

**Putting the Public into Public Health: Health Policy Related Opinion and Public Policy**

By

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## **Abstract**

Understanding how public opinion towards health issues shape policy preferences and confidence in government requires not only understanding why such events engage public sentiments but also why they should matter to lawmakers and health policy experts. In an effort to understand the role of public opinion and emotion in towards health issues I explore three salient issues in health policy. First, using the policy diffusion framework, I explore how public opinion influenced state adoption of provisions of the ACA. Second, I explore how the threat of an outbreak of measles occurring in a community influences attitudes toward mandatory vaccination policies. Finally, I examine how individual anxiety towards Ebola influences confidence in government and policy preferences towards restrictive policies involving Ebola. My findings suggest that public opinion towards health policy issues not only influence state adoption of policy, but also influences individual policy preferences and evaluations of government.

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## **Chapter 1**

### **Public Opinion, Public Policy and its Influence on Health Policy Issues**

#### **Introduction**

When public health concerns receive considerable attention from politicians and media outlets, public anxiety about health issues is likely. Such fears and anxiety have been apparent recently with the measles outbreak connected to Disneyland in California and related calls for mandatory vaccinations of all children, and the Ebola outbreak in the Western African countries of Guinea, Sierra Leone, and Liberia, which increased the public's concern about a widespread epidemic affecting the United States (Pew Research Centers 2014). In addition, the public continues to be divided over the Patient Protection Affordable Care Act (ACA), with Republicans calling for its full repeal and Democrats pushing for states to expand coverage under the law. Each of these events, whether they involve an epidemic of disease, an outbreak of the measles, or health reform, all play an important role in how individual attitudes and public opinion shape health policy issues.

Although researchers have examined public attitudes towards various health policy issues (see Frewer 2003; Gollust and Lynch 2011; Jacobs and Mettler 2011; Joffe 2011) less is known about how public attitudes on health policy issues influence policymaking or how confidence in government is shaped by attitudes about disease and other health issues. Public attitudes toward health issues can be shaped by anxiety or misunderstanding over a disease, its causes, and its potential consequences for society.

Anxiety can not only increase intolerance towards certain groups but can also influence individual preferences towards policy (Huddy et al. 2005). The recent outbreak of measles in California shows how anxiety can influence public attitudes towards certain groups. A recent

CNN poll found that 78 percent of individuals believed parents should be required to vaccinate their children against preventable diseases; 58 percent of individuals believe that children who are not vaccinated should not be allowed to participate in public schools or day care activities (LaMotte 2015). Similarly, when the public was made aware that a citizen from Liberia (a country not impacted by the Ebola outbreak) traveled to Texas infected with Ebola, an ABC/Washington Post poll in 2014 found that 73 percent of the public supported restricting entry into the United States from individuals coming from areas impacted by Ebola.

The central tenant in most democracies is that the government should be responsive to the preferences of the citizens. However, should policymakers be responsive to public opinion even when public demands are not based in evidence? How do policymakers balance the rights of parents to decide health care options for their children versus potential outbreaks of diseases that have long been eradicated within the United States? Should policymakers ban travel to and from countries that have been impacted by an outbreak of disease because of public concerns about a potential outbreak occurring in the United States? Should states be responsive to desires of their citizens when it comes to expansion of Medicaid? This dissertation explores potential answers to these questions and more broadly examines the interplay between public opinion and public health issues.

### **Public Opinion and Policy**

To say that views about the impact of public opinion on policy vary widely would be an understatement (Burstein 2014). For example, Stimson et al. (1995) found a relationship between the preferences of the public and policy outcomes at the national level existed. Similar results have also been found at the state level (Erikson et al. 1993; Lax and Phillips 2009, 2012). On the other side of the debate are the many scholars who consider the idea that public opinion

influences policy absurd and dismiss findings that support the opinion influencing policy (Manza and Brooks 2012). Theda Skocpol, for instance, argues that public opinion had little to do with the way the American welfare system was structured. Instead, she finds that structural factors of the government, mainly the multiple veto points, help explain why the American welfare system is very different from those in European countries (Skocpol 1995).

The belief that politicians are responsive to public opinion ultimately rests on the assumption that political elites derive benefit from pursuing policies that are (or appear to be) in line with the wishes of citizens (Downs 1957; Jacobs and Shapiro 2000; Manza and Cook 2002). For example, Mayhew (1974) argued that the primary motivation for legislators to be responsive to constituents is the desire to be reelected. However, accepting that legislators are responsive to constituents assumes that legislators know the desires of their citizens. Scholars have suggested for years that the policy preferences of most citizens are either nonattitudes and are incapable of coherently informing policy or they are so weakly held they are able to be manipulated by political elites (Converse 1964). Some studies have tried to paint a more improved capacity of the public (Nie et al. 1979), but most research has continued to find little evidence that voters are informed (Delli Carpini and Keeter 1996).

If information is low, can citizens meaningfully express opinions in ways legislators are able to react to? Recent work in political psychology has provided answers to this question. For example, Zaller and Feldman (1992) contend that individuals have a large number of “considerations” stored in memory and the saliency of an issue or priming can help the individual recall certain opinions that are top of mind. Other work has suggested public opinion moves over time in ways that are seen by political elites as the will of the voters (Erikson et al. 2002; Page and Shapiro 1992). Still, politicians are frequently not able to draw on survey-based

information about public attitudes because poll data does not exist on most of the questions that come before policymakers (Burstein 2006; Burstein 2014; Nicholson-Crotty 2009). Many of the problems listed above have plagued health reform efforts in the United States.

### **Public Opinion and Health Policy**

Most people know little or nothing about most policies – and cannot be expected to. Major pieces of legislation are often complicated and impossible to understand in detail; for example, the ACA alone was 906 pages. Although most citizens approved of major provisions of the law (i.e. preexisting conditions, children staying on their parents' insurance until 26, and the removal of insurance caps), the public was divided on the law as a whole (Jacobs and Metter 2011). A recent Kaiser Health Tracking Poll in April of 2016 found that 49 percent of adults had an unfavorable opinion of the ACA while only 38 percent of adults had a favorable opinion of the ACA (Kaiser Family Foundation 2016).

Where people say they obtained their information on the law helps to clarify the divided opinion towards the law. Prior to the passage of the ACA, 68 percent of respondents said they were getting their information from family and friends. 63 percent also mentioned cable, and 55 percent mentioned broadcast news programs. The survey found that of those who watched Fox News 78 percent were opposed to the law, while 52 percent of those who watched CNN favored the law (Kaiser Family Foundation 2010). Even with divisions over the ACA evident, the ACA still passed in 2010. What allowed this attempt of health care reform to pass when so many health reforms since the 1930s had failed?

One reason is that it was just the right time. Jacobs and Skocpol (2012) argue major reforms such as Social Security, Medicare or Medicaid are enacted only when the stars align just right. In many ways though, the environment in 2008 was eerily similar to the lead-up of the

1992 election with the country facing an economic downturn and engaged in a war in the Middle East taking attention away from domestic matters (Jacobs 2008). However, the major difference present in 2008, which was not possible in 1992, were the convincing majorities Democrats had in both the House and Senate which aligned with a Democratic president in the White House (Jacobs and Skocpol 2012). Still though, the implementation of the ACA rested upon the states and its acceptance of expanding Medicaid to individuals at or below 138 of the Federal Poverty Line and objections to the ACA were almost instant. In fact, the very day President Obama signed the ACA into law, twelve states had already joined a lawsuit with the State of Virginia challenging the constitutionality of the ACA (Joondeph 2011).

The success of the ACA rested upon a two-prong state adoption process. The first was through the creation of a health exchange system in which individuals could compare insurance plans and select a plan suitable to their needs. The second was through the expansion of Medicaid to all citizens under the age of sixty-five earning up to 138% of the federal poverty level. To help states deal with the increased costs associated with the expansion of Medicaid, the federal government agreed to subsidize 100% of the costs of adding new enrollees from 2016, after which the share would gradually decline until 2022 when the government will cover 90% of the costs (Young 2012).

The expansion of Medicaid was the primary tool the federal government employed to tackle the health care access problem in the United States (Jacobs and Callaghan 2013). However, the U.S. Supreme Court ruling in *NIFB v. Sebelius* in 2012 essentially stripped the mechanism in which the government used to entice to Medicaid expansion; as such, states were able to make decisions on the expansion of Medicaid absent of fiscal coercion. What led states to

adopt provisions of the ACA and did public opinion towards the ACA play any role in that decision process? This question is more fully explored in Chapter 2.

Beyond the ACA, public opinion plays an important role in others areas of health policy. Recently, significant research has examined the role emotions play towards health policy and other issues like terrorism (Albertson and Gadarian 2015; Davis and Silver 2004; Huddy et al. 2002, 2005). Emotions are “multi-faceted, whole-body phenomena” (Gross and Thompson 2009, 5) that occur when individuals evaluate a situation which changes perceptions and behaviors (Albertson and Gadarian 2015; Clore and Isbell 2001).

In Chapter 4, I examine how emotions, mainly anxiety, influence confidence in government. Anxiety occurs when an individual evaluates a situation as being unpleasant, highly threatening, and uncertain (Lerner and Keltner 2000, 2001). Anxiety can manifest itself in two ways. First, anxiety can occur because of concern for oneself or one’s family. Secondly, anxiety can develop out of a concern about a potential threat towards society, the country as a whole, or the region where one lives, often referred to as sociotropic threat. To understand how anxiety influences political attitudes, I examine how anxiety towards Ebola influences confidence in government and support for more restrictive policies for people entering the United States from areas affected by Ebola in Chapter 4.

Finally, I examine how the perception of threat, like an outbreak of measles, influences support for mandatory vaccination policies. Threat perception occurs when an individual determines a distressing event will likely occur. This perception, whether it is real or perceived influences policy preferences and intolerance towards the groups responsible for the perceived threat (Huddy et al. 2005).

Although threat perception has not been widely utilized in health policy research, the impact of threat and its influence on policy has been documented within counterterrorism literature. For example, Davis and Silver (2004) found that individuals who were more concerned about a future terrorist attack were more likely to support counterterrorism policies that limit civil liberties but provide for additional securities. Similarly, Huddy et al. (2005) find that individuals who perceive an imminent terrorist attack in the United States were more likely to support antiterrorism policies that restricted civil liberties. Individual perceptions of threat lead citizens to support policies that they believe will neutralize the source of the threat and protect them (Gadarian 2010; Gordon and Arian 2001). Chapter 3 of the dissertation is an attempt to examine how threat perception influences support for mandatory vaccination policies.

Three separate empirical projects examining the influence of opinion on health policy issues make up the body of the dissertation. They are each briefly outlined below. The fifth and final chapter of the dissertation summarizes the findings of these projects and discusses their collective implications and relevance to policymakers and scholars of public policy.

## **Overview of the Dissertation**

### **Chapter 2**

Chapter 2 examines the influence of public opinion on state adoption of provisions of the ACA. Even with the passage of the Patient Protection and Affordable Care Act (ACA) in 2010, health care continues to be a prominent point of conflict between national and state policy agendas. Public attitudes towards the ACA have been divided, even though many support the provisions of the ACA. Additionally, most opposition comes from Republicans and Conservatives.

Although 32 states have decided to expand Medicaid and 17 states have created a state-run health insurance marketplace, this chapter seeks to understand if state adoption of provisions of the ACA is driven by public opinion or some other force (external or internal) to the state. Using a policy diffusion framework, my findings indicate that citizen preferences on the ACA have influenced the likelihood of policy adoption, but state adoption of ACA provisions is shaped more by citizen and elite political ideology.

### **Chapter 3**

Chapter 3 examines whether threat perception influences support for mandatory vaccination policies. With the 2014 measles outbreak tied to Disneyland resorts in California in 2014, we have observed a renewed debate over childhood vaccinations and alleged side effects. The success of infant and childhood immunizations programs is one of the most effective health interventions of the 20th century and is credited with a substantial portion of the overall increase in life expectancy. However, despite the scientific evidence suggesting that the side effects of vaccines are minimal, support for the government requiring parents to vaccinate their children is mixed. Considerable research has suggested that support for more restrictive public policies is influenced by the perception of threat.

Using data from a nationally representative sample of 1,199 adults conducted after the Disneyland measles outbreak, I explore the extent to which the perception of threat influences support for mandatory vaccination policies. The results suggest that threat perception and political ideology influence support for mandatory vaccination policies. The results also have broader implications for the relationship between threat perception and policy ideology as the analysis shows that threat perception influences liberals differently than with conservatives.

### **Chapter 4**

Finally, Chapter 4 examines how emotions (anxiety) towards epidemics of disease influence evaluations of government and policy preferences. When public health concerns receive considerable attention from politicians and media outlets, public anxiety and fear are likely. These emotions limit the ability of the government to communicate risks or prevention mechanisms to the public effectively and may influence the public's confidence in the government's ability to prevent an outbreak in the United States. The recent outbreak of the Ebola virus in the Western African countries of Guinea, Sierra Leone, and Liberia provides an opportunity to examine how anxiety influences confidence in government and support for more restrictive policies to prevent an Ebola outbreak from occurring in the United States

Using individual-level survey data collected in 2014, this chapter examines whether individual anxiety about contracting Ebola influences confidence in the government's response to potential outbreaks in the United States and support for restrictive policies during a health crisis. The results suggest that concern about Ebola does influence confidence in government and that sociotropic concerns about Ebola predict support for more restrictive policies during times of a health crisis.

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## Chapter 2

### **Do Legislators Listen to the Public? Policy Responsiveness and State Resistance to the Affordable Care Act**

#### **Introduction**

With the passage of the ACA in 2010 by President Obama and the then Democratic – controlled House and Senate, health care continues to be a prominent point of conflict between national and state policy agendas. This conflict is due to increasing health care costs that influence both state and federal budgets through Medicaid. Since the passage of the ACA, public attitudes towards the ACA have been divided, even though many support the provisions of the ACA. Not surprisingly, most opposition towards the ACA comes from Republican legislators and governors who have vigorously fought against creating state-run health insurance<sup>1</sup> marketplaces and the expansion of Medicaid. Despite this, 32 states have decided to expand Medicaid and 17 states have created a state-run health insurance marketplace.

A basic tenant of democratic theory suggests citizens elect officials to pass laws that are in line with their policy preferences. While considerable research has examined the connection between policy and public opinion (Lax and Phillips 2009a, 2012; Page and Shapiro 1983), less is known about the connection between public opinion and health policy issues. This chapter examines the relationship between public opinion and state adoption of provisions of the ACA.

The analysis proceeds as follows. First, I provide a background of the dilemma states are facing with the Medicaid program. Secondly, I outline the two complementary theories that allow us to understand both how public opinion influences state decision-making regarding

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<sup>1</sup> States creating a state-run marketplace are responsible for performing all marketplace functions. For purposes of this analysis, federally supported state-run marketplaces were included as well. The only difference is states get IT support from the federal government.

policy and how other external and internal state factors influence state policymaking as well. I then test components of these frameworks by employing Event History Analysis (2010 to 2015) from the American states in an empirical model of state adoption of provisions of the ACA. Finally, I discuss the theoretical and empirical implications of my findings.

### **The Medicaid and ACA Dilemma**

Medicaid spending is a significant budgetary issue for many states because average Medicaid spending accounts for 16.8 percent of state general funds (Heberlein et al. 2011). Even though states are free to run their own Medicaid program, they must follow certain guidelines regarding access and benefits in order to receive federal matching funds. Medicaid is a perfect example of the delicate balance federal and state governments maintain in regards to policy. As with other policy programs operated jointly by the state and federal government, relationships concerning Medicaid are often strained with side each wanting to run their program independently while minimizing its financial burden (Barrilleaux and Miller 1988).

These same power-struggles continued when Congress and President Obama passed the ACA. While some in the United States were excited about the adoption of the ACA in 2010, not everyone shared the same excitement. In fact, when President Obama signed the ACA into law, twelve states had already joined a lawsuit with the State of Virginia in challenging the constitutionality of the ACA<sup>2</sup> (Joondeph 2011).

The success of the ACA rested upon a two-prong state adoption process. The first was through the creation of a health exchange system in which individuals could compare insurance plans and select a plan suitable to their needs. The second was through the expansion of Medicaid to all citizens under the age of sixty-five earning up to 138 percent of the federal

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<sup>2</sup> In the end, twenty-four states joined the suit with the State of Oklahoma filing its own suit in opposition to the ACA.

poverty level. To help states deal with the increased costs associated with the expansion of Medicaid, the federal government agreed to subsidize 100 percent of the costs of adding new enrollees from 2016, after which the share would gradually decline until 2022 when the government will cover 90 percent of the costs (Young 2012). The expansion of Medicaid was the primary tool the federal government employed to tackle the health care access problem in the United States (Jacobs and Callaghan 2013). However, the U.S. Supreme Court ruling in *NIFB v. Sebelius* in 2012 essentially stripped the mechanism in which the government used to entice to Medicaid expansion; as such, states were able to make decisions on the expansion of Medicaid absent of fiscal coercion.

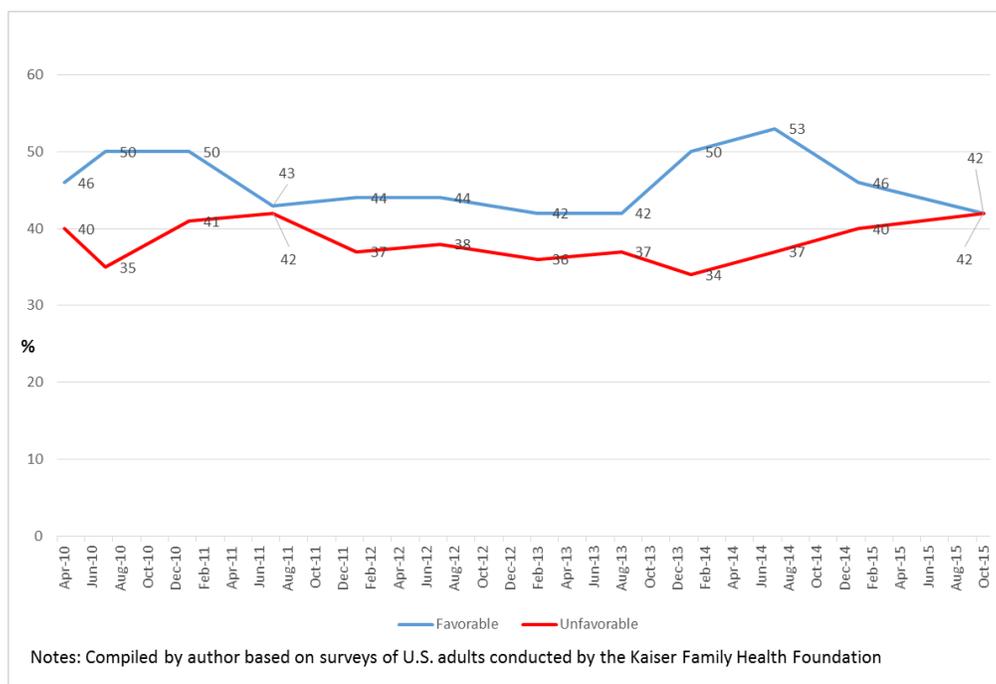
### **Public Opinion and Health Care**

Most research on the influence of public opinion on health care reform has largely taken place at the national level (Blendon et al. 1995; Jacobs 2008). This proposition seems natural considering that both Democratic and Republican presidents have tried to reform the U.S. health system unsuccessfully over the last half century (Starr 2013). The failure of these attempts is partly due to a number of attitudes held by many members of the public about direct massive government intervention, self-interest when it comes to health care, and tax-fatigue in regards to paying for health care reform (Jacobs and Shapiro 1995).

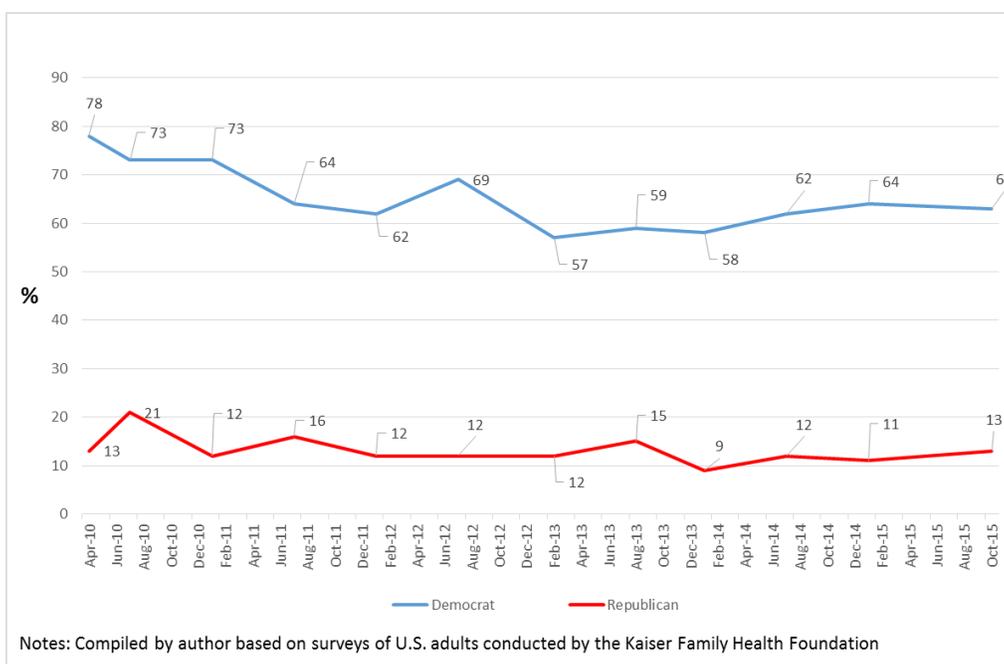
Since the passage of the ACA, public opinion has been divided. Figure 1 below shows 42 percent of Americans have a favorable opinion towards the ACA and 42 percent of Americans have an unfavorable opinion towards the ACA. Taking it a step further, Figure 2 below shows public attitudes towards the ACA controlling for party identification; 63 percent of Democrats have a favorable opinion towards the ACA while only 13 percent of Republicans has a favorable

opinion towards the ACA. As both figures show, public opinion towards the ACA is divided and is strongly shaped by party identification.

