Political Frames of Public Health Crises: Evidence from the Opioid Epidemic in the US Congress

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Background. In recent years, opioid overdose deaths have increased precipitously in the United States. Little is known about whether and how political elites discuss the opioid epidemic with their constituents. This paper leverages novel data on Congressional statements to explore the conditions under which members of Congress (1) issue public statements about opioids and (2) frame the opioid crisis as a predominantly public-health or law enforcement problem.

Methods. We examined 3.8 million Congressional floor speeches and 111,000 public statements to identify (1) floor speeches about drug crises in the 97th to 114th Congresses (1981-2017) and (2) public statements about the opioid crisis in the 116th Congress (2019-2020). A dictionary-based text analysis methodology scored text along a law enforcement-public health dimension, and regression analyses examine how district-level and member-level characteristics predict variation in the frequency and public health framing of opioid statements.

Results. Moderate ideology, women, greater overdose deaths, and larger white populations are associated with significantly higher frequencies of opioid statements. Ideologically liberal and African American legislators are more likely to use public-health framing, while ideologically conservative members are more likely to use law enforcement framing and refer to national borders or foreign countries in opioid statements. Democrats/liberals more often referenced medication assisted treatment in opioid statements.

Conclusion. Both district and legislator characteristics shape whether representatives discuss the opioid crisis and whether a public health frame is used. Elite framing may shape how constituents think about addiction, medication assisted treatment, and criminal punishment.

1. INTRODUCTION

Drug overdose deaths in the US have steadily climbed, from about 15,000 in 1999 to 70,000 in 2017, amid a dynamic and multifaceted "opioid-epidemic" (Ciccarone 2019). In October 2017, President Donald Trump declared the opioid epidemic a "public health emergency" (Davis 2017) though federal budget requests have also included large new appropriations for drug enforcement (Siegel 2018). Previous research indicates that the language used to describe addiction influences clinical responses (Collins et. al 2018), public support for overdose mitigation interventions (Barry et. al 2018), and treatment-seeking behavior (Kelly et. al 2010; Kelly & Westerhoff 2010).

How politicians frame issues structures public opinion (Chong & Druckman 2007, Tesler & Zaller 2017). Political messages are amplified by local media sources, which often generously borrow – and sometimes copy verbatim – language from the press releases of their Congressional representatives (Grimmer 2013, 24). Consequently, the thousands of public statements about opioids by members of Congress are important information vectors for public attitudes and beliefs about addiction. Moreover, because the United States is a federalist system, state and local policymakers act both as cue makers for their constituents and as cue takers from national policymakers. How federal politicians frame the opioid crisis to their constituents may impact the policy responses of state, county, and municipal policymakers.

For all these reasons, the gap in existing scholarship regarding how politicians discuss the opioid epidemic is an important one (Laugesen & Patashnik 2020). We fill this gap with novel data and systematic coding of all public statements about opioids made by members of the 116th Congress (starting January 3, 2019) and by compiling all Congressional floor speeches about drugs between the 97th and 114th Congresses (Gentzkow et. al 2018). Matching statements with

member and district characteristics, we analyze factors predicting the frequency of statements about the opioid epidemic and whether members use public health or law enforcement frames.

Our results show systematic variability in whether and how politicians discuss opioids. Legislators who are political moderates, women, from districts with greater overdose mortality, and from districts with a higher proportion of white residents issue more statements about opioids. More liberal legislators and African American legislators use less law enforcement language and more public health language. Though we find evidence consistent with greater public health framing of the opioid crisis compared to previous drug crises (Kim et. al 2020; Shachar et. al 2020), substantial partisan differences remain in framing of the opioid epidemic, with about half of Republican and one quarter of Democratic members using predominantly law enforcement language.

2. METHODS

2.1 Public Statements Data

One dependent variable is the frequency of public statements about opioids by members of Congress. We obtained this measure by (1) systematically scraping Vote Smart's Public Statements database, which archives press releases, open letters, and public speeches by politicians, (2) deleting any duplicated public statements, and (3) identifying all public statements using the keyword "opioid" made by members of Congress during the first year of the 116th Congress (January 3rd, 2019 - January 3rd, 2020). The data included the date, title, member name, and text of 2,247 distinct public statements about opioids from 430 members (95 Senators and 335 Representatives). We also obtained the total number of public statements issued by each legislator during this period (111,014 public statements across all legislators) and used a member's total statement count to normalize the count of opioid statements (more details below).

This enables examination of how members prioritize the opioid crisis, rather than a general tendency to release more statements.

2.2 Congressional Record Speech Data

We also compiled drug-related Congressional floor statements made during the 97th through 114th Congresses (Gentzkow et. al 2018) to supplement our more in-depth analyses of the 116th Congress. By string matching the speech texts for general drug types, we extracted 7,339 speeches from the original 3.8 million speeches referencing cocaine, methamphetamine, and opioids. These three drug types were selected because of their responsibility for the largest shares of substance use deaths and their prominence in recent decades of drug politics. As with public statements, we used the member's total number of floor speeches to normalize the data.

2.3 Other Covariates

2017 County-level data on overdose deaths were obtained from the National Center for Health Statistics. These small-area estimates of overdose mortality were joined to congressional districts; each district's rate is the population-weighted average of the overdose mortality rates of all the counties comprising the district in the Congressional Districts and Counties relationship file provided by the US Census Bureau. For analyses of earlier Congresses, we collected state-level drug deaths from CDC Wonder (deaths classified MCD: Drug-induced causes) and member gender, age, and race over 1999-2016.

State and congressional district median household income, college education, and racial composition data were obtained from the American Community Survey 2014-2018 5-year estimates. Race, gender, partisanship, and age of legislators were obtained from the public domain "congress-legislators" repository hosted on GitHub.

To measure the ideology of legislators, we used a common index from political science called Nominate scores (Poole & Rosenthal 1985) which scale members according to their votes. The first dimension of Nominate – essentially, a latent factor which best explains variation in voting – approximately measures ideological variation on a liberal-conservative spectrum, with very conservative members scoring around +1, very liberal members scoring around -1, and more moderate members scoring closer to zero.

2.4 Text Analyses

To analyze the content of public statements, we identified sentences which referenced common opioid terms (CDC 2020) or opioid drug names (Thomas 2019), a combined list of 15 words (see supplementary materials). We divided each statement into sentences using sentence punctuation, identifying 10,638 drug-related sentences.

To categorize text, we derived two competing frames of how addiction is described – a punitive frame and a public health frame – using both deductive and inductive approaches. Deductively, previous literature indicates that discourse around addiction often has two broad camps implying differing etiologies and treatments: 1) Addiction is a deviant behavior and moral failing requiring criminal sanction, incarceration, and a "War on Drugs" and 2) Addiction is a disease, requiring a public health response incorporating social determinants, evidence-based treatment, recovery, and harm reduction (Saloner et al. 2018; Dasgupta et. al 2018). Inductively, we reviewed several hundred samples of press releases about opioids in our data and found broad consistency with these two frames.

