harris Interactive (Polling the Nation) (08/03/05–08/05/05) and (04/25/06–04/27/06).					
Survey date	Aug 3-5, 2005	Apr 25-27, 2006			
Very concerned	12.0%	20.0%			
Somewhat concerned	39.0%	44.0%			
Not very concerned	33.0%	24.0%			
Not at all concerned	8.0%	7.0%			
Don't know	9.0%	6.0%			
Q5. How concerned are you about a pandemic outbreak of avian or bird flu in many countries at the same time? Data are from Harvard/ICR (01/17/06–1/25/06) and (O6/07/06–06/21/06)					
Survey date	Jan 17-25, 2006	Jun 7-21, 2006			
Very concerned	20.0%	16.0%			
Somewhat concerned	42.0%	35.0%			
Not very concerned	24.0%	29.0%			
Not at all concerned	13.0%	19.0%			
Don't know					
Q6. How concerned are you about the spread of bird flu in the United States? Data are from Fox News/ODI (10/11/05–10/12/05) (01/10/06–01/11/06), Harvard/ICR (01/17/06–01/25/06), Fox News/ODI (02/28/06–03/03/06), ABC News(03/02/06–03/05/06)					

	Oct 11-12, 2005	Jan 10-11, 2006	Jan 17-25, 2006	Mar 2-5, 2006	Feb 28-Mar 3, 2006
Survey date					
Very concerned	30.0%	26.0%	15.0%	23.0%	26.0%
Somewhat concerned	33.0%	31.0%	42.0%	38.0%	40.0%
Not very concerned	21.0%	28.0%	27.0%	25.0%	24.0%
Not at all concerned	11.0%	15.0%	14.0%	12.0%	10.0%
Don't know	5.0%	2.0%	1.0%	1.0%	

Q7. How likely do you think it is that there will be cases/more cases of avian or bird flu among…. in the United States during the next 12 months? Data are from Harvard/ICR

	a. Among wild birds	b. Among chickens or other farm-raised poultry	c. Among humans
Survey date	Jan 17-25, 2006	Jan 17-25, 2006	Jan 17-25, 2006
Very likely	12.0%	9.0%	6.0%
Somewhat likely	46.0%	34.0%	28.0%
Not too likely	27.0%	40.0%	42.0%
Not at all likely	11.0%	13.0%	22.0%
Don't know	3.0%	4.0%	3.0%

Table A5.10: Questions about Support for Funding for Research on Avian Flu

Q1. How important will it be to invest government dollars in the development and production of avian flu vaccines? Data are from Wall Street Journal Online /Harris Interactive (08/03/05–08/05/06)			
Survey date	Aug 3-5, 2005	Apr 25-27, 2006	
Absolutely essential	24.0%	30.0%	
Very important	37.0%	35.0%	
Somewhat important	31.0%	28.0%	
Not very important	5.0%	4.0%	
Not at all important	3.0%	3.0%	
Q2.Are you worried that the United States may not be doing enough to prevent contagious diseases such as SARS, lethal flu, and mad cow disease that come from other countries. Data are from the Public Agenda Foundation (06/01/05–06/13/05)(01/10/06–01/22/06)			
Survey date	Jun 1-13, 2005	Jan 10-22, 2006	
Worry a lot	23.0%	22.0%	
Worry somewhat	37.0%	41.0%	
Don't worry	39.0%	36.0%	
Don't know	1.0%	1.0%	
Q3.Do you think the United States is spending too much, too little, or about the right amount of money to protect the country against the avian or bird flu? Data are from Harvard/ICR (01/7/06–01/25/06), Trust for America's Health. Methodology: Greenberg Quinlan Rosner Research (01/18/06–01/22/07)			
Survey date	Jan 17- 25, 2006	Jan18- 22, 2007	
Too much/Much more	6.0%	20.0%	
Somewhat more		26.0%	
Little more		18.0%	
Too little	36.0%		
About the right/Right amount now	36.0%	32.0%	
Spend less		2.0%	
Don't know	22.0%	3.0%	
Q4. Do you think it is important to improve the country's ability to respond to new infectious diseases such as SARS (severe acute respiratory syndrome) and avian flu? Data are from Harvard/ICR			
Survey date	Mar 31-Apr 4, 2006(Sample A)	Mar 31-Apr 4, 2006(Sample B)	Apri11-15, 2007
Extremely important	46.0%	47.0%	43.0%
Very important	41.0%	41.0%	42.0%
Somewhat important	11.0%	11.0%	12.0%
Not an important thing to do	1.0%	1.0%	3.0%
Don't know	1.0%	0.0%	1.0%