**Figure 1: Public Attitudes Towards the Affordable Care Act**



**Figure 2: Public Attitudes Towards the Affordable Care Act – By Party**



Despite divided opinions on the ACA a majority of Americans approve of certain provisions covered by the ACA. After the ACA was passed, a 2011 Kaiser Family Foundation poll found that 82 percent of individuals felt the government should continue providing tax credits to help small businesses provide health care. In addition, 72 percent felt the government should continue providing assistance to individuals who cannot afford health care while 76 percent approved of the government closing the Medicare “doughnut hole” in prescription costs for seniors. Given the divided nature of public opinion on the ACA, should we expect public opinion to influence state adoption of provisions of the ACA?<sup>3</sup>

Although most scholars agree public opinion influences public policy, what is less agreed upon however is the impact of public opinion on public policy (Page 1994). Some argue democracy is working as intended with elected officials responding to shifts in public opinion (Stimson et al. 1995), while others contend responsiveness can only occur in a limited number of policy areas because of the organizational structure of Congress and the public having meaningful opinions on only a handful of issues (Jones 1994; Zaller 1992). However, others have argued scholars have overestimated the impact of public opinion on policy. For example, Page (2002) contends most public opinion polls focus on issues already important to the public and the ones in which the public would hold government accountable.

Other scholars have begun to voice the same concerns; Lax and Phillips (2012) found that policy congruence was only present half of the time and certain opinion majorities were needed for the policy to have a chance of being adopted. For example, their study found support for medical marijuana by citizens in the state have to be approximately 70 percent support for the policy to have a 50 percent chance of adoption.

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<sup>3</sup> Many authors contend this relationship is conditional. Those issues that are more salient to the public and powerful interest group tend to have higher levels of responsiveness (Burstein 2003, 2014; Page and Shapiro 1983).

Another issue with being able to determine how public opinion influences policy is finding reliable measures of state public opinion. Earlier research on policy responsiveness at the state level had to rely upon “aggregate liberalism” scores created by researchers like Erikson, Wright, and McIver (1993) or Berry et al. (1998) which served as a proxy for measures of public opinion. Because of this, previous research on the influence of public opinion on the policy process discounted the role of issue-specific opinion, in large part due to voters’ lack of interest and knowledge in state politics (Treadway 1985). However, more recently research has suggested that state legislators are responsive to issue-specific public opinion. For example, Lax and Phillips (2009a) in their study of state adoption of gay rights found a high degree of responsiveness, even after controlling for interest group pressure and the ideology of voters and elected officials. Similarly, Camobreco and Barnello (2008) found a connection between abortion attitudes and state abortion policy.

While recent studies have continued to examine the influence of public opinion on the policy process in areas like the death penalty and same-sex marriage (Lax and Phillips 2009a; Lupia et al. 2010; Norrander 2000) these studies have focused on morality issues that are especially salient to the general public. Lax and Phillips (2012) examined public opinion on health care but these questions were concerned about reducing the number of people who are eligible for Medicaid and extending eligibility for the State Children’s Health Insurance Program (SCHIP).<sup>4</sup> The expansion of Medicaid under the ACA is different because it was more politically toxic than SCHIP and called for expanding Medicaid rather than reducing the number of individuals eligible for Medicaid.

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<sup>4</sup> Other issues include legalizing physician-assisted suicide and legalizing medical marijuana.

### **State Policy Innovation and Diffusion**

A traditional model of whether a state adopts a particular policy is influenced by factors both internally and externally to the state (Berry and Berry 1990). State diffusion of policy innovation is a process of learning; states can learn about policy innovations through observing policy alternatives considered by other states, as well as through policy information from professional organizations and advocates or interest groups (Boushey 2010; Walker 1969); they can then mold or reject policy alternatives based on local considerations and needs (Gray 1973). Berry and Berry (1990) explicitly proposed that the probability of a state adopting a policy is a function of internal conditions in a state, such as resources and need, as well as factors external to a state, such as consideration of a policy by nearby states. In short, state policy adoption is a function of state internal demand and constraints, as well as external stimuli and information (Berry and Berry 2007).

State internal characteristics that can influence state adoption of provisions of the ACA include the ideology of both the legislature and governor (Barrilleaux and Rainey 2014; Callaghan and Jacobs 2014; Dinan 2014; Jacobs and Callaghan 2013). Resources and obstacles are additional internal characteristics that can shape the likelihood of policy adoption, and include fiscal resources, legislative professionalism, public opinion, and issue saliency (Berry and Berry 2007; Boushey 2010; Lax and Phillips 2009a, 2012).

External forces that can influence state policy adoption typically involve a learning process. State actors can learn of a policy in a neighboring state and emulate the policy because of the policy success in other states; this neighboring model view assumes states near each other share similar internal economic and social conditions (Mooney and Lee 1995; Sylvester and Haider-Markel 2015).

However, most applications of the neighborhood model assume geographic proximity is a central factor in policy adoption and fail to account for shared state characteristics such as policy ideology or public opinion. Grossback et al. (2004) suggests states will emulate policies from states that share the same political ideology. Likewise, Pacheco (2012) argues state emulation of the policies of other state can be a function of similar public opinion or recent changes in public opinion.

In summary, I expect that state adoption of provisions of the ACA will be best explained by public opinion towards the ACA. I also expect state adoption of provisions of the ACA will be a function of state internal demands and constraints, as well as information external to a state.

### **Research Design and Variable Measurement**

To study the influence of public opinion on state resistance to provisions of the ACA I employ the primary methodology used in state policy adoption research – Event History Analysis (EHA), which assumes discrete non-repeatable events. The technique is based on the structure of the data set and requires the use of logit or probit regression models (Berry and Berry 2007). The benefit of EHA is that it captures external policy diffusion and internal state determinants of policy adoption. Another benefit of EHA is that it allows researchers to examine differences between states in a cross-sectional design of all 50 states with a longitudinal component for each state. For this study, the years from 2010 (the first year any state adopted) to 2015 are examined.<sup>5</sup>

#### **Dependent Variable**

As is typical in an EHA, model the dependent variable is coded one if a state has expanded Medicaid or created a state-run health exchange and zero otherwise; in addition, if the

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<sup>5</sup> The first adoption by a state for Medicaid expansion occurred in 2012 while the first state-run health marketplace was created shortly after the ACA was passed in 2010.

policy is adopted in a given state-year no additional state-years are included in the dataset for that state. By 2015, thirty-two states had expanded Medicaid to their citizens and seventeen states had created a state-based marketplace/federally-supported marketplace (See Appendix A-C for more information on all variables and data sources).

### **Independent Variables**

State Internal Factors: Many scholars have put forth paths by which policy can be shaped by policy-specific opinion and citizen ideology. For example, Mayhew (1974) argued that the primary motivation for legislators to be responsive to constituents is the desire to be reelected. Although Mayhew's argument was framed in the national context, state legislators, just like their national counterparts, are concerned about reelection. Should one expect health care policies to be responsive to policy-specific opinion, citizen ideology, or both?

The method most commonly used to estimate state-level opinion is disaggregation, championed by Erikson, Wright, and McIver (1993). Disaggregation involves combining a large set of national polls and then calculate the opinion percentages for each state. One of the drawbacks of disaggregation is that a large number of national surveys are required, typically over an extended time period (i.e. 25 years), to create a sufficient sample size within each state. Another drawback of disaggregation is that even with a sufficient sample over an extended time period, smaller states or those seldom surveyed often are dropped from the sample.

An alternative method exists to simulate state opinion using national surveys. Multilevel regression and poststratification, or MRP, is the latest implementation (Gelman and Little 1997; Lax and Phillips 2009a, 2009b; Park, Gelman, and Bafumi 2006; see Sniders and Bosker [2012] for a comprehensive review of multilevel models). In the first stage of the MRP process, a multilevel model of individual survey responses is estimated, with opinion modeled as a function

of demographics and geographic predictors: individual responses are nested within states nested within regions and demographic groupings (i.e. education, race, gender). While disaggregation relies solely upon demographic differences among states, the MRP method allows the use of state-level effects not available at the individual level (i.e. uninsured rate, presidential vote, etc.) in addition to the demographic differences of the state.

The second stage of the MRP process is a poststratification; The estimates for each demographic-geographic respondent type are weighted (poststratified) by the percentages of each type in actual state populations. Poststratification allows the model to estimate the percentage of respondents within each state that have a favorable opinion towards a policy such as the ACA. The poststratification process corrects for clustering and other statistical issues that are prevalent in disaggregation estimates (see Norrander 2007, 154). To estimate the influence of citizen ideology and policy-specific opinion towards the ACA I use the variables *Citizen Ideology* and *Policy-Specific Opinion*. To measure state ideology, I used Berry et al.'s measure of mass liberalism or citizen ideology (Berry et al. 1998) which is based on a 0 to 100 scale with a higher number signifying the ideology of the state is more liberal. The expectation is that as citizen ideology becomes more liberal, states will be more likely to adopt provisions of the ACA. To measure policy-specific opinion I pool individual responses to the following question from the Kaiser Family Foundation Health Tracker Poll:

- “Given what you know about the health reform law, do you have a generally favorable or generally unfavorable opinion of it?”

Table 1 shows opinion estimates and descriptive statistics. There is significant variation in policy support across states over time. For example, in 2013 individual support for the ACA was lowest

**Table 1: Opinion Estimates and Summary Statistics**

State	2010	2011	2012	2013	2014	Mean Opinion
Alabama	45	39	44	37	38	41
Alaska	43	40	40	39	35	39
Arizona	46	43	41	41	41	42
Arkansas	40	36	41	31	36	37
California	60	55	59	53	52	56
Colorado	51	47	50	42	42	46
Connecticut	53	52	58	49	46	52
Delaware	53	48	61	48	47	51
Florida	47	45	50	44	42	46
Georgia	50	46	50	43	41	46
Hawaii	64	61	68	60	63	63
Idaho	37	35	33	33	31	34
Illinois	52	50	56	48	49	51
Indiana	42	38	46	35	37	40
Iowa	43	40	50	37	39	42
Kansas	38	35	42	34	36	37
Kentucky	38	36	40	32	37	37
Louisiana	48	42	49	39	42	44
Maine	47	46	53	44	43	47
Maryland	60	57	65	55	55	58
Massachusetts	55	55	62	57	49	56
Michigan	48	48	53	45	43	47
Minnesota	45	45	53	43	44	46
Mississippi	52	46	54	47	45	49
Missouri	42	36	45	35	37	39
Montana	41	39	30	35	33	36
Nebraska	36	36	40	32	34	36
Nevada	53	49	47	45	43	47
New Hampshire	45	45	50	41	40	44
New Jersey	55	50	57	61	49	54
New Mexico	52	49	50	48	42	48
New York	59	57	64	54	51	57
North Carolina	50	44	52	43	43	46
North Dakota	35	34	39	30	33	34
Ohio	46	41	50	40	39	43
Oklahoma	36	33	36	29	32	33
Oregon	49	50	50	48	44	48
Pennsylvania	48	42	52	44	40	45
Rhode Island	56	53	61	52	47	54
South Carolina	48	41	50	39	41	44
South Dakota	36	34	41	32	40	37
Tennessee	42	37	43	35	38	39
Texas	42	43	41	38	36	40
Utah	34	33	31	30	30	32
Vermont	55	54	62	52	47	54
Virginia	50	47	54	43	43	47
Washington	53	51	55	48	44	50
West Virginia	35	31	37	30	31	33
Wisconsin	44	43	52	42	42	45
Wyoming	35	31	29	28	28	30
Mean	47	44	49	42	41	44
SD	8	8	9	8	7	8

Notes: Estimates of policy support for the Patient Protection Affordable Care Act are shown by state. The last column shows mean opinion across all years by state.

in Wyoming at 28 percent while individual support for the ACA was highest in Hawaii at 59 percent. The expectation is that as individual-level support in the state increases so too does the likelihood that the state will adopt provisions of the ACA.

Research also suggests political factors, mainly party control of the state legislature and governor, impact whether or not a state will adopt or resist a federal policy (Doan and McFarlane 2012; Nicholson-Crotty 2009; Gilardi 2010). Early research on the actions of states towards the ACA have confirmed this research. For example, Barrilleaux and Rainey (2014) found state resistance to Medicaid expansion was a product of the composition of the state legislature and governors.

Ideology not only influences how a state may decide to fund Medicaid, but also influences how legislatures and governors interpret new information (Gilardi 2010). In his analysis of unemployment benefits, Gilardi found that “ideological positions and prior beliefs about the effectiveness of policies shape the interpretation of new evidence and make policy makers react differently to information coming from the experience of others, which helps them assess both the political and policy potential of alternatives” (2010, 660-661). He found that governments that were more conservative were more sensitive to information when they dealt with electoral consequences of reforms, while those governments that tended to be more liberal were more likely to be influenced by the actual policy effect. To test the influence party control has on the state legislature I include a *Legislative Ideology* measure developed by Berry et al. (1998) and updated on Richard Fording’s website with scores to 2015 (<https://rcfording.wordpress.com/state-ideology-data/>). A higher score is associated with greater aggregate liberalism in a state legislature. I use legislative ideology instead of partisanship because ideology allows for ideological differences among members of each party in different

parts of the country (i.e. a southern Democrat tends to be different from a northern Democrat) to be accounted for (Berry et al. 1998; Sylvester and Haider-Markel 2015). The expectation is a state with a more liberal state legislature will be more likely to adopt provisions of the ACA. To measure partisanship of the Governor, I include the variable *Governor*. The variable is coded one for a Democratic governor and zero for a Republican governor. The expectation is states with a Democratic governor will be more likely to adopt provisions of the ACA.

Aside from ideology, because of the technical nature and budget management needed to implement the ACA at the state level, professionalism in the state legislature should play a role in the policy process. More professionalized legislatures are better able to identify problems and should increase responsiveness to public opinion (Boushey 2010; Lax and Phillips 2009a). I included a measure of *State Legislative Professionalism* based on the Squire (2012) Professionalism Index.

Finally, state legislators are not expected to be responsive to every issue equally. Therefore, a measure of salience for a particular issue must be included in a legislator's electoral calculus. For less salient issues elites may be unaware of their constituents' views; however, when the public does care about a particular issue, the expectation is that the government should do what the people want (Burstein 2014). To control for salience, I constructed *Issue Salience: State News* which measures the annual number of Google searches that included the words "Patient Protection and Affordable Care Act," "Health Care," "Affordable Health Care," "Affordable Health Insurance," "Obama Care," and "Affordable Health Care Act."

External Variables: Following earlier efforts to model the potential influence of nearby states on policymaking in a state (Berry and Berry 2007), I constructed two variables that measure

external forces. The first variable, *Neighbor Adoption*,<sup>6</sup> captures geographical diffusion (Chamberlain and Haider-Markel 2005; Mooney 2001); it ranges from zero to 100 and is the percentage of contiguous neighboring states that have adopted an interlock policy in the previous year. Here I assume that states are attentive to the policy actions of their neighbors; if multiple neighboring states adopt a policy, a state will be more likely to see the law as a viable policy option.

For the second measure of external forces, I follow Grossback et al. (2004) and argue states may learn from and emulate states with similar ideological preferences. If policy-adopting states are distant in terms of ideology, it is unlikely those states would be an unlikely candidate to use as a model to solve policy problems. Like Grossback et al. (2004) and Sylvester and Haider-Markel (2015) I measure *Policy Diffusion: Ideological Distance* by utilizing the state government liberalism indicator created by Berry et al. (1998) along with the status of state adoption of provisions of the ACA in the following formula:

$$\mathbf{Ideological\ Distance = ABS (Previous\ Adopter - Potential\ Adopter)}$$

The value for previous adopter was achieved by taking the average of all state government ideologies that had previously adopted provisions of the ACA. This value is then calculated for each year in the dataset. It is expected those states that are further away ideologically from states that have already adopted provisions from the ACA should be less likely to expand provisions of the ACA.

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<sup>6</sup> Alaska and Hawaii have no actual neighbors but were included in the analysis considering Washington and Oregon as neighboring state for Alaska, and considering Washington, Oregon, and California as neighboring states for Hawaii following Chamberlain and Haider-Markel (2005).

## Results and Discussion

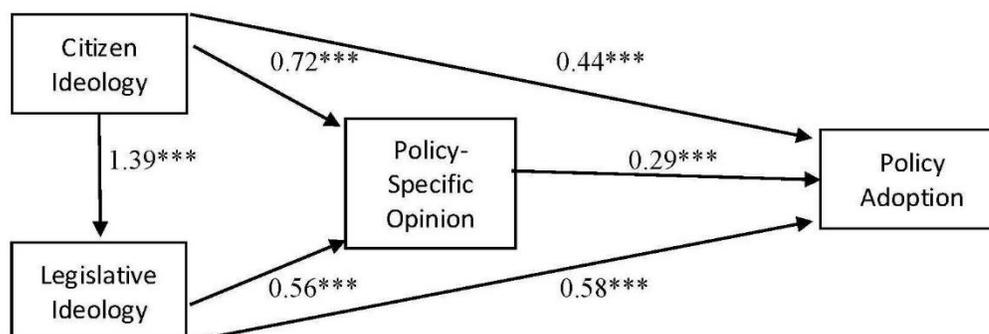
Previous research has found a clear relationship between voter ideology and state policy (Erikson et al. 1993; Stimson et al. 2002). However, others have found that general attitudes towards various issues better map with policy outcomes. For example, Haider-Markel and Kaufman (2006) found a connection between attitudes towards homosexuals and state bans on gay marriage. Similarly, Brace et al. (2002) found a connection between attitude measures from the GSS and state attributes. They found state attitudes towards feminism is strongly related to the percentage of each state's legislature made up of women.

Scholars have primarily focused on attitudes and ideology because it is unreasonable to expect detailed policy preferences from voters and unrealistic to assume elected representatives are mindful of voters' policy preferences. Lax and Phillips (2009a, 2009b, 2012) however make the argument that scholars don't use state-level policy preferences because the lack of comparable opinion polls across states. This leads to a puzzling question: which measure is driving state adoption of provisions of the ACA? Is it citizen ideology? Or is it policy-specific opinion?

One of the difficulties with trying to disentangle the relationship between public opinion and state resistance to the ACA is the high correlation between public opinion, legislative ideology, and citizen ideology. For example, the correlation between legislative ideology and policy-specific opinion is 0.62. Similarly, the correlation between citizen ideology and policy-specific opinion is 0.72. To untangle the relationship, I conducted a path analysis showing the direct and indirect association between policy-specific opinion, legislative ideology, and citizen ideology.

Figure 4 presents a path analysis for state expansion of Medicaid. Coefficients are standardized so that the variances of both the dependent and independent variables are 1. First, the path analysis shows citizen ideology has a direct effect on legislative ideology ( $\beta=1.39$ ,  $p<.000$ ). Secondly, citizen ideology has an indirect effect on policy-specific opinion ( $\beta=0.72$ ,  $p<.000$ ). Finally, citizen ideology ( $\beta=0.44$ ,  $p<.000$ ), legislative ideology ( $\beta=0.58$ ,  $p<.000$ ), and policy-specific opinion ( $\beta=0.29$ ,  $p<.000$ ) have a direct effect on state expansion of Medicaid. This suggests that citizen ideology is the primary driver for legislative ideology. Furthermore, the path analysis shows that citizen ideology is the primary driver for policy-specific opinion. Thus, all three are important to predicting whether or not a state expands Medicaid.

**Figure 4: Path Analysis of Attitudes Towards the ACA – Medicaid Expansion**

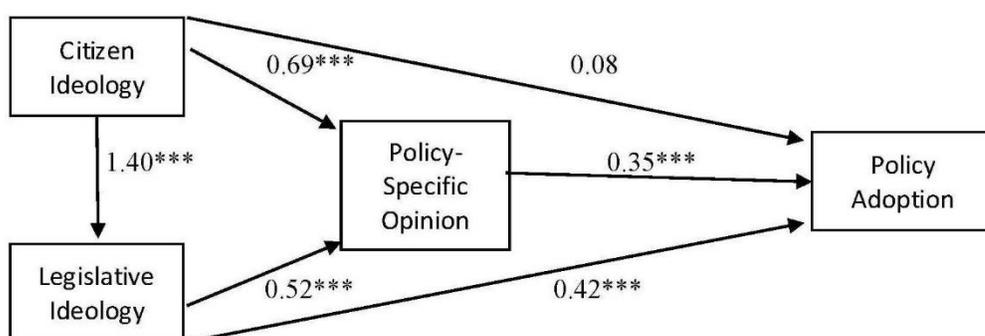


Notes: Path coefficients are standardized regression coefficients based on OLS regression models. Significant levels (one-tailed test) \*\*\* $p<0.01$ ; \*\* $p<0.05$ ; \* $p<0.10$ .