Computationally, we used a dictionary-based approach to classify language as law enforcement or public health oriented. A dictionary-based approach enables automated content analysis when topic dimensionality for text data is known a priori (Laver et al 2003; Grimmer &

Stewart 2013). Dictionary-based content analysis requires the construction of a coded corpus of terms (a dictionary) from the body of text being analyzed, incorporating subject-area knowledge. For instance, the terms "China" and "Mexico" in the context of the opioid epidemic are typically used within a law enforcement/national security frame; for example, "illicit fentanyl is flowing across our borders from China and Mexico." We constructed a corpus (dictionary) of frequent words in public statements about opioids and hand classified them as punitive (coded -1), public health (coded +1), or neutral (coded 0; further details are provided in the Appendix). Using this dictionary of coded words, we scored each sentence by averaging the quantities of all their informative words (those coded as –1 or +1).

The resulting score represents a quantitative measure of the relative use of a public health versus law enforcement frame in a sentence. A sentence using predominantly public health language has a score closer to +1. For example, the following quote from Rep. Nancy Pelosi (D-CA-12) scored +1 (with informative words underlined): "With these huge savings, we are also investing in new research for new treatments and cures and fighting the opioid epidemic, as the gentleman from New York (Mr. Rose) pointed out, and in the community health centers that deliver quality healthcare to so many Americans." Conversely, law enforcement-oriented sentences have scores closer to -1. The following quote from Rep. John Moolenaar (R-MI-4) scored -1: "I voted for tonight's legislation because it increases funding for border security, which will help prevent the flow of illegal immigration, human trafficking, and deadly drugs, including opioids and fentanyl, at our southern border." Sentences using a mix of law enforcement and public health language would have a score closer to 0; the following statement by Rep. Abigail Spanberger (D-VA-7) had a score of +0.2 (with 2 law enforcement words – "traffickers" and "illicit" – and 3 health words): "By deterring drug traffickers and those who

produce illicit drugs, we are taking another step in a multi-faceted approach in the fight against fentanyl—and I'll keep working with my colleagues to prevent overdoses, increase access to wraparound treatment, and pave more pathways to long-term recovery." A sentence can receive a 0 score either because it included an equal number of public health and law enforcement terms ("true zeros") or because it included no informative terms in our dictionary ("uninformative zeros"). We omit uninformative zeros because they do not inform a member's tendency to use law enforcement or public health language. Finally, we scored each member of Congress who made at least one informative public statement about opioids by averaging the scores of their sentences about opioids.

2.5 Statistical Analyses

In frequency analyses, main analyses use negative binomial count regressions – including the total number of public statements made by the member as an exposure variable – to examine the number of public statements about opioids as a function of member (ideology, age, gender, race) and district-level (overdose, percent white) characteristics (robustness tests using an ordinary least squares linear regression yield substantively similar results and are shown in Appendix Table A1). Robustness analyses examine the share of congressional floor speeches about opioids from the years 1999 to 2016 with a multilevel regression model incorporating random intercepts for members and congressional sessions (Table A2).

For analyses of content of speeches, we use ordinary least squares regression to examine whether lawmakers use predominantly law enforcement or public health frames of opioids, regressing the member-level text scores on member ideology, age, race, and district overdose and percent white. Supplementary analyses examine the determinants of references to medications for opioid use disorder and foreign countries in opioid statements.

3. RESULTS

[Figure 1 Here]

In 2019, members of Congress issued 2,247 public statements about opioids. The average number of opioid public statements was 4.2, comprising 2.1% of all public statements. However, this number varied considerably between members. On the low end, 106 members of Congress who issued at least one public statement did not issue a single public statement about opioids. In contrast, 21% of all public statements by David Trone, a freshmen Democrat from Maryland, were about opioids (Trone's nephew died from an opioid overdose and his campaign for Congress focused on the opioid epidemic).

Figure 1 illustrates the geographic distribution of key variables at the Congressional District level: the share of public statements about opioids by Congressional representatives (top left), Congressional district-level overdose rates (top right), ideological leanings of members (bottom left), and frames of the opioid crisis. The maps in the top row indicate spatial overlap in regions of elevated overdose mortality and larger shares of opioid related statements (darker purple), while the bottom row suggests a relationship between member ideology and frames of the opioid epidemic. Other bivariate relationships between member and district characteristics and the frequency and framing of opioid speeches are shown in Appendix Figures A1 and A2.

3.1 Frequency Analyses

[Table 1 Here]

To systematically examine predictors of opioid public statements, we used multivariate negative binomial regression analyses (Table 1). Model 1 includes as predictors member ideology and ideology squared, a measure of ideological extremism. Model 2 adds member demographic and district characteristic, while Model 3 adds district characteristics. Models 4 and

5 disaggregate by party, estimating the same parameters as Model 3 but subset to Democrats and Republicans, respectively.

Across models, more ideologically extreme members of Congress were, regardless of party, less likely to discuss opioids than more moderate members (Table 1, Columns 3-4). Among Democrats, more conservative members issued more statements about opioids ($p < 0.01$), while more conservative Republicans issued fewer statements about opioids ($p < 0.01$).

Using the parameters from Model 3, the average adjusted prediction for the number of opioid public statements was 1.46 for the most liberal member of Congress in the data (Nominate Score of -0.767), 1.77 statements for the most conservative member (Nominate of 0.913), and 5.3 statements for the ideologically median member (-0.163). The moderate vs liberal difference (99% CI: 2.31, 5.37) and moderate vs conservative difference (99% CI: -1.73, 5.32) are each statistically significant ($p < 0.01$), while the liberal vs conservative difference is not statistically significant ($p = 0.31$; 99% CI: -0.48, 1.09). Net of ideology and other characteristics, men in Congress had significantly fewer public statements about opioids than comparable women ($p < 0.05$), with average predicted counts of 5.2 for women vs 3.1 for men ($p < 0.01$; 99% CI: 0.19, 2.4).

District-level factors also explained frequency of opioid statements. Members representing congressional districts with more overdose deaths issued more statements about opioids; an increase of ten overdose deaths per 100,000 is associated with about a 35% increase in opioid statements, while an increase of ten percentage points in the white population is associated with a 15% increase in opioid statements. District income and college education did not have a statistically significant association net of other characteristics. Supplementary analyses explore a member's opioid speeches as a share of total floor speeches during the 1999

to 2016 period. We find similar results, including a positive and statistically significant relationship between drug deaths and drug-related speeches, and an association between ideological moderation and greater speech frequency (Appendix Table A2).

3.2 Content Analyses

Now we turn to the content of statements about opioids. We first explore trends in drug related congressional floor speeches. Consistent with prior scholarship (Shachar et al. 2020), we find that political speech about the opioid crisis places less emphasis on criminal punishment and more emphasis on treatment than during the crack cocaine epidemic. As Figure 2 shows, use of common law enforcement framing language such as "traffick-", "war on/against drugs", and "crime/criminal" was common during the 1980s when speeches focused on cocaine but has steadily declined. Discussion of opioids was sparse until the 114th Congress (2015-2017), when it spiked to comprise about 80% of all drug-related speeches. This coincided with increased public health language such as "recover", "treatment", and "pain". These trends are evident among both Democrats (blue) and Republican (red).