Table A6.1: Changes in Media Coverage over Time HIV/AIDS (Semi Annual)

Time Interval	Number of Articles	Medical Ratio	Economic Ratio	Security Ratio	Human Rights Ratio
6-12, 1999	30	0.24	0.12	0.00	0.16
1-6, 2000	25	0.25	0.14	0.07	0.07
7-12,2000	32	0.26	0.16	0.03	0.08
1-6, 2001	58	0.25	0.29	0.02	0.10
7-12,2001	35	0.27	0.20	0.01	0.06
1-6, 2002	32	0.34	0.19	0.00	0.04
7-12,2002	32	0.17	0.29	0.01	0.11
1-6, 2003	40	0.27	0.20	0.02	0.11
7-12,2003	36	0.26	0.29	0.00	0.08
1-6, 2004	28	0.28	0.22	0.00	0.13
7-12,2004	28	0.25	0.17	0.00	0.15
1-6, 2005	34	0.27	0.14	0.01	0.07
7-12,2005	27	0.23	0.20	0.01	0.04
1-6, 2006	38	0.22	0.17	0.00	0.11
7-12,2006	31	0.30	0.17	0.00	0.13
1-6, 2007	33	0.22	0.16	0.00	0.10

Note: The ratio for each frame for a given news article was calculated as the number of times a given frame was mentioned divided by the total number of sentences in that news article, and the mean ratio for each frame in the given time interval (semiannual) was calculated as the average of the ratios for all news articles published in the monthly interval.

Table A6.2: Changes in Media Coverage over Time HIV/AIDS (Quarterly Interval)

Time Interval	Number of Articles	Biomedical Ratio	Economic Ratio	Security Ratio	Human Right Ratio
4-6,1999	5	0.05	0.22	0.00	0.16
7-9,1999	13	0.38	0.11	0.00	0.13
10-12,1999	12	0.17	0.10	0.00	0.20
1-3, 2000	11	0.32	0.11	0.15	0.05
4-6,2000	14	0.20	0.16	0.01	0.08
7-9,2000	19	0.24	0.15	0.05	0.10
10-12,2000	13	0.29	0.17	0.01	0.06
1-3, 2001	18	0.30	0.20	0.04	0.09
4-6,2001	40	0.23	0.33	0.01	0.10
7-9,2001	17	0.33	0.21	0.00	0.03
10-12,2001	18	0.22	0.18	0.01	0.09
1-3, 2002	15	0.42	0.16	0.00	0.03
4-6,2002	17	0.26	0.23	0.00	0.05
7-9,2002	14	0.21	0.26	0.01	0.18
10-12,2002	18	0.15	0.31	0.02	0.06
1-3, 2003	25	0.25	0.22	0.02	0.12
4-6,2003	15	0.32	0.15	0.00	0.08
7-9,2003	16	0.30	0.24	0.00	0.08
10-12,2003	20	0.23	0.33	0.00	0.08
1-3, 2004	14	0.32	0.27	0.00	0.03
4-6,2004	14	0.25	0.17	0.00	0.22
7-9,2004	14	0.19	0.24	0.00	0.09
10-12,2004	14	0.31	0.11	0.00	0.20
1-3, 2005	18	0.37	0.08	0.01	0.08
4-6,2005	16	0.17	0.21	0.00	0.06
7-9,2005	12	0.14	0.18	0.00	0.05
10-12,2005	15	0.30	0.21	0.02	0.03
1-3, 2006	15	0.21	0.14	0.00	0.12
4-6,2006	23	0.24	0.18	0.00	0.11
7-9,2006	15	0.30	0.18	0.00	0.12
10-12,2006	16	0.30	0.16	0.00	0.13
1-3,2007	15	0.21	0.12	0.00	0.11
4-6,2007	18	0.24	0.19	0.00	0.08

Note: The ratio for each frame for a given news article was calculated as the number of times a given frame was mentioned divided by the total number of sentences in that news article, and the mean ratio for each frame in a given quarterly interval was calculated as the average of the ratios for all news articles published in the quarterly interval.