When examining the indirect and direct association between policy-specific opinion, legislative ideology, and citizen ideology towards the creation of a state-run marketplace (see Figure 5), many of the same patterns that were present in the path analysis for Medicaid expansion are also present with the path analysis for state-run marketplaces. First, citizen ideology has a direct effect on legislative ideology ( $\beta=1.40$ ,  $p<.000$ ). Secondly, citizen ideology

has an indirect effect on policy-specific opinion ( $\beta=0.69$ ,  $p<.000$ ). Finally, both legislative ideology ( $\beta=0.42$ ,  $p<.000$ ) and policy-specific opinion ( $\beta=0.35$ ,  $p<.000$ ) have a direct effect on a state creating a state-run health marketplace. However, it appears that citizen ideology has no direct effect on the creation of a state-run marketplace ( $\beta=0.08$ ,  $p<.011$ ). One potential reason for the non-findings with citizen ideology is the explanatory power of the relationship is being already being captured by policy-specific opinion and legislative ideology.

**Figure 5: Path Analysis of Attitudes Towards the ACA – Health Exchanges**



Notes: Path coefficients are standardized regression coefficients based on OLS regression models. Significant levels (one-tailed test) \*\*\* $p<0.01$ ; \*\* $p<0.05$ ; \* $p<0.10$ .

With the path analysis establishing that there is both a direct and indirect effect between policy-specific opinion, legislative ideology, citizen ideology, and state adoption of provisions of the ACA, Tables 2 and 3 display the results of a multivariate logit model predicting state expansion of Medicaid and the creation of state-run marketplaces.

Consistent with expectations, the results suggest that policy-specific opinion influences whether a state expands Medicaid and creates a state-run or federally-supported marketplace. Similarly, legislative ideology and citizen ideology are significant in the expected direction. Meanwhile, issue salience, which should play a bigger role in legislative decision-making when

citizens are more concerned with an issue particularly important to them, is also significant in the expected direction.

**Table 2: Determinants of State Resistance to the ACA – Medicaid Expansion**

	Full Model	Legislative Ideology	Ideological Distance	Predicted Probability
<i>Internal Determinants</i>				
Policy-Specific Opinion	0.25 *** (.09)	0.11 *** (.04)	0.08* (.06)	21%
Legislative Ideology	0.19 *** (.06)	0.09 *** (0.03)	–	44%
Legislative Professionalism	13.77 *** (5.21)	9.01 *** (3.68)	13.37 *** (3.73)	18%
Citizen Ideology	0.25 *** (.09)	0.13 *** (.04)	0.02 (.04)	25%
Governor (Democrat)	–0.51 (1.10)	0.40 (.85)	–1.28* (.99)	
Issue Salience: State News	–0.008 ** (.005)	–0.003 (.003)	–0.008 ** (.004)	
<i>External Determinants</i>				
Neighbor Adoption	0.74 (1.54)	1.40* (1.01)	0.56 (1.30)	
Policy Diffusion: Ideological Distance	0.08 ** (.04)	–	–0.03 (.02)	
Log Likelihood	–26.017	–46.355	–32.978	
Chi-Square	44.68 ***	51.80 ***	30.76 ***	
PCP	.85	.82	.86	
PRE	.38	.20	.43	
Pseudo R <sup>2</sup>	.46	.36	.32	
Number of Cases	88	138	88	

Notes: The dependent variable equals 1 if a state expanded Medicaid under the PPACA and zero otherwise. Coefficients are logistic regression coefficients with standard errors reported in parentheses. — indicates omitted variables. Significance levels (one-tailed test) \*\*\* $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.01$ ; PRE is the proportional reduction in error and ranges from 0 to 1. PCP = Percent Correctly Predicted. The Predicted Probability estimates show the relative influence of each variable on the probability of state adoption from one standard deviation to two standard deviation, while holding all other variables at their mean.

In those states where citizens have paid more attention to issues dealing the ACA, states are less likely to expand Medicaid in their state and are more likely to defer to a federally-controlled marketplace.

Finally, legislative professionalism has mixed results. For example, with state expansion of Medicaid legislative professionalism is significant in the expected direction; however, with the creation of a state-run or federally-supported marketplace legislative professionalism is not statistically significant.

Because past research suggests that more professional legislators are able to deal with more complex policies, the results are surprising (Boushey 2010). While the expansion of Medicaid in a state is complicated, whether a state expands its Medicaid program was more

**Table 3: Determinants of State Resistance to the ACA – State-Run Health Marketplaces**

	Full Model	Legislative Ideology	Ideological Distance	Predicted Probability
<i>Internal Determinants</i>				
Policy-Specific Opinion	0.36 * ** (.10)	0.15 * ** (.04)	0.15 * ** (.05)	2%
Legislative Ideology	0.20 * ** (.06)	0.08 * ** (0.03)	—	3%
Legislative Professionalism	-2.11 (3.87)	0.03 (3.03)	-1.99 (3.73)	
Citizen Ideology	0.08* (.06)	0.02 (.04)	-0.12 * ** (.04)	
Governor (Democrat)	1.36* (1.06)	.52 (.70)	-0.85 (.71)	
Issue Salience: State News	-0.01 * * (.004)	-0.002 (.003)	-0.009* (.004)	
<i>External Determinants</i>				
Neighbor Adoption	2.12* (1.60)	2.12* (1.01)	2.25* (1.30)	
Policy Diffusion: Ideological Distance	0.06* (.04)	—	-0.03* (.02)	
Log Likelihood	-26.295	-46.047	-35.385	
Chi-Square	75.58 * **	56.16 * **	57.40 * **	
PCP	.95	.90	.92	
PRE	.62	.09	.38	
Pseudo R <sup>2</sup>	.59	.38	.45	
Number of Cases	174	224	174	

Notes: The dependent variable equals 1 if a state created a state-run or a federally-supported health exchange under the PPACA and zero otherwise. Coefficients are logistic regression coefficients with standard errors reported in parentheses. — indicates omitted variables. Significance levels (one-tailed test) \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; PRE is the proportional reduction in error and ranges from 0 to 1. PCP = Percent Correctly Predicted. The Predicted Probability estimates show the relative influence of each variable on the probability of state adoption from one standard deviation to two standard deviation, while holding all other variables at their mean.

politically toxic for legislatures but not technical in nature. However, the creation of a state-run or federally-supported marketplace was extremely technical.

In addition to internal factors, external factors were also examined. Following previous diffusion literature (Grossback et al. 2004; Sylvester and Haider-Markel 2015) the results suggest that states respond to the actions of states that are ideologically similar. Likewise, at least with the creation of state-run marketplaces, the results suggest that geographic proximity

influences state actions regarding the ACA. One possible explanation for the non-findings with geographic proximity regarding Medicaid expansion could be because of the requirement for states to set up some sort of health exchange while being able to opt out of the Medicaid expansion provision.

In summary, consistent with previous research, the results indicate that public opinion does influence whether or not a state adopts provisions of the ACA. In those states with a more favorable opinion towards the ACA states are more likely to expand Medicaid and create a state-run or federally-supported health marketplace. Legislative ideology can also shape policymaking – in states with more liberal legislatures Medicaid expansion and state-run marketplaces are more likely to be adopted.

Although the EHA models tell us something about the influence of various factors on state action towards the ACA, what is the substantive impact of these factors? Estimating the predicted probabilities from the theoretical relevant variables in the model gives some sense of the substantive impact. To obtain the predicted values I moved each variable from one standard deviation to two standard deviations holding all other variables at their mean (see last column in Tables 2 and 3). For example, states that have a greater favorability towards the ACA are 21 percent more likely to expand Medicaid than those states that have an unfavorable opinion towards the ACA. Additionally, states with a more liberal legislature are 44 percent more likely to expand Medicaid than those states with a more conservative legislature. Finally, states with a more liberal citizenry are 25 percent more likely to expand Medicaid. Thus, key variables in the models do show a modest substantive impact on the likelihood that a state will take action regarding provisions of the ACA.

## Conclusion

Since the ACA passed in 2010, states have exhibited fierce resistance to the ACA and the public has continued to remain divided. Many of the states that have resisted stand to benefit more from expanding Medicaid.<sup>7</sup> This chapter set out to examine what impact public opinion has had on state adoption of provisions of the ACA. Below I summarize my conclusions and a few implications of my findings.

Scholars have long tried to disentangle the relationship between the influence of citizen ideology, legislative ideology, and policy-specific opinion on state adoption of policies. Most research involving the ACA have established a relationship between legislative ideology and state actions towards the ACA (Barrilleaux and Rainey 2014; Jacobs and Callaghan 2013). However, scholars have been unable to find a link between public opinion and states' actions towards the ACA. As such, this chapter set out to examine that relationship. Making use of EHA with time series data from public opinion polls and data from American states, this chapter sought to weigh in on this debate and draw several important conclusions.

First, contrary to previous research (Barrilleaux and Rainey 2014) the findings here suggest that elected officials are responsive to their citizen's policy-specific opinions even after controlling for citizen ideology and legislature ideology. However, there are some caveats to this conclusion. While policy-specific opinion is statistically significant in the expected direction, the substantive influence of policy-specific opinion towards Medicaid expansion is stronger than for creating state-run health marketplaces. One reason for this is that Medicaid expansion was more known to the general public compared to the creation of health marketplaces.

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<sup>7</sup> States that don't expand Medicaid don't lose any funding but do not receive any new federal money. For some states this could be billions of dollars. Also by expanding Medicaid states could eliminate the coverage gap that was created when some states did not expand Medicaid (Garfield and Damico 2016).

Secondly, research has shown that responsiveness is higher for policies that are highly salient but for policies that are less salient, voters are less likely to get what they want (Lax and Phillips 2009a). The results here show that in states where the ACA is more salient states are less likely to adopt provisions of the ACA. This suggests that not only are states being responsive to citizens' desires to adopt provisions of the ACA but are also responsive to the citizens' desire to not implement provisions of the ACA.

Finally, this study has demonstrated the value of estimating policy-specific opinion. While previous research has mainly focused on issues of morality this study suggests that the application of aggregate state-level opinion on policy issues can be applied to other areas, in this case health policy issues. However, future research should examine how often legislators are congruent with policy-specific opinion with respect to the ACA. Also, future research should also examine what level of support for the ACA is needed for elected officials to be responsive to policy-specific opinion.

## Appendix A: Variable Measurement and Data Sources

Name	Description	Source
<b>Dependent Variable</b>		
Medicaid Expansion	State has not expanded Medicaid is coded 0 while states that have expanded Medicaid are coded 1.	Kaiser State Health Facts about the ACA
Creation of State-Run Health Marketplace	State defaulted to a federally controlled marketplace coded 0 while states that created a state-run marketplace are coded 1.	Kaiser State Health Facts about the ACA
<b>Independent Variables</b>		
Policy-Specific Opinion	Measure of state favorability towards the ACA on a 0 to 1 scale. Higher measures signify more favorable opinions towards the ACA	Kaiser Family Health Foundation Health Tracker Polls.
Legislative Ideology	Measure of state legislator ideology on a 0 to 1 scale. Higher value signify more liberal legislative bodies.	Constructed based on Government Ideology Scale by Berry, Fording, and Hanson (1998)
Legislative Professionalism	Measure of state legislative professionalism. Takes into account salary and benefits, time demands of service, and resources.	Squire Legislative Professionalism Index (2012)
Citizen Ideology	State citizens' liberal-to-conservative ideology score on a 0 to 1 scale; higher scores indicate greater liberalism	Berry et al. (1998) Revised 1960-2015, Updated on ICPSR

Governor	Variable coded 0 if the governor is Republican and 1 if the governor is Democratic between 2010 and 2015	Klaner 1934-2015 Governor Data
Policy Learning: Ideology	Absolute difference of state ideology between potential adopters and previous adopters lagged one year	Constructed based on Government Ideology Scale by Berry, Fording, and Hanson (1998) and the formula from Grossback et al. (2004)
Issue Salience: State News	Number of google searches per state using the following words: "Patient Protection and Affordable Care Act," "Health Care," "Affordable Health Care," "Affordable Health Insurance," "Obama Care," and "Affordable Health Care Act."	Google Trends
Neighbor Adoption	Percentage of neighboring states adopting provisions of the ACA.	Constructed by author based on the Kaiser State Health Facts about the ACA and Chamberlain and Haider-Markel (2005)
Policy Learning: Ideology	Absolute difference of state ideology between potential adopters and previous adopters	Constructed based on Government Ideology Scale by Berry, Fording, and Hanson (1998) and the formula from Grossback et al. (2004) and Sylvester and Haider-Markel (2015)

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### Appendix B: Descriptive Statistics for Medicaid Expansion Model

	Mean	Min	Max	S.D.	N
State Expansion of Medicaid	-	0	1	0.414	138
Policy-Specific Opinion	43.16	28.23	67.51	8.12	200
Legislative Ideology	41.23	2.58	91.45	31.22	200
Legislative Professionalism	0.19	0.0061	0.61	0.12	200
Citizen Ideology	49.36	13.48	91.85	16.16	200
Governor	-	0	1	0.49	200
Issue Salience: State News	251.62	52	508.00	103.8	200
Neighbor Adoption	0.46	0	1	0.37	200
Policy Diffusion: Ideological Distance	33.25	0.96	72.75	19.62	150

### Appendix C: Descriptive Statistics for State-Run Marketplace Model

	Mean	Min	Max	S.D.	N
State-Run Health Marketplace	-	0	1	0.3	224
Policy-Specific Opinion	43.85	28.23	67.51	7.99	300
Legislative Ideology	41.88	2.58	91.45	31.17	300
Legislative Professionalism	0.19	0.0061	0.61	0.12	300
Citizen Ideology	49.87	13.48	91.85	15.51	300
Governor	-	0	1	0.49	300
Issue Salience: State News	209.68	32	508.00	113.59	300
Neighbor Adoption	0.37	0	1	0.37	300
Policy Diffusion: Ideological Distance	33.14	0.07	73.92	22.62	250

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## Chapter 3

### **Threat and Loathing in a (Un)Vaccinated World: The Role of Perceived Threat in Public Support for Restrictive Vaccination Policies**

When the Center for Disease Control and Prevention (CDC) announced in 2014 that a measles outbreak was connected to the Disneyland resorts in California, debates over vaccinations and their alleged side effects intensified. The success of infant and childhood immunizations programs is one of the most effective health interventions of the 20<sup>th</sup> century and is credited with a substantial portion of the overall increase in life expectancy (Gellin et al. 2000). However, while coverage levels for most childhood vaccines remains high, numerous studies have documented that vaccine-related confidence has decreased among U.S. parents over the past several years. For example, in a national study of parents measuring concerns towards vaccines done in 2009, 50 percent of parents indicated they had “concerns about vaccines” compared to 19 percent when a similar survey was conducted in 2000 (Gowda and Dempsey 2013).

No vaccine is 100% effective; the success of vaccination programs relies on a concept known as “herd immunity,” which occurs when a significant portion of a community is immunized against a contagious disease. While the actual percentage necessary to achieve herd immunity varies for each potential disease, it generally ranges from 83 to 94 percent (Plans-Rubio 2012). Simply put, if fewer people are vaccinated, a greater portion of the population could be at higher risk of contracting preventable diseases. Vaccines have become a victim of their own success; because many parents have not been exposed to diseases that have long since been suppressed, the risks associated with receiving vaccines garner more attention than the successes (Larson et al. 2012).

In many ways, the anti-vaccination movement represents a classic example of both the free-rider problem and the “tragedy of the commons” (May 2005). In his classic work *The Logic of Collective Action*, Mancur Olson explains the free rider problem: “In a large, latent group there will be no tendency for the group to organize to achieve its goals through the voluntary, rational action of the members of the group, even if there is perfect consensus” (1971, pg. 59-60). In other words, free riders rely on other members of the group in order to take risks and still benefit from the goals of the group. Because of herd immunity, the inaction of one parent who refuses to vaccinate their children is difficult to detect. However, if enough parents refuse to vaccinate their children, the “herd immunity” or collective good can be lost entirely – often referred to in policy literature as the ‘tragedy of the commons’ (Ostrom 1990; Ostrom et al. 2006).

Hardin (1982) argues the type of free-rider collective action problem caused by parents delaying or forgoing childhood vaccinations can be solved through compulsory vaccination laws. However, forcing parents to vaccinate their children in opposition to their personal or religious beliefs presents a dilemma “in a society that values individual freedoms...” (May 2005, 414). With vaccines becoming a contentious political topic, it is necessary to understand why some individuals support mandatory vaccination policies while others do not. Recent research on the role of threat perception and its effect on attitudes towards policies may provide some answers.

The central question of this chapter is whether support for restrictive vaccination policies is influenced by an individual’s threat perception—here the perception that an outbreak of measles in their community is imminent. While considerable research has examined the influence that threat perception has on support for counterterrorism policies (Gadarian 2010; Haider-Markel and Joslyn 2006; and Huddy et al. 2002, 2003, 2005; Davis and Silver 2004), to

date little work has examined how threat perception influences support for vaccination policies; this paper seeks to fill that gap.

### **Opposition to Government Compulsory Laws**

One area in which the government has played an integral role in the health system is the eradication of preventable diseases through vaccination. The first U.S. law to require a vaccination was passed in Massachusetts in 1809. The law, which required the smallpox vaccination, was subsequently ruled constitutional in the landmark case *Jacobson v. Massachusetts* in which the U.S. Supreme Court ruled in favor of the rights of states to pass and enforce compulsory vaccination laws (Omer et al. 2009).

Individuals who are opposed to mandatory vaccination policies typically voice one of three main concerns. The first concern is religious freedom. Novotny et al. (1988) found that individuals who base their objections to mandatory vaccinations on religious freedom grounds generally oppose vaccinations under all circumstances, even in the context of an outbreak. Similarly, Warriach (2009) found that some Muslim groups felt it was subverting the will of God. Christian Scientists forgo some or all medical help for disease, but instead believe that healing for disease occurs through prayer (Grabenstein 2012). Although each denomination has their reason for being opposed to compulsory laws, the common element is that mandatory vaccinations violate their ability to freely exercise their religious beliefs (Lantos et al. 2012).

The second argument most often made in opposition to mandatory vaccinations is based on political ideas rather than religious freedoms. Lantos et al. (2012) argues that individuals who advocate for less government intrusion feel "...there is a strong presumption against governments' ability to compel medical treatment of any kind or to compel any other violation of bodily integrity for anyone at any time. To do so, according to the most emphatic view,

constitutes criminal assault” (pg. 134). Indeed, this was the primary argument put forth by Henning Jacobson in *Jacobson v. Massachusetts*. Although, it is true personal belief and religious exemptions are available in many states exempting parents from vaccinating their children,<sup>1</sup> some states have recently begun passing laws limiting the use of these exemptions by parents.<sup>2</sup>

Finally, opposition to mandatory vaccination laws comes from those concerned that a number of vaccines might have negative health consequences. These parents are described as “vaccine hesitant” (Kestenbaum and Feemster 2015). Domachowske and Suryadevara (2013) argue that the number of vaccines included in the immunization schedule, a resentment about the government towards vaccine mandates, and a lack of trust towards public health officials all influence vaccine hesitancy. Parental hesitancy towards vaccines also includes concerns about the link between autism and vaccines. Even though the link between autism and vaccines is not supported by science, the personal experiences and vivid stories of parents who have children diagnosed with autism shortly after receiving vaccinations is what sticks in people’s minds and not dry statistics (Pitney Jr. 2015).

Vaccines provide an interesting test case to understand whether threat perception influences support for vaccination policies because there are two different threats that parents perceive. On one hand it is understandable for parents who are concerned about the side effects of vaccinations to be wary of the government mandating vaccinations. On the other hand, it is also understandable for parents to be concerned about the potential threat unvaccinated children

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<sup>1</sup> As of January 21, 2016 18 states (WA, OR, ID, UT, AZ, CO, ND, OK, TX, MN, MO, AR, LA, WI, MI, OH, PA, ME) provide for both religious and personal exemptions; and 28 states (NV, MT, WY, NM, SD, NE, KS, IA, IL, IN, KY, TN, AL, FL, GA, SC, NC, VA, NY, VT, NH, MA, RI, CT, NJ, DE, MD) and the District of Columbia allow for religious exemptions.

<sup>2</sup> California – SB No. 277; Vermont – H. 98. Vermont still allows for religious exemptions for parents.

or adults may have on their children when interacting with them in the community or local schools.