[Figure 2 Here]

We further investigate the political framing of the opioid crisis using our more comprehensive public statements data from the 116th Congress (since 2019), which allow us to systematically score members by their statements about opioids from -1 (exclusively law enforcement framing) to +1 (exclusively public health framing). Only members who issued at least one public statement about opioids can be scored according to whether their statements used public health or law enforcement language, leaving 405 members of Congress in these analyses. The average framing score among these members was 0.29 (and the median member's score about 0.57), indicating that most public statements about the opioid crisis used

predominantly public health language. However, ideology structures whether members discuss the crisis using law enforcement versus public health language, with higher Nominate scores (indicating greater ideological conservatism) associated with reduced public health language (r = -0.25; $p < 0.001$). Because ideology and partisanship are highly correlated, this results in substantial clustering by partisanship; about 75% of Democrats tended to use mostly public health language (greater than 0 on the overall score), while about 50% of Republicans did so (Appendix Figure A1).

[Table 2 Here]

Regression models examined the determinants of law enforcement versus public health issue framing (Table 2). The sole consistent predictors of issue framing were member's ideology and whether the legislator is African American ($p < 0.05$). More conservative legislators were more likely to adopt a law-enforcement, rather than public health frame, while African American legislators were more likely to use a public health frame. Neither the district's overdose mortality rate, income, college education, or percentage of white constituents consistently impacted the content of speech about opioids, though, subset to Democrats, there appears to be suggestive relationships ($p < 0.1$) between intensity of the opioid epidemic and public health language, and between older Democratic members and law enforcement language ($p < 0.1$). These same patterns hold among all opioid public statements, regardless of when the statement was issued, by the incumbent members of the 116th Congress (Appendix Table A3). In other models not shown, we tested whether ideological extremism, a medical background, membership in the congressional public health caucus, and membership in the congressional law enforcement caucus influenced speech; none had an impact net of ideology.

In supplementary analyses, we examined predictors of using the phrases "medication assisted treatment" or any of the FDA-approved medications for treating opioid addiction, including brand names (e.g. "Suboxone") and constituent drugs (e.g. "Buprenorphine") as a share of sentences about opioids (FDA 2020). ("Medication for opioid use disorder" – the clinical standard phrase for describing medications treating opioid addiction – is mentioned just twice across all press releases, and each of the two instances is used along with the phrase medication assisted treatment.) While 89 of 283 Democratic members (31%) mentioned these phrases or a specific medication at least once, just 31 of 253 Republicans (12%) did so ($\chi^2_{(1)} = 28.3$; $p < 0.01$). As Appendix Table A4 shows, the only consistent predictor of using medication-related language was ideology, with more conservative legislators tending to issue fewer statements with such references ($p < 0.01$). We also examined predictors of sentences about opioids containing "National Security" language – typically the names of foreign countries (Mexico and China), "traffickers" and related words, and references to national borders. 90 Democrats (32%) made at least one reference, compared to 113 Republicans (45%) ($\chi^2_{(1)} = 9.4$; $p < 0.05$). As Appendix Table A5 shows, more conservative legislators were more likely to make national security references, while African American legislators were less likely ($p < 0.05$). Among Democrats, older legislators were more likely to make such references ($p < 0.05$).

4. DISCUSSION

The ideological orientation of members of Congress structures both the frequency and manner of discussion about the opioid epidemic. More moderate members, regardless of party, placed greater emphasis on this issue. That moderates are more likely to emphasize the opioid crisis builds on previous research highlighting how Congressional moderates differ from extremists in their press release content; for example, moderates are less likely to describe their

voting behavior and more likely to describe credit-claiming activities than extremists (Taylor 2017). Electoral incentives may galvanize moderates to emphasize the opioid crisis, which, while not without partisan cleavages, yields much greater support for action across the political spectrum. Emphasizing less ideologically controversial issues can be a way to build nonpartisan support by demonstrating concern for constituents and competency on issues without taking strong stances on issues that may alienate some voters – especially in electorally competitive districts (Grimmer et al 2014, 22-24).

Moreover, ideological orientation affected *how* members discuss the opioid epidemic. More conservative members tended to discuss opioids with greater use of law enforcement language, while more liberal members tended to use more public health language. Unlike with frequency, the relationship between ideology and content of speeches is monotonic; that is, more liberal Democrats use more public health language than moderate Democrats, and more conservative Republicans use more punitive language than moderate Republicans. This finding illustrates that while *most* legislators use predominantly public health language to discuss the opioid epidemic (Bowen & Irish 2017), a substantial minority – especially politically conservative members – use mostly punitive language. Furthermore, it is consistent with research demonstrating that political liberals are more likely than conservatives to view addiction as a disease (Lytle et al 2019) and research documenting greater support for building addiction treatment clinics among Democrats than Republicans (de Benedictis-Kessner & Hankinson 2018).

Descriptive representation mattered as well, with women issuing a larger share of statements about the opioid epidemic and African Americans less likely to use law enforcement language. That congresswomen were substantially more likely to discuss opioids in their public

statements may reflect a more general tendency to emphasize health care; congresswomen also tend to introduce more health care legislation (Volden et. al 2018). That African American legislators are less likely to use law enforcement language is consistent with skepticism towards punitive approaches to drug enforcement which have historically disproportionately impacted African Americans (Moore LD & Elkavich 2008), though some research suggests African American politicians advocated for certain punitive drug policies (Fortner 2015). However, it may also be that even controlling for voting-based Nominate scores, African American legislators tend to be more ideologically liberal and so less likely to use a punitive frame.

Lastly, district characteristics were associated with frequency, but not content, of speeches about opioids. Members from districts with more overdose deaths tended to issue a larger share of statements about opioids. This makes sense considering the electoral incentives of members of Congress, who can earn the trust of their constituents by appealing to their concerns (Fenno 1978). District demographics incentivize legislators to talk more frequently about issues of interest to a larger share of constituents (Grimmer et al 2014, 22-24).

4.1 Conclusion

Who holds elected office and their district characteristics both structure how politicians discuss the opioid epidemic. Legislators prioritized the drug epidemic in places that were more heavily impacted by it, consistent with a responsiveness to local issues. But the ideology of members mattered too, with more ideologically extreme politicians placing less emphasis on the overdose epidemic, and ideological conservatism predicted greater usage of law enforcement frames. Member demographics also mattered; congresswomen issued a larger share of statements about opioids, while African American legislators were less likely to use law enforcement language.

Though our results show greater emphasis on public health during the opioid crisis compared to previous drug crises, they illustrate that substantial heterogeneity remains in how political elites talk about the opioid crisis, with a large minority of legislators – a quarter of Democratic members of Congress and about half of Republicans – tending to use predominantly law enforcement language. This heterogeneity is consistent with the hybrid punitive and public health policy response and media coverage of the opioid epidemic (Mcginty et. al, 2015; Kennedy-Hendricks et. al, 2019).

