Stigma and Attribution in the Opioid Crisis*

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June 3, 2021

Abstract

How does blaming individuals or other actors for the opioid crisis affect views about drug policy?. In this paper, I use a survey experiment to test whether providing news articles about doctors and pharmaceutical companies being held accountable for their role in the opioid crisis increases support for public health-oriented policies and decreases support for criminalization. I find that providing information about doctors' role in the opioid crisis increases support for stricter sentences on people who buy or sell opioids illegally, while this prime does not affect support for medication-assisted treatment or safe injection sites. This effect is concentrated among respondents with the highest level of stigma against people with opioid use disorders (OUDs). Priming blame for drug companies, however, does not change support for any policy. In the discussion, I suggest potential explanations for these findings, as well as avenues for potential future research on attribution.

As the number of drug overdose deaths increased throughout the 2010s, public attention turned toward the problem of drug addiction. Governors, state legislatures, and Congress sought to take action to address the growing opioid crisis. The historically high number of overdose deaths, which by 2015 became the leading cause of injury-related mortality in

*This paper is preliminary. Please do not cite without permission. This project was funded by the Center for American Political Studies at Harvard University and was approved by the Harvard University IRB. I would like to thank Jennifer Hochschild, Jon Rogowski, Jaclyn Kaslovsky, and the participants of Ryan Enos's research design workshop for helpful feedback and advice.

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the United States, coupled with increased media attention and the perception that victims were disproportionately white, led the opioid crisis to become a national problem. Meanwhile, journalistic narratives focused on a variety of sources of the epidemic, such as lenient painkiller prescribing practices (Mann, 2020), illicit sales by some doctors and dentists (Spencer, 2019), pharmaceutical companies' aggressive marketing of opioid painkillers (Keefe, 2017), and changes in heroin distribution from Mexico (Quinones, 2016).

This national discussion of potential causes and solutions raises a set of questions. First, how do Americans attribute blame for the opioid crisis? Next, how are public perceptions of causes of the opioid crisis linked to support for different kinds of policies to address it? Research has shown that attributions for social problems, such as whether a problem is caused by individuals or social structures, shapes preferences over government involvement in solving the problem (Kluegel, 1986). Studies of stigma toward people with opioid use disorders (OUDs) have also shown that whether individuals are blamed for addiction is linked to support for policies that criminalize addiction or treat addiction as a public health problem (McGinty et al., 2015).

While much research focuses on these dynamics of individual blame for addiction, less is known, however, about ideas concerning who shares collective blame for the opioid crisis, and how those beliefs affect public policy. In this paper, I address this issue by testing whether beliefs about blame for the opioid crisis as a whole predict support for different kinds of policy responses. I test whether attributing the opioid crisis to actors other than people with OUDs will decrease support for policies that emphasize a criminal justice approach to addiction and increase support for public health-oriented policies. I also test whether people with increased stigma toward people with OUDs are most affected by perceptions of blame.

To test these hypotheses, I run a survey experiment where I prime individuals to attribute blame to doctors or pharmaceutical companies, then ask about support for criminal justice and public health policies. Contrary to my hypotheses, I find that individuals primed to think about doctors are more likely to support increased criminal penalties both for people who sell and for people who use opioids illegally – an effect which is concentrated among those with the highest stigma toward people with OUDs – while there is no effect on public health policy preferences. Priming pharmaceutical company attribution, however, has no effect on either set of policy outcomes. Offsetting blame from people with OUDs seems to not meaningfully shift support for policies aimed at addressing the opioid crisis. These results also suggest that stigma has an important role for determining public opinion about addiction.

1 Attribution of Responsibility

"The attribution of blame and responsibility is a cornerstone of democratic politics" (Malhotra and Kuo, 2008, 120). How the public attributes blame for societal problems, as well as who is blamed, enables the reward or sanction of representatives. For example, the assignment of blame to the government for economic conditions helps voters hold elected officials accountable (Abramowitz, Lanoue and Ramesh, 1988; Rudolph, 2003). This link between economic perceptions and government attribution is a key component of models of both retrospective and prospective voting (Fiorina, 1981; MacKuen, Erikson and Stimson, 1992; Rudolph, 2003). Accordingly, considerable research explores who voters hold accountable for certain problems, such as whether government or markets are blamed for economic con-

ditions (Hellwig, Ringsmuth and Freeman, 2008; Hellwig and Coffey, 2011), or which levels of government are blamed for the response to a natural disaster (Malhotra and Kuo, 2008).

Attribution is a key aspect of how political issues become important and for the formation of public opinion. Moreover, blame influences how an issue is framed – frames "diagnose causes" and "suggest remedies" (Entman, 1993, 52). Specifically, whether a problem is attributed to individual or societal causes shapes support for policies in many areas. For example, the belief that poverty is the result of individual failures is associated with opposition to government spending on welfare; conversely, the belief that poverty is the result of structural disadvantage is associated with support for redistribution (Feagin, 1975; Kluegel, 1986; Bullock, Williams and Limbert, 2003). Similarly, beliefs about the causes of homelessness predict support for providing more housing or restricting social services (Lee, Hinze Jones and Lewis, 1990; Pellegrini et al., 1997).

In addition to attitudes about redistributive poicies, a number of studies show that attitudes about punishment are also linked to beliefs about individual responsibility for crime. Believing that crime is the product of an individual's character, as opposed to stemming from social conditions, is associated with support for stricter sentencing laws and opposition to policies that favor rehabilitation (Cullen et al., 1985; Grasmick and McGill, 1994). Similarly, individual attributions predict a higher likelihood of supporting the death penalty (Cochran, Boots and Heide, 2003). Attributions also condition the relationship between emotions such as anger or compassion and punitive policy preferences (Petersen, 2010), and the perception of the redeemability of criminal offenders shapes attitudes about sentencing policy (Maruna and King, 2009).

When considering the opioid crisis, then, it is important to understand how individual

and structural attributions shape attitudes about public health. Public opinion often assigns blame for public health conditions onto individuals, which prevents these issues from reaching the policy agenda (Oliver, 2006). In some public health issues, there is a similar relationship between individual and structural attributions and policy views as seen in poverty and crime. For example, metaphors about the causes of rising obesity rates impact views toward a variety of anti-obesity policies; metaphors that emphasize societal responsibility lead to more support for redistributive and compensatory policies, as compared to frames that emphasize individual blame (Barry et al., 2009). In this paper, I test how individual and structural attributions for the opioid crisis shape policy views about public health and criminal justice-oriented solutions.

2 Blame, Stigma, and Addiction

Broadly, stigma toward people with opioid use disorders (OUDs) is seen by many public health researchers as a crucial component of understanding the opioid crisis. These negative attitudes toward people with OUDs can translate into discrimination and social distancing that undermine care. Stereotypes also become internalized by many people with OUDs, leading individuals to be less likely to seek treatment (Corrigan and Nieweglowski, 2018). Likewise, these attitudes have consequences for opinions about potential policy responses to the opioid crisis, as stigma against individuals who are addicted to drugs is associated with support for punishment over public health strategies to address addiction (Barry et al., 2014; Kennedy-Hendricks et al., 2017). The inability to see victims of overdose deaths as "grievable lives" may also contribute to opposition to harm reduction policies (Fraser, 2018).

An important concept that is related both to attributions for social problems and stigma is how much an individual is blamed for a health condition. The belief that mental health conditions arise from individual causes, such as one's character or upbringing, as opposed to structural causes like stress or biology, is associated with increased social distancing from people with mental health conditions (Martin, Pescosolido and Tuch, 2000). Associating obesity with individual responsibility also leads to increased weight-based stigma (Puhl and Heuer, 2010). Regarding addiction, cultural beliefs about the causal mechanisms behind addiction are also associated with the extent to which individuals show negative attitudes toward people with OUDs (Henderson and Dressler, 2017).

Stigma toward people with OUDs, then, is an important predictor of policy views toward the opioid crisis, and it is closely linked to ideas about whether individuals are to blame for addiction. This close relationship between blame and stigma has led some studies to focus on how providing information about the origin of an addiction might reduce negative attitudes toward people with OUDs or change policy preferences, but this research has yielded mixed results. In a survey experiment, Goodyear, Haass-Koffler and Chavanne (2018) find that describing a person with an OUD as obtaining a prescription drug from a doctor, instead of a friend, reduced stigma. In another study, however, providing information about a prescription being the cause of an addiction actually decreased respondents' willingness to support redistributive drug treatment (Chavanne and Goodyear, 2019). One possible explanation offered is that priming respondents to think about how prescription drugs harmed patients reduced support for treatment that is also delivered by the medical system.

Other research has also questioned the relationship between blame and stigma, as well as their impacts on policy views. In a recent vignette study using the 2018 General Social

Survey, Perry, Pescosolido and Krendl (2020) find that respondents were less likely to describe someone addicted to prescription painkillers as having a mental illness or a problem based in character, when compared to someone with an alcohol use disorder; rather, they were more likely to call opioid addiction a physical problem. Despite being less likely to blame people with OUDs for addiction, however, respondents expressed a strong desire for social distance. This aversion to people with OUDs persists despite a tendency to blame external forces for addiction.[1] Relatedly, de Benedictis-Kessner and Hankinson (2020) find that blame for addiction does not mediate the relationship between the presented identity of a person with OUD and support for spending on treatment or law enforcement.

This research on attitudes toward people with OUDs suggests that the relationship between blame and stigma is complicated. Unlike other mental health issues, there is a considerable proportion of the population who believe opioid addiction is not solely a person's fault but still prefer social distance from people with OUDs. This suggests that attitudes toward people with OUDs might be more entrenched and would explain why providing information about where an individual received an opioid does not shape stigma or clearly relate to policy views. In this paper, I take two approaches in light of this research. First, I focus on how attributions for the overall crisis shape policy views, rather than blame for an individual case of addiction. Instead of focusing on individual cases, thinking about the effects of the crisis as a whole may be more likely to affect views about possible structural solutions (Iyengar, 1990; Gross, 2008). Next, rather than testing the effect of changing blame on stigma, I use a measure of social distancing to test whether pre-existing negative attitudes toward people

[1] A 2018 AP/NORC survey also shows a similar pattern. Attributing addiction to character or willpower is only weakly correlated with social distancing, and the belief that addiction is a medical problem is not at all correlated at all with social distancing.

with OUDs affects how information about blame is filtered.

3 Hypotheses

Many studies have shown that the media is increasingly likely to use frames that place blame outside of people with OUDs (McGinty et al., 2019; Willis and Painter, 2019). While studies have explored how attributions for individual cases of addiction shape views about drug policy, less is known about how attributions for the opioid crisis as a whole might affect policy views. Meanwhile, pre-existing stigma against people with OUDs might shape the perception of potential attributions are perceived. This connection between attribution and stigma leads to a set of questions this paper will address. First, how do overall attributions for the opioid crisis affect public opinion about drug policy? Second, how does stigma toward people with OUDs moderate the relationship between blame and policy? In an analysis of a 2019 AP/NORC survey and an original survey experiment, I test a set of hypotheses seeking to address these questions.

The first hypothesis is that priming individuals to consider blame for the opioid crisis from sources other than people with OUDs will lower support for criminalization policies and increase support for public health policies. This hypothesis draws from the attribution literature, which finds that individual attributions predict criminalization, while structural attributions predict social spending (Kluegel, 1986; Cullen et al., 1985), as well as the findings that individual attributions for health conditions affect support for redistributive policies (Barry et al., 2009).

I will test this hypothesis first using a 2019 AP/NORC survey to compare cross-sectional

relationships between how much respondents assign blame for the opioid crisis to different actors – individuals, doctors, pharmaceutical companies, and government – and policy preferences over potential solutions to the crisis. Next, in a survey experiment, I will use modified news stories to prime two particular sources of blame for the opioid crisis: doctors and pharmaceutical companies. Many media outlets have reported on the role of doctors' prescribing practices in the opioid crisis (Mann, 2020). Reporting has also shown that a small number of doctors have prescribed opioids without prescriptions, fueling the epidemic in some communities (Spencer, 2019). Similarly, the role of pharmaceutical companies in aggressively marketing prescription painkillers, while overstating claims about their non-addictive qualities, has been both well-documented and highly publicized, including a number of high profile cases involving the Sacklers and Purdue Pharma (Quinones, 2016; Keefe, 2017).

While I hypothesize that both primes will increase support for public health solutions and reduce support for criminalization, I also hypothesize that the pharmaceutical company prime will have a stronger effect than the doctor prime. This is because the pharmaceutical company treatment represents more of a structural actor than the actions of individual doctors. The actions of some doctors may be considered to be anomalous, considering the high level of trust most Americans have for doctors (Patashnik, Gerber and Dowling, 2017). The close association between pharmaceutical corporations and the FDA might suggest that actions blamed on these companies could also lead to blaming the government more broadly for failing to properly regulate (Carpenter, 2010).

Third, I hypothesize that the effect of the attribution primes on policy views will vary by pre-existing individual stigma toward people with opioid use disorder, with those highest in stigma showing the strongest effect. While some studies have focused on how differences in

blame might affect stigma toward people with OUDs, there is less known about how stigma might shape how blame connects to policy. In particular, providing a credible, non-individual source of blame for the opioid crisis could be especially important for those with high levels of stigma, having a larger impact on policy preferences. Alternatively, stigma could operate as a way to interpret the potential sources of blame. This would lead to an opposite finding, where the effect of non-individual frames would be less powerful on those with high levels of stigma.