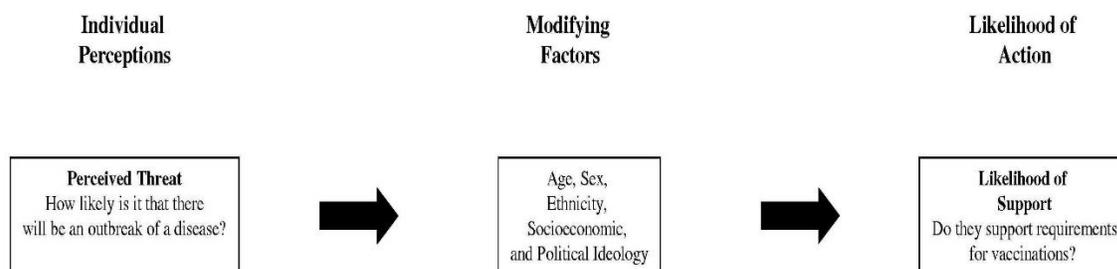
### **The Influence of Threat and Support for Vaccination Policies**

Threat perceptions (i.e. the belief about a potential harm) are components of most theories of health behavior (for reviews, see Cameron 2003; Leventhal et al. 1999; Rogers 1975; Sutton 1987; Weinstein 1993; and Witte 1992). However, most theories of health behavior have mainly focused on the influence of threat on individual participation within the health system. For example, the Health Belief Model (HBM) developed in the early 1950s was an attempt to understand “the widespread failure to accept disease preventives or screening tests for the early detection of asymptomatic disease” (Rosenstock 1974). The HBM has since been applied to understanding patients’ response to symptoms (Kirscht 1974) and adherence to prescribed medical regimen (Becker 1974).

HBM focuses on two key variables: (1) the value an individual places on a particular goal; and (2) the individual’s estimate of the likelihood that a given action will achieve that goal (Janz and Becker 1984). So, if an individual values the benefits vaccines provide, and has the belief the vaccination will prevent themselves or their family from contracting a disease, the HBM predicts the individual will participate and receive the vaccination. Here I will be applying the HBM to understand how threat perception influences support for mandatory vaccination policies.

In order to test this relationship, I develop a framework derived from the assumptions put forth by the HBM. Figure 1 below outlines the assumptions for how an individual’s perception of threat influences their support for mandatory vaccination policies.

**Figure 1: A Model for Understanding Threat Perception and Support for Mandatory Vaccination Policies**



Notes: Constructed by author based on Health Belief Model (HBM). For a review of the HBM please see Janz and Becker (1984).

The framework begins with an individual's perception of how likely it is that a potential threat may occur (i.e. how likely is it that there will be an outbreak of a disease in your community). As was stated earlier, one of the basic assumptions of the HBM is the value of supporting a certain action (i.e. either getting a vaccine or supporting a particular policy). In the case of mandatory vaccination policies, the potential value that an individual could place on supporting mandatory vaccination policies is by ensuring the herd immunity is maintained in their area. If an individual perceives a potential outbreak of measles will occur in the community, the value for an individual to support mandatory vaccination policies is ensuring the herd immunity is maintained in their community. This is accomplished by requiring parents to vaccinate their children and limit school participation of unvaccinated children.

While threat perception has not been widely utilized to study how threat may influence support for health policies, Cacciatore et al. (2015) recently studied how awareness of the 2014-2015 U.S. measles outbreak influenced vaccine – related concerns as well as confidence in and support for state vaccination mandates. The study found that individuals who were aware of the measles outbreak were more likely to have higher levels of vaccine confidence and support

mandatory vaccinations. While Cacciatore et al. (2015) focus their study on how level of awareness influences support of vaccination policies, I focus on how the perception of threat (i.e. how likely it is that there will be an outbreak of a disease in your community) influences support for mandatory vaccination policies.

Studying the impact of how threat perception on support for public policies is not new, but has mainly been applied to studies examining individual support for counterterrorism policies. For example, Davis and Silver (2004) found that individuals who were more concerned about a future terrorist attacks were more likely to support counterterrorism policies that limit civil liberties but provide for additional securities. Similarly, Huddy et al. (2005) find that individuals who perceive an imminent terrorist attack in the United States were more likely to support antiterrorism policies that restricted civil liberties. Individual perceptions of threat lead citizens to support policies that they believe will neutralize the source of the threat and protect them (Gadarian 2010; Gordon and Arian 2001; Haider-Markel and Joslyn 2006). In terms of vaccination requirements, if parents perceive a threat in their community or school it is expected that they would be more likely to support mandatory vaccination policies and restrict participation in schools from children who have not been vaccinated.

The framework also includes modifying factors that may influence support for mandatory vaccination policies. These factors, typically associated with heightened concern or hesitancy towards vaccines, include age, gender, race, education, income. For example, Kennedy et al. (2005) found that parents who were white, more educated, and had higher levels of income were more likely to support mandatory vaccination policies. Shui et al. (2006) in their study of how race and ethnicity influence attitudes toward vaccines found parents of Hispanic descent were more likely to have higher levels of concern towards vaccinations. The survey data I am

employing does not allow me to directly measure confidence towards vaccines, but using variables commonly found to be associated with concern towards vaccinations may provide additional support in explaining who may be more likely to support mandatory vaccination policies or restrict participation in school activities from children who have not been vaccinated.

Finally, political ideology could influence support for mandatory vaccination policies. Existing research has not been able to establish a link between attitudes towards vaccines and political ideology, but recent tests of Moral Foundations Theory (MFT) have suggested that individual attitudes and behaviors are influenced by moral intuitions. MFT posits individuals use a battery of psychological modules (i.e. care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and disgust/purity) to make evaluative judgements based on moral approval or disapproval (Haidt and Graham 2007). A sixth category liberty/oppression, which is based on a study of libertarians, is characterized by a desire to be free from government intrusion and restrictions of freedoms (Iyer et al. 2012). In line with this perspective other studies have demonstrated that liberals and conservatives make different evaluative judgments based on morals. For example, Graham et al. (2009) found that liberals tend to base their evaluative judgments on care/harm compared to conservatives. Although I am not able to directly test the assumptions of the MFT, I am presuming that attitudes towards vaccines are heavily intertwined with moral judgments (Shaw et al. 2016). As such, the expectation is that liberals will be more likely to support mandatory vaccination policies while conservatives will be less likely to support such policies.

### **Data and Methods**

The next step is to explore empirically the influence of threat on support for mandatory vaccination policies and whether individuals support restricting school participation from

children who have not been vaccinated. A national random sample survey of 1,199 adults conducted from February 12 to 15, 2015, provides an excellent opportunity to test this question.<sup>3</sup> The next section outlines the dependent and independent variables taken from the survey that were used in the analysis.

### **Dependent Variables**

Support for Mandatory Vaccinations: The first dependent variable measures individual support for mandatory vaccination policies (See Appendix A for coding scheme). Specifically, respondents were asked, “Do you think parents should or should not be required to have their children vaccinated against preventable diseases such as measles, mumps and rubella or polio if the children are healthy enough to be vaccinated?” Figure 2 shows the distribution of responses.

**Table 1: Support for Requiring Parents to Vaccinate Their Children**

	Percent
Should Not Be Required	17%
Should Be Required	83%
Total	100%

Notes: Data are from a February 12-15, 2015 survey of American adults.

The number of respondents completing the survey was 1,199.

Approximately 17 percent answered that parents should not be required to vaccinate their children while the remaining 83 percent thought that parents should be required to vaccinate their children.

Participation in School Activities: In addition to measuring individual support for mandatory vaccination policies, I utilize questions that ask respondents their opinions towards restricting

<sup>3</sup> A sample of 1,199 of national adults with an oversample of blacks was recruited by *Opinion Research Corporation* to participate in a study measuring political attitudes on the economy, ISIS, race relations, vaccinations, and the 2016 Presidential election. The survey was fielded from February 12 – June 15, 2015. Respondents were contacted via landline telephone and cellular phones.

children from school participation who are not vaccinated (See Appendix A for coding scheme). Specifically, respondents were asked, “If a child has not been vaccinated, even though he or she is healthy enough to receive vaccines, do you think that child should be allowed to participate in each of the following activities (public school, private school, daycare), or not?” As is shown in Table 2 individuals across all types of school (i.e. public, private, and daycare) felt that children who are not vaccinated should not be able to participate in school activities.

**Table 2: Support for Restricting School Participation for Unvaccinated Children**

	<u>Public School</u>	<u>Private School</u>	<u>Daycare</u>
Should Be Able To Participate	38%	48%	35%
Should Not Be Able To Participate	62%	52%	64%
Total	100%	100%	100%

Notes: Data are from a February 12-15, 2015 survey of American adults. The number of respondents completing the survey was 1,199

Interestingly though, when individuals were asked about children participation in private school the responses were more evenly disbursed. Approximately 52 percent answered that children who are not vaccinated should not be able to participate in activities at private schools while the remaining 48 percent thought that children who are not vaccinated should be able to participate in activities at private schools.

### **Independent Variables**

Threat Perception: As was established earlier, most theories on health behavior measure the influence of threat on individual participation in the health system. However, most studies only examine how the perception of threat influences action and only consider the perception of threat as a moderating variable instead of the primary driver. Brewer et al. (2007) argues that one of the major problems in testing whether threat perception motivates action is the failure to condition the threat question on not taking action. While the action Brewer et al. (2007) is referring to in their article is in reference to getting a vaccine, I argue that not only should perception of threat

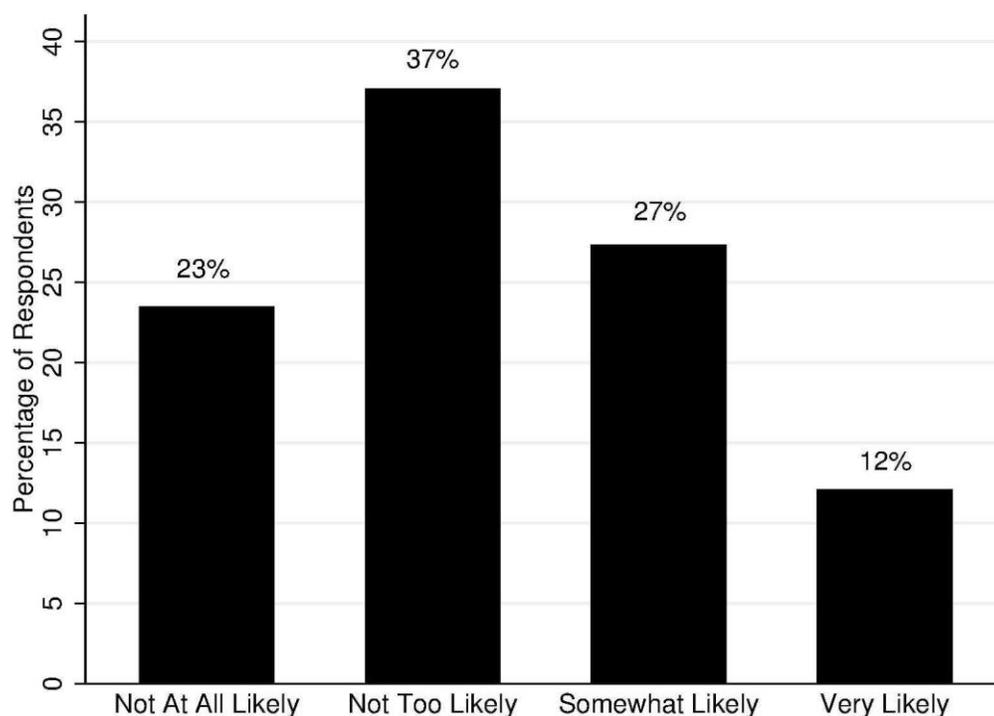
be used as a primary driver of action within the health system, but it also should be used to help explain how threat influences support for more restrictive health policies. This is consistent with previous literature on how threat influences support for counterterrorism policies (Davis and Silver 2004; Huddy et al. 2005).

Respondents were asked about the likelihood of a disease outbreak in their community using the following question: “How likely do you think it is that someone in your local community will be infected with measles in the next few weeks – very likely, somewhat likely, not too likely, or not likely at all?” Figure 2 shows the distribution of responses. Approximately 23 percent felt that an outbreak was not at all likely, 37 percent thought an outbreak was not too likely, 27 percent thought an outbreak was somewhat likely, and 12 percent thought an outbreak was very likely (See Appendix A for coding scheme). The expectation is that individuals who feel an outbreak is likely to happen in their neighborhood are more likely to support mandatory vaccination policies and will be more likely to approve of restricting school participation from children who are not vaccinated.

Political Ideology: In addition to threat I posit that political ideology is a moderating variable that influences whether an individual will support mandatory vaccination policies or be willing to support restricting access to school activities from children who have not been vaccinated (See Appendix A for coding scheme). Though political ideology has been used to help explain how threat perception influences support for counterterrorism policies, we should not expect the same results to occur for health policy issues. Because research has found that conservatives are less likely to defer to science (Blank and Shaw 2015; Mooney 2005, 2012) and are less supportive of health policies that restrict individual liberty (Lantos et al. 2012), the expectation is that conservatives should be influenced less by perception of threat and should instead be influenced

by their political ideology. Alternatively, the expectation is that the perception of threat will influence support for mandatory vaccinations policies more for liberals compared to conservatives.

**Figure 2: Perceived Threat of an Outbreak of Measles in Community**



Control Variables: I include additional control variables to account for alternative explanations (See Appendix for coding scheme). First, I include a variable to account for education; I expect that individuals who are less educated, which research has found to be concerned of vaccine safety, will be less likely to support mandatory vaccination policies. Secondly, because previous research has shown that race and income is associated with high-level concerns towards vaccine safety (Shui et al. 2006), I include measures for both race and income. The expectation is that non-whites and individuals with lower levels of income will be less likely to support mandatory vaccination policies. I also included control variables to account for gender and age. I expect that females will be more likely to support mandatory vaccination policies than males (Keane et al.

2005). Finally, I expect that as an individual gets older the more likely they will be to support mandatory vaccination policies (Brunson 2013).

### **Results and Discussion**

This section discusses a series of logistic regression models that estimate support for mandatory vaccination policies. Table 3 tests the direct effect of perception of threat and ideology starting with whether parents should be required to vaccinate their children and moving to the right to include dependent variables about whether school participation should be restricted from children who have not been vaccinated. Table 4 goes a step further and provides an interaction between the level of threat perception and ideology. The expected outcomes are strongly supported by the results. The descriptive statistics for the variables can be found in Appendix B.

Consistent with expectation, the results suggest that perception of an outbreak of measles will occur in their community increases the chance that individuals will support mandatory vaccination policies and limit school participation for children who have not been vaccinated. Put another way – individuals who are most likely to feel an outbreak of measles is imminent in their community are more likely to support more restrictive vaccination policies. This is consistent with previous literature regarding the influence of threat towards support for counterterrorism policies in which the government limits privacy rights and restricts civil liberties (Huddy et al. 2005).

Figure 3 plots the predicted probabilities for threat perception and its influence on support for requiring parents to vaccinate their children. There is a 15 percent difference

**Table 3: Determinants of Support for Participation in School Activities and Mandatory Vaccination Policies: Role of Perceived Threat**

	Parents Should Be Required To Vaccinate	Participation in Public School	Participation in Private School	Participation in Day Care
Threat Perception	0.39 *** (.10)	0.39 *** (.07)	0.28 *** (.07)	0.34 *** (.07)
Female	0.35 ** (.18)	0.07 (.14)	0.06 (.13)	0.19 (.14)
Education	-0.25 *** (.10)	0.17 ** (.08)	-.003 (.07)	0.11 (.08)
Age	0.43 *** (.08)	0.20 *** (.07)	0.12* (.06)	0.13 ** (.07)
Black	0.36* (.21)	-0.26* (.15)	-0.04 (.15)	-0.17 (.15)
Hispanic	-0.37 (.28)	-0.71 *** (.25)	-0.38 (.24)	-0.65 ** (.25)
Income	0.14 *** (.06)	0.14 *** (.05)	0.07 (.05)	0.13 *** (.05)
Ideology (Conservative)	-0.27 *** (.11)	-0.06 (.09)	-0.18 ** (.08)	-0.10 (.09)
Log Likelihood	-434.748	-639.076	-689.584	-635.551
Chi-Square	73.74 ***	84.32 ***	33.69 ***	60.77 ***
Pseudo R <sup>2</sup>	.08	.06	.02	.05
Number of Cases	1025	1031	1021	1030

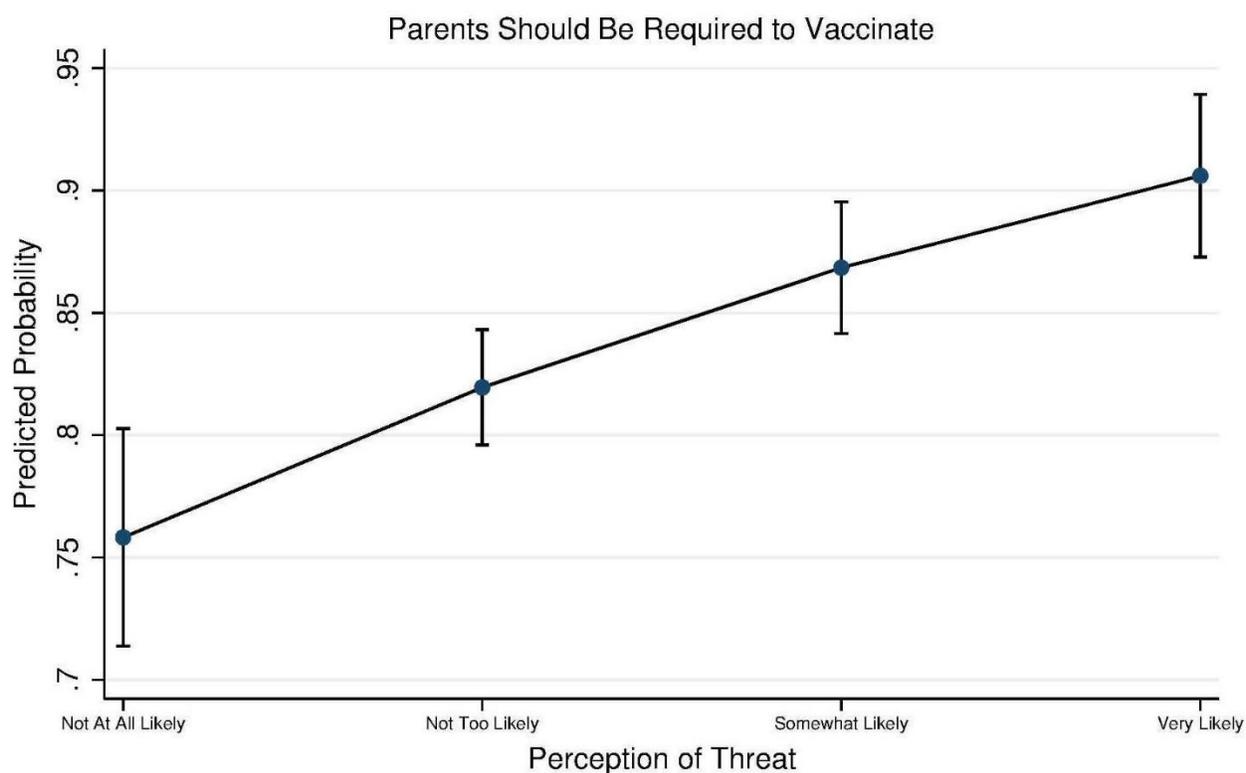
Notes: Coefficients are logistic regression coefficients with standard errors reported in parentheses. Significance levels (two-tailed test) \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Datasource: 2015 CBB/ORC Poll: Economy/ISIS/Race Reactions/Vaccinations/2016 Presidential Election

between those who think an outbreak of measles is not likely and those who think an outbreak of measles is likely. This suggests those individuals who are more likely to perceive a threat of measles are more likely to support requiring parents to vaccinate their children.

Moving onto limiting participation of unvaccinated children in school, Figure 4 plots the predicted probability for public school, private school, and daycare. Notice that for each type of school the curve is steep and in the positive direction. With limiting participation in public schools, there is a 25 percent difference between those who think an outbreak of measles is not likely and those who think an outbreak of measles is likely. Similarly, with participation in daycare there is a 20 percent difference between the two categories. This suggests that threat

perception strongly predicts support for limiting school participation in public school, private school, and daycare.

**Figure 3: Influence of Threat on Support for Requiring Parents to Vaccinate Their Children**



The results also show that political ideology influences whether they support parents being required to vaccinate their children and limiting participation for unvaccinated children in private school. Compared to liberals, conservatives are less likely to support limiting school participation for unvaccinated children in private schools and requiring parents to vaccinate their children. This is consistent with expectations as conservatives are more likely to reject mandatory government restrictions of any kind and are more in favor of individual liberty especially when applied to vaccinations (Lantos et al. 2012).