Our aggregate indicators using natural language processing techniques trade off depth of analysis for breadth of analyzing large amounts of text expeditiously (Chowkwanyun 2019). This leaves open opportunities for future scholarship to "deep dive" into specific press releases and more granular differences in messaging than the aggregate measures of law enforcement and public health language that we use. Future work might also explore *intraparty* variation in how politicians discuss the opioid epidemic, as well as the discourse by politicians at other levels of government, such as by mayors and governors, or discourse about addiction on social media (Walter et al 2020). Finally, future work might explore other public health crises.

Since the 1970s, Congress has become more ideologically polarized as the ranks of moderate members have shrunk, and the gaps between political parties has widened (McCarty et al 2016). Consequently, the negative relationship between ideological extremism and prioritizing the opioid crisis that we document is important and worrisome, because it suggests that public health issues may have become displaced by hot-button issues that appeal to ideologically extreme politicians, and politicians who are uninterested in public health issues are less likely to develop expertise in these areas. Hence, increasing political polarization is to the detriment of well-formed public health policy and may undermine responses to public health crises.

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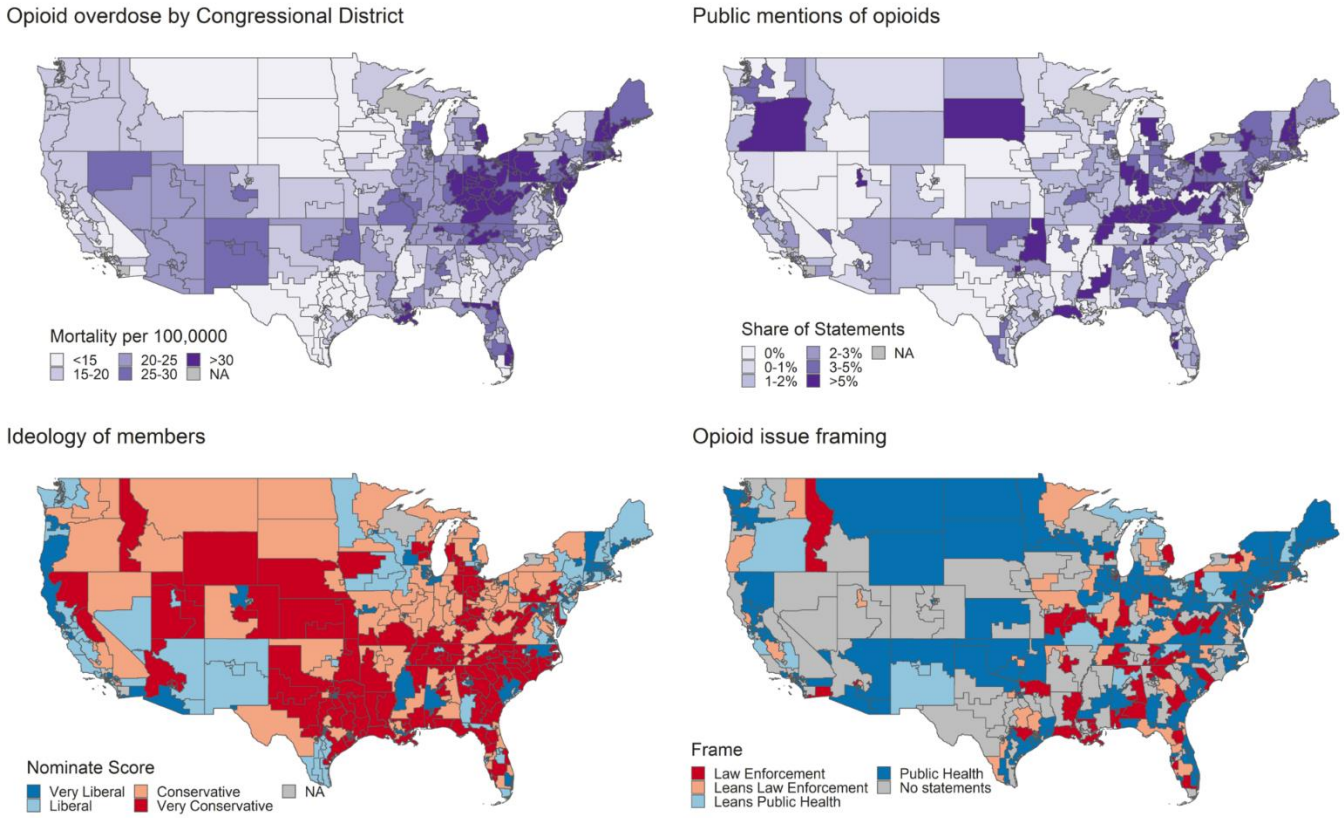
FIGURES AND TABLES

FIGURE 1: Geographic representation of key variables of interest



These maps show four key variables at the House of Representatives Congressional District level, indicating broad spatial overlap between overdose mortality and public statements about opioids (top row) and liberal-conservative ideology and law enforcement/public health framing of opioids (bottom row). Data are missing for six districts because of turnover (resignation or death of members during the period of study) and for 124 districts where a member either did not issue any opioid-related statements (103 members) or, conditional on issuing an opioid-related statement, did not issue any statements which included informative language in the law-enforcement public health dictionary of terms (21 members; each with exactly 1 or 2 opioid statements). Nominate scores are divided approximately into quartiles, with those scoring less than -0.3865 shaded "very liberal", between 0 and -0.3865 "liberal", between 0 and 0.49 "conservative", and greater than 0.49 "very conservative." Framing scores are coded as follows: between -1 and -0.5 "Law Enforcement" (55 members of the House of Representatives), between -0.5 and 0 "Leans Law Enforcement" (40 members), between 0 and 0.5 "Leans Public Health" (32 members), and between 0.5 and 1 "Public Health" (182 members).