4 Blame: Cross-Sectional Survey Results

First, I discuss results from a cross-sectional survey. A 2019 AP/NORC survey asked several questions about attributions for the opioid crisis. Specifically, the survey asked participants how much blame they assign to doctors and dentists, pharmaceutical companies, the government, and individuals who use opioids. Figure 1 shows the proportion of respondents saying each potential source has "a great deal" or "quite a bit" of blame. According to this survey, Americans are most likely to blame drug companies for the opioid crisis, with 64% agreeing that they share a great deal or quite a bit of blame. After drug companies, people who use opioids are the second-highest source of blame, with 61% of Americans assigning blame to this group. Like research on poverty and crime, it appears that many Americans assign blame to both individual and non-individual sources (Hunt, 1996; Unnever et al., 2010). Finally, doctors are the third-highest source of blame at 46%, followed by the least common source of blame, the government, at 35%.

Next, I examine partisan and other predictors of sources of blame to unpack whether a

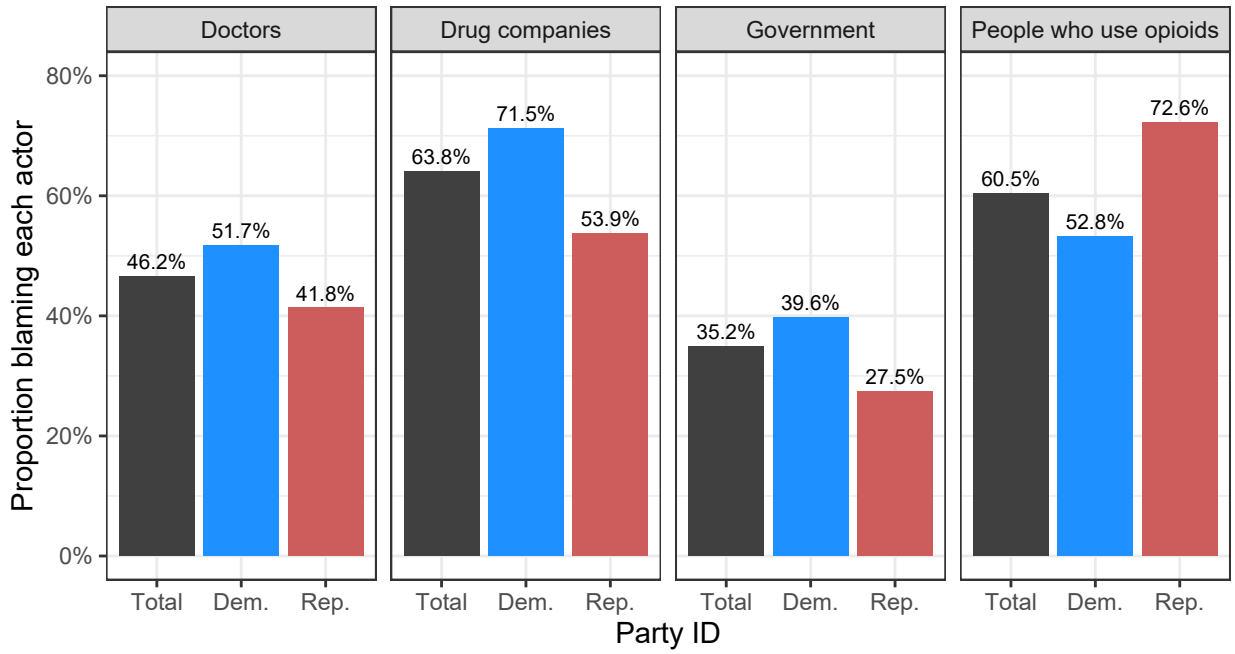

Figure 1: Attribution for Opioid Crisis by Party

Note: Percent of sample reporting that each actor has "a great deal" or "quite a bit" of blame for the opioid crisis. Party ID includes leaners. Data from AP/NORC 2019.

relationship between blame and support for different policies could be driven by beliefs that lead to both sets of views. In research on attitudes about both poverty and crime, liberals are more likely to attribute blame to structural factors, while conservatives are more likely to attribute blame to the individual (Kluegel, 1986; Cochran, Boots and Heide, 2003). Here, the pattern is similar; Democrats are more likely than Republicans to blame doctors, drug companies, and the government, while Republicans are more likely to blame individuals who use opioids. Despite this partisan gap, however, members of both parties place more blame on drug companies and individuals.

Next, I run an OLS regression to predict assigned blame. I use each potential source of blame as a dependent variable, with party, race/ethnicity, income, education, and age as independent variables. Here, I find that partisanship is again strongly related to perceptions

of blame, with Republicans being more likely to blame individuals and less likely to blame doctors, drug companies, and government. Black and Latinx respondents are more likely to blame government, but there are no other notable differences by race or ethnicity. Perhaps surprisingly, there are very little differences by income or educational status. Finally, older voters appear to be more likely to blame individuals, while voters from 30 to 59 years old are less likely to blame government. These findings suggest that some individual characteristics, especially party, help determine perceptions of blame for addiction.

The perceived sources of blame for the opioid crisis also correlate with views about policy responses. AP/NORC asked respondents whether their community is doing too much, too little, or the right amount of a set of policies. For each policy, I rescale the variable to a 0-1 scale, with higher numbers representing the belief that one's community is not doing enough of the said policy, which I interpret as support for more of that policy. I run an OLS regression with support for the policy as a dependent variable and perceived blame for the four actors as independent variables, along with controls for party, race, gender, income, education, and age. Figure 2 shows the coefficients for each kind of blame for each model. Attributing the opioid crisis to people who use opioids is associated with increased support for punishment – both cracking down on drug dealers and drug users – as well as less support for reducing stigma toward people with addiction. On the other hand, attributing blame to pharmaceutical companies is associated with increased support for making treatment programs more accessible and for improving the quality of treatment.

To some extent, the results fit with existing research on attributions; individual attributions are associated with increased support for punishment; while structural attributions are associated with increased support for social services. Attributions to doctors or the

Table 1: Predictors of Blame for Opioid Crisis, AP/NORC 2019

	Dependent variable:			
	How much do you blame...			
	Individuals	Doctors	Drug Companies	Government
	(1)	(2)	(3)	(4)
Indep/Other party	0.042	−0.076**	−0.086**	−0.024
	(0.033)	(0.036)	(0.037)	(0.035)
Republican	0.089**	−0.102**	−0.153**	−0.113**
	(0.027)	(0.028)	(0.028)	(0.030)
Black	0.022	−0.019	−0.033	0.146**
	(0.040)	(0.045)	(0.047)	(0.046)
Latinx	0.044	0.013	−0.024	0.077**
	(0.035)	(0.035)	(0.034)	(0.034)
Other race/ethnicity	0.005	0.058	−0.005	0.080**
	(0.039)	(0.040)	(0.040)	(0.040)
Female	0.010	0.003	−0.002	0.0002
	(0.023)	(0.024)	(0.024)	(0.025)
Income: $50,000 - $99,999	0.042	0.013	−0.029	−0.037
	(0.029)	(0.030)	(0.029)	(0.029)
Income: $100,000 or more	0.048	−0.001	0.005	−0.043
	(0.031)	(0.035)	(0.035)	(0.040)
Some college/Associate's degree	0.016	−0.021	−0.006	0.007
	(0.029)	(0.031)	(0.031)	(0.031)
College degree or more	−0.015	−0.009	0.052	0.008
	(0.033)	(0.036)	(0.034)	(0.038)
Age: 30-39	0.018	−0.045	−0.026	−0.070*
	(0.039)	(0.043)	(0.042)	(0.042)
Age: 40-59	0.065*	0.012	−0.048	−0.102**
	(0.038)	(0.039)	(0.037)	(0.038)
Age: 60-64	0.114**	0.063	0.023	−0.053
	(0.049)	(0.050)	(0.047)	(0.048)
Age: 65+	0.077*	0.068*	0.017	−0.022
	(0.042)	(0.041)	(0.040)	(0.041)
Constant	0.562**	0.624**	0.794**	0.589**
	(0.052)	(0.050)	(0.048)	(0.043)
Observations	1,134	1,132	1,131	1,131
Adjusted R^2	0.036	0.033	0.055	0.080

Note: Results from an OLS regression using robust standard errors. * indicates $p < 0.10$ and ** $p < 0.05$ (two-tailed tests). Data from AP/NORC 2019.

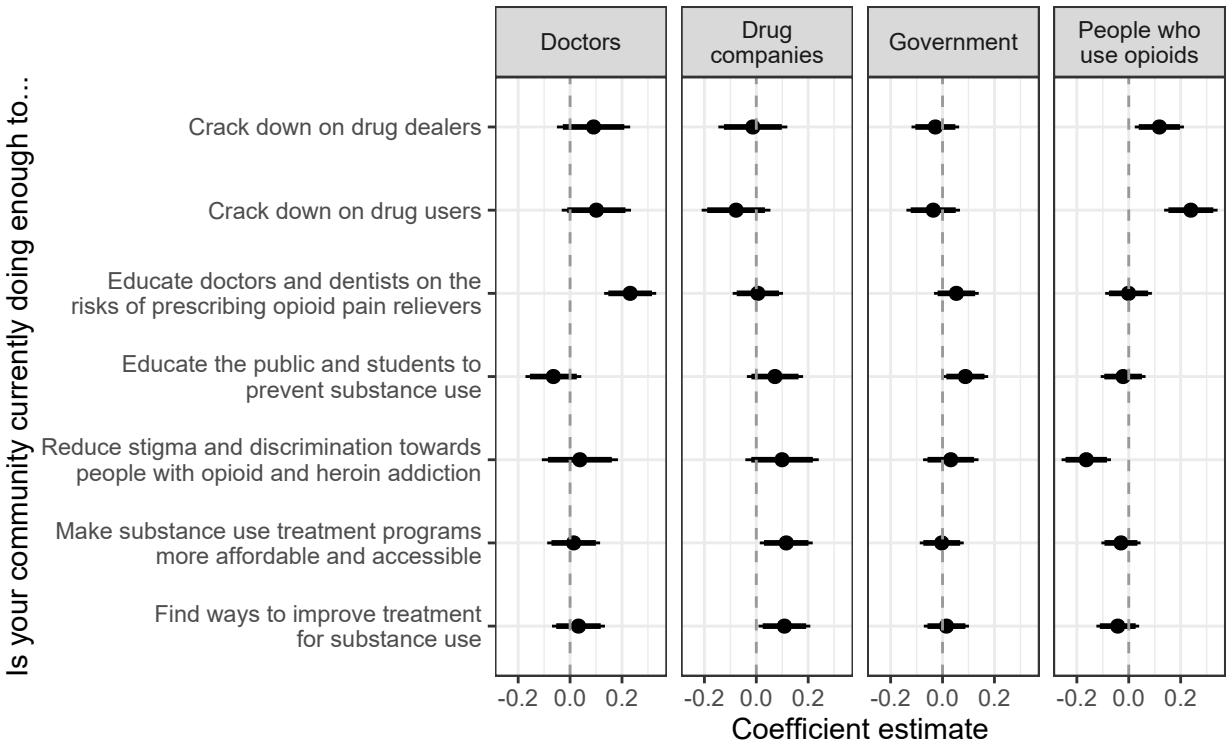

Figure 2: Attribution and Policy Beliefs

Note: Points are OLS coefficient estimates using perceived blame for the opioid crisis to predict responses to policy questions. Horizontal lines are 90 and 95% confidence intervals. Each row represents a different regression model, where the four sources of blame are independent variables, along with demographic controls, and the policy question is the dependent variable. The policy questions ask respondents whether their community is doing too much, the right amount, or not enough of each item listed. The data is coded such that responses to the blame and policy questions are collapsed to a 0-1 scale, where higher responses indicated higher amounts of blame and not doing enough of the policy. Regression tables are available in Appendix Tables A1 and A2. Data from AP/NORC 2018.

government, however, only minimally impact policy preferences. People who blame doctors are more likely to support training doctors but are not more likely to support other policies. People who blame the government are more likely to support education but not other measures.

While the AP/NORC survey in the previous section sheds light on the prevalence of blame for the opioid crisis and the relationship between policy views, this survey analysis also leaves some unanswered questions. First, there are questions about causality. Do attributions of blame for the opioid crisis shape policy beliefs? Or does an underlying political ideology or

other sets of preferences shape both who individuals blame and what policies they support? This may be especially likely considering the partisan differences in blame for the opioid crisis. Moreover, the survey does not allow for a test of how perceptions of blame interact with other sets of beliefs about individuals with OUDs. Finally, the question wording is not ideal; asking if your community is doing enough on a certain policies makes it difficult to be exactly sure how to interpret respondents' answers to the questions. It is not clear whether saying one's community is not doing enough to crack down on drug dealers is the same as support for your community doing more, and it is difficult to compare responses between individuals whose local governments might be engaging in these policies to different extents.