**Figure 4: Influence of Threat on Support for Limiting School Participation for Unvaccinated Children**

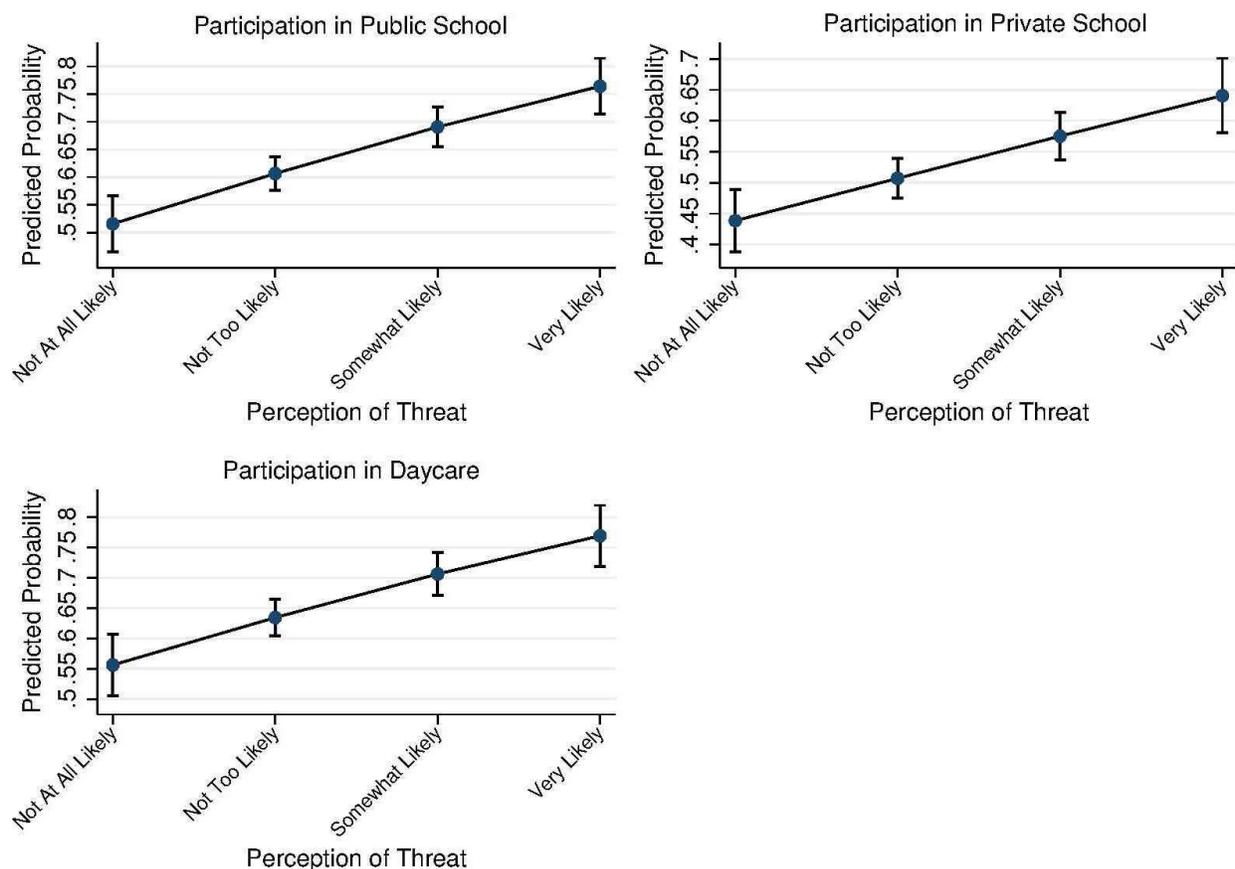
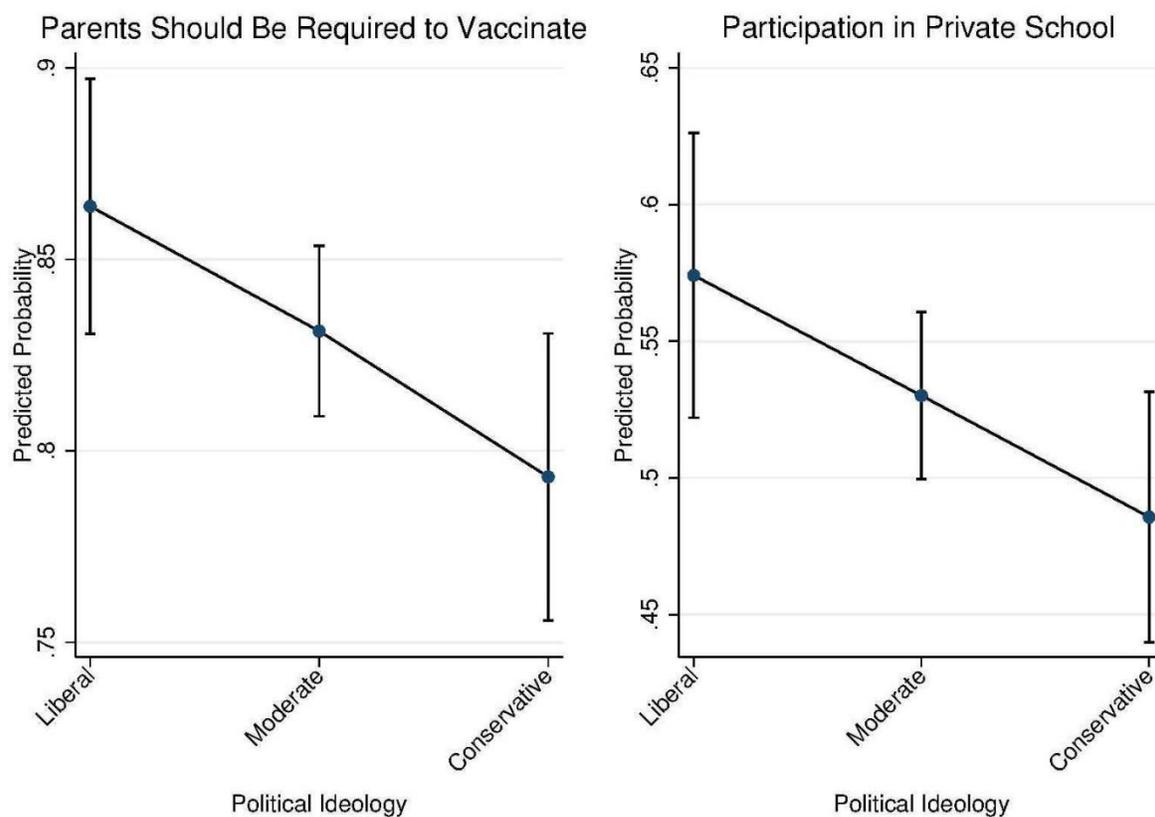


Figure 5 plots the predicted probabilities of the influence of ideology on mandatory vaccination policies and limited participation in schools. Looking first at the influence of ideology on whether parents should be required to vaccinate their children there is a 7 percent difference between liberals and conservatives. Finally, for limiting participation for unvaccinated children in private schools there is an 8 percent difference between liberals and conservatives.

Looking at the various control variables, the results show that individuals with higher education were less likely to support mandatory vaccination policies. This is surprising considering previous research on concerns about vaccine safety suggest parents with less education are much more likely to be concerned about vaccine safety (Gust et al. 2005; Prislina et al. 1998; Shui et al. 2006).

**Figure 5: Influence of Political Ideology on Mandatory Vaccination Policies and School Participation**



Interestingly though, when individuals with higher education were asked if children who are not vaccinated should be restricted from school activities, they were more likely to support restricted participation in public schools and daycare. A possible reason for these findings may be that individuals with higher education are more skeptical of government involvement in parental decisions with respects to mandatory vaccinations but are supportive of limited school participation for non-vaccinated children because of public safety concerns.

The results also suggest that African Americans are more likely to support requiring parents to vaccinate their children. However, when you examine whether unvaccinated children should be restricted from participating in public schools both African Americans and Hispanics are less likely to support limiting participation for unvaccinated children. Considering previous

research has suggested non-whites are more likely to be concerned about vaccine safety, (Shui et al. 2006) the lack of support for unvaccinated children participating in public school is not surprising. This still does not explain why African Americans are more likely to support requiring parents to vaccinate their children.

Thus far, I have established that perception of threat influences supports for policies that require parents to vaccinate their children and limiting school participation for children who have not been vaccinated. In addition, the results show that ideology influences support for requiring parents to vaccinate their children independent of threat perception. If both perception of threat and ideology influence support for requiring parents to vaccinate their children, does the perception of threat influence liberals differently than conservatives when being asked if they support requiring parents to vaccinate their children?

The results in Table 4 suggest that threat perception does influence liberals differently than moderates and conservatives as the interaction between the perception of threat and political ideology is statistically significant in the negative direction. Estimating the models for only liberals, moderates, and conservatives the results show that perception of threat is significant in the positive direction for liberals and moderates. For conservatives however, threat perception does not appear to influence support for requiring parents to vaccinate their children for conservatives.

Interestingly, education and gender are only significant predictors of support for requiring parents to vaccinate their children for conservatives. Thus, female conservatives are more likely to support requiring parents to vaccinate their children than liberal females. Furthermore, it appears that conservatives who are highly educated are less likely to support requiring parents to vaccinate their children. To my knowledge, I know of no research that has found a relationship

between education, gender, ideology, and support for requiring parents to vaccinate their children.

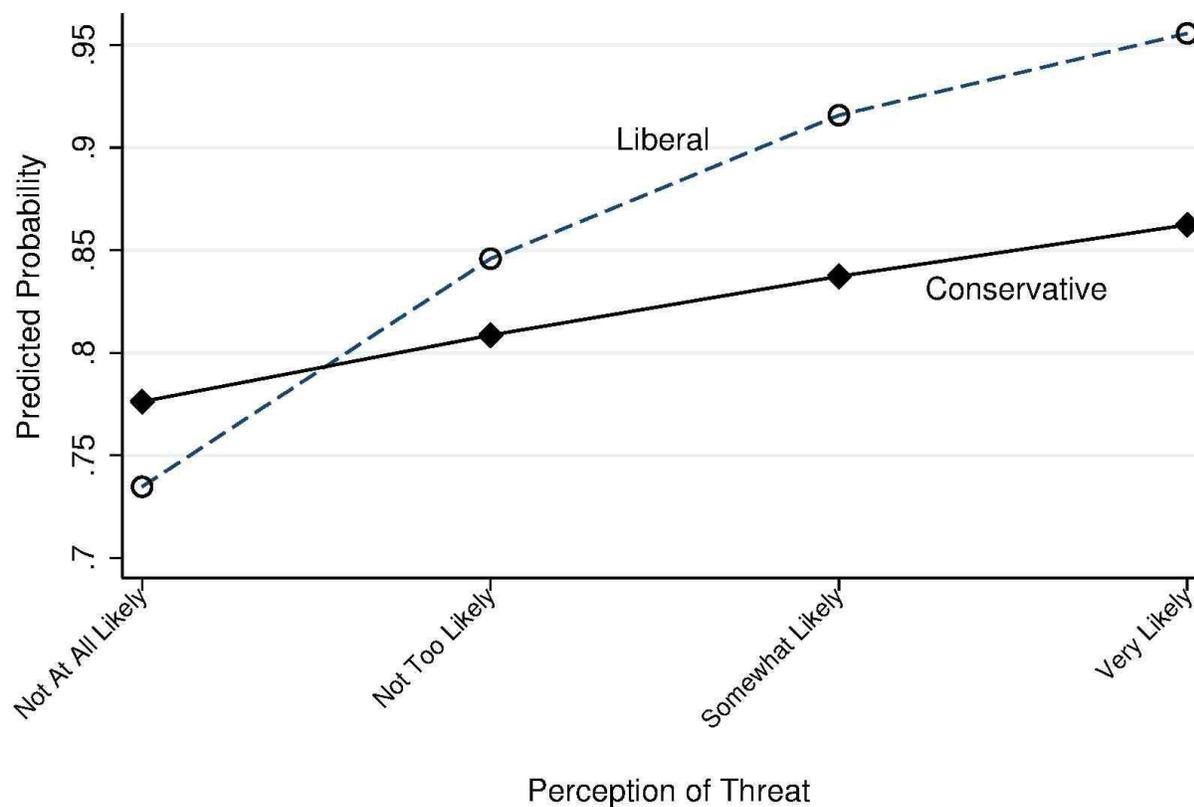
**Table 4: Determinants for Requiring Parents to Vaccinate Their Children: Role of Political Ideology**

	Parents Should Be Required To Vaccinate	Liberal	Moderate	Conservative
Threat Perception	0.98*** (.29)	0.69** (.20)	0.45*** (.19)	0.20 (.14)
Female	0.34** (.18)	0.32 (.36)	-0.11 (.32)	0.63** (.28)
Education	-0.26*** (.10)	-0.09 (.20)	-0.29 (.19)	-0.38*** (.16)
Age	0.43*** (.08)	0.36** (.17)	0.60*** (.16)	0.37*** (.13)
Black	0.37* (.21)	-0.30 (.41)	0.10 (.37)	0.67* (.37)
Hispanic	-0.37 (.29)	-0.06 (.51)	-0.70 (.50)	-0.33 (.49)
Income	0.14** (.06)	0.24** (.12)	0.06 (.11)	0.13 (.10)
Ideology (Conservative)	.26 (.26)	-	-	-
Threat*Ideology	-0.27** (.12)	-	-	-
Log Likelihood	-432.306	-112.492	-132.172	-181.442
Chi-Square	78.62***	28.03***	32.04***	26.98***
Pseudo R <sup>2</sup>	.08	.11	.11	.07
Number of Cases	1025	279	357	389

Notes: Coefficients are logistic regression coefficients with standard errors reported in parentheses. Significance levels (two-tailed test) \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Datasource: 2015 CBB/ORC Poll: Economy/ISIS/Race Reactions/Vaccinations/2016 Presidential Election

Figure 6 plots the predicted probabilities for the conditional influence of ideology for both liberals and conservatives. The figure suggests that liberals appear to be influenced more by the threat of an outbreak of measles occurring in their community compared to conservatives. For liberals, support for requiring parents to vaccinate their children increases as their perception increases. For conservatives however, they appear to not be influenced by the threat of an outbreak of measles occurring in their community. This suggests that support for mandatory vaccination policies for conservatives is influenced more by political ideology while liberals are influenced more by the perception of threat.

**Figure 6: Conditional Influence of Ideology on Support for Requiring Parents to Vaccinate Their Children**



### Conclusion

Laws that attempt to require parents vaccinate their children have been rigorously enforced since the 1970s. At the heart of the debate over mandatory vaccination laws is this sense of distrust of both vaccines and the government. Research has established that individual attitudes about policies can be influenced by threat but little research has examined the connection between threat and support for mandatory vaccination policies. As such, this paper explored the influence of threat and ideology on individual attitudes towards vaccination policies through the use of a national sample. The analysis allows for several important conclusions.

First, individual perception of threat does influence the support of mandatory vaccination policies which is consistent with the research on individual support for counterterrorism policies.

However, the findings also suggest that the support of mandatory vaccination policies is also influenced by ideological preferences; more importantly, threat perception influences conservatives differently than it does liberals and moderates.

Scholars argue that if conservatives feel a dangerous infectious disease is spreading, they recognize the governments need to restrict individual liberty by requiring mandatory vaccinations (Lantos et al. 2012; Epstein 2003). The findings here however are inconsistent with these assumptions. Here I find that support for mandatory vaccination policies for liberals is much more influenced by threat while conservatives are more influenced by ideological preferences. It seems that even with a highly politicized issue such as the threat of exposing the community to an infectious disease; conservatives are influenced more by their distrust of the government and science than by the perception that an outbreak in their community is imminent.

Second, although health scholars frequently note low-levels of education influence confidence in vaccines (Gust et al. 2005; Prislun et al. 1998; Shui et al. 2006), the findings here suggest that individuals with higher levels of education are less likely to support requiring parents to vaccinate their children compared to individuals with lower levels of education. However, the results also showed individuals with higher education are more likely to support limiting unvaccinated children from participating in public school. What can be made of these conflicting findings? One potential explanation may be that it is hard for individuals to rationalize requiring parents to vaccinate their children; however, it seems if parents do delay or forgo vaccinations individuals with higher education are more likely to support limiting unvaccinated children from attending public school. In other words, you do not have to vaccinate your children but you also cannot send them to school if you do not.

Finally, the findings here have broader implications for health policies regarding vaccinations and the ability of the government to educate the public on the need for vaccinations. While the effectiveness of vaccines depends on “herd immunity” being maintained, the results suggest that the government and pro-vaccine advocates should tailor their message to apply to different types of groups. For liberals, a successful message would entail advocating the threat a loss of “herd immunity” causes or the potential public safety risk caused by not vaccinating their children. Because conservatives are skeptical of government mandates and are not influenced by an outbreak occurring in their community, advocates for vaccines are going to have a difficult time tailoring a message towards conservatives about the need for vaccines. More research needs to examine under what circumstances conservatives will support mandatory vaccination policies.

## Appendix A: Variable Measurement and Data Sources

Name	Coding Scheme	Source
<b>Dependent Variable</b>		
Parents Should Be Required To Vaccinate	0 = Parents should not be required to vaccinate; 1 = Parents should be required to vaccinate children	2015 CBB/ORC Poll: Economy/ISIS/Race Reactions/Vaccinations/ 2016 Presidential Election
Participation in Public School	0 = Unvaccinated children should be able to participate; 1 = Unvaccinated children should not be able to participate	2015 CBB/ORC Poll: Economy/ISIS/Race Reactions/Vaccinations/ 2016 Presidential Election
Participation in Private School	0 = Unvaccinated children should be able to participate; 1 = Unvaccinated children should not be able to participate	2015 CBB/ORC Poll: Economy/ISIS/Race Reactions/Vaccinations/ 2016 Presidential Election
Participation in Daycare	0 = Unvaccinated children should be able to participate; 1 = Unvaccinated children should not be able to participate	2015 CBB/ORC Poll: Economy/ISIS/Race Reactions/Vaccinations/ 2016 Presidential Election
<b>Independent Variables</b>		
Threat Perception	Measles outbreak in community: 1 = Not at all likely; 2 = Not too likely; 3 = Somewhat likely; 4 = Very likely	2015 CBB/ORC Poll: Economy/ISIS/Race Reactions/Vaccinations/ 2016 Presidential Election
Female	0 = Male; 1 = Female	2015 CBB/ORC Poll: Economy/ISIS/Race Reactions/Vaccinations/ 2016 Presidential Election

Education	1 = No high school; 2 = High school grad; 3 = Some college; 4 = College grad	2015 CBB/ORC Poll: Economy/ISIS/Race Realtions/Vaccinations/ 2016 Presidential Election
Age	1 = 18 to 29; 2 = 30 to 49; 3 = 50 to 64; 4 = 65+	2015 CBB/ORC Poll: Economy/ISIS/Race Realtions/Vaccinations/ 2016 Presidential Election
Black	0 = White; 1 = Black	2015 CBB/ORC Poll: Economy/ISIS/Race Realtions/Vaccinations/ 2016 Presidential Election
Hispanic	0 = White; 1 = Hispanic	2015 CBB/ORC Poll: Economy/ISIS/Race Realtions/Vaccinations/ 2016 Presidential Election
Income	1 = Less than \$25k; 2 = \$25 to \$34k; 3 = \$35 to \$49k; 4 = \$50 to \$75k; 5 = Over \$75k	2015 CBB/ORC Poll: Economy/ISIS/Race Realtions/Vaccinations/ 2016 Presidential Election
Ideology	1 = Liberal; 2 = Moderate; 3 = Conservative	2015 CBB/ORC Poll: Economy/ISIS/Race Realtions/Vaccinations/ 2016 Presidential Election

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### Appendix B: Descriptive Statistics

	Mean	Min	Max	S.D.	N
Require Parents To Vaccinate Children	-	0	1	0.38	1187
Limit Public School Participation	-	0	1	0.49	1193
Limit Private School Participation	-	0	1	0.50	1181
Limit Daycare Participation	-	0	1	0.48	1190
Threat Perception	2.28	1	4	0.96	1174
Female	-	0	1	0.50	1199
Education	3.01	1	4	0.95	1186
Age	2.83	1	4	1.03	1187
Black	-	0	1	0.44	1199
Hispanic	-	0	1	0.26	1180
Income	3.24	1	5	1.53	1075
Ideology	2.12	1	3	0.8	1166

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## Chapter 4

### **Anxiety and Loathing on the Trail of an Epidemic? The Link Between Anxiety, Confidence, and Restrictive Policy**

#### **Introduction**

In March of 2014, the World Health Organization (WHO) reported that the Ebola virus had broken out in the Western African countries of Guinea, Sierra Leone, and Liberia (Center for Disease Control and Prevention (CDC) 2014). Initially, American officials and the public thought the outbreak was isolated to these three African countries. However, in September of 2014, Thomas Eric Duncan, a citizen of Liberia, became infected and traveled to Texas, becoming the first Ebola case confirmed by the Center for Disease Control and Prevention (CDC) in the U.S. (Botelho and Wilson 2014; CDC 2014).

No matter where they live, people around the world face potential threats of infectious diseases such as severe acute respiratory syndrome (SARS), swine flu, avian (bird) flu, and any number of less well-known diseases. These transferable diseases have the potential to cause rapidly spreading epidemics that could result in many deaths, major economic impacts, and media and public hysteria. Public health authorities must act quickly to reduce the spread of disease but the impact of their actions are often hindered by the lack of vaccines or effective treatments for those who become infected.