Table A6.3: Questions Regarding Willingness to Change Behavior in Response to News about HIV/AIDS

Q1. Do you need more information about how to use condoms to protect against HIV and AIDS? (Kaiser/ Princeton Survey Research Associates)

	August 14 - October 26,	March 15-May
Survey date	2000	11, 2004
Yes	14%	14%
No	86%	85%
Don't know	0%	1%

Q2. Do you need more information about how to talk with children about HIV and AIDS? (Kaiser/ Princeton Survey Research Associates)

	August 14 - October 26,	March 15-May
Survey date	2000	11, 2004
Yes	44%	33%
No	56%	66%
Don't know	0%	1%

Q3. Do you need more information about where to go to get tested for HIV?(Kaiser/ Princeton Survey Research Associates)

	August 14 - October 26,	March 15-May	March 24 - April
Survey date	2000	11, 2004	18, 2006
Yes	26%	23%	35%
No	73%	76%	64%
Don't know	0%	1%	1%

Q4. Do you need more information about how to talk with your doctor or health care provider about HIV and AIDS?(Kaiser/ Princeton Survey Research Associates)

	August 14 - October 26,	March 15-May
Survey date	2000	11, 2004
Yes	19%	18%
No	81%	81%
Don't know	0%	1%

Q5. Do you need more information about how to talk with your partner about HIV and AIDS?(Kaiser/ Princeton Survey Research Associates)

	August 14 - October 26,	March 15-May	March 24-April
Survey date	2000	11, 2004	18, 2006
Yes	19%	17%	31%
No	80%	82%	67%
Don't know	1%	1%	2%

Table A6.4: Questions about Actual Behavioral Changes Made in Response to News about HIV/AIDS

Q1a. Have you, yourself, ever been tested for HIV the virus that causes AIDS? (If yes, ask, Was that in the past 12 months, or not?)
Kaiser/ Princeton Survey Research Associates

Survey date	August 14 - October 26, 2000	March 15 -May 11, 2004	March 24 -April 18, 2006
Yes, tested within past 12 months	17%	20%	18%
Yes, tested, but not in the past 12 months	26%	28%	29%
No, never tested	55%	50%	52%
Don't know or refused	2%	2%	1%

Q1b. Have you, yourself, ever been tested for HIV?
Kaiser/ Princeton Survey Research Associates (08/14 - 10/26/2000, 03/15 - 05/11/2004)
National Opinion Research Center, University of Chicago (03/10/-08/07/2006)

Survey date	December 10 - January 19, 2003	March 15-May 11, 2004	March 10 - August 7, 2006
Yes	64%	48%	38%
No	34%	50%	62%
Don't Know	1%	2%	0%

Q1c. Now thinking about any medical tests you may have had in the last two years, have you had a test for HIV the virus? (Kaiser/ Princeton Survey Research Associates).

	March 28 - July 29, 2001	July 6- September 26, 2004
Yes	33%	23%
No	64%	76%
Don't Know	3%	1%

Q2. Have you ever talked with a doctor or health care provider about HIV and AIDS? (Kaiser/ Princeton Survey Research Associates).

Survey date	August 14 - October 26, 2000	December 10 - January 19, 2003	March 15 - May 11, 2004	March 24 - April 18, 2006
Yes	30%	50%	38%	38%
No	70%	50%	62%	61%
Don't know	0%		0%	1%

Q3. Have you and your partner ever had a conversation about whether to get tested for HIV/AIDS? (Kaiser/ Princeton Survey Research Associates)

Survey date	December 10 - January 19, 2003	March 15-May 11, 2004
Yes	51%	45%

No	49%	54%
Don't know	0%	0%

Q4. Have you personally ever personally talked about HIV or AIDS with (your) child or not?
Kaiser/ Princeton Survey Research Associates (02/07/-09/04/2000, 12/07/-01/18/2001), NPR/Harvard/ Kaiser/ Princeton Survey Research Associates (09/29/-10/23/2003)

Survey date	February 7 - September 4, 2000	December 7 - January 18, 2001	September 29 - October 23, 2003
Yes	76%	55%	87%
No	24%	44%	13%
Don't know	0%	1%	0%

Table A6.5: Questions about Recognition of HIV/AIDS as a Threat

Q1a. Do you think HIV is a more urgent problem or a less urgent problem, or is it the same for this country, than it was a few years ago?(Kaiser/Princeton Survey Research Associates)