5 Survey Experiment

To further test the relationship between attributions for the opioid crisis and policy views, I conducted an online survey experiment of 1391 respondents recruited from Lucid Theorem.[2] Experimental research using samples from Lucid has been shown to produce similar results to nationally representative surveys (Coppock and McClellan, 2019). The survey was conducted on April 26, 2021,received IRB approval from Harvard University, and was funded by a grant from the Center for American Political Studies at Harvard University. Sample characteristics are presented in Appendix Table A7. While the sample was intended to be nationally representative, my experimental sample has a larger proportion of white and college-educated respondents than the general public, as well as a smaller proportion of Republicans.

[2]The total number of respondents includes a pilot of 50 respondents who received the same survey design. I exclude respondents who did not answer each question used in the analysis, as well as 5 respondents that took over 2000 seconds to complete the survey, leaving a total of 1333 respondents.

First, to measure stigma toward people with opioid use disorder, respondents were given an index of questions to measure social distancing adapted from a 2018 AP/NORC survey.[3] In this index, respondents are asked how comfortable they would be interacting with a person with an OUD as a family member, friend, neighbor, close colleague, and someone to socialize with. This will measure stigma before treatment, which will allow the index to be used as a moderator between the treatments and policy outcomes. Appendix Figure A1 shows the proportion of responses for each stigma question. The social distancing questions are highly correlated, with a Cronbach's alpha of 0.93, suggesting these questions can form an index. I create an index by coding the Likert question responses as numeric variables and taking the mean across each item. Appendix Figure A2 displays the distribution of this stigma index.

Next, all respondents read a brief informational statement about the opioid crisis, intended to ensure respondents have a small amount of background knowledge with which to evaluate treatments and policy questions, such as knowing what is included in the category of opioids.[4] Then, respondents are randomly assigned to one of two treatment conditions or a control group. Respondents in treatment conditions receive a stylized, shortened news article about fraud charges being brought against either doctors or a pharmaceutical company. Group 1 received a news article about doctors being charged with health care fraud for illegally prescribing or selling opioids. Group 2 received a news article about a prescription drug company being charged with fraud for marketing exaggerated claims about its opioid painkiller. Group 3 received no news article and serves as a control. Both articles are based on factual information from online articles published by NPR, but the wordings have been

[3]This index is based on the MacArthur Mental Health Module in the 1996 General Social Survey, which studied stigma, mental health, and substance abuse (Pescosolido et al., 1999). See Appendix Table A3 for question text.

[4]See Table A4 for the text.

altered to use similar language to describe aspects of the cases. The control group does not receive any news article. The treatment text is displayed in Table 2.

Following the intervention, respondents in all treatment and control conditions are asked the same sets of policy questions to test the main hypotheses. To measure support for criminal justice solutions to the opioid crisis, I ask two questions about support for increased punishment for people who *sell* opioids illegally, and for people who *use* opioids illegally. These questions are based on the 2019 AP/NORC survey. Next, to measure support for public health solutions, I also include two questions; I ask about support for medication-assisted treatment and safe injection sites.[5] These questions are intended to cover two policy items that are controversial, especially safe injection sites, yet are prescribed by some public health experts as necessary for combatting the opioid crisis (Tsai et al., 2019).

Finally, to test if treatment shifted attributions, I ask respondents a set of questions about how much they blame different actors for the opioid crisis, including people who use opioids, doctors, pharmaceutical companies, and the government.[6] Results suggest that the treatments did shift attributions in the expected direction. Figure 3 shows results from OLS regressions using treatment condition to predict amount of blame given to each actor.[7] The Doctors treatment increased the amount of blame respondents gave to doctors, while the Drug Companies treatment increased the amount of blame given to drug companies.

[5]Question wording is available in Appendix Table A5. The Appendix also shows distributions for responses to these questions. These questions did not fit together as an index, so I analyze them individually.

[6]I used the same language as AP/NORC 2019.

[7]See Appendix Table A9 for the complete regression table.

Table 2: Survey Experiment Vignettes

Treatment 1: Doctors

Over 30 Doctors Charged with Fraud in Federal Opioid Case

Federal prosecutors are charging 31 doctors with alleged opioid pushing and felony health care fraud, the Justice Department said Wednesday. The doctors allegedly prescribed opioid painkillers without physically examining patients. In one episode, a doctor had a pharmacy operating outside his own waiting room.

This indictment marks an escalation in what has already emerged as a dangerous year for medical professionals entangled in the opioid crisis. According to the U.S. Centers for Disease Control and Prevention, prescription opioid overdoses have killed more than 200,000 Americans over the last 20 years.

Doctors who follow illegal prescribing practices face a wave of lawsuits in state courts around the country. These lawsuits stem from claims that some unscrupulous doctors accelerated the opioid crisis by aggressively pushing prescription painkillers and other opioid medications.

Treatment 2: Drug Companies

Prescription Drug Company Charged with Fraud in Federal Opioid Case

Federal prosecutors are charging drugmaker Indivior with felony fraud for its marketing of opioid products, the Justice Department said Wednesday. The company allegedly convinced doctors and government insurance providers that Indivior's patented opioid medications are safer and less prone to abuse than cheaper generic alternatives.

This indictment marks an escalation in what has already emerged as a dangerous year for major drugmakers entangled in the opioid crisis. According to the U.S. Centers for Disease Control and Prevention, prescription opioid overdoses have killed more than 200,000 Americans over the last 20 years.

Drug companies face a wave of lawsuits in state courts around the country. These lawsuits stem from claims that some unscrupulous drug manufacturers accelerated the opioid crisis by aggressively marketing prescription painkillers and other opioid medications.

Note: Treatment 1 excerpt adapted from Mann (2019). Treatment 2 excerpt adapted from Johnson (2019).

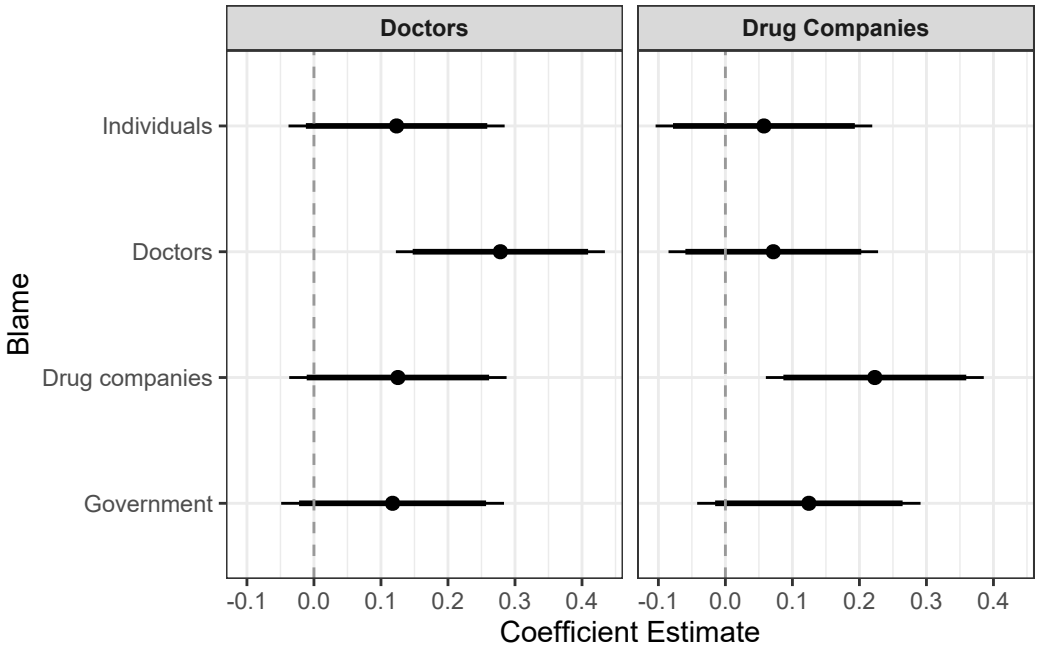

Figure 3: Survey Experiment: Effect of Treatments on Perceived Blame

Note: Points are OLS coefficient estimates using each treatment condition to predict perceived blame for the opioid crisis. Horizontal lines are 90 and 95% confidence intervals. Each row represents a different regression model, where each source of blame is a dependent variable, measured on a 1-5 scale. See Appendix Table A9 for regression table.

5.1 Results

First, I present the effects of both treatment conditions on support for the criminal justice and public health policy questions. To analyze the results, I conduct four regressions using the two treatment indicators as independent variables, with each policy question serving as a dependent variable, where I treat the Likert scale responses as a numeric variable.[8] I include demographic controls to improve the precision of the estimates. Figure 4 and Table 3 display the results from these regressions. The results show that, contrary to my hypotheses, the treatments did not decrease support for criminal justice solutions to the opioid crisis. In fact, respondents who were shown the Doctors article were more likely to support increasing criminal penalties for both people who sell and use opioids illegally. For seller penalties, the coefficient is significant at the $p < 0.05$ level; for user penalties, the coefficient is significant at the $p < 0.1$ level.[9] The treatment increased support for both policy items by nearly 0.15 points on a 1-5 scale, or 3.75 percentage points. The Drug Companies treatment coefficient is positively associated with both criminal justice questions, but the results are not statistically significant. On the other hand, there are no effects of either the Doctors or Drug Companies treatment on support for medication-assisted treatment or safe injection sites. This null finding also contradicts my hypothesis, and the lack of any effects for the Drug Companies treatment suggests there is no evidence for my hypothesis that those effects would be larger.[10]

Next, I test whether pre-existing stigma toward people with opioid use disorders moderates the relationship between treatment and policy outcomes. In particular, I hypothesized

[8]Distributions for each question by treatment condition are available in Figure A3. Mean responses for each question by treatment are in Appendix Table A10.

[9]See Table A12 for regression results without controls. The results are similar, but the effect of the Doctors treatment on support for penalizing users of illegal opioids is no longer statistically significant.

[10]For this reason, I do not formally test the difference in coefficient sizes between treatment conditions.

Table 3: Survey Experiment Main Results: Blame Primes and Policy Views

	Dependent variable:			
	Policy			
	Seller penalties	User penalties	Treatment	Safe injection
	(1)	(2)	(3)	(4)
Treatment: Doctors	0.149*	0.150*	−0.015	−0.022
	(0.079)	(0.090)	(0.066)	(0.090)
Treatment: Drug companies	0.102	0.073	−0.080	0.006
	(0.079)	(0.090)	(0.066)	(0.090)
Democrat	0.102	−0.115	0.288**	0.411**
	(0.099)	(0.114)	(0.083)	(0.114)
Republican	0.251**	0.207*	0.091	−0.142
	(0.102)	(0.117)	(0.086)	(0.117)
Asian/PI	0.015	0.297*	−0.010	0.344**
	(0.152)	(0.174)	(0.128)	(0.174)
Black	−0.019	0.018	−0.294**	0.048
	(0.123)	(0.141)	(0.103)	(0.141)
Indigenous/Other	−0.192	−0.237	−0.049	0.011
	(0.197)	(0.225)	(0.165)	(0.225)
Latinx	−0.143	0.205	−0.137	0.085
	(0.113)	(0.130)	(0.095)	(0.130)
Male	−0.042	0.126*	−0.029	0.218**
	(0.066)	(0.076)	(0.056)	(0.076)
Age	0.011**	−0.003	0.003*	−0.015**
	(0.002)	(0.002)	(0.002)	(0.002)
Income: $25,000 - $49,999	−0.111	−0.141	0.111	−0.148
	(0.095)	(0.109)	(0.080)	(0.109)
Income: $50,000 - $99,999	0.126	−0.057	0.079	−0.158
	(0.091)	(0.104)	(0.076)	(0.104)
Income: $100,000 or more	0.326**	0.297**	0.081	−0.113
	(0.105)	(0.120)	(0.088)	(0.120)
Some college/Associate's degree	0.062	−0.148	0.175**	0.196**
	(0.087)	(0.099)	(0.073)	(0.099)
Bachelor's degree	0.147	−0.200*	0.173**	0.212*
	(0.096)	(0.109)	(0.080)	(0.109)
Graduate degree	0.266**	0.136	0.218**	0.582**
	(0.104)	(0.119)	(0.088)	(0.119)
Observations	1,243	1,243	1,243	1,243
Adjusted R^2	0.069	0.039	0.029	0.119

Note: Results from an OLS regression. * indicates $p < 0.10$ and **$p < 0.05$ (two-tailed tests).