Despite the efforts of the CDC to educate the general public in the limited ways in which Ebola can be transmitted, when Texas nurses Nina Pham and Amber Vinson both tested positive for Ebola after caring for Mr. Duncan, concern among the American public about contracting Ebola dramatically increased. To illustrate, a September poll conducted before both Pham and Vinson tested positive for Ebola showed 32 percent of Americans were worried about their exposure to Ebola, with only 11 percent saying they were very worried (Pew Research Center

2014a). However, a few weeks after Pham and Vinson were diagnosed, Pew conducted another survey and found that 41 percent of Americans were worried that they themselves or someone in their family would be exposed to the virus, including 17 percent who said they were very worried. Anxiety clearly increased after the public became aware that the Ebola crisis was not isolated to the three Western African countries like they initially thought.

Public health crises, especially potential disease epidemics, raise two important questions. First, when public concern rises because of a potential outbreak does individual anxiety (personal or sociotropic) influence confidence in the government's ability to respond to the crisis? Secondly, how does anxiety towards Ebola influence attitudes towards government policies in response to Ebola?

In this chapter, I argue that hearing about a disease will cause individuals to become anxious. In order to mitigate those anxieties (personal or collective) individuals will seek out information from the government and identify steps the government is taking to reduce the risk of exposure. If individuals do not see evidence in the media that the government can reduce the likelihood that they will contract Ebola or that an epidemic will affect the country, their confidence in government will decline.

### **Evaluations of Government, Anxiety, and Disease Epidemics**

Most of what we know about how individuals evaluate government comes from research looking at approval ratings for the president, legitimacy of the Supreme Court, and dissatisfaction of Congress (Caldeira 1986; Caldeira and Gibson 1992; Hibbing and Theiss-Morse 1995). Nevertheless, effective and legitimate representative governments rely upon public confidence that their leaders will protect citizens and pursue the public good. When confidence in government is high, individuals are more likely to comply with laws (Scholz and Lubell

1998). Alternatively, when confidence in government is low the government is less likely to comply with government recommendations during a health crisis (Taylor-Clark 2005).

Confidence in government is particularly important during a public health crisis because health threats can trigger public anxiety and result in government authorities overreacting to a crisis like the Ebola virus (Albertson and Gadarian 2015). For example, Governor Chris Christie of New Jersey and Governor Andrew Cuomo of New York enacted a policy that required all arriving air travelers who had contact with Ebola patients in West Africa to be quarantined for 21 days regardless if they tested negative for Ebola or showed any symptoms (Frumin 2015). Although these actions are well intentioned, instead of easing fears these government actions heightened anxiety. With concerns about Ebola rising, did individual anxiety about contracting Ebola influence confidence in the government's ability to respond to Ebola?

Anxiety can have at least two components. First, one can have anxiety because of concern for oneself or one's family – often referred to as personal concern. Secondly, anxiety can develop out of a concern about a potential threat towards society, the country as a whole, or the region where one lives, etc. – often referred to as sociotropic concern. Thus, individuals can be anxious about someone in their family, themselves, or the United States being affected by Ebola.

Recently, research has found that anxiety can have an influence on individual evaluations of government during a health crisis. For example, Albertson and Gadarian (2015) in their study of anxiety towards H1N1 and smallpox found that individuals who were more anxious about H1N1 and smallpox were more likely to trust the government as a source of information. Their research showed that individuals who were more anxious about smallpox were more likely to

trust the CDC as a source of information for smallpox. Similarly, individuals who more anxious about H1N1 were also more likely to trust the CDC.

Although Albertson and Gadarian (2015) found anxiousness influences whether an individual views the government as a reliable source of information during times of a health crisis, the government does more than just provide information. During a health crisis, the government can provide money for research, provide vaccines and test for individual symptoms, quarantine people, and recommend restricting travel to areas that are more susceptible to risk. For example, even though the government advised against closing schools during the H1N1 outbreak, the CDC said schools would be justified in closing “if they have a high rate of infection or large numbers of students with the underlying conditions that make the virus more dangerous” (McKenna 2009). Similarly, with smallpox the government bought enough of the smallpox vaccine to treat two million people just in case of a bioterrorism attack (McNeil Jr. 2013). Thus, during a health crisis the government can play an important role in reducing anxiety by providing relevant information and outlining steps the government is taking to reduce the risk to the public; thereby improving public confidence in the government’s response to the crisis.

Unlike the H1N1 and smallpox crisis, the information environment that existed for Ebola was different. After it was learned that Eric Duncan, the first U.S. death from Ebola, traveled to Dallas from Liberia the public began to call for an outright travel ban from the Western African countries infected with Ebola. A recent poll showed that 77 percent of respondents supported a travel ban from the United States (Laing 2014). However, despite public support for a travel ban, President Obama, the CDC, and Department of Homeland security added entry-screening restrictions at several major airports in the U.S. to detect signs of Ebola or potential exposure among all passengers (White House 2014). Many felt in the public this measure was not enough

to prevent an outbreak of Ebola from occurring in the United States. Indeed, just 51 percent of U.S. residents felt that the American response to the current outbreak of Ebola had been adequate (Laing 2014). Another difference in the information environment for both H1N1 and smallpox is the presence of a vaccine. Despite a significant amount of federal spending to combat Ebola, a vaccine is still unavailable.

During times of a crisis like Ebola, individuals feel a sense of anxiety, not only for the individuals who may be affected by the crisis, but also for themselves and what the crisis may mean for those closest to them (Atkeson and Maestas 2012). This anxiety leads individuals to search for information to understand the causes of the crisis in order to return to a state of normal processing (Atkeson and Maestas 2012; Meyer 1988; Meyer et al. 1991; Shoemaker 1996; Weiner 1985, 1995). If during their investigation the crisis reveals nothing of personal importance, or fits with their prior expectations, the public may return to their normal routines. On the other hand, if individuals feel a crisis is direct threat to themselves or their family, anxious individuals will feel the need to decipher the new information and determine accountability (Atkeson and Maestas 2012). Should we then expect similar patterns that were present for both H1N1 and smallpox to register when the public evaluates government's ability to respond to Ebola?

Because individuals who are anxious will seek out information in order to reduce their anxiety (Atkeson and Maestas 2012), if individuals feel the government has provided adequate information and has taken steps to reduce their risk to exposure their confidence in government should not be affected. Alternatively, if anxious individuals do not see that the steps the government is taking reduces their risk of exposure to Ebola, their confidence in government will

decline. Thus, anxiety (personal or collective) will reduce confidence in government unless there is something in the information environment that will offset or reverse individual concerns.

***H1: Anxiety (personal or and collective) will have a negative effect on confidence in government if individuals perceive the steps the government are taking will not reduce their risk of exposure to Ebola.***

Finally, research has also found that the type of anxiety an individual is experiencing can affect attitudes towards policies. For example, Davis and Silver (2004) found that individuals that were more concerned about another terrorist attack on the United States (sociotropic concern) were more likely to support policies that restricted civil liberties. Similarly, Huddy et al. (2005) found that individuals who were more concerned about another terrorist attack on the United States (sociotropic concern) were more likely to support the Bush administration's antiterrorism policies. Alternatively, Joslyn and Haider-Markel (2007) found that if the threat is specific (in this case a threat of anthrax) personal concern plays a significant role in predicting policy positions only if the policy issue lends itself to an attribution of responsibility for the national government. In both of these cases, anthrax and terrorism, anxiety (personal or sociotropic) only influenced policy preferences if individuals attributed responsibility to the government. Because individuals tend to believe a health crisis is out of the control of the government (Albertson and Gadarian 2015), I expect that concern (personal or sociotropic) will have no impact on policy preferences towards policies dealing with Ebola.

***H2: Personal or sociotropic concern will have no effect on the policy preferences of individuals for policies dealing with Ebola.***

### **Data and Methods**

The next step is to explore empirically the influence of personal and collective concern (anxiety) on confidence in government. Two national random sample surveys of 2,210 adults conducted from October 9 to 12 and 23 to 26, 2014, provides an excellent opportunity to test this

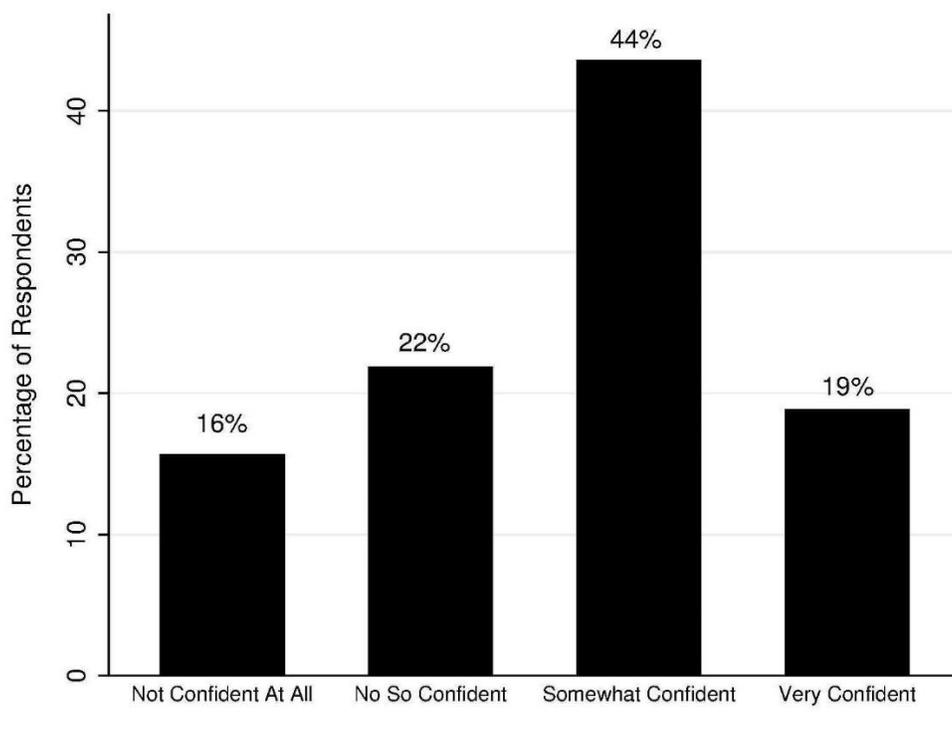
question. The next section outlines the dependent and independent variables taken from the survey that I employed in the analysis.

### **Dependent Variables**

Confidence in Government: The first dependent variable measures the public's confidence in the government's ability to control an Ebola outbreak (See Appendix A for coding scheme).

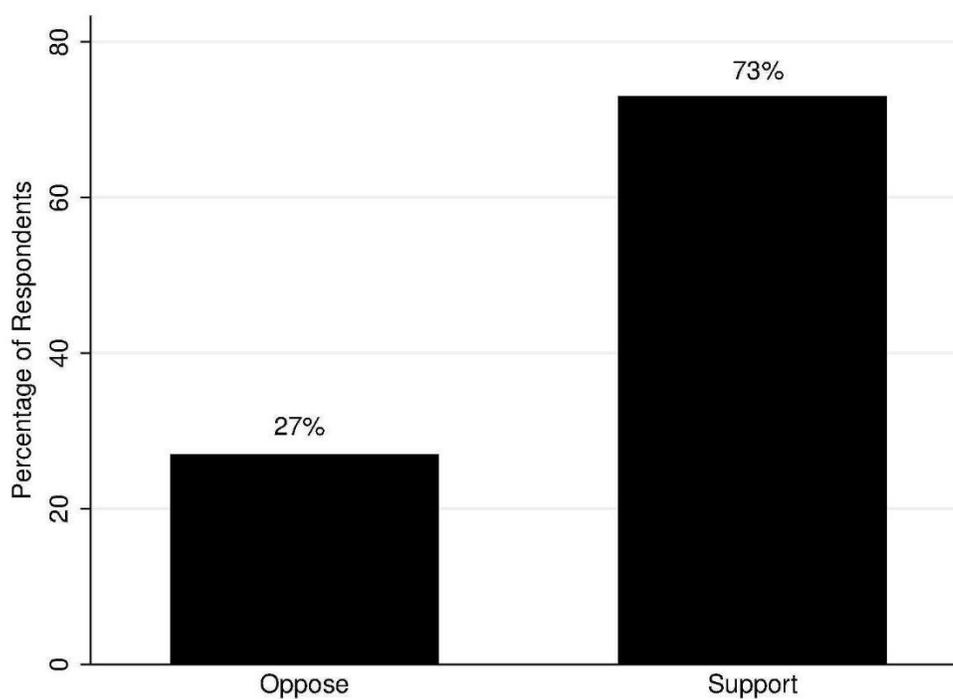
Specifically, respondents were asked: "How confident are you in the federal government's ability to respond effectively to an outbreak of the Ebola virus in the United States?" Figure 1 shows the distribution of responses; 16 percent of respondents were not confident at all in the government's ability to respond to an outbreak of the Ebola virus while 19 percent of respondents were very confident in the government's ability to respond to an outbreak of the Ebola virus. A majority of respondents (63 percent) were at least somewhat confident.

**Figure 1: Confidence in the Government's Ability to respond to an Ebola Outbreak**



Restrict Entry to the United States: In addition to measuring public confidence in the government's ability to respond to an outbreak of the Ebola virus in the United States, I examine whether anxiety about the Ebola virus influences support for policies dealing with Ebola (See Appendix A for coding scheme). Specifically, respondents were asked, "In dealing with the Ebola outbreak, would you support or oppose restricting entry to the United States by people who've been in affected countries?" Figure 2 shows the distribution of responses. Approximately 27 percent would oppose restricting entry to the United States by people who have been in affected countries while the remaining 73 percent support restricting entry to the United States.

**Figure 2: Support for Restricting Entry to the United States**



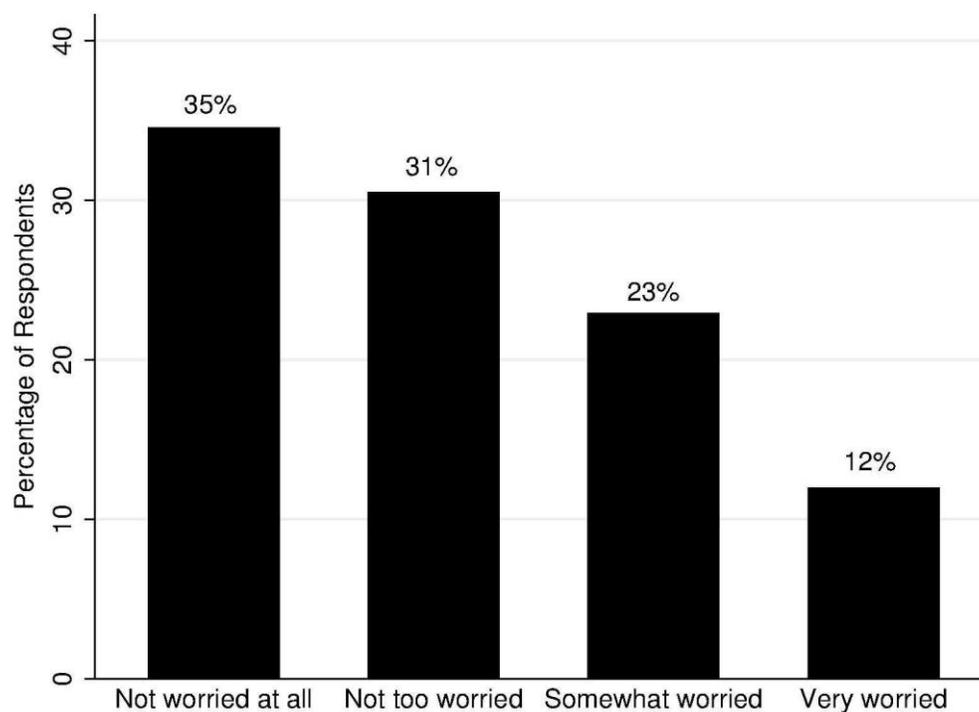
### **Independent Variables**

Personal and Sociotropic Concern: My primary interest is whether anxiety influences individual evaluations of government and policy preferences during a health crisis--in this case an outbreak of Ebola occurring in the United States. Although previous research has found that anxiety

influences evaluations of government during a health crisis, Albertson and Gadarian (2015) only examine whether anxiety influences if an individual views government officials as a reliable source of information during a health crisis. I instead examine how anxiety influences individual confidence in the government's response towards Ebola and support for restrictive entry policies.

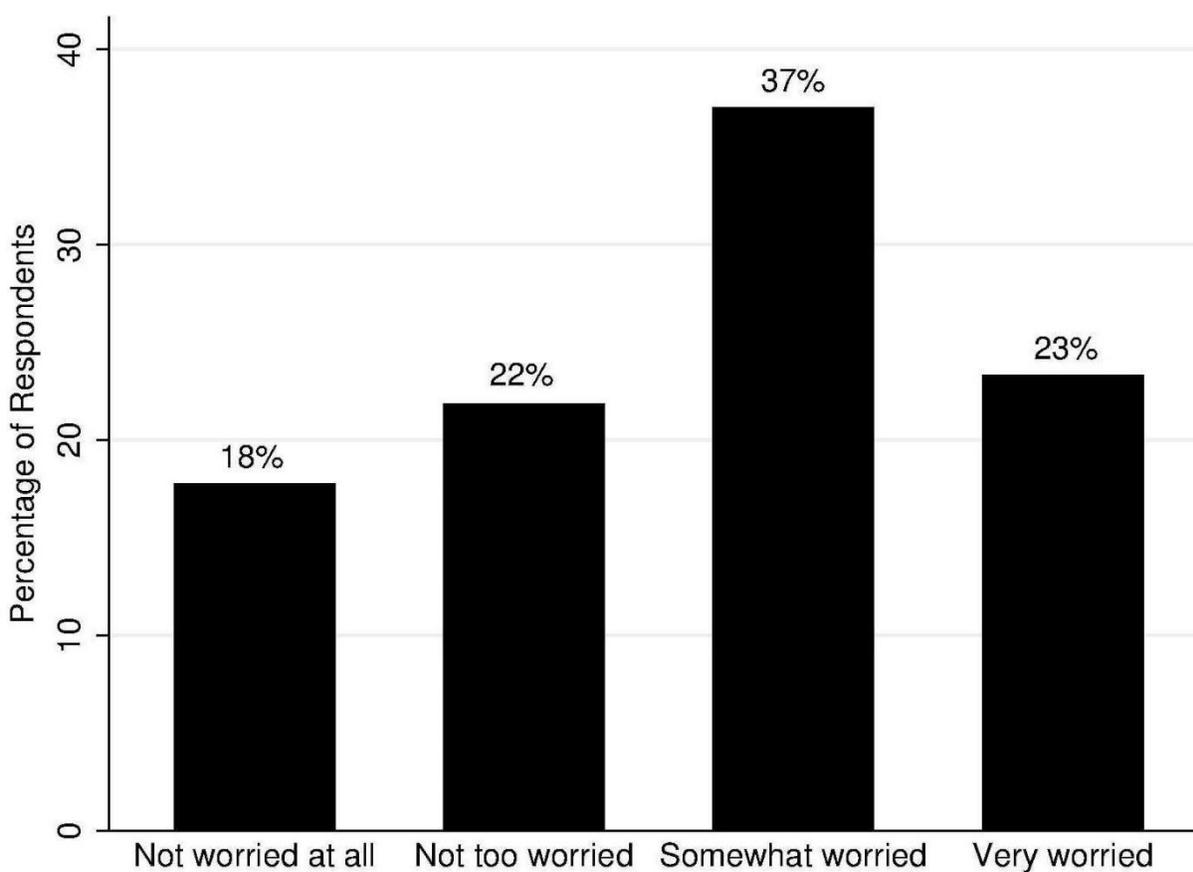
Personal concern about an Ebola outbreak here is measured by asking respondents the question: "On some other issues, how do you feel about the possibility that you are someone in your immediate family might catch the Ebola virus – very worried, somewhat worried, not too worried, or not worried at all?" (See Appendix A for coding scheme). Figure 3 shows the distribution of responses. A majority of respondents (66 percent) were not worried about themselves or someone in their immediate family catching the Ebola virus. On the other hand, only 12 percent of respondents were very worried.

**Figure 3: Personal Concern about an Outbreak of Ebola Affecting You or Your Immediate Family**



Concern about Ebola affecting you or your family is not the only type of anxiety that could influence evaluations of government during a health crisis. To measure sociotropic concern respondents were asked, “Apart from you and your family, how concerned are you about the possibility of a widespread Ebola epidemic occurring in the United States – very concerned, somewhat concerned, not so concerned, or not concerned at all?” (See Appendix A for coding scheme).<sup>1</sup> Figure 4 shows the distribution of responses for sociotropic concern. Only 16 percent of respondents were not worried at all about an epidemic of Ebola occurring in the United States. On the other hand, 60 percent of respondents were either somewhat worried or very worried about an epidemic of Ebola occurring in the United States.

**Figure 4: Sociotropic Concern about an Outbreak of Ebola Affecting the United States**



<sup>1</sup> This sociotropic measure is similar to previous studies examining the relationship between anxiety and political and/or policy response attitudes (Davis and Silver 2004; Huddy et al. 2002, 2005).