Survey date	February 7-September 4, 2000	August 14-October 26, 2000
More Urgent	49%	49%
Less urgent	15%	13%
About the same	34%	35%
Don't know/refused	2%	3%

Q1b. Do you think the number of new HIV infections per year in the US (United States) has increased, decreased, or stayed about the same? Associated Press/IPSOS Public Affairs (07/19/-07/21/2004), Kaiser/ Princeton Survey Research Associates (03/24/-04/18/2006)

Survey date	July 19-July 21, 2004	March 24-April 18, 2006
More people (Increased)	52%	57%
Fewer people (decreased)	20%	12%
About the same	25%	25%
Don't know/refused	3%	6%

Q1c. Do you think HIV/AIDS is a bigger or a smaller problem now than it was 5 years ago, or is the problem of HIV/AIDS about the same as it was 5 years ago? (Kaiser/Princeton Survey Research Associates)

Survey date	April 23-May 6, 2007
Bigger problem	42%
Smaller problem	15%
About the same	39%
Don't know/refused	5%

Q2. Thinking about the way the problem of HIV/AIDS affects the United States today; do you think the problem is about the same as it has been, that the U.S. today is making progress in this area, or that the U.S. today is losing ground? Harvard/Washington Post(06/13/-06/23/2002), Kaiser/Princeton Survey Research associates(03/15/-05/11/2004, 10/04/-10/09/2005, 03/24/-04/18/2006)

Survey date	June 13-June 23, 2002	March 15 - May 11, 2004	October 4-October 9, 2005	March 24-April 18, 2006
Making progress	49%	47%	41%	40%
about the same	20%	13%	26%	22%
Losing ground	26%	36%	24%	29%
Don't know/refused	6%	5%	9%	10%

Q3. Please tell me if you think it is a very big problem, a moderately big problem, a small problem or not a problem at all.)...The spread of HIV/AIDS and other infectious diseases. (Pew/ Princeton Survey Research Associates)

Survey date	August 19-September 8, 2002	April 23-May 6, 2007
Very big problem	42%	39%
Moderate big problem	41%	42%
Small problem	13%	15%
Not a problem at all	1%	1%
Don't know/refused	2%	2%

Q4. Bearing in mind the different ways people can be infected with HIV--how concerned are you personally about becoming infected with HIV? Are you very concerned, somewhat concerned, not too concerned, or not at all concerned? Kaiser/Princeton Survey Research Associates (09/10-10/19/1997, 02/07-09/04/2000, 08/14/-10/26/2000, 01/25/-01/28/2001, 03/15/-05/11/2004, 03/24/-04/18/2006) Harvard/Washington Post(06/13/-06/23/2002), Gallup(11/03/-11/05/2003), Associated Press(07/19/-07/21/2004)

Survey date	September 17 - October 19, 1997	February 7-September 4, 2000	August 14 - October 26, 2000	January 25 - January 28, 2001
Very concerned/worried	24%	21%	19%	26%
Somewhat concerned/worried	17%	23%	18%	15%
Not too concerned/worried	21%	18%	22%	22%
Not concerned at all	38%	38%	39%	26%
Don't know/refused		1%		

Survey date	June 13-June 23, 2002	November 3-November 5, 2003	March 15 - May 11, 2004	July 19-July 21, 2004
Very concerned/worried	18%	7%	17%	10%
Somewhat concerned/worried	15%	9%	14%	12%
Not too concerned/worried	21%	18%	25%	26%
Not concerned at all	45%	66%	44%	52%
Don't know/refused	1%			

Survey date	March 24-April 18, 2006	January 26-March 8, 2009
Very concerned/worried	15%	13%

Somewhat concerned/worried	14%	12%
Not too concerned/worried	22%	23%
Not concerned at all	49%	50%
Don't know/refused		1%

Q5.How concerned are you about a son or daughter becoming infected with HIV? Are you very concerned, somewhat concerned, not too concerned, or not at all concerned? Kaiser/Princeton Survey Research Associates(08/14/-10/26/2000, 03/15/-05/11/2004, 03/24/-04/18/2006)

	August 14 - October 26, 2000	March 15-May 11, 2004	March 24-April 18, 2006
Survey date			
Very concerned/worried	44%	36%	32%
Somewhat concerned/worried	27%	32%	28%
Not too concerned/worried	15%	17%	21%
Not concerned at all	14%	14%	19%
Don't know/refused	1%		1%