TABLE 1: Determinants of Public Statements about Opioids

Dependent Variable: Count of public statements about opioids

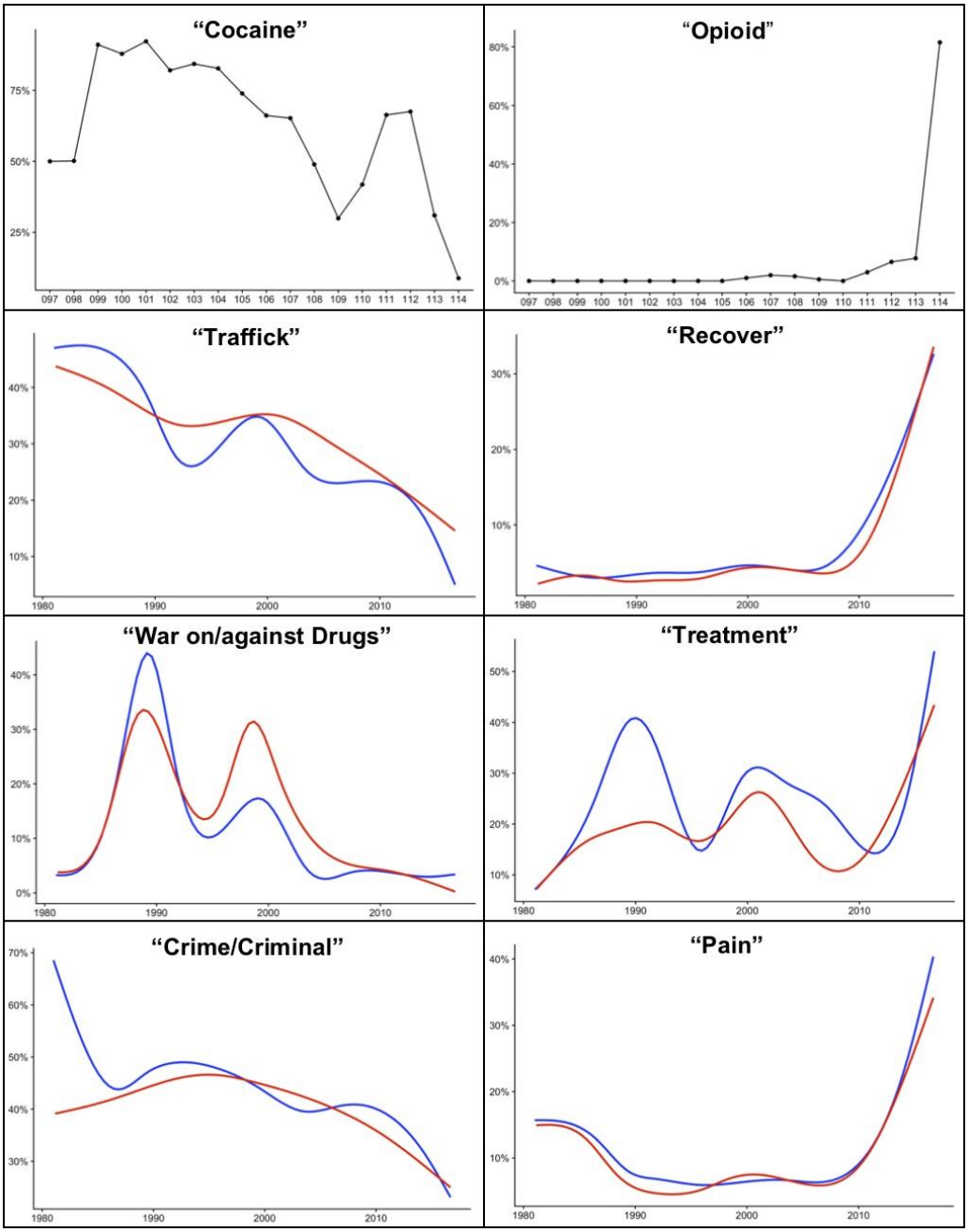
	All	All	All	Dems	Repubs
Ideology	1.73***	1.78***	1.48***	3.73***	0.15***
	(0.20)	(0.24)	(0.18)	(1.84)	(0.07)
Ideology Sq.	0.085***	0.090***	0.15***		
	(0.03)	(0.04)	(0.05)		
Men		0.80*	0.82**	0.83	0.86
		(0.09)	(0.08)	(0.10)	(0.12)
Age		1.00	1.00	1.00	1.01
		(0.00)	(0.00)	(0.01)	(0.01)
Black		0.79	1.04	1.23	
		(0.13)	(0.17)	(0.19)	
District, Overdose			1.35***	1.40***	1.31***
			(0.05)	(0.06)	(0.07)
District, White %			1.14***	1.19***	1.02
			(0.04)	(0.05)	(0.08)
District Income			1.04	1.15***	0.84**
			(0.04)	(0.06)	(0.07)
District, College %			0.94	0.83**	1.18
			(0.07)	(0.08)	(0.14)
Overdispersion	0.63***	0.62***	0.46***	0.40***	0.49***
	(0.07)	(0.07)	(0.07)	(0.11)	(0.08)
Observations	529	529	528	278	250
Pseudo R^2	0.021	0.024	0.060	0.069	0.056
BIC	2457.1	2469.0	2401.6	1348.0	1076.0

Exponentiated coefficients; Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

This table reports the incident rate ratios and standard errors of negative binomial regression analyses examining the frequency of opioid public statements in the 116th Congress. The dependent variable is the number of public statements referencing the opioid epidemic. All models include an exposure term equal to the total number of public statements. Model 1 includes only the explanatory variables of ideology and ideology squared. Model 2 adds parameters for member characteristics. Model 3 adds district characteristics. Models four and five show, respectively, models subset only to Democrats and Republicans.

Figure 2: Relative Use of Law Enforcement and Public Health Terms in Congressional Floor Speeches on Drugs



Each frame shows the percent of Congressional Record drug speeches (Y) containing the indicated string over time. The black points plot this relative frequency in each individual Congressional Session (X). The blue and red curves, Democrats and Republicans respectively, use a GAM smoothing function to model this relative frequency over time (X = Year). **—Democrat, —Republican**

TABLE 2: Determinants of Public Health / Punitive Framing

Framing: Positive = public health [-1, 1]

	All	All	Dems	Repubs
Ideology	-0.41***	-0.43***	-0.67*	-0.47
	(0.08)	(0.10)	(0.38)	(0.38)
Black		0.37***	0.31**	
		(0.13)	(0.13)	
Age		-0.038	-0.074*	-0.011
		(0.03)	(0.04)	(0.06)
Men		0.11	0.16*	-0.037
		(0.09)	(0.09)	(0.18)
District, Overdose		0.38	0.71*	-0.15
		(0.33)	(0.42)	(0.56)
District Income		-0.005	-0.045	0.087
		(0.04)	(0.04)	(0.08)
District, College %		0.002	0.11	-0.25*
		(0.07)	(0.08)	(0.13)
District, White %		0.37	-0.039	0.85
		(0.44)	(0.48)	(1.08)
Constant	0.30***	0.22	-0.002	0.52
	(0.03)	(0.18)	(0.22)	(0.42)
Observations	405	404	217	187
Adjusted R^2	0.062	0.068	0.056	0.000

Robust standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

This Table shows the coefficients of OLS regression analyses examining the public health versus law enforcement framing of public statements about opioids made during the 116th Congress. The dependent variable is an average index of the content of public statements about opioids, ranging from -1 (if the member used exclusively law enforcement language) to +1 (if the member used exclusively public health language). Model 1 includes only the explanatory variables of ideology. Model 2 adds parameters for member and district characteristics. Models 3 and 4 show, respectively, models subset only to Democrats and Republicans.