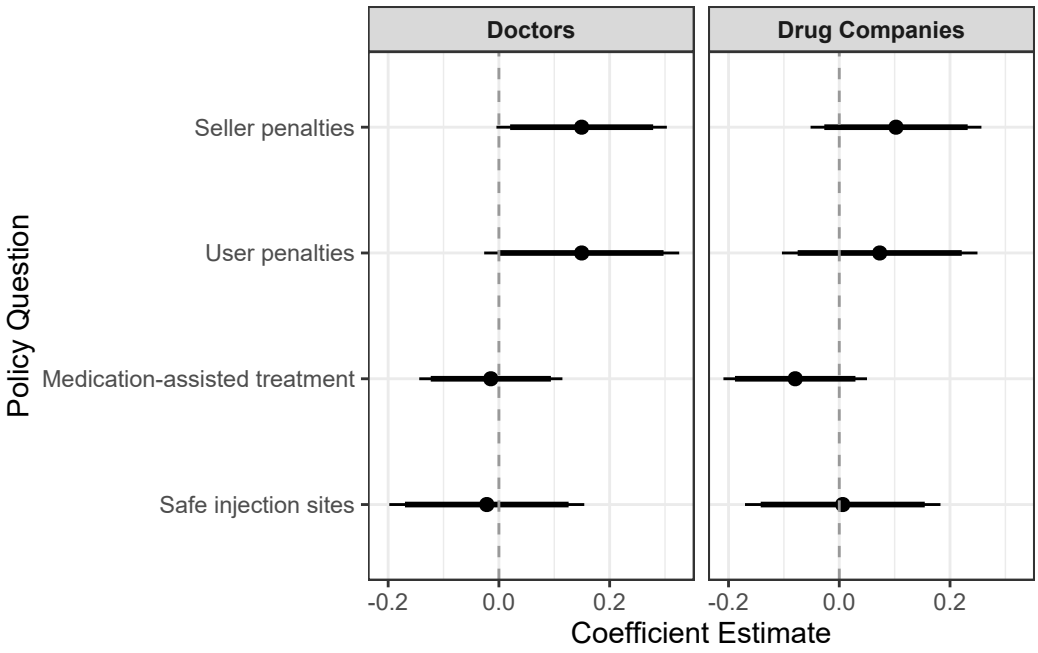

Figure 4: Survey Experiment Main Results: Blame Primes and Policy Views

Note: Points are OLS coefficient estimates using each treatment condition to predict perceived policy opinions. Horizontal lines are 90 and 95% confidence intervals. Each row represents a different regression model, where each policy is a dependent variable, with support measured on a 1-5 scale. See Table 3.

that the treatments would be most effective at shifting opinions for those highest in stigma. I test these hypotheses by interacting treatment with the stigma index in a set of regressions using the criminal justice and policy questions as dependent variables. The regression results are displayed in Table 4. The results show that the effect of the Doctors prime on support for stricter criminal penalties increases with levels of stigma. The marginal effects plots in Figure 5 show that the Doctors article only increased support for higher penalties for people who sell or use opioids illegally among those with higher levels of stigma. For seller penalties, this interaction is significant at the $p < 0.1$ level. A similar pattern is evident for the Drug Companies treatment, but the effect is not distinguishable from zero. This evidence also does not support my hypothesis that those highest in stigma would be most likely to see increases in support for public health and decreases in support for carceral policies. While

the results do show that stigma increases the magnitude of treatment effects, the direction is opposite from what I predicted.

Table 4: Survey Experiment Interaction Results

	Dependent variable:			
	Policy			
	Seller penalties	User penalties	Treatment	Safe injection
	(1)	(2)	(3)	(4)
Treatment: Doctors	−0.239	−0.126	−0.167	−0.113
	(0.240)	(0.275)	(0.201)	(0.266)
Treatment: Drug companies	−0.231	−0.227	−0.133	−0.083
	(0.243)	(0.278)	(0.204)	(0.269)
Stigma index	−0.062	−0.107*	−0.101**	−0.353**
	(0.052)	(0.059)	(0.043)	(0.057)
Treatment: Doctors × Stigma index	0.118*	0.085	0.048	0.036
	(0.069)	(0.079)	(0.058)	(0.076)
Treatment: Drug companies × Stigma index	0.101	0.093	0.018	0.035
	(0.070)	(0.080)	(0.059)	(0.077)
Observations	1,243	1,243	1,243	1,243
Adjusted R^2	0.070	0.039	0.034	0.177

Note: Results from an OLS regression. * indicates $p < 0.10$ and **$p < 0.05$ (two-tailed tests). Controls for party, race, gender, age, income, and education are also included.

5.2 Discussion

In the 2019 AP/NORC survey, I find that there is a mixed relationship between blaming different actors and support for public health and criminal justice policies. Individual attributions are associated with increased support for cracking down on drug dealers and drug users, while blaming pharmaceutical companies is associated with more support for treatment. Attributions to doctors or the government, however, only minimally impact policy preferences. I also find that partisanship is closely correlated with perceptions of blame, suggesting that it is unclear whether blame drives public opinion or partisanship drives both.

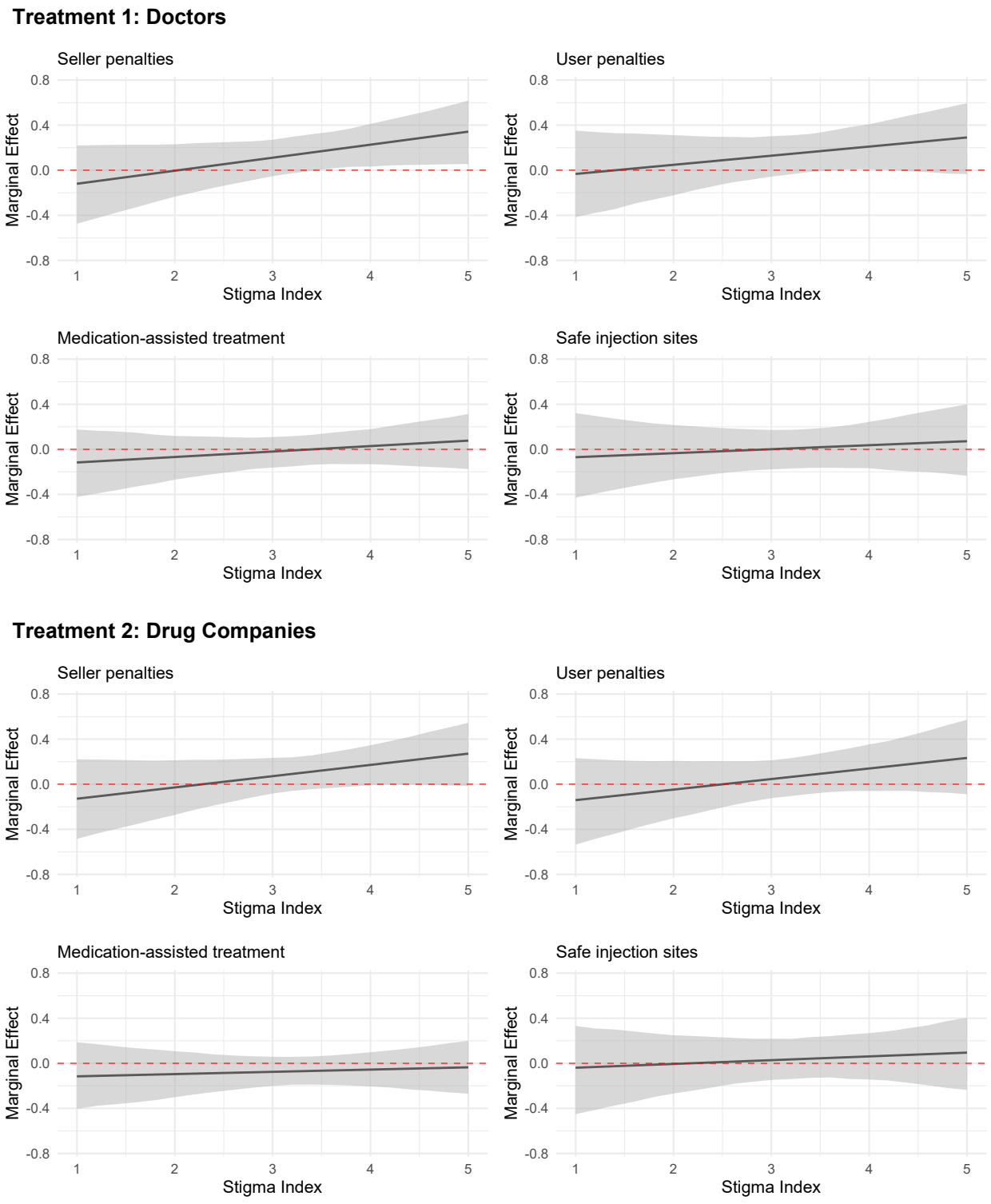

Figure 5: Survey Experiment Results: Marginal Effect of Stigma

Note: Marginal effects plot from regression in models in Table 4. These plots displaying the interaction between stigma and treatment for models predicting support for four different policies.

In the survey experiment, I find that priming respondents with news articles about the role of doctors and pharmaceutical companies in the opioid crisis did not, as hypothesized, reduce support for stricter sentences and increase support for public health policies. Instead, the Doctors treatment increased support for stricter sentences for people who use or sell opioids illegally, while the Drug Companies treatment had no effect. Crucially, the Doctors treatment did not just increase support for stricter sentences for the illegal sale of opioids, but also for illegal use. I find that this effect is strongest for those with the highest levels of stigma, but in the opposite direction as expected; respondents who most strongly desired social distance from people with OUDs and were primed by the Doctors treatment were more likely to support cracking down on drug dealers and drug users. In this section, I discuss several reasons why the experimental results did not support my hypotheses. Then, I consider some potential future research that could help better understand the relationships I tested.

First, the emphasis on the criminal justice system in the treatments could have affected respondents more than perceptions of blame. Rather than reducing the amount of blame assigned to individuals for the opioid crisis, both treatments, especially the Doctors treatment, primed the element of illegality or criminality. The specific treatment I used focused on the actions of doctors who did something illegal as a source of blame, rather than doctors who may have over-prescribed painkillers without ill intent or illegality. While I used this particular kind of wrongdoing as a way to compare closely with the pharmaceutical company treatment, this might have meant that people who viewed the Doctors treatment were primed to think about illicit sales more generally, making them more likely to support increased penalties on buyers and sellers. This may be particularly relevant for individuals

with high stigma against people with OUDs, who could blame individuals for seeking out doctors to gain easy or illicit access to opioids. The pharmaceutical company treatment, on the other hand, focused on illegal marketing, which does not imply an illegal purchase or an illegal buyer. This might explain why the Doctors treatment increased support for sentencing while the Drug Companies treatment had no effect.

Another way to interpret the findings could be that the Doctors framing was more of a surprise or contained more new information than the pharmaceutical company treatment. Patashnik, Gerber and Dowling (2017) find that, in general, Americans tend to place very high trust in doctors, much higher than the trust placed in other medical actors, including pharmaceutical companies. Similarly, I found that respondents from both parties in the 2019 AP/NORC survey blamed pharmaceutical companies for the opioid crisis more than doctors. Since doctors are generally trusted, priming information about particular doctors fueling the opioid crisis may have led to demand to punish bad actors, leading to the treatment effects I find. In this way, blaming doctors may lead to a kind of cognitive dissonance, which is resolved by support for cracking down on individuals; blaming pharmaceutical companies, for many respondents, would not be similarly dissonant and would not lead to the same effect.

An additional possible explanation for my findings concerns the manner in which the news vignettes were presented, specifically the extent to which the vignettes used episodic or thematic framings. Research has shown that attributions for a social problem can be shaped by the type of media framing. Thematic framings that provide context about a problem encourage people to attribute poverty and unemployment as a structural problem, whereas stories about specific people in poverty or struggling with unemployment, called

episodic framings, encourage individual attributions (Iyengar, 1996). The treatments I used focused on specific charges brought against a group of doctors and a specific pharmaceutical company. While the treatments made clear that the charges were part of a broader pattern, the overall focus of the article concerned a specific episode of wrongdoing, rather than on the overall pattern – the headlines, for example, focused on the cases at hand. This type of episodic framing could explain why the Doctors treatment increased support for punishment for people who use illegal opioids; the framing as an individual issue may have mattered more for evaluations of criminal justice policy than the attempt to blame non-individual sources. Additionally, while episodic frames can invoke a sympathetic response, thematic frames are more effective in influencing opinions on policy (Gross, 2008). This finding could explain why the Drug Companies treatment failed to affect policy opinions. Even though both treatments increased the perceptions of blame in the intended categories, the ways in which they were framed may have led to the Doctors treatment increasing support for punishment and the Drug Companies treatment showing null effects.

The relative ambiguity of the survey experiment findings suggest some potential new avenues of research. A possible follow-up experiment could work on refining the Doctors treatment and potential policy outcomes. In addition to a vignette about doctors similar to this experiment, I could give a vignette that primes blame for doctors without invoking criminality, such as an article about doctors overprescribing opioid painkillers without understanding the potential consequences. Such a prime might be more likely to deflect blame from an individual with OUD, since doctors are a trusted source of advice and would not be portrayed as breaking the law. For dependent variables, I could add more specific questions that distinguish different kinds of illegal opioid sales and use. I could also include a question

about pursuing lawsuits against pharmaceutical companies to better match the illegal sales questions, which could test support for using a different aspect of the criminal justice system to address the opioid crisis.

If the non-criminal doctor prime has a similar effect as the criminal doctor prime, that could suggest that attributing blame to an individual actor can still encourage criminalization even if it is not necessarily the individual target of a policy. On the other hand, if the non-criminal doctor prime has a null effect or goes in the opposite direction, that might suggest that the character of the news story matters more than who is blamed. A story focused on illegal selling could encourage more aggressive criminal justice actions, while a story focused less on illegality might not have the same impact. Such a study could potentially be expanded by varying the episodic and thematic nature of the framings, with some stories including more detailed context about the role of doctors or drug companies in the opioid crisis, while other stories would focus on individual cases.