Q5b.How big a problem you think HIV/AIDS is for teens in general(NPR/Harvard/Kaiser/ Princeton Survey Research Associates)

	September 29-October 23, 2003
Survey date	
Major problem	65%
Minor Problem	31%
Not a problem at all	2%
Don't know/refused	3%

Q6.What do you think is the most urgent health problem facing this nation today? Kaiser/Princeton Survey Research Associates(08/14/-10/26/2000, 03/15/-05/11/2004, 10/04/-10/09/2005,03/24/-04/18/2006)Kaiser/ Harvard/ Washington Post(06/13/-06/23/2002)

	August14 - October26, 2000	June 13 - June 23, 2002	March 15 - May 11, 2004	October 4 - October 9, 2005
Survey date				
HIV	26%	17%	21%	16%

	March 24 - April 18, 2006
Survey date	
HIV	17%

Q7. How serious a problem would you say HIV/AIDS is? Would you say it is a very serious problem, a somewhat serious problem, not too serious of a problem, or not a problem at all?

Survey date	July 13 - July 17, 2001	July 19-July 21, 2004
Very serious problem	82%	61%

Somewhat serious problem	14%	33%
Not too serious a problem/Not very serious	2%	4%
Not a problem at all	1%	2%
Don't know/refused	1%	
Survey date	July 10-July 11, 2002	
Very serious problems	68%	
Fairly serious problem	17%	
Just somewhat of a problem	9%	
Not really a problem	4%	
Not sure	2%	
Survey date	May 10-May 16, 2004	June 23-June 28, 2005
Extremely serious	35%	44%
Very serious	44%	37%
Somewhat serious	16%	15%
Less serious	4%	3%
No opinion/Don't know	1%	2%

Q8. What do you think is the most urgent health problem facing the world today? Kaiser/Princeton Survey Research Associates(08/14-10/26/2000, 07/18/-07/21/2002,03/15/-05/11/2004,03/14/-04/18/2006) Harvard/ Washington Post(06/13/-06/23/2002)

Survey date	August 14 - October 26, 2000	June 13 - June 23, 2002	July 18 - July 21, 2002
HIV	37%	33%	50%
Survey date	March 15 - May 11, 2004	March 24 - April 18, 2006	
HIV	36%	34%	

Q9 .Which one of the following two statements comes closer to your views? The HIV/AIDS problem worldwide is best described as 'an epidemic.' HIV/AIDS is a serious problem, but it is an exaggeration to call it 'a pandemic.' Kaiser Family Foundation, Washington Post, Harvard University (06/13-06/23/2002), Kaiser/ Princeton Survey Research Associates(03/15/-05/11/2004)

Survey date	June 13 - June 23, 2002	March 15 - May 11, 2004
Best described as 'an epidemic'	67%	70%
An exaggeration to call it 'an epidemic'	28%	26%
Don't know/Refused	5%	4%

Q10.Do you think the problem of HIV/AIDS is about the same as it has been, that the world today is making progress in this area, or that the world today is losing ground? Kaiser Family Foundation, Washington Post, Harvard University(06/13/-06/23/2002), Kaiser/ Princeton Survey Research Associates(03/15/-05/11/2004, 03/24/-04/18/2006)

Survey date	June 13 - June 23, 2002	March 15 - May 11, 2004	March 24 - April 18, 2006
Making progress	35%	38%	36%
about the same	15%	9%	16%
Losing ground	45%	49%	40%
Don't know/refused	5%	4%	8%

Table A6.6: Questions on Support for Federal Funding on HIV/AIDS

Q1.Do you think federal spending on AIDS is too high, low or about right compared to other diseases? Kaiser/Princeton Survey Associates(09/17/-10/19/97,02/07-09/04/2000, 08/14/-10/26/2000, 06/13/-06/23/2002,03/15-05/11/2004, 10/04/-10/09/2005,03/24/-04/18/2006)

Survey date	September 17-October 19, 1997	, February 7-September 4, 2000	August 14-October 26, 2000	June 13-June 23, 2002
Too high/too much	11%	9%	8%	11%
Too low/too little	40%	40%	43%	29%
About right	5%	39%	30%	42%
Don't know or refused	14%	12%	19%	18%