Clearly, both distributions are skewed but in opposite directions. Nearly 70 percent of respondents were not concerned about their family or themselves contracting Ebola. Indeed, only 12 percent were very worried. On the other hand, 60 percent of respondents were worried about a widespread Ebola epidemic occurring in the United States. People appear less anxious about their own circumstances or that of their family but appear to be much more anxious about the threat to society as a whole.

In addition to my central independent variables, I also include variables for partisanship, political ideology, gender, education, race, and age (See Appendix A for coding scheme). Research has found that confidence in government is uniquely shaped by education, partisanship, and gender (Cook and Gronke 2005; Newton and Norris 2000). First, I expect those with higher levels of education will be less likely to be confidence in the government response to Ebola while females will be more confident in government. Secondly, because Republicans and Conservatives generally have negative attitudes towards the federal government (Pew Research Center 2015), I expect that Republicans and Conservatives will be less likely to have confidence in the government's ability to respond effectively to an outbreak of Ebola.<sup>2</sup> Finally, following findings examining attitudes towards counterterrorism policies (Davis and Silver 2004; Huddy et al. 2002, 2005) I expect Republicans and Conservative to be more supportive of policies restricting entry into the United States from areas impacted by Ebola. I also expect that those with higher education will be more likely to support policies restricting entry into the United States while females will be less likely to support (Huddy et al. 2005).

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<sup>2</sup> The Pew Research Center in 2014 found that 42 percent of Republicans have a great deal or fair amount of confidence in the government to prevent an Ebola outbreak, compared with 67 percent of Democrats and 51 percent of independents.

Finally, there is good reason to expect that people's confidence in government and support for more restrictive policies towards Ebola to be affected jointly by their level of anxiety, partisanship/political ideology, and education (Davis and Silver 2004; Huddy et al. 2002, 2005). I expect that those with higher levels of education and higher anxiety will be less confident in government (Huddy et al. 2005). Similarly, I expect that individuals who are both anxious and Conservative will be less confident in government.

### **Results and Discussion**

Based on possible response categories of the dependent variables I estimated ordered logistic and logistic regression models to predict individual confidence in government and support for restrictive policies concerning Ebola. Table 1 shows the direct effect of personal and sociotropic concern with individual confidence towards the government's response on Ebola, with Model 1 being the unconstrained model and Model 2 includes interactions (descriptive statistics for the variables are in Appendix B).

The results suggest that partisanship, political ideology, and education are consistent indicators of confidence in the government's ability to respond to an outbreak of Ebola effectively. Individuals with higher levels of education and those who identify as being either Republican or Conservative are less confident in the government's ability to respond effectively to an outbreak of Ebola. These results are not surprising considering that previous research indicates that both education and partisanship shape confidence in government (Cook and Gronke 2005). It may also be that those with higher education are more anxious about Ebola. As is shown in Table 1 (Model 2) those with higher levels of education and higher anxiety levels have less confidence in the government's response towards Ebola. This is consistent with

previous research. In their examination of the differences between anxiety and threat, Huddy et al. (2005) found that higher levels of education were a strong predictor of anxiety.

More importantly, anxiety (both personal and sociotropic) about Ebola reduces an individual's confidence in the government's ability to respond to an Ebola outbreak, which is consistent with expectations. The fact that both personal and sociotropic concern appear to significantly decrease the likelihood of confidence suggests that the information environment that was present during the Ebola crisis did not reduce anxiety like it did for H1N1 and smallpox.

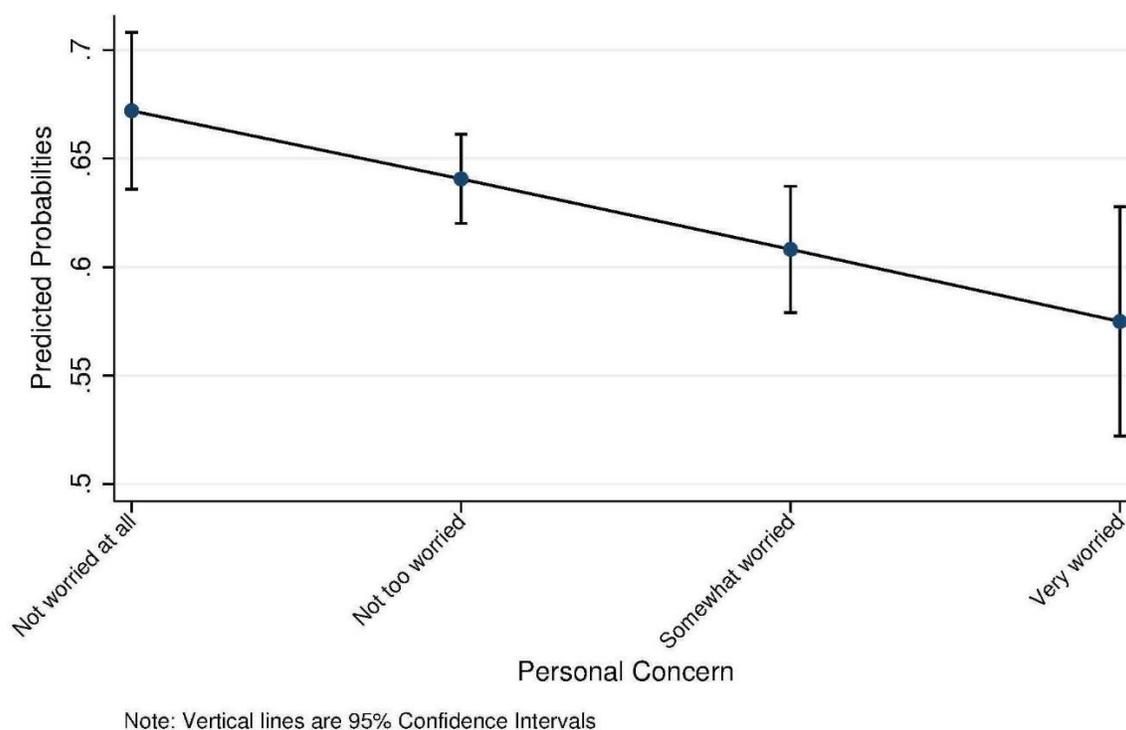
**Table 1: Determinants of Individual Confidence in Government Response Towards Ebola: Role of Personal and Sociotropic Concern**

	Model 1	Model 2
Personal Concern	-0.22 *** (.06)	-0.23 *** (.06)
Sociotropic Concern	-0.61 *** (.06)	-0.50 *** (.17)
Party ID (Republican)	-0.38 *** (.05)	-0.35 *** (.05)
Ideology (Conservative)	-0.43 *** (.07)	-0.76 *** (.17)
Female	0.008 (.09)	0.006 (.09)
Age	0.02 (.03)	0.03 (.03)
Education	-0.14 *** (.04)	0.30 *** (.12)
White	-0.49 *** (.11)	-0.51 *** (.11)
Ideology * Collective Concern	-	0.13 *** (.06)
Education * Collective Concern	-	-0.16 *** (.04)
Cut Point 1	-6.42	-6.08
Cut Point 2	-5.03	-4.69
Cut Point 3	-2.58	-2.22
Log Likelihood	-2318.91	-2306.90
Chi-Square	541.66 ***	565.69 ***
Pseudo R <sup>2</sup>	.10	.11
Number of Cases	2002	2002

Notes: Coefficients for Confidence in Government model are ordered logistic regression coefficients with standard errors reported in parentheses. Significance levels (two-tailed test) \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Datasource: 2014 ABC News/The Washington Post Poll: Congress/Political Parties/Ebola/2016 Presidential. - = omitted variable

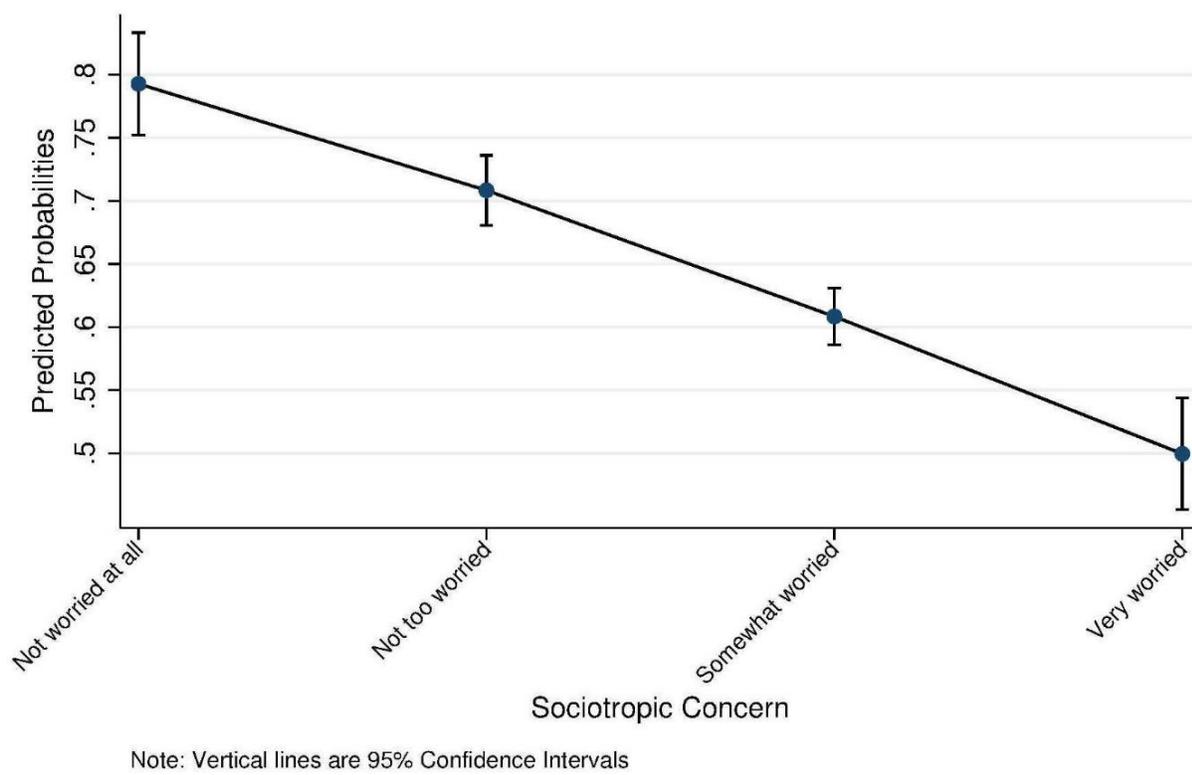
Figure 5 plots the predicted probabilities of personal concern about Ebola and its influence on confidence in government. Note the negative direction of the slope; as personal concern about Ebola increases the likelihood of individual confidence in government decreases. Indeed, there is a 10-percentage point decline in the probability of being confident between those who are not worried at all and those who are very worried.

**Figure 5: Influence of Personal Concern about Ebola on Confidence in Government**



Moving onto the influence of sociotropic concerns on confidence in government, Figure 6 graphs the predicted probabilities for the relationship. Like with personal concern the slope of the line is negative; however, note that the negative direction is steeper for sociotropic concern than in personal concern. There is a 30-percentage point decline in the likelihood of confidence between those who are not worried at all about an epidemic of Ebola occurring in the United States and those that are very worried.

**Figure 6: Influence of Sociotropic Concern about Ebola on Confidence in Government**

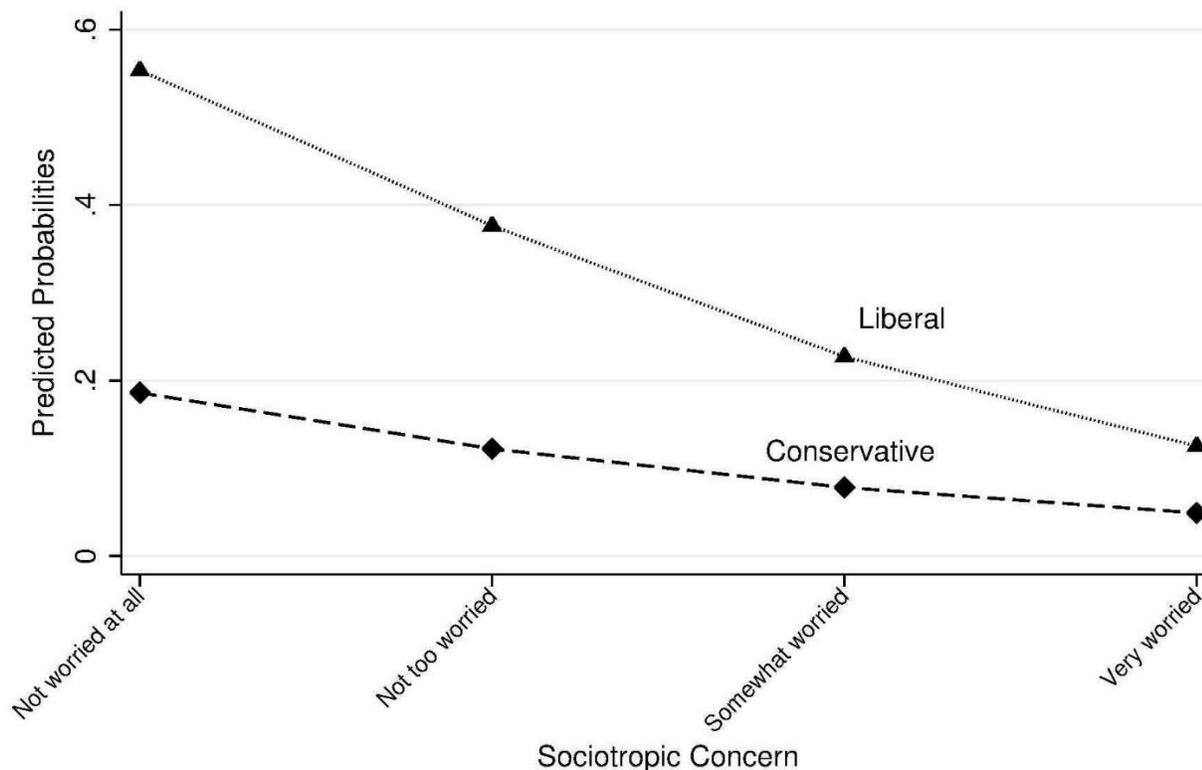


Finally, although both personal and sociotropic concern about Ebola appear to predict confidence in government, the figures seem to indicate that high sociotropic concern about Ebola is more likely to decrease confidence in government than is high personal concern.

Figure 7 indicates that for both Conservatives and Liberals confidence in government in government decreases as anxiety increases. This suggests that anxiety affects Liberals more dramatically than it does for Conservatives. As Liberals become more anxious, their confidence in the government's response to Ebola decreases. This result is not surprising considering the figures for both personal and sociotropic concern were in the negative direction.<sup>3</sup>

<sup>3</sup> Sociotropic concern for political ideology is the only interaction that was significant. I also ran an interaction with personal concern but the interaction was not significant. In addition, I also ran an interaction between anxiety (both personal and sociotropic) and partisanship and the interaction was not significant.

**Figure 7: Conditional Influence of Sociotropic Concern and Political Ideology on Confidence in Government**



Moving onto how anxiety about Ebola influences attitudes towards restrictive policies about Ebola, the results indicate that partisanship, political ideology, age, and education are consistent predictors of support for restricting entry into the United States from countries affected by Ebola. Individuals who are older and identify as either Republican or Conservative appear more likely to support restricting entry into the United States from individuals traveling from areas impacted by Ebola. Finally, individuals with higher levels of education are less likely to support restricting entry into the United States.

The results show that sociotropic concerns about Ebola are a strong predictor of attitudes towards restricting entry into the United States from areas affected by Ebola. Although these findings are inconsistent with my expectations, the findings are consistent with the existing literature on policy preferences towards counterterrorism policies (Davis and Silver 2004; Huddy

et al. 2002, 2005; Joslyn and Haider-Markel 2007). The findings appear to indicate that individuals may view Ebola as an issue the government is responsible for. Thus, sociotropic concerns about Ebola play a stronger role in how policy preferences for restricting entry into the United States.

**Table 2: Determinants of Individual Support for Restricting Entry into the United States: Role of Personal and Sociotropic Concern**

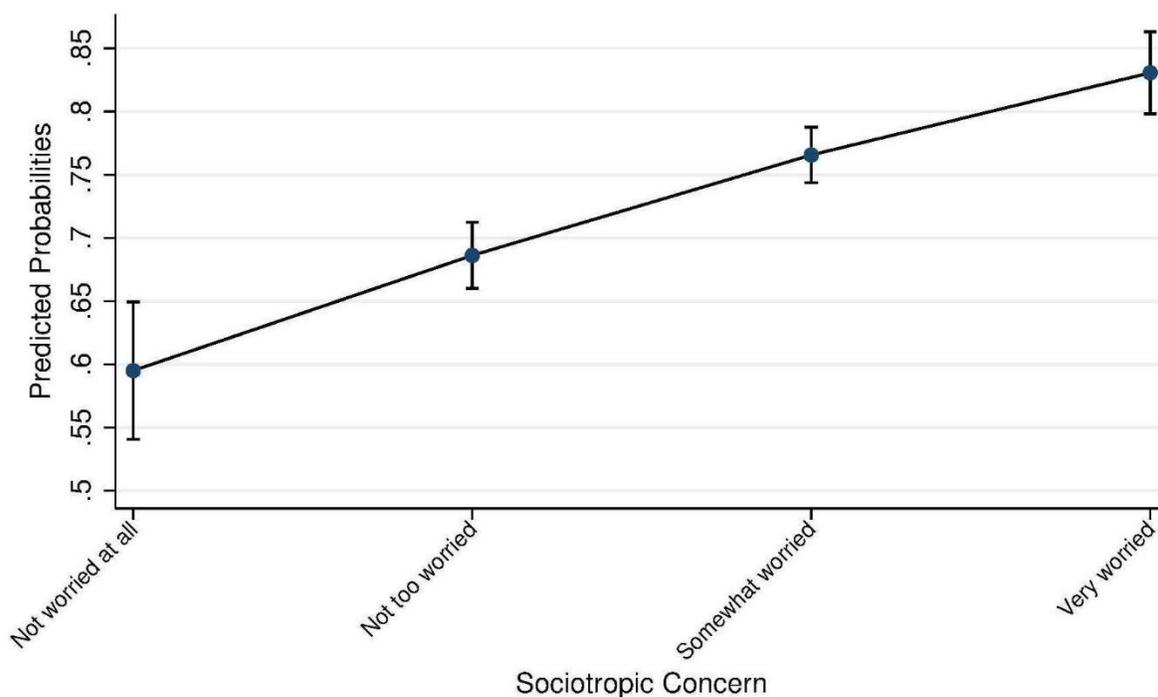
	Model 1	Model 2
Personal Concern	-0.02 (.07)	-0.009 (.07)
Sociotropic Concern	0.47 *** (.07)	0.41 ** (.17)
Party ID (Republican)	0.37 *** (.07)	0.79 *** (.17)
Ideology (Conservative)	0.19 ** (.08)	0.18 ** (.09)
Female	-0.03 (.11)	-0.03 (.11)
Age	0.09 ** (.04)	0.09 ** (.04)
Education	-0.19 *** (.05)	-0.57 *** (1.14)
White	0.23* (.14)	0.26 ** (.14)
Education * Sociotropic Concern	-	0.16 *** (.05)
Party ID * Sociotropic Concern	-	-0.17 *** (.06)
Constant	-1.29 *** (.33)	-1.11 ** (.49)
Log Likelihood	-1009.21	-1012.10
Chi-Square	232.92 ***	241.30 ***
Pseudo R <sup>2</sup>	.10	.11
Number of Cases	1924	1937

Notes: Coefficients for Restrict Entry to the U.S. are logistic regression coefficients with standard errors reported in parentheses  
Significance levels (two-tailed test) \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Datasource: 2014 ABC News/The Washington  
Post Poll: Congress/Political Parties/Ebola/2016 Presidential. - = Variables have been omitted

Figure 8 plots the influence anxiety (sociotropic concern) about an epidemic of Ebola affecting the United State has on attitudes towards restricting entry into the United States from areas affected by Ebola. The graph shows that as individual concern about Ebola increases the more likely an individual will be to support restricting entry into the United States from areas impacted by Ebola. For example, those who are very worried about an Ebola epidemic affecting

the United States are 24 percent more likely to support restricting entry into the United States than those who are not worried about an Ebola epidemic affecting the United States.