A separate study could focus more directly on the public health outcomes tested, medication-assisted treatment and safe injection sites. It is likely that many respondents know little about these policies, so one could conduct a study aimed at providing more information. I could design a news article describing how each policy is a potential solution to the opioid crisis, including arguments from supporters and opponents. Within each article, I could then vary how the opioid crisis is described, changing whether the article focuses on the role of individuals, doctors, pharmaceutical companies, or government. If there are no effects of treatment on support for these policies, then I could conclude that attribution is not an important driver of opinion for these policies. If blaming non-individual sources does increase support for medication-assisted treatment or safe injection sites, this would suggest that my

current findings are partially due to insufficient information, and that attributions for the opioid crisis can shape public opinion about harm reduction policies.

6 Conclusion

In a media environment with frequent news stories about different kinds of actors being held accountable for their role in the opioid crisis, one might expect that these accounts could impact public opinion about drug policy. In particular, blaming external forces, such as doctors or pharmaceutical companies, might shift blame away from individuals and lead to support for public health policies. The results from this survey experiment, however, suggest this is not the case. Encouraging respondents to attribute blame to doctors increased support for criminal punishment of illegal opioid sales and use, while there was no impact on support for public health policies; priming drug companies as a source of blame had no effect on either kind of policy support.

The inability of blame primes to shift policy support in a more public health-oriented direction suggests that stigma may have a larger role in shaping the public response to the opioid crisis. Additionally, the interaction of stigma with an external source of blame to increase support for criminalization provides more evidence for a growing disconnect between attribution and social distancing for people with OUDs (Perry, Pescosolido and Krendl, 2020). In other words, attitudes about people with OUDs might shape how ideas about blame relate to policy views. This pattern might mean that while blame for the opioid crisis could not solely be assigned to individuals, aversion to people with OUDs may still prevent the adoption of policies that could reduce the harms of addiction (Tsai et al.,

2019). The importance of social distancing attitudes can also help shed additional light on the opposition to locally-sited opioid treatment centers, despite support for these initiatives more broadly (de Benedictis-Kessner and Hankinson, 2019). Attitudes about social distance may be more important for policy beliefs than whether or not individuals are blamed for addiction, suggesting the importance of efforts to humanize and reduce stigma against people with OUDs.

References

Abramowitz, Alan I., David J. Lanoue and Subha Ramesh. 1988. "Economic Conditions, Causal Attributions, and Political Evaluations in the 1984 Presidential Election." *The Journal of Politics* 50(4):848–863.

AP-NORC Center. 2019. "The April 2019 AP-NORC Center Poll, 2019 [Dataset].". Roper #31116348, Version 3. The AP-NORC Center for Public Affairs Research [producer]. Cornell University, Ithaca, NY: Roper Center for Public Opinion Research [distributor]. Access Date: Nov-23-2020.

Associated Press-NORC Center. 2018. "Associated Press-NORC Center for Public Affairs Research Poll: Americans Recognize the Growing Problem of Opioid Addiction, 2018 [Dataset].". Roper #31116089, Version 2. The Associated Press-NORC Center for Public Affairs Research [producer]. Cornell University, Ithaca, NY: Roper Center for Public Opinion Research [distributor]. Access Date: Dec-4-2020.

Barry, Colleen L., Emma E. McGinty, Bernice A. Pescosolido and Howard H. Goldman. 2014. "Stigma, Discrimination, Treatment Effectiveness, and Policy: Public Views About Drug Addiction and Mental Illness." *Psychiatric Services* 65(10):1269–1272.

Barry, Colleen L., Victoria L. Brescoll, Kelly D. Brownell and Mark Schlesinger. 2009. "Obesity Metaphors: How Beliefs about the Causes of Obesity Affect Support for Public Policy." *The Milbank Quarterly* 87(1):7–47.

Bullock, Heather E., Wendy R. Williams and Wendy M. Limbert. 2003. "Predicting Support for Welfare Policies: The Impact of Attributions and Beliefs About Inequality." *Journal of Poverty* 7(3):35–56.

Carpenter, Daniel P. 2010. *Reputation and Power: Organizational Image and Pharmaceutical Regulation at the FDA*. Princeton: Princeton University Press.

Chavanne, David and Kimberly Goodyear. 2019. "Waking Up from Dreamland: Opioid Addiction Precipitance and Support for Redistributive Drug Treatment." *Journal of Drug Policy Analysis* 12(1).

Cochran, John K., Denise Paquette Boots and Kathleen M. Heide. 2003. "Attribution Styles and Attitudes toward Capital Punishment for Juveniles, the Mentally Incompetent, and the Mentally Retarded." *Justice Quarterly* 20(1):65–93.

Coppock, Alexander and Oliver A. McClellan. 2019. "Validating the Demographic, Political, Psychological, and Experimental Results Obtained from a New Source of Online Survey Respondents." *Research & Politics* 6(1):1–14.

Corrigan, Patrick W. and Katherine Nieweglowski. 2018. "Stigma and the Public Health Agenda for the Opioid Crisis in America." *International Journal of Drug Policy* 59:44–49.

Cullen, Francis T., Gregory A. Clark, John B. Cullen and Richard A. Mathers. 1985. "Attribution, Salience, and Attitudes toward Criminal Sanctioning." *Criminal Justice and Behavior* 12(3):305–331.

de Benedictis-Kessner, Justin and Michael Hankinson. 2019. "Concentrated Burdens: How Self-Interest and Partisanship Shape Opinion on Opioid Treatment Policy." *American Political Science Review* 113(4):1078–1084.

de Benedictis-Kessner, Justin and Michael Hankinson. 2020. How and Why the Identity of Substance Users Shapes Public Opinion on Opioid Treatment Policy. Working paper.

Entman, Robert M. 1993. "Framing: Toward Clarification of a Fractured Paradigm." *Journal of Communication* 43(4):51–58.

Feagin, Joe R. 1975. *Subordinating the Poor: Welfare and American Beliefs*. Englewood Cliffs, N.J.: Prentice-Hall.

Fiorina, Morris P. 1981. *Retrospective Voting in American National Elections*. New Haven: Yale University Press.

Fraser, Suzanne. 2018. "Grievable Lives? Death by Opioid Overdose in Australian Newspaper Coverage." pp. 28–35.

Goodyear, Kimberly, Carolina L. Haass-Koffler and David Chavanne. 2018. "Opioid Use and Stigma: The Role of Gender, Language and Precipitating Events." *Drug and Alcohol Dependence* 185:339–346.

Grasmick, Harold G. and Anne L. McGill. 1994. "Religion, Attribution Style, and Punitiveness Toward Juvenile Offenders*." *Criminology* 32(1):23–46.

Gross, Kimberly. 2008. "Framing Persuasive Appeals: Episodic and Thematic Framing, Emotional Response, and Policy Opinion." *Political Psychology* 29(2):169–192.

Hellwig, Timothy and Eva Coffey. 2011. "Public Opinion, Party Messages, and Responsibility for the Financial Crisis in Britain." *Electoral Studies* 30(3):417–426.

Hellwig, Timothy T., Eve M. Ringsmuth and John R. Freeman. 2008. "The American Public and the Room to Maneuver: Responsibility Attributions and Policy Efficacy in an Era of Globalization." *International Studies Quarterly* 52(4):855–880.

Henderson, Nicole L. and William W. Dressler. 2017. "Medical Disease or Moral Defect? Stigma Attribution and Cultural Models of Addiction Causality in a University Population." *Culture, Medicine and Psychiatry* 41(4):480–498.

Hlavac, Marek. 2018. *stargazer: Well-Formatted Regression and Summary Statistics Tables*. R package version 5.2.2. http://CRAN.R-project.org/package=stargazer.

Hunt, Matthew O. 1996. "The Individual, Society, or Both? A Comparison of Black, Latino, and White Beliefs about the Causes of Poverty." *Social Forces* 75(1):293–322.

Iyengar, Shanto. 1990. "Framing Responsibility for Political Issues: The Case of Poverty." *Political Behavior* 12(1):19–40.

Iyengar, Shanto. 1996. "Framing Responsibility for Political Issues." *The ANNALS of the American Academy of Political and Social Science* 546(1):59–70.

Johnson, Carrie. 2019. "Nearly 60 Doctors, Other Medical Workers Charged In Federal Opioid Sting." *NPR.org* (April 17). https://www.npr.org/2019/04/17/714014919/nearly-60-docs-other-medical-workers-face-charges-in-federal-opioid-sting.

Keefe, Patrick Radden. 2017. "The Family That Built an Empire of Pain — The New Yorker." *The New Yorker* (October 30). https://www.newyorker.com/magazine/2017/10/30/the-family-that-built-an-empire-of-pain.

Kennedy-Hendricks, Alene, Colleen L. Barry, Sarah E. Gollust, Margaret E. Ensminger, Margaret S. Chisolm and Emma E. McGinty. 2017. "Social Stigma Toward Persons With Prescription Opioid Use Disorder: Associations With Public Support for Punitive and Public Health-Oriented Policies." *Psychiatric Services* 68(5):462–469.

Kluegel, James R. 1986. *Beliefs about Inequality: Americans' Views of What Is and What Ought to Be*. New York : Routledge.

Lee, Barrett A., Sue Hinze Jones and David W. Lewis. 1990. "Public Beliefs About the Causes of Homelessness." *Social Forces* 69(1):253–265.

MacKuen, Michael B., Robert S. Erikson and James A. Stimson. 1992. "Peasants or Bankers? The American Electorate and the U.S. Economy." *American Political Science Review* 86(03):597–611.

Malhotra, Neil and Alexander G. Kuo. 2008. "Attributing Blame: The Public's Response to Hurricane Katrina." *The Journal of Politics* 70(1):120–135.

Mann, Brian. 2019. "Opioid-Maker Charged With Fraud In Marketing Drug As Less Prone To Abuse.". https://www.npr.org/2019/04/10/711669778/opioid-maker-charged-with-fraud-in-marketing-drug-as-less-prone-to-abuse.

Mann, Brian. 2020. "Doctors And Dentists Still Flooding U.S. With Opioid Prescriptions." *NPR.org* (July 17). https://www.npr.org/2020/07/17/887590699/doctors-and-dentists-still-flooding-u-s-with-opioid-prescriptions.

Martin, Jack K., Bernice A. Pescosolido and Steven A. Tuch. 2000. "Of Fear and Loathing: The Role of 'Disturbing Behavior,' Labels, and Causal Attributions in Shaping Public Attitudes toward People with Mental Illness." *Journal of Health and Social Behavior* 41(2):208–223.

Maruna, Shadd and Anna King. 2009. "Once a Criminal, Always a Criminal?: 'Redeemability' and the Psychology of Punitive Public Attitudes." *European Journal on Criminal Policy and Research* 15(1):7–24.

McGinty, Emma E., Elizabeth M. Stone, Alene Kennedy-Hendricks, Kaylynn Sanders, Alexa Beacham and Colleen L. Barry. 2019. "U.S. News Media Coverage of Solutions to the Opioid Crisis, 2013–2017." *Preventive Medicine* 126:1–6.

McGinty, Emma E., Howard H. Goldman, Bernice Pescosolido and Colleen L. Barry. 2015. "Portraying Mental Illness and Drug Addiction as Treatable Health Conditions: Effects of a Randomized Experiment on Stigma and Discrimination." *Social Science & Medicine (1982)* 126:73–85.

Oliver, Thomas R. 2006. "The Politics of Public Health Policy." *Annual Review of Public Health* 27(1):195–233.

Patashnik, Eric M., Alan S. Gerber and Conor M. Dowling. 2017. *Unhealthy Politics: The Battle over Evidence-Based Medicine*. Princeton: Princeton University Press.

Pellegrini, Robert J., Sergio S. Queirolo, Victor E. Monarrez and Dona M. Valenzuela. 1997. "Political Identification and Perceptions of Homelessness: Attributed Causality and Attitudes on Public Policy." *Psychological Reports* 80(3_suppl):1139–1148.

Perry, Brea L., Bernice A. Pescosolido and Anne C. Krendl. 2020. "The Unique Nature of Public Stigma toward Non-Medical Prescription Opioid Use and Dependence: A National Study." *Addiction* 115(12):2317–2326.

Pescosolido, B A, J Monahan, B G Link, A Stueve and S Kikuzawa. 1999. "The Public's View of the Competence, Dangerousness, and Need for Legal Coercion of Persons with Mental Health Problems." *American Journal of Public Health* 89(9):1339–1345.

Petersen, Michael Bang. 2010. "Distinct Emotions, Distinct Domains: Anger, Anxiety and Perceptions of Intentionality." *The Journal of Politics* 72(2):357–365.

Pew Research Center, Washington, D.C. 2020. "Democratic Edge in Party Identification Narrows Slightly." https://www.pewresearch.org/politics/2020/06/02/democratic-edge-in-party-identification-narrows-slightly/.

Puhl, Rebecca M. and Chelsea A. Heuer. 2010. "Obesity Stigma: Important Considerations for Public Health." *American Journal of Public Health* 100(6):1019–28.

Quinones, Sam. 2016. *Dreamland: The True Tale of America's Opiate Epidemic*. New York: Bloomsbury Press.

Rudolph, Thomas J. 2003. "Who's Responsible for the Economy? The Formation and Consequences of Responsibility Attributions." *American Journal of Political Science* 47(4):698–713.