Survey date	March 15-May 11, 2004	October 4-October 9, 2005	March 24-April 18, 2006
Too high/too much	6%	13%	7%
Too low/too little	42%	29%	48%
About right	40%	43%	24%
Don't know or refused	12%	16%	21%

Q2. Do you think the federal government spends too much money on AIDS, too little money, or about the right amount? Kaiser/Princeton Survey Associates (08/14-10/26/2000, 06/13-06/23/2002, 03/15-05/11/2004, 10/04-10/09/2005, 03/24/-04/18/2006) Time/ABC News (05/10-05/16/2004)

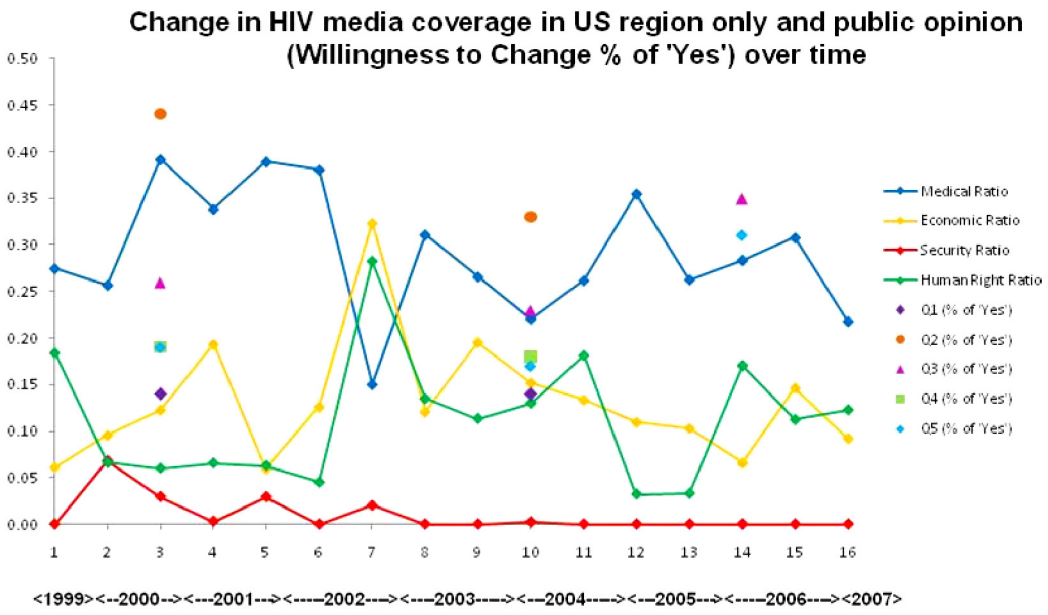
Survey date	August 14-October 26, 2000	June 13-June 23, 2002	March 15-May 11, 2004	May 10-May 16, 2004
Too high/too much	5%	5%	5%	5%
Too low/too little	55%	39%	52%	53%
About right	25%	39%	36%	38%
Don't know or refused	15%	15%	8%	4%

Survey date	October 4-October 9, 2005	March 24-April 18, 2006
Too high/too much	9%	7%
Too low/too little	42%	63%
About right	33%	17%
Don't know or refused	16%	14%

Q3.Do you think that spending more money on HIV/AIDS prevention in the United States will lead to meaningful progress in slowing the epidemic, or that spending more money won't make much difference? Kaiser/Princeton Survey Associates (03/15/-03/11/2004, 10/04/-10/05/2005, 03/24/-04/18/2006, 03/24/-04/18/2006)

Survey date	March 15-May 11, 2004	October 4-October 9, 2005	March 24-April 18, 2006	March 24-April 18, 2006

Lead to meaningful progress	57%	44%	62%	59%
Won't make much difference	34%	48%	30%	31%
Depends	3%	3%	5%	3%
Don't know or refused	7%	5%	4%	7%
Survey date	March 24-April 18, 2006			
Lead to meaningful progress	62%			
Won't make much difference	32%			
Depends	5%			
Don't know or refused	4%			
Q4.Do you think improving treatment and prevention of HIV and AIDS is important national priority ?Harvard, Robert Wood Johnson Foundation/ICR(03/30-04/03/2005, 03/31/-04/04/2006, 03/31/-04/04/2006, 04/11/-04/15/2007)				
Survey date	March 30-April 3, 2005	March 31-April 4, 2006	March 31-April 4, 2006	April 11-April 15, 2007
Extremely important	42%	49%	50%	52%
Very important	40%	38%	39%	35%
Somewhat important	14%	10%	10%	9%
Not important	2%	1%	2%	2%
Shouldn't be on nation's health agenda	1%	1%	0%	1%