APPENDIX TABLES AND FIGURES

Table A1: Determinants of Public Statements about Opioids (OLS)

Dependent Variable: Share of public statements about opioids (%)

	All	All	All	Dems	Repubs
Ideology	1.17***	1.33***	0.85***	2.40**	-3.96***
	(0.25)	(0.33)	(0.28)	(0.98)	(1.19)
Ideology Sq.	-5.28***	-5.28***	-4.20***		
	(0.80)	(0.83)	(0.72)		
Men		-0.56*	-0.66**	-0.40	-1.13*
		(0.31)	(0.27)	(0.27)	(0.68)
Age		0.013	0.015	0.002	0.035**
		(0.01)	(0.01)	(0.01)	(0.02)
Black		-0.32	0.12	0.47	
		(0.28)	(0.31)	(0.33)	
District, Overdose			0.82***	0.75***	0.91***
			(0.14)	(0.12)	(0.24)
District, White %			0.25***	0.31***	0.12
			(0.07)	(0.08)	(0.17)
District Income			0.058	0.28***	-0.50***
			(0.08)	(0.09)	(0.18)
District, College %			-0.11	-0.34**	0.37
			(0.14)	(0.15)	(0.29)
Constant	3.19***	2.89***	-1.12	-1.59	2.21
	(0.24)	(0.60)	(0.96)	(1.13)	(2.02)
Observations	529	529	528	278	250
Adjusted R^2	0.065	0.071	0.201	0.186	0.231

Robust standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

This Table shows the coefficients of OLS regression analyses examining the frequency of public statements among members of the 116th Congress. The dependent variable is the percentage of public statements referencing the opioid epidemic. Model 1 includes only the explanatory variables of ideology and ideology squared. Model 2 adds parameters for member characteristics. Model 3 adds district characteristics. Models four and five show, respectively, models subset only to Democrats and Republicans.

TABLE A2: Predictors of drug relates speeches in the Congressional Record: Multilevel Model Coefficients (1999-2016)

	Drug Related Speeches
Intercept	0.18
	(0.13)
Overdose (state)*	0.06
	(0.02)
Men	-0.04
	(0.05)
Ideology	0.05
	(0.04)
Ideology Squared*	-0.22
	(0.10)
Var(Member)	0.36
Var(Congress)	0.23
Observations	4841
Log-Likelihood	-6568.2
	*p<0.05

This table shows the outputs of a multilevel random effects model explaining the share of floor speeches in the US congresses mentioning drugs in the years 1999-2016. The model includes crossed random effects with random intercepts for member of congress and for sessions of Congress. As in the main analyses, overdose rates (here, at the state-level and standardized as z-scores) predict speeches about drugs, while ideological extremism is associated with reduced speeches about drugs. Men were less likely to speak about drugs, though the difference is not statistically distinguishable from zero.

TABLE A3: Determinants of Public Health / Punitive Framing (All Years)

	Framing: Positive = public health			
	All	All	Dems	Repubs
	(1)	(2)	(3)	(4)
Nominate 1	-0.31*	-0.33*	-0.58*	-0.80*
	(0.05)	(0.06)	(0.17)	(0.28)
Age		-0.002	-0.02	0.01
		(0.02)	(0.02)	(0.04)
Black		0.14*	0.07	
		(0.05)	(0.05)	
Male		0.02	-0.01	0.13
		(0.04)	(0.04)	(0.13)
Income		0.01	0.003	0.003
		(0.02)	(0.02)	(0.04)
College		-0.01	0.03	-0.07
		(0.03)	(0.02)	(0.08)
Overdose		-0.01	-0.004	-0.02
		(0.02)	(0.02)	(0.03)
Percent White		0.03*	0.01	0.05
		(0.01)	(0.02)	(0.04)
Observations	498	497	274	223
Adjusted R^2	0.10	0.10	0.06	0.04
Note:				*p<0.05

This Table shows the coefficients of OLS regression analyses examining the public health versus law enforcement framing of public statements about opioids made by members of the 116th Congress across all years (i.e., it includes statements made by incumbent members of the 116th Congress in previous Congresses). The dependent variable is an average index of the content of public statements about opioids, ranging from -1 (if the member used exclusively law enforcement language) to +1 (if the member used exclusively public health language). Model 1 includes only the explanatory variables of ideology. Model 2 adds parameters for member and district characteristics. Models 3 and 4 show, respectively, models subset only to Democrats and Republicans.

TABLE A4: Predictors of referencing opioid addiction medication treatments

	Use of opioid medication language [0, 1]			
	All	All	Dems	Repubs
	(1)	(2)	(3)	(4)
Nominate 1	-0.04*	-0.04*	-0.05	-0.02
	(0.01)	(0.01)	(0.05)	(0.03)
Age		0.01	0.01	0.001
		(0.005)	(0.01)	(0.01)
Black		0.02	0.01	
		(0.02)	(0.02)	
Men		0.02	0.03*	-0.01
		(0.01)	(0.01)	(0.01)
Income		-0.001	-0.01	0.02
		(0.01)	(0.01)	(0.02)
College		0.005	0.02	-0.04
		(0.01)	(0.01)	(0.02)
Overdose		0.01	0.01	0.01
		(0.004)	(0.01)	(0.004)
Percent White		0.002	0.003	-0.01
		(0.004)	(0.004)	(0.01)
Observations	418	417	225	192
Adjusted R^2	0.03	0.04	0.03	0.02
Note:				*p<0.05