Spencer, Terry. 2019. "Florida 'Pill Mills' Were 'Gas on the Fire' of Opioid Crisis." *Associated Press* (July 20). https://apnews.com/article/west-virginia-fires-health-wv-state-wire-us-news-0ced46b203864d8fa6b8fda6bd97b60e.

Tsai, Alexander C., Mathew V. Kiang, Michael L. Barnett, Leo Beletsky, Katherine M. Keyes, Emma E. McGinty, Laramie R. Smith, Steffanie A. Strathdee, Sarah E. Wakeman and Atheendar S. Venkataramani. 2019. "Stigma as a Fundamental Hindrance to the United States Opioid Overdose Crisis Response." *PLoS medicine* 16(11):1–10.

Unnever, James D., John K. Cochran, Francis T. Cullen and Brandon K. Applegate. 2010. "The Pragmatic American: Attributions of Crime and the Hydraulic Relation Hypothesis." *Justice Quarterly* 27(3):431–457.

U.S. Census Bureau. 2021. "2019 American Community 1-Year Estimates, Tables S1901, S0101, S1501, and DP05.". Data accessed using data.census.gov.

Willis, Erin and Chad Painter. 2019. "The Needle and the Damage Done: Framing the Heroin Epidemic in the Cincinnati Enquirer." *Health Communication* 34(6):661–671.

Appendix

1 Cross-Sectional Survey

Table A1: Relationship Between Blame for Opioid Crisis and Policy, AP/NORC 2019 (1)

	Dependent variable:			
	Support for...			
	Crackdown dealers	Crackdown users	Educate doctors	Educate public
	(1)	(2)	(3)	(4)
Blame: Doctors	0.091	0.101	0.232**	−0.064
	(0.072)	(0.068)	(0.051)	(0.055)
Blame: Drug Companies	−0.013	−0.078	0.006	0.072
	(0.068)	(0.068)	(0.050)	(0.055)
Blame: Government	−0.028	−0.036	0.053	0.088**
	(0.047)	(0.053)	(0.044)	(0.045)
Blame: Individuals	0.118**	0.239**	−0.001	−0.022
	(0.048)	(0.053)	(0.046)	(0.044)
Indep/Other party	−0.008	0.027	−0.016	0.018
	(0.044)	(0.041)	(0.032)	(0.034)
Republican	−0.013	0.003	−0.082**	−0.066**
	(0.031)	(0.036)	(0.027)	(0.029)
Black	0.003	0.028	−0.054	−0.011
	(0.041)	(0.045)	(0.041)	(0.040)
Latinx	−0.001	0.010	−0.049	−0.013
	(0.044)	(0.047)	(0.032)	(0.039)
Other race/ethnicity	0.053	0.108**	0.025	−0.009
	(0.041)	(0.043)	(0.043)	(0.039)
Female	0.028	0.059**	0.015	0.023
	(0.027)	(0.027)	(0.023)	(0.023)
Income: $50,000 - $99,999	0.003	0.024	0.019	−0.007
	(0.032)	(0.034)	(0.027)	(0.029)
Income: $100,000 or more	−0.038	−0.018	−0.034	−0.036
	(0.039)	(0.042)	(0.031)	(0.034)
Some college/Associate's degree	0.047	0.018	−0.059**	0.024
	(0.033)	(0.034)	(0.028)	(0.029)
College degree or more	0.058	0.005	−0.003	0.085**
	(0.035)	(0.037)	(0.031)	(0.031)
Age: 30-39	0.030	−0.001	−0.088**	0.083*
	(0.052)	(0.051)	(0.040)	(0.043)
Age: 40-59	0.091*	0.082*	−0.097**	0.038
	(0.047)	(0.046)	(0.035)	(0.041)
Age: 60-64	0.056	0.020	−0.110**	0.011
	(0.063)	(0.059)	(0.043)	(0.055)
Age: 65+	0.085*	0.073	−0.106**	0.067
	(0.050)	(0.049)	(0.039)	(0.045)
Constant	0.558**	0.424**	0.690**	0.660**
	(0.066)	(0.066)	(0.059)	(0.057)
Observations	1,102	1,103	1,109	1,107
Adjusted R^2	0.037	0.069	0.114	0.051

Note: Results from an OLS regression using robust standard errors. * indicates $p < 0.10$ and ** $p < 0.05$ (two-tailed tests). Data from AP/NORC 2019.

Table A2: Relationship Between Blame for Opioid Crisis and Policy, AP/NORC 2019 (2)

	Dependent variable:		
	Support for...		
	Reduce stigma	Treatment access	Treatment quality
	(1)	(2)	(3)
Blame: Doctors	0.038	0.014	0.032
	(0.075)	(0.052)	(0.052)
Blame: Drug Companies	0.099	0.115**	0.108**
	(0.072)	(0.052)	(0.051)
Blame: Government	0.032	−0.003	0.015
	(0.055)	(0.043)	(0.044)
Blame: Individuals	−0.164**	−0.030	−0.042
	(0.049)	(0.039)	(0.042)
Indep/Other party	−0.013	−0.001	−0.018
	(0.043)	(0.027)	(0.033)
Republican	−0.133**	−0.136**	−0.128**
	(0.033)	(0.027)	(0.027)
Black	−0.030	−0.043	−0.043
	(0.054)	(0.039)	(0.039)
Latinx	0.017	0.006	−0.030
	(0.040)	(0.032)	(0.033)
Other race/ethnicity	0.051	−0.043	−0.005
	(0.042)	(0.039)	(0.035)
Female	0.008	0.011	0.018
	(0.028)	(0.021)	(0.022)
Income: $50,000 - $99,999	−0.028	0.013	−0.038
	(0.033)	(0.025)	(0.027)
Income: $100,000 or more	−0.017	−0.001	−0.026
	(0.039)	(0.031)	(0.032)
Some college/Associate's degree	−0.001	−0.039	0.001
	(0.034)	(0.025)	(0.028)
College degree or more	0.002	0.009	0.036
	(0.038)	(0.030)	(0.033)
Age: 30-39	0.044	−0.029	0.022
	(0.057)	(0.040)	(0.041)
Age: 40-59	0.087*	−0.011	−0.0004
	(0.052)	(0.033)	(0.038)
Age: 60-64	0.051	0.015	0.019
	(0.062)	(0.046)	(0.047)
Age: 65+	0.070	−0.030	−0.021
	(0.055)	(0.037)	(0.041)
Constant	0.739**	0.809**	0.777**
	(0.076)	(0.052)	(0.053)
Observations	1,102	1,101	1,112
Adjusted R^2	0.085	0.083	0.089

Note: Results from an OLS regression using robust standard errors. * indicates $p < 0.10$ and ** $p < 0.05$ (two-tailed tests). Data from AP/NORC 2019.

2 Survey Experiment

2.1 Question Wording

Table A3: Stigma Index Question Text

Question Label	Question Text
	I would like you to imagine a person who often takes opioid pills without a prescription. The person experiences cravings for pills and will sometimes feel sick if they go too long without taking them. The person is aware that their use of opioids is interfering with their life but has been unable to stop. Imagining that same person, how willing would you be to voluntarily... (Extremely willing, very willing, somewhat willing, not too willing, not at all willing)
Family	allow to marry into your family
Friend	...keep as a friend?
Live Near	...live next door?
Socialize	...spend an evening socializing?
Work Together	...work closely together on the job?

Table A4: Opioid Crisis Information (Presented to all respondents)

Please review the following information: Since 1999, over 450,000 Americans have died from an overdose involving at least one kind of opioid, including prescription painkillers, heroin, and illegal synthetic substances, such as fentanyl. The toll of the opioid crisis has increased over time. By 2018, the drug overdose death rate was nearly four times higher than the rate in 1999. While federal and state governments have enacted a number of policies aimed at curtailing the epidemic, the number of overdose deaths continued to rise in 2020. Next, please read the following news excerpt carefully. (Control: Next, we will ask you some questions about the opioid crisis.)

Table A5: Policy Question Text

Question Label	Question Text
	There are a number of different solutions that have been proposed to reduce the harms associated with the opioid crisis. How much would you support the following policies? (Strongly support, Somewhat support, Neither support nor oppose, Somewhat oppose, Strongly oppose)
Seller penalties	Increased prison sentences for people who sell illegal opioids
User penalties	Increased criminal penalties for people who use illegal opioids
Treatment	Treatment programs that use medication to reduce addiction to dangerous opioids
Safe injection sites	Locations for people to consume addictive drugs under medical supervision, sometimes called safe injection sites

Table A6: Blame Question Text

Question Text and Label
There are a number of different potential causes for the opioid crisis in the United States. How much do you blame the following for the problem of opioid addiction? (A great deal, A lot, A moderate amount, A little, Not at all)
Individuals who use opioids
Doctors
Pharmaceutical companies
Government

2.2 Survey Demographics

Table A7: Sample Characteristics

Demographic	Count	Sample Proportion	U.S. Proportion
Age			
18-29	266	0.200	0.210
30-49	484	0.363	0.332
50-64	301	0.226	0.247
65+	282	0.212	0.212
Education			
High school or less	382	0.287	0.391
Some college/Associate's degree	365	0.274	0.303
Bachelor's degree or higher	567	0.425	0.306
Gender			
Female	675	0.506	0.513
Male	658	0.494	0.487
Household Income			
Less than $25,000	311	0.233	0.181
$25,000 to $49,999	275	0.206	0.203
$50,000 to $99,999	385	0.289	0.302
$100,000 or more	280	0.210	0.314
Party			
Indep/Other	191	0.143	0.070
Democrat	636	0.477	0.490
Republican	506	0.380	0.440
Race/Ethnicity			
White	964	0.723	0.600
Latinx	141	0.106	0.184
Black	106	0.080	0.124
Asian/PI	66	0.050	0.058
Indigenous/Other	56	0.042	0.035
Region			
Midwest	273	0.205	0.208
Northeast	264	0.198	0.171
South	535	0.401	0.383
West	261	0.196	0.239

Table A8: Sample Characteristics by Treatment Condition

Demographic	Control	Treat: Doctors	Treat: Drug Companies
Age			
18-29	0.164	0.185	0.162
30-49	0.345	0.375	0.407
50-64	0.262	0.217	0.221
65+	0.229	0.224	0.210
Education			
High school or less	0.305	0.290	0.233
Some college/Associate's degree	0.262	0.280	0.286
Bachelor's degree or higher	0.431	0.428	0.467
Gender			
Female	0.507	0.504	0.474
Male	0.493	0.496	0.526
Household Income			
Less than $25,000	0.240	0.248	0.257
$25,000 to $49,999	0.250	0.204	0.205
$50,000 to $99,999	0.317	0.324	0.283
$100,000 or more	0.193	0.224	0.255
Party			
Indep/Other	0.129	0.127	0.157
Democrat	0.467	0.501	0.483
Republican	0.405	0.372	0.360
Race/Ethnicity			
White	0.719	0.715	0.779
Latinx	0.090	0.134	0.083
Black	0.100	0.092	0.055
Asian/PI	0.062	0.041	0.043
Indigenous/Other	0.029	0.017	0.040
Region			
Midwest	0.186	0.219	0.219
Northeast	0.219	0.185	0.190
South	0.419	0.406	0.386
West	0.176	0.190	0.205

Party identification includes leaners.