FigureA6.1: Changes in Media Coverage over Time and Public Opinion about Willingness to Change Behavior (Coverage on United States)

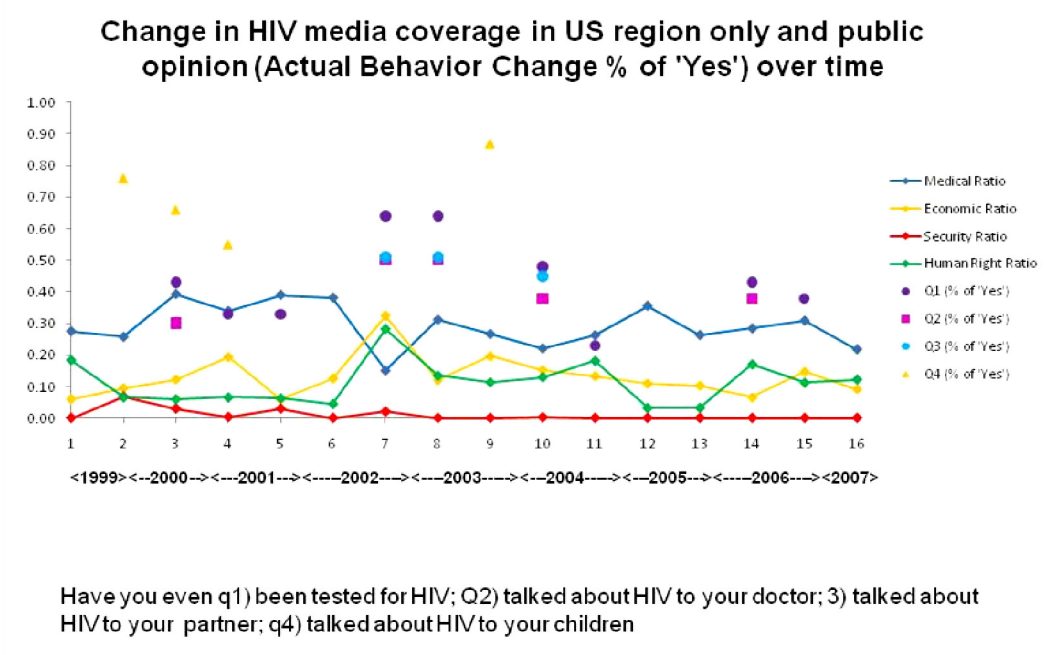
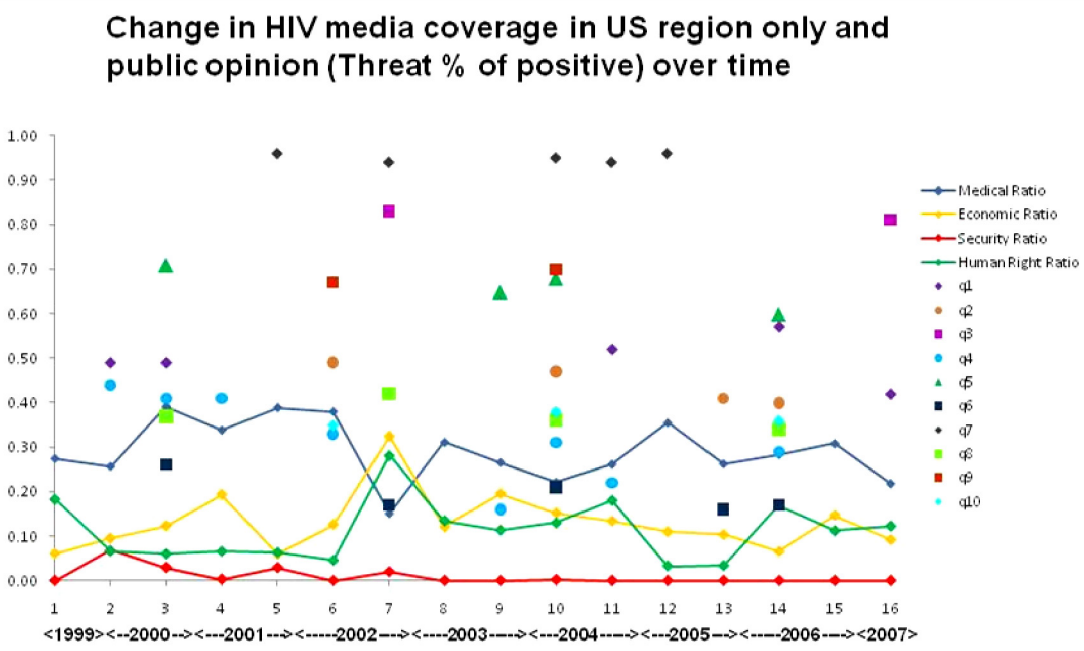