**Figure 8: Influence of Sociotropic Concern on Support for Restrictive Policies**

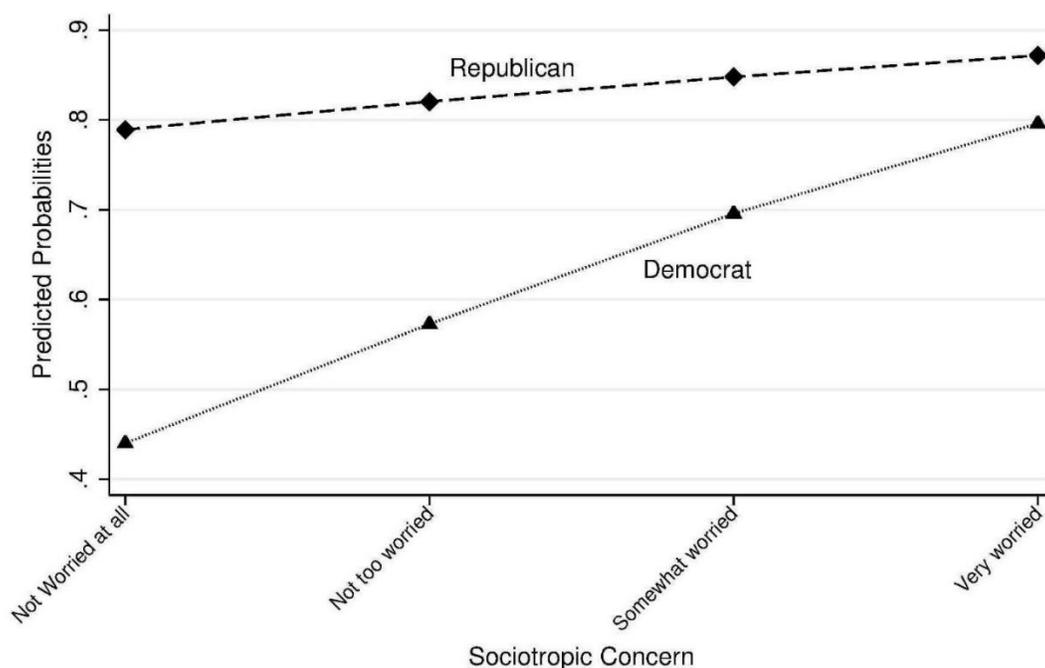


Note: Vertical lines are 95% Confidence Intervals

The results also show that anxiety (sociotropic) concern influences attitudes towards restricting entry into the United States from areas impacted by Ebola differently for Republicans and Democrats. Figure 9 above shows the conditional influence of partisanship and anxiety on policy preferences. The figure indicates that anxious Republicans are not anymore supportive of restricting entry into the United States from areas impacted by Ebola. Regardless of their level of anxiety, Republicans are supportive of restricting entry into the United States from areas with Ebola. However, anxious Democrats are significantly more likely to support restricting entry into the United States than are less anxious Democrats. This suggests that anxiety level influences the policy preferences of Democrats regarding restricting entry into the United States more than it

does for Republicans. Indeed, high anxiety makes it difficult to distinguish a Democrat from a Republican in terms of the likelihood of supporting an entry restriction.<sup>4</sup>

**Figure 9: Conditional Influence of Sociotropic Concern and Partisanship on Support for Restrictive Policies**



### Conclusion

Understanding how disease epidemics shape policy preferences and confidence in government requires not only understanding why such events engage public sentiments but also why they should matter to lawmakers and health policy experts. With the outbreak of Ebola sensationalized in the media and each party having a different view as to how the government should respond to the Ebola crisis, this chapter sought to answer the following questions: How does emotion, more specifically anxiety, about Ebola influence confidence in government? Secondly, how does anxiety influence attitudes towards government policies regarding Ebola? I

<sup>4</sup> I investigated to see if an interaction between party ideology and sociotropic concern was present for support for restrictive policies. However, the interaction was insignificant and was not included in the discussion.

utilized individual-level survey data collected in 2014 to examine these questions. Below I highlight several implications of my findings.

First, my findings suggest that the information environment of a particular issue influences the way anxiety influences confidence in government. During times of a crisis, anxiety will cause individuals to search for information to understand the causes of a crisis and its impact on themselves, their family, or the United States (Atkeson and Maestas 2012). However, individuals do not only care about what the government is telling the public about a specific disease epidemic but are also concerned about the steps the government is taking to reduce the risk of exposure. My findings suggest that individual anxiety (personal and sociotropic) about Ebola has a negative effect on confidence in government. Unlike the health crises of H1N1 and smallpox, where the government was clear with not only their information but the steps the government was taken to reduce the risk of exposure, the findings indicate that the information and steps the government conveyed to the public about Ebola did not reduce anxiety levels.

More importantly, my findings suggest that anxiety towards Ebola influences Liberals much more than it does Conservatives. The findings show that Conservatives, no matter their anxiety level, are less confident in the government's response towards Ebola. With Liberals however, as their anxiety level increases their confidence in the government's response to Ebola decrease. This is further evidence to suggest that the information environment for Ebola did not significantly decrease anxiety levels if anxious Liberals are less confident in the government's response.

Second, I also analyzed individual attitudes towards restricting entry into the United States from areas impacted by Ebola. Similar to confidence in government, the results were

inconsistent with expectations. Because literature has suggested individuals do not attribute responsibility to the government for a health crisis, I had expected individual concerns about an epidemic of Ebola affecting the United States would have little influence on support for policies dealing with Ebola. However, it appears that individuals do view Ebola as a large-scale problem. This is consistent with a Pew report that showed that 49 percent of respondents closely followed news stories about Ebola (Pew Research Center 2014). Thus, similar to previous literature on counterterrorism policies (Davis and Silver 2004; Huddy et al. 2002, 2005; Joslyn and Haider-Markel 2007), sociotropic concerns about an epidemic of Ebola affecting the United States was a consistent predictor for support of policies involving Ebola.

Third, the findings indicated that anxiety conditions partisan support for restricting entry into the United States from areas impacted by Ebola. Research on policy preferences towards counterterrorism issues has found that Republicans are more likely to support more restrictive policies (Davis and Silver 2004; Huddy et al. 2002, 2005), and my findings suggest that Republicans are more supportive of harsher penalties during a health crisis. However, my results also suggest that anxiety conditions the influence of partisanship in that Democrats who are more anxious are more likely to support restricting entry into the United States, making them much more like all Republicans (anxious or not) on this issue. Future research should examine if anxiety conditions the influence of partisanship on other health issues as well.

Finally, the findings have broader implications for our understanding of public opinion and public health and the ability of the government to effectively message during a health crisis. The results show here that individuals do not treat all health crises equally and that the information environment can significantly influence confidence in government and policy preferences. Because the government depends on the public being receptive to education

campaigns about public health crises, the public not only has to look at the government for expertise but also believe that the steps taken by the government are reducing their risk of exposure (Gronke 2015). If the public does not trust government officials to provide needed information or take appropriate action, individuals are less likely to comply with government recommendations.

### Appendix A: Variable Measurement and Data Sources

Name	Coding Scheme	Source
<b>Dependent Variable</b>		
Confidence in Government	1 = Not Confident at all; 2 = No So Confident; 3 = Somewhat Confident; 4 = Very Confident	2014 ABC/Washington Post Poll: Congress / Political Parties / Ebola/ 2016 Presidential
Support for Restricting Entry into the United States	0 = Oppose; 1 = Support	2014 ABC/Washington Post Poll: Congress / Political Parties / Ebola/ 2016 Presidential
<b>Independent Variables</b>		
Personal Concern	Worry about Yourself or Family catching Ebola: 1 = Not Worried at all; 2 = Not too worried; 3 = Somewhat worried; 4 = Very Worried	2014 ABC/Washington Post Poll: Congress / Political Parties / Ebola/ 2016 Presidential
Sociotropic Concern	Worry about an epidemic of Ebola occurring in the United States: 1 = Not Worried at all; 2 = Not too worried; 3 = Somewhat worried; 4 = Very Worried	2014 ABC/Washington Post Poll: Congress / Political Parties / Ebola/ 2016 Presidential
Party ID (Republican)	1 = Democrat; 2 = Independent; 3 = Republican	2014 ABC/Washington Post Poll: Congress / Political Parties / Ebola/ 2016 Presidential
Ideology (Conservative)	1 = Liberal; 2 = Moderate; 3 = Conservative	2014 ABC/Washington Post Poll: Congress / Political Parties / Ebola/ 2016 Presidential

Female	0 = Male; 1 = Female	2014 ABC/Washington Post Poll: Congress / Political Parties / Ebola/ 2016 Presidential
Age	1 = 18 to 29; 2 = 30 to 39; 3 = 40 to 49; 4 = 50 to 64; 5 = 65+	2014 ABC/Washington Post Poll: Congress / Political Parties / Ebola/ 2016 Presidential
Education	1 = High school or less; 2 = Some college; 3 = College degree; 4 = Post-graduate degree	2014 ABC/Washington Post Poll: Congress / Political Parties / Ebola/ 2016 Presidential
White	0 = Non-White; 1 = White	2014 ABC/Washington Post Poll: Congress / Political Parties / Ebola/ 2016 Presidential

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### Appendix B: Descriptive Statistics

	Mean	Min	Max	S.D.	N
Confidence in Government	2.65	1	4	0.96	2180
Support Restrict Entry to United States	-	0	1	0.44	2098
Personal Concern	2.12	1	4	1.02	2195
Sociotropic Concern	2.66	1	4	1.02	2204
Party ID	1.99	1	3	0.95	2126
Ideology	2.15	1	3	0.76	2129
Female	-	0	1	0.50	2210
Age	3.6	1	5	1.39	2186
Education	2.17	1	4	1.07	2186
White	-	0	1	0.43	2157

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## **Chapter 5**

### **Public Opinion, Emotion, and Policy: Where Do We Go Next?**

When a crisis hits the United States it often times is associated with any number of adjectives (i.e. anxiety, worry, concern). Terrorist attacks, natural disasters, and disease epidemics all have the potential to trigger emotions (positive or negative) which influence evaluations of government and policy preferences. The purpose of this dissertation is to understand the interplay between public opinion about health issues and health policy.

Although existing research has examined public attitudes towards various health policy issues (see Frewer 2003; Gollust and Lynch 2011; Jacobs and Mettler 2011; Joffe 2011), little research has examined how public opinion about health issues impacts policy, policy preferences, and evaluations of government on health issues. In an attempt to answer these questions, I examined three public health in which public opinion or emotion could impact attitudes: the ACA, vaccines, and Ebola. Below I summarize and discuss my findings and its implications for researchers, policymakers, and public health officials.

#### **Public Opinion and the ACA**

Even though most research on the influence of public opinion on health care reform has taken place at the national level (Blendon et al. 1995; Jacobs 2008), the ACA provides a unique opportunity to examine how public opinion influences policymakers at the state level. When the ACA was passed in 2010, resistance from the states was immediate. Before the ink had dried from President Obama signing the ACA into law, twelve states had already joined with the State of Virginia in suing the federal government over the passage of the ACA (Joondeph 2011). To entice states to expand Medicaid and create a health exchange the federal government agreed to subsidize 100 percent of the costs until 2022, when the government would then only cover 90

percent the costs (Young 2012). To date 32 states (including DC) have expanded Medicaid while 19 states have yet to expand (Kaiser Family Foundation 2016a).

My findings in Chapter 2 show that policy-specific opinion does influence state adoption of provisions of the ACA; even after controlling for voter ideology, legislative ideology, and the governor. These findings contradict previous research suggesting public opinion has little influence on state adoption of the ACA (Barrilleaux and Rainey 2014). This suggests that state policymakers are responsive to public opinion in policy matters involving the ACA.

Despite these findings many would still argue that policy-specific opinion has little influence on ACA-related policy adoption. Instead many would contend that citizen ideology is the primary driver because it is unreasonable to expect detailed policy preferences from voters and unrealistic to assume elected representatives are mindful of voters' policy preferences (Erikson et al. 1993; Stimson et al. 2002). Nonetheless, the path analysis conducted suggests that citizen ideology is directly associated with policy-specific opinion towards the ACA. Even if policymakers are unaware of public opinion towards the ACA, the fact that there is a relationship between citizen ideology and policy-specific opinion suggests that policymakers can use citizen ideology to (in addition to policy-specific opinion) to pass policies that are responsive to citizen wishes.

Although the findings suggest responsiveness is occurring, many questions are still left unanswered. During the years of my analysis (2010 to 2015), average public opinion support for the ACA never reached a majority, indeed a recent Kaiser Family Foundation poll in 2016 found that 49 percent of the public had an unfavorable opinion towards the ACA (Kaiser Family Foundation 2016c). Thus, the most obvious question unanswered is at what level does opinion matter? Does it need to be a simple majority or, as some suggest, does it need to be a

supermajority (Lax and Phillips 2012)? Lax and Phillips (2012) contend that in many policy areas a simple majority is not enough and indeed a supermajority is necessary for the policy to pass. Future research needs to examine what opinion majority is needed for provisions of the ACA to be adopted in a given state.

For policy scholars the findings demonstrate the value of estimating policy-specific opinion at the state level. For policymakers it suggests that government efforts need to continue to press the benefits of the ACA to the states. Many of the states that have yet to expand Medicaid (i.e. Texas and Georgia) stand to benefit the most as their uninsured rates are among the highest in the country (Kaiser Family Foundation 2016b). Also the government needs to continue to educate the public of the benefits of the ACA. Even though the ACA has expanded health care coverage to over 16 million individuals, prevented insurance companies from denying coverage to individuals with preexisting conditions, and has allowed children to stay on their parent's insurance until the age of 26, public opinion towards the ACA is very much divided.

### **Vaccines and Threat Perception**

In Chapter 3, I was seeking to understand how the perception of an outbreak of measles occurring in a community influenced support for mandatory vaccination policies. The success of vaccination programs relies upon "herd immunity," which occurs when a significant portion of a community is immunized against a contagious disease. However, achieving herd immunity faces many barriers. First, a greater portion of the public are concerned about the side effects of vaccines (Gowda and Dempsey 2013). Second, vaccines are a victim of their own success since most of the diseases vaccines are meant to protect (i.e. smallpox, measles, etc.) are unfamiliar to many. Nevertheless, outbreaks in the United States still occur and in 2014 a measles outbreak

tied to the Disneyland resorts in California, renewed the debate over mandatory vaccinations in the United States.

Although outbreaks of disease that have vaccinations connected to them do not occur often, the outbreak at the Disneyland resorts heightened awareness about the potential of an outbreak occurring in communities and schools. In order for states to maintain herd immunity many mandate vaccines for any child wishing to attend a public school or daycare. However, despite the scientific evidence finding the side effects of vaccines are minimal, support for the government mandating vaccines is mixed. Chapter 3 examined the relationship between the threat of an outbreak of measles occurring in a community and support for mandatory vaccination policies.

The findings show that individual perception of threat does influence support for requiring parents to vaccinate their children; as perception that a measles outbreak would occur in the community increased, support for requiring parents to vaccinate increased as well. The results also indicate that individuals who perceive an outbreak of measles will occur in their community are more likely to support restricting school participation for unvaccinated children. Moreover, the perception of threat influences conservatives differently than it does liberals and moderates. I find as the perception of threat increases for Liberals their support for requiring parents to vaccinate their children significantly increases while Conservatives are more influenced by ideological preferences. Considering that research has found that conservatives tend to recognize the need to restrict liberty during a health crisis (Lantos et al. 2012; Epstein 2003) these results were surprising. What leads conservatives to be less likely to support mandatory vaccination policies?

Even though a recent Pew Report found in 2015 that conservatives view a major role for the government in ensuring food and medicine are safe for consumption, conservatives are in general more distrustful of the government and exhibit more anger towards the government (Pew Research Center 2015). This has implications for pro-vaccine advocates who depend on the “herd immunity” that vaccinations provide. If conservatives are not fearful of an outbreak but are also not supportive of mandatory vaccination policies how can vaccine advocates educate conservatives the benefits to public safety? Future research needs to examine if the lack of support for conservatives is more than just a distrust of the government and is more indicative of a distrust of science towards vaccines (Blank and Shaw 2015; Mooney 2005, 2012).

Finally, the findings here have broader implications for health policies regarding vaccinations and the ability of the government to educate the public on the need for vaccinations. While the effectiveness of vaccines depends on “herd immunity” being maintained, the results suggest that the government and pro-vaccine advocates should tailor their message to apply to different types of groups. For liberals, a successful message would entail advocating the potential public safety risk caused by not vaccinating their children. Because conservatives are skeptical of government mandates and are not influenced by the threat of an outbreak occurring in their community, advocates for vaccines may have to tailor their message to involve a discussion about the increased health costs associated with unvaccinated children or a measles outbreak (Haelle 2015).

### **Anxiety, Confidence in Government, and Policy Preferences**

Finally, in Chapter 4 I sought to understand who disease epidemics shape policy preferences and confidence in government. Understanding how disease epidemics shape policy preferences and confidence in government requires not only understanding why such events

engage public sentiments but also why they should matter to lawmakers and health policy experts. I utilized individual-level survey data collected in 2014 to examine these questions and make several contributions to the literature.

First, my findings suggested that the information environment of Ebola does not follow the similar patterns identified in both H1N1 and smallpox (Albertson and Gadarian 2015). When individuals are anxious they seek out information in order to determine if this is a crisis of personal concern (Atkeson and Maestas 2012). For both H1N1 and smallpox anxiety caused individuals to view the government as a trusted source for information on both H1N1 and smallpox (Albertson and Gadarian 2015). My findings indicate that anxiety (personal and sociotropic) decreased individual confidence towards a government response for Ebola. This suggests that individuals not only care about what the government is telling the public about a specific disease epidemic but are also worried about the steps the government is taking and want those steps clearly communicated to the public.

More importantly, my findings suggest that anxiety towards Ebola influences Liberals much more than it does Conservatives. The findings show that Conservatives, no matter their anxiety level, are less confident in the government's response towards Ebola. With Liberals however, as their anxiety level increased their confidence in the government's response to Ebola decreases.

Secondly, my findings showed that individual attitudes towards restricting entry into the United States from areas impacted by Ebola is influenced only sociotropic concerns and not personal concerns. This is consistent literature examining policy preferences towards counterterrorism policies (Davis and Silver 2004; Huddy et al. 2002, 2005; Joslyn and Haider-

Markel 2007). These findings also indicate that individuals view the Ebola outbreak as a large-scale problem the government must solve.

Perhaps more interesting though, are how anxiety conditions partisan support for restricting entry into the United States. Research on policy preferences towards counterterrorism issues has found that Republicans are more likely to support more restrictive policies (Davis and Silver 2004; Huddy et al. 2002, 2005), and my findings suggest that Republicans are more supportive of harsher penalties during a health crisis. However, my results also suggest that anxiety conditions the influence of partisanship in that Democrats who are more anxious are more likely to support restricting entry into the United States, making them much more like all Republicans (anxious or not) on this issue.

Finally, the findings have broader implications for our understanding of public opinion and public health and the ability of the government to effectively message during a health crisis. The results show here that individuals do not treat all health crises equally and that the information environment can significantly influence confidence in government and policy preferences. Because the government depends on the public being receptive to education campaigns about public health crises, the public not only has to look at the government for expertise but also believe that the steps taken by the government are reducing their risk of exposure (Gronke 2015). If the public does not trust government officials to provide needed information or take appropriate action, individuals are less likely to comply with government recommendations.

### **Where Do We Go Next?**

The ultimate point of this dissertation was to examine the interplay between public opinion and health policy issues. Through an examination of the ACA, vaccines, and infectious

diseases I showed that in fact emotion and public opinion play a role in policymaking, influence our evaluations of government, and finally support for more restrictive policies. While this work only focused on a few areas of health policy there are many other areas in health policy in which future research should examine the relationship between emotion, public opinion and its influence on public policy.

The World Health Organization (WHO) announced that the Zika virus was a public health emergency of international concern (Pearson 2016). However, many of the concerns that are associated with Ebola are not present with Zika. For example, the Zika virus is not transmitted through passive contact like Ebola. Furthermore, individuals do not usually get sick enough to require hospitalization and Zika is rarely fatal (Villanueva and Cook 2016). Nevertheless, WHO and the CDC have recommended women traveling to countries with known cases to avoid getting pregnant while Major League Baseball (MLB) cancelled an upcoming matchup between the Pittsburgh Pirates and the Miami Marlins that was to take place in Puerto Rico (ESPN 2016).

Should we expect similar anxiousness with Zika that is shown with Ebola? With over 63 percent of the public viewing the spread of infectious diseases throughout the world (Gallup 2016) as a critical threat to the United States emotions about various diseases will continue to be an important area of research. After the slow response towards Ebola, the political pressure on WHO and the CDC to take action is strong.

Zika is just one area of health policy in which public opinion and emotion could influence policymakers. Another area is the current opioid and prescription drug epidemic currently affecting the United States. Drug overdose is the leading cause of accidental death in the United States with 47,055 lethal drug overdoses and 18,893 overdose deaths in 2014 alone

(American Society of Addiction Medicine 2016). A recent Kaiser Family Foundation poll found that the 35 percent of the public views heroin abuse among one of the most serious health problems facing the United States – second only to cancer (Kaiser Family Foundation 2016d).

Despite heroin and prescription drug abuse being a serious threat to the public health of the United States, discrimination exists for both demographics. For example, 52 percent of public view people who are addicted to heroin as facing a lot of discrimination while only 38 percent of the public view people who are addicted to prescription painkillers as facing a lot of discrimination (Kaiser Family Foundation 2016d). With the Obama Administration lifting restrictions on doctors, providing new funding to Community Health Centers across the United States, and funding state programs seeking to curb addiction (White House 2016), what impact do public perceptions toward opioid use have on the policy preferences of individuals? Will public attitudes on these issues influence the decisions of policymakers? My research has offered some perspective on how these questions might be answered, and also clarify the measurement difficulties likely to be faced by researchers in this area.

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