2.3 Variable Distributions

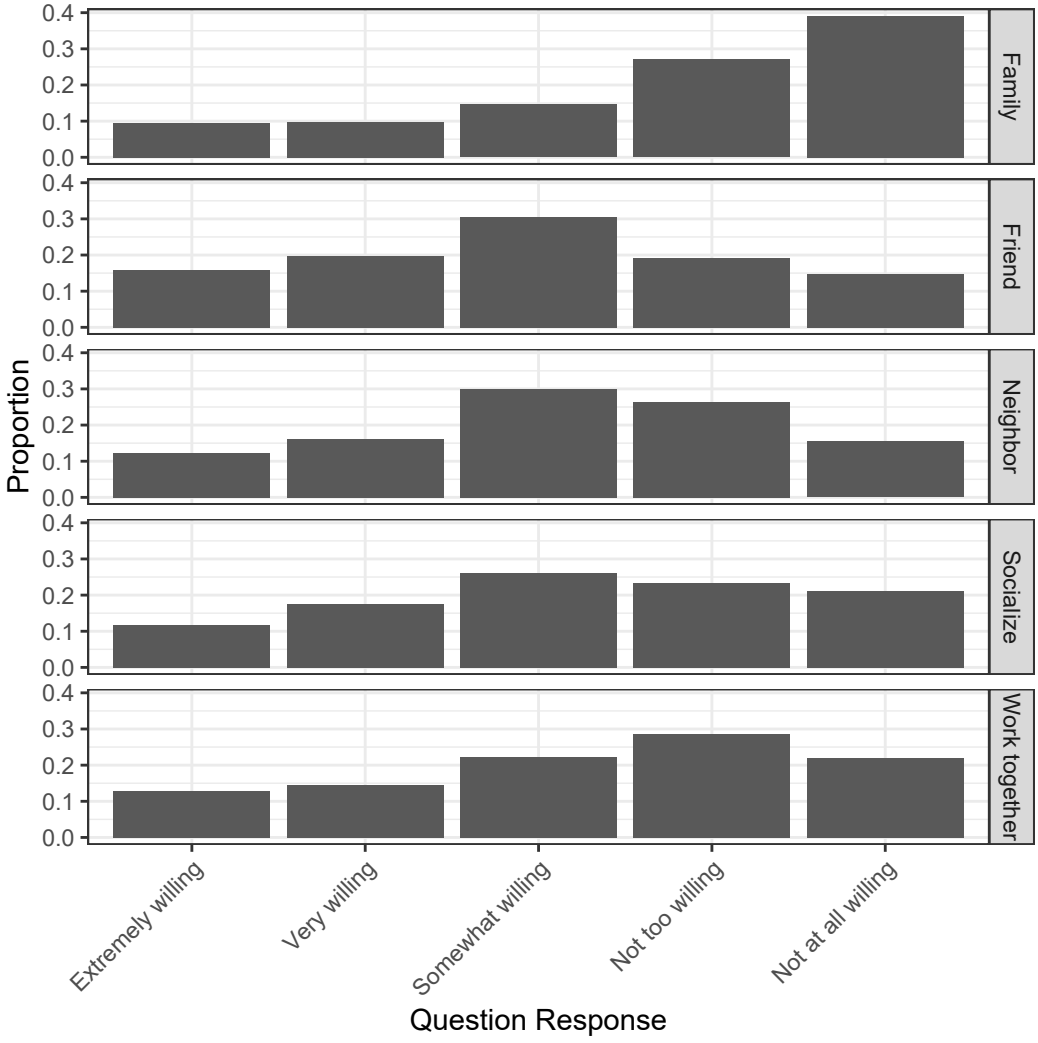

Figure A1: Distribution of Stigma Questions

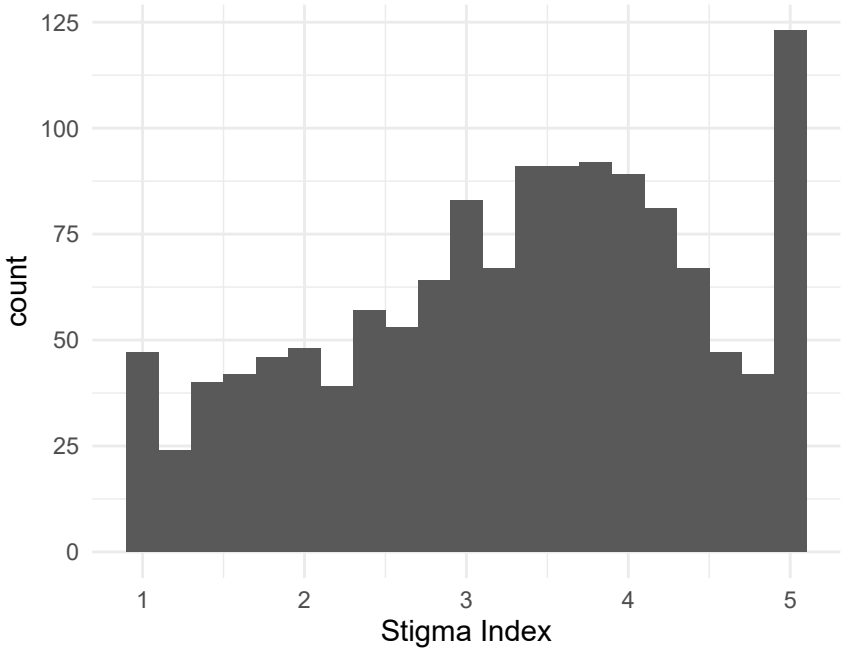

Figure A2: Distribution of Stigma Index

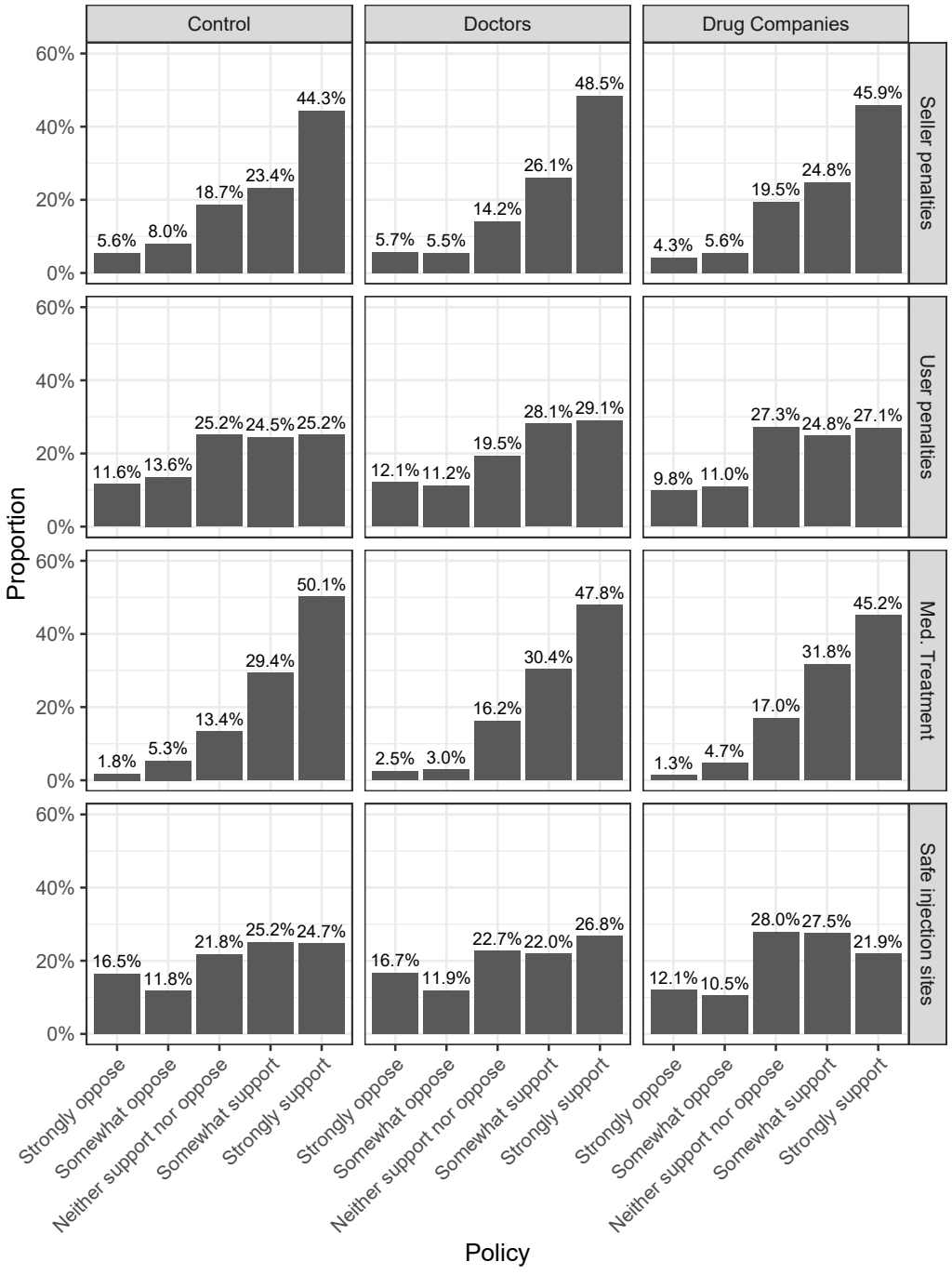

Figure A3: Support for Policy Outcomes by Treatment Condition

Note: Columns represent each treatment condition. Rows represent each policy question. Results are presented as proportion choosing each answer choice for each policy question.

2.4 Additional Results

Table A9: Survey Experiment: Treatment and Perceptions of Blame

	Dependent variable:			
	Blame			
	Individuals	Doctors	Drug companies	Government
	(1)	(2)	(3)	(4)
Treatment: Doctors	0.123	0.278**	0.125	0.117
	(0.082)	(0.080)	(0.083)	(0.085)
Treatment: Drug companies	0.057	0.071	0.223**	0.125
	(0.082)	(0.080)	(0.083)	(0.085)
Democrat	0.012	0.362**	0.384**	0.083
	(0.104)	(0.101)	(0.105)	(0.107)
Republican	0.169	0.134	−0.020	0.044
	(0.107)	(0.104)	(0.108)	(0.111)
Asian/PI	0.256	−0.106	−0.123	0.214
	(0.160)	(0.154)	(0.161)	(0.165)
Black	0.277**	−0.221*	−0.244*	0.069
	(0.129)	(0.125)	(0.130)	(0.133)
Indigenous/Other	0.136	0.161	0.147	0.209
	(0.206)	(0.199)	(0.207)	(0.212)
Latinx	0.184	0.041	−0.093	0.028
	(0.119)	(0.115)	(0.120)	(0.123)
Male	0.156**	0.053	−0.048	0.208**
	(0.070)	(0.067)	(0.070)	(0.072)
Age	0.006**	0.003	0.00004	−0.012**
	(0.002)	(0.002)	(0.002)	(0.002)
Income: $25,000 - $49,999	0.203**	0.016	0.153	0.067
	(0.100)	(0.096)	(0.100)	(0.103)
Income: $50,000 - $99,999	0.142	0.075	0.091	−0.010
	(0.095)	(0.092)	(0.096)	(0.098)
Income: $100,000 or more	0.298**	0.271**	0.282**	0.064
	(0.110)	(0.107)	(0.111)	(0.114)
Some college/Associate's degree	0.042	0.038	0.140	0.019
	(0.091)	(0.088)	(0.092)	(0.094)
Bachelor's degree	−0.039	−0.133	0.175*	0.012
	(0.100)	(0.097)	(0.101)	(0.103)
Graduate degree	0.154	−0.085	0.271**	0.237**
	(0.109)	(0.106)	(0.110)	(0.113)
Observations	1,243	1,243	1,243	1,243
Adjusted R^2	0.020	0.027	0.048	0.042

Note: Results from OLS regression. * indicates $p < 0.10$ and **$p < 0.05$ (two-tailed tests).

Table A10: Mean Support for Policy by Treatment Condition

Policy	Control	Treatment: Doctors	Treatment: Drug Companies
Seller penalties	3.93	4.06	4.02
User penalties	3.38	3.51	3.48
Treatment	4.21	4.18	4.15
Safe injection sites	3.30	3.30	3.37

Note: Data from survey experiment. Outcomes are Likert scale responses from 1-5, where higher numbers indicate more support for the policy.

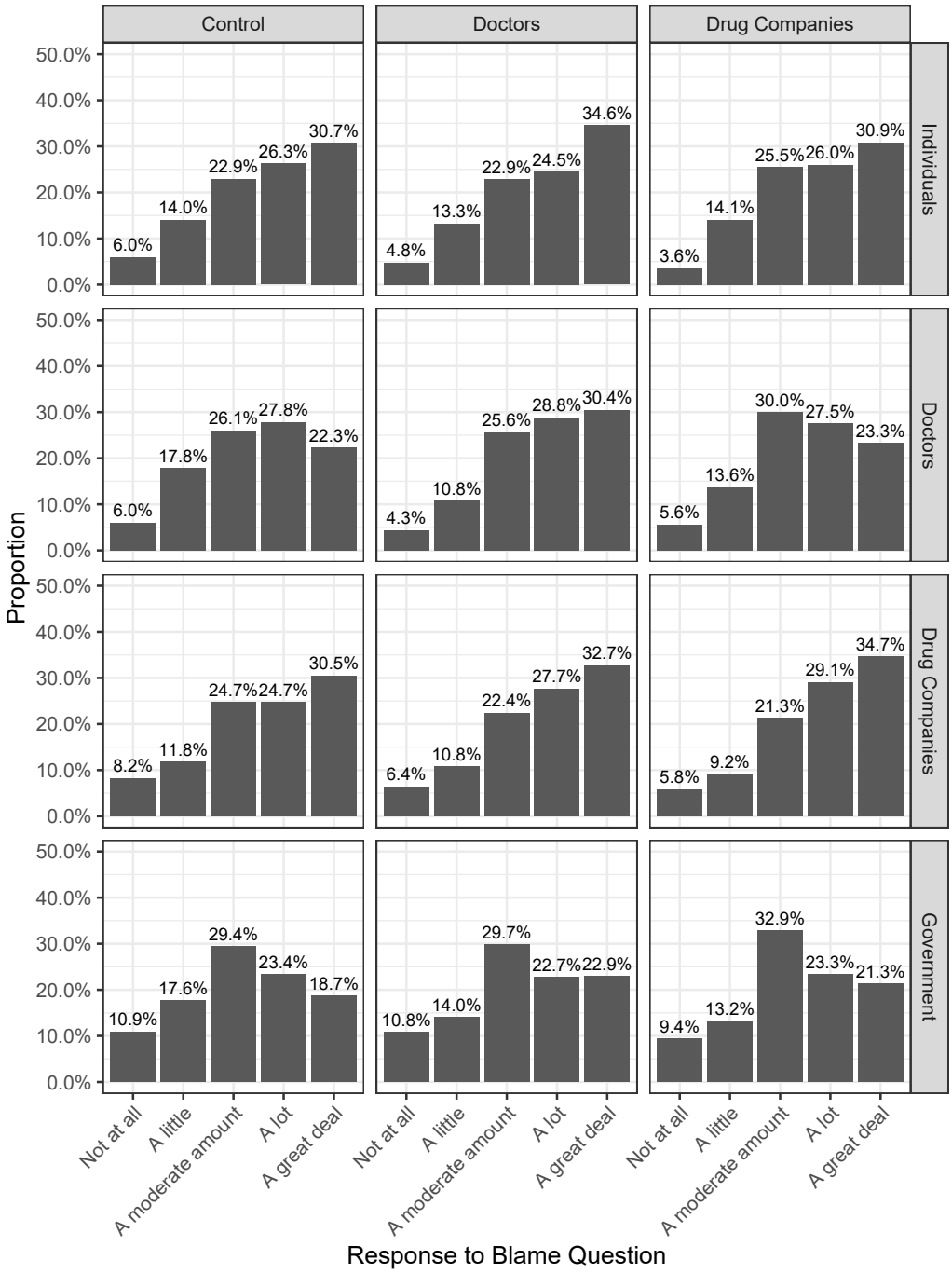

Figure A4: Blame for Opioid Crisis by Treatment Condition

Note: Columns represent each treatment condition. Rows represent each blame question. Results are presented as proportion choosing each answer choice for each blame question.