Figure A6.2: Changes in Media Coverage over and Public Opinion about Actual Behavioral Changes (Coverage on United States)



Q1: HIV is a more urgent/bigger problem; Q2: US is making progress in HIV problem; Q3: How you think the problem of HIV/AIDS; Q4: How concerned are you about HIV problem; Q5:How concerned are you about a son or daughter becoming infected with HIV; Q6:most urgent health problem facing this nation today; Q7: How serious a problem would you say HIV/AIDS is?; Q8:What do you think is the most urgent health problem facing the world today? Q9: HIV is 'an epidemic' or not; Q10: Do you think the world today is making progress in HIV

Figure A6. 3: Changes in Media Coverage over Time and Public Opinion about HIV as Threat (Coverage on United States)

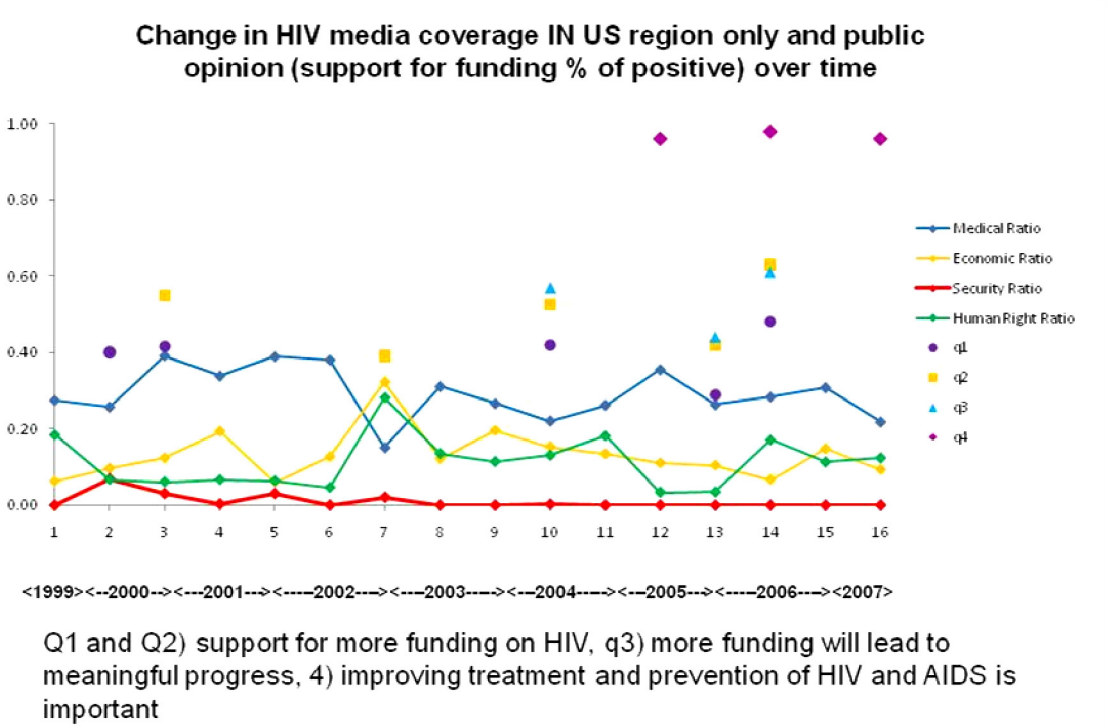


Figure A6. 4: Changes in Media Coverage over Time and Public Opinion on Support for Funding (Coverage on United States)

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