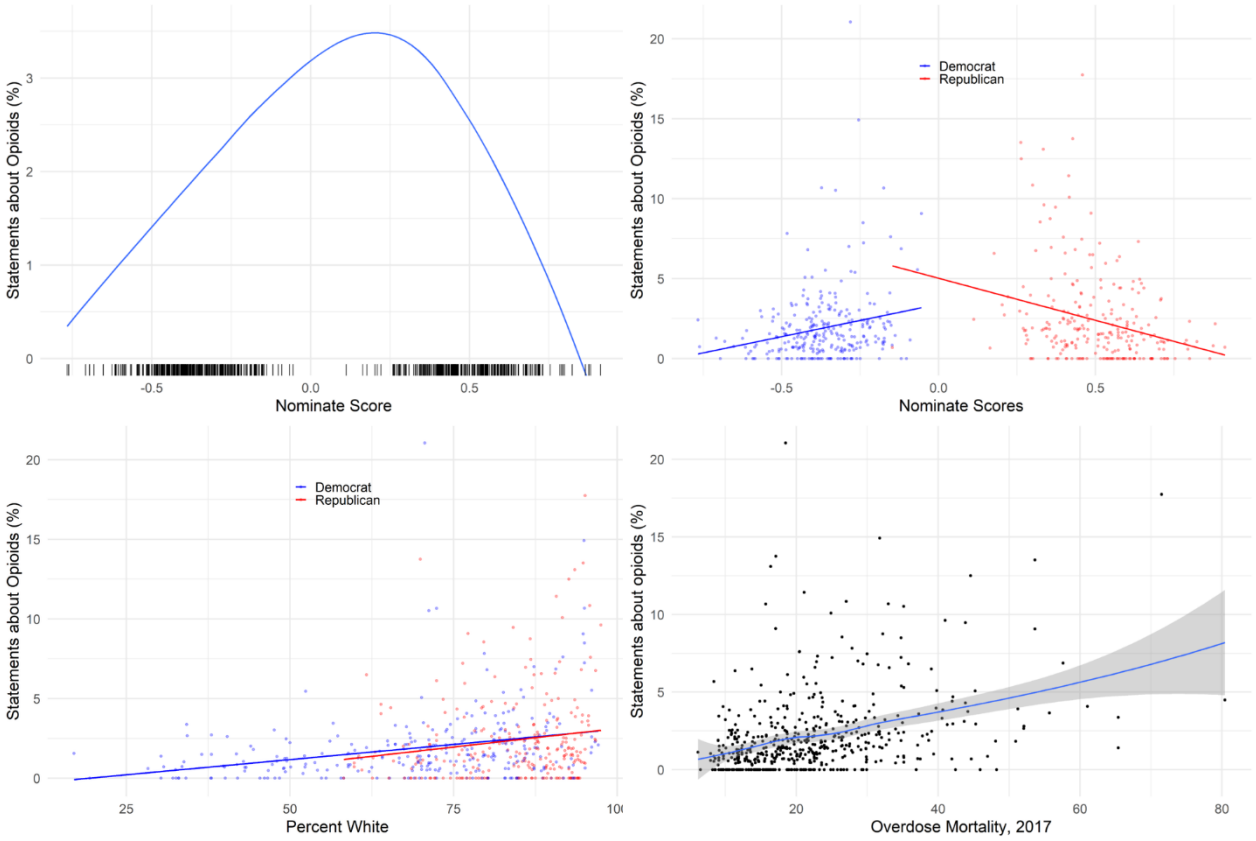
Like Table 2, this Table shows the coefficients of OLS regression analyses examining the language of public statements about opioids made by members of the 116th Congress. However, the dependent variable is proportion of opioid-related sentences referencing medication for opioid use disorder / medication assisted treatment. Specifically, terms used in these analyses were the following: medication-assisted treatment, medication assisted treatment, medication assisted, assisted treatment, medication-assisted, methadone, buprenorphine, naltrexone, vivitrol, bunavail, cassipa, probuphine, sublocade, suboxone, subutex, zubsolv, dolophine, methadose, narcan, naloxone, evzio.

TABLE A5: Predictors of "National Security" oriented language

	Use of national security language [0, 1]			
	All	All	Dems	Repubs
	(1)	(2)	(3)	(4)
Nominate 1	0.12*	0.12*	0.25*	0.31*
	(0.03)	(0.04)	(0.12)	(0.14)
Age		0.02	0.03*	0.02
		(0.01)	(0.01)	(0.03)
Black		-0.11*	-0.10*	
		(0.03)	(0.03)	
Men		-0.003	-0.02	0.05
		(0.03)	(0.03)	(0.05)
Income		0.01	0.01	-0.01
		(0.01)	(0.01)	(0.03)
College		0.001	-0.02	0.04
		(0.03)	(0.03)	(0.05)
Overdose		-0.003	-0.01	0.01
		(0.01)	(0.01)	(0.02)
Percent White		-0.01	-0.0004	-0.01
		(0.01)	(0.01)	(0.02)
Observations	418	417	225	192
Adjusted R^2	0.04	0.04	0.04	0.003
Note:				*p<0.05

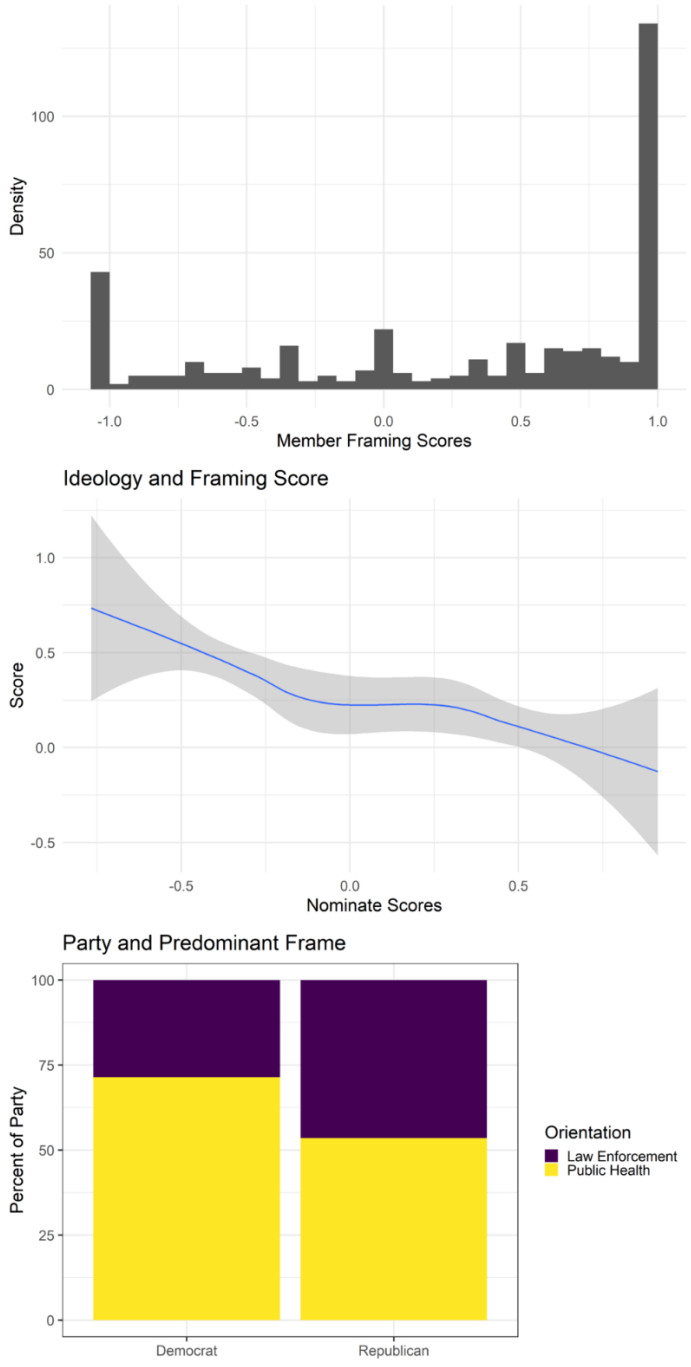
Like Table 2, this Table shows the coefficients of OLS regression analyses examining the language of public statements about opioids made by members of the 116th Congress. However, the dependent variable is the proportion of opioid-related sentences referencing national security language. Specifically, terms used in these analyses were the following: Chinese government, foreign opioid, China, sanctions, traffickers, Mexico, trafficking, Chinese, flow, border, security, intelligence, countries, China's, borders, international, multilateral, trade, customs, diplomatic.