Table A11: Mean Support for Blame by Treatment Condition

Question	Control	Treat: Doctors	Treat: Drug Companies
Individuals	3.62	3.71	3.66
Doctors	3.43	3.70	3.49
Drug Companies	3.57	3.70	3.78
Government	3.21	3.33	3.34

Table A12: Survey Experiment Main Results, No Controls

	Dependent variable:			
	Policy			
	Seller penalties	User penalties	Treatment	Safe injection
	(1)	(2)	(3)	(4)
Treatment: Doctors	0.133*	0.127	−0.026	0.004
	(0.078)	(0.088)	(0.065)	(0.091)
Treatment: Drug companies	0.096	0.102	−0.059	0.068
	(0.078)	(0.087)	(0.065)	(0.091)
Observations	1,333	1,333	1,333	1,333
Adjusted R^2	0.001	0.0003	−0.001	−0.001

Note: Results from an OLS regression. * indicates $p < 0.10$ and **$p < 0.05$ (two-tailed tests).

2.5 Survey Duration

In this section, I first show the distribution of duration for the survey experiment in seconds. Then, I re-run the main regression specifications of the survey experiment using datasets that remove different amounts of respondents who took the most and least time with the survey. I do this to filter out those who may have sped through the survey without paying much attention. In the following plots, "Complete" refers to the survey experiment only with extremely high outliers (above 2000 seconds) removed. The "98%" survey removes the top and bottom 1 percent of respondents by duration. Similarly, "90%" excludes the top and bottom 5 percent of respondents, "80%" excludes the top and bottom 10 percent, and "75%" excludes the top and bottom 25 percent. First, I compare the coefficient for the Doctors treatment on each policy question. Then, I do the same for the Drug Companies treatment. While the results become noisier as sample size decreases, the direction and magnitude of the treatment effects are largely the same.

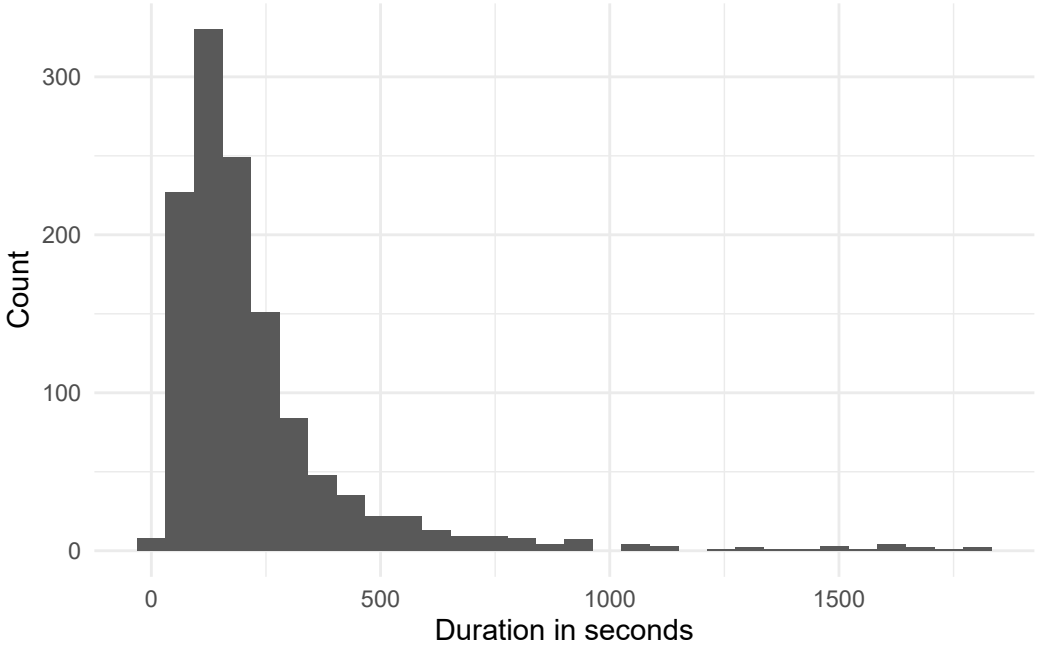

Figure A5: Survey Experiment Duration

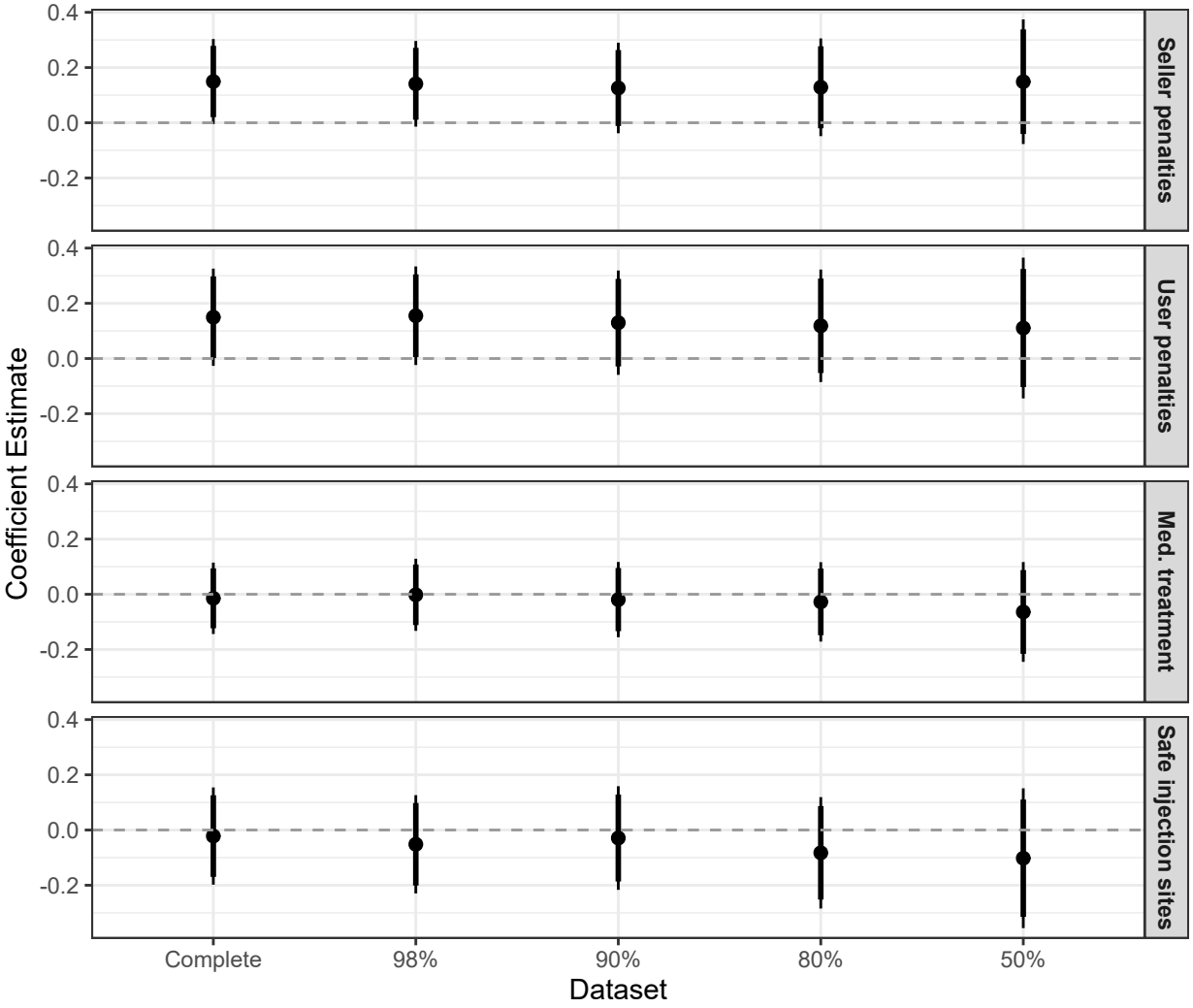

Figure A6: Doctors Treatment Effects by Duration Dataset

Note: This figure shows the relationship between the Doctors treatment and policy outcomes by datasets that include different proportions of the respondents by duration.

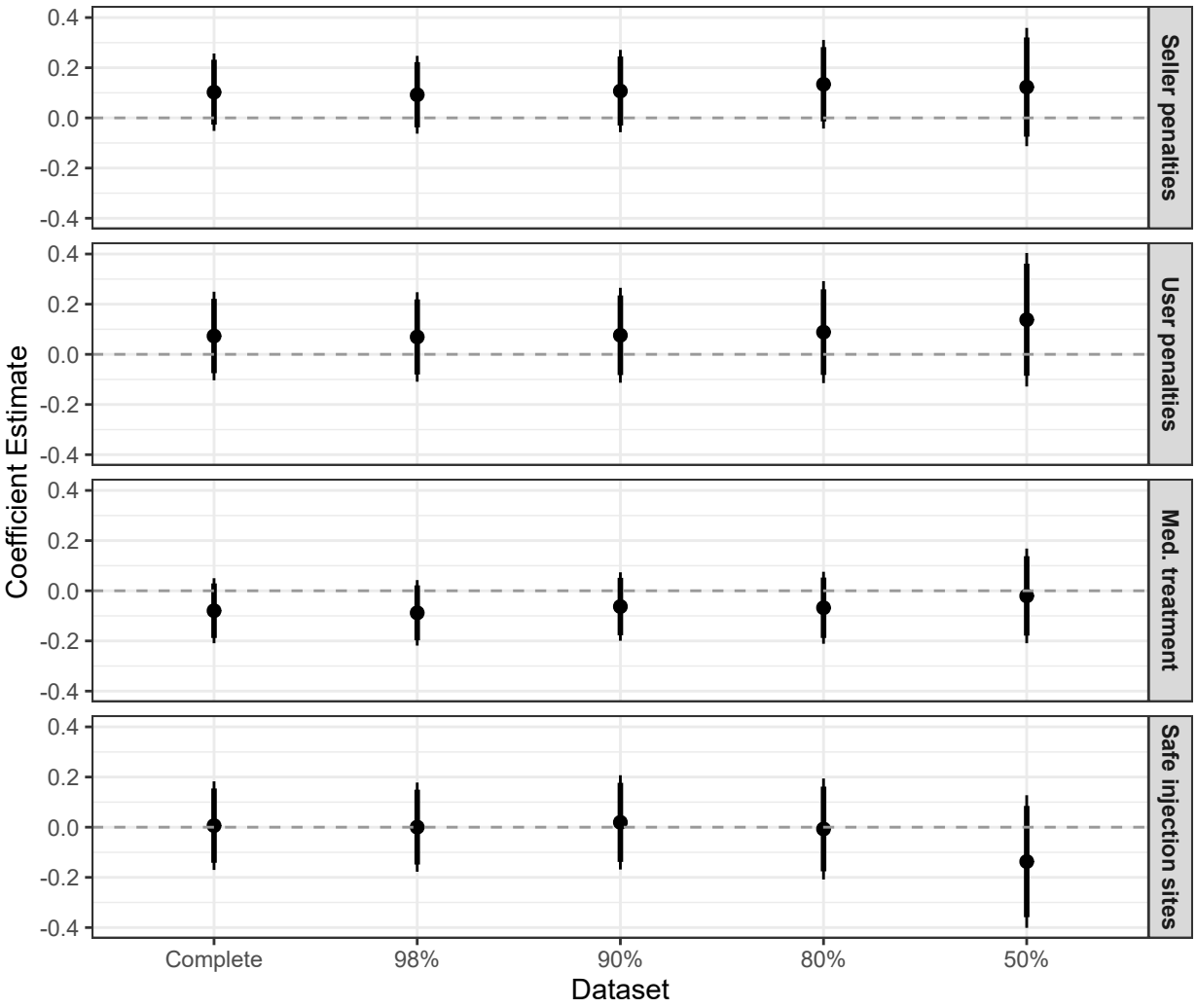

Figure A7: Drug Companies Treatment Effects by Duration Dataset

Note: This figure shows the relationship between the Drug Companies treatment and policy outcomes by datasets that include different proportions of the respondents by duration.