Appendix Figure A1: Determinants of Statements about Opioids



This panel of figures illustrate determinants of public statements about opioids in the 116th Congress. In the top left plot, the blue curve is a smoothed loess fit between members' nominate scores (a measure of ideology on a liberal-conservative spectrum) and the percentage of statements about opioids. The dashes on the x-axis indicate the distribution of nominate scores. The figure shows that the share of statements about opioids is highest among ideological moderates, those with nominate scores close to zero. The top right panel shows linear fits between nominate scores and the share of statements about opioids, fit separately for Democrats (in blue) and Republicans (red). For Democrats, who on average have nominate scores below zero, increases in nominate scores (indicating more conservative voting) are associated with more statements about opioids, while among Republicans, whose average nominate score is above zero, the relationship between more conservative voting and statements about opioids is negative. The bottom left figure shows the positive bivariate relationship between a district's overdose mortality in 2017 and the share of member's statements about opioids. The bottom right panel shows linear fits between the percentage of whites in the district and the share of statements about opioids, fit separately for Democrats (in blue) and Republicans (red); both are increasing.

Appendix Figure A2: Distribution of Member Scores on Public Health/Punitive Dimension



The top figure is a histogram of the scores of members statements about opioids, where -1 corresponds to only law enforcement language and +1 corresponds to only public health language. The middle figure shows the bivariate negative relationship between political conservatism and public health language. The bottom plot shows the distribution, by political party, of a binarized score. About 75% of Republicans used mostly law enforcement language, while just 25% of Democrats did so.

METHODS APPENDIX

Public Statements

To compare the relative frequency of opioid-related speech between members, we also obtained the date, title, and member name associated with all Congressional public statements from Vote Smart. A total of 809,634 public statements were scraped from the database. Due to inconsistencies in Vote Smart naming conventions, members were matched manually to their respective sets of Congressional member IDs.

When re-organizing the text data to the sentence level, periods were removed from acronyms, common abbreviations, and decimals before splitting. 10 members who each issued one public statement about opioids were dropped during this processing step because (in two cases) the members only explicitly mentioned opioids in the title rather than the text or (in the remaining 8) their only public statements about opioids came from one co-signed open letter document for which text was not machine readable. Due to the format of some statements and scraping errors, limited additional cleaning was required, which included splitting by bullet points [·] and other heuristics derived from investigating strings that were outliers in length. After splitting, sentences were filtered for inclusion if they matched a list of common strings used when discussing opioids derived from the CDC (2020) and Scot Thomas at the American Addiction Centers (2019):

"heroin|opioid|opiate|fentanyl|naloxone|narcan|synthetic|oxycodone|hydrocodone|morphine|codeine|methadone|meperidine|buprenorphine|hydromorphone".

Congressional Record

Congressional speeches from the 97th through 114th Congresses were scraped and processed by Gentzkow et. al 2018 from the daily edition of the Congressional Record. The 3,866,184 speeches parsed for the time period were downloaded from the Social Science Data

Collection at Stanford. Speeches were retained for analyses if they contained a string match for at least one of a list of general drug types: “opioid|opiate| meth |methamphetamine|cocaine|heroin |fentanyl”.

The drug speeches dataset included 7,339 speeches from 2,316 unique speaker IDs (distinct member-session combination), which segregated speeches by both member and year. 1082 of the speeches were not attributed by Gentzkow et. al 2018 to a member of Congress, either originating from nonmember speakers and clerks or processing errors. Matching of speaker IDs to sets of Congressional member IDs by first name, last name, and member state was primarily automated. A number of speaker IDs were assigned to members belonging to a father-son pair that were both active in Congress at some point during the period of interest and had duplicate first name, last name, member state identities, and these speaker IDs were matched to Congressional member IDs manually.

Because nearly all of the Congressional Record speeches about opioids appeared in the 114th Congress and because of diminishing external validity of the dictionary with increasing temporal distance from the text corpus used to create the dictionary (i.e. the Public Statements dataset), only speeches and members from the 114th Congress were scored for text analysis. 761 speeches from 217 members were included in scoring analysis, and 74 speeches were not attributed to a member.

Text Analyses

Unigrams, bigrams, and trigrams were all considered for dictionary inclusion. If a unigram, i.e. a single word, comprised at least 00.05% of the non-stop words used in the entire Public Statements sentences dataset (or at least 85 uses), then it was included in the corpus for coding. Stop words, or commonly used words unlikely to confer important information, were

removed when establishing the threshold for minimal number of uses. A minimum threshold was set due to diminishing marginal changes in sentence scoring with increasing words included in the dictionary. For this reason, the threshold of 85 uses was held constant to select bigrams and trigrams for corpus inclusion. Stop words were excluded from the unigram corpus, and bigrams and trigrams beginning or ending with a stop word were excluded from the corpus. 426 terms including 342 unigrams, 56 bigrams, and 28 trigrams were included in the corpus for dictionary coding.

Two coders each independently labeled all unigrams and bigrams based on the frame with which the term is associated: -1 (law enforcement framing), 0 (uninformative), or +1 (public health framing). Hand-coding the corpus of informative words necessarily required subjective decision-making and judgement calls. Each of two coders separately hand-coded every bigram and unigram of the corpus with consistent classifications on the first iteration of coding in 95% (378/398) of instances. Discrepant coding was reconciled by looking at samples of sentences containing words where the coders disagreed. To be as transparent as possible, our classifications for each word, or sequence of words, appear as supplementary information to this article.

Trigrams were coded using the same -1/0/+1 coding scheme; however, trigrams exceeding the frequency threshold were also evaluated by both coders for meaningfulness of the trigram. For example, “substance use disorder” should be considered one trigram unit, while “treatment and recovery” should be represented by the two unigram units “treatment” and “recovery.” If the trigram was found to confer new meaning from its unigram and bigram parts (11 of the 28 trigrams that reached frequency threshold), then it was coded for scoring.

Sentences were scored with unigrams, bigrams, and trigrams equally weighted. Because of multilevel n-gram inclusion, many dictionary terms included one another. To avoid counting

the same unigram or bigram multiple times due to inclusion in a separate bigram or trigram, n-grams were matched in order hierarchically starting from trigrams then removed from the text before matching for the next lowest n-gram level. Analyses were also executed only using the unigram dictionary, which yielded substantively and statistically similar results.

If a sentence contained no words in the dictionary (described in the text as "uninformative zeros"), they were removed. All statistical analyses were also conducted with these sentences treated, instead, as neutral statements (i.e. as 0s), yielding similar conclusions.

We considered three alternate methods for scoring language about opioids before ultimately choosing to score each sentence about opioids as equally contributing units of analysis: A) scoring each full public statement document, B) scoring the aggregated sentences about opioids for each public statement document, and C) averaging the scores of any sentences about opioids in each public statement document. Because press releases often discuss multiple topics (not just opioids), the first option (scoring all statements in a document) was rejected. Reasonable arguments could be made for options (B) and (C), but we believed averaging all sentences regardless of document affiliation minimized methodological error and maximized interpretability. We concluded that because statements vary in the degree of detail in their discussion of opioids (e.g. one press release may devote a single sentence to discussing opioids, while another press release may devote many paragraphs), treating sentences as units of analysis was the most reliable, practical procedure for characterizing a member's speech about opioids.