

Democratic and Republican physicians provide different care on politicized health issues

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Physicians frequently interact with patients about politically salient health issues, such as drug use, firearm safety, and sexual behavior. We investigate whether physicians' own political views affect their treatment decisions on these issues. We linked the records of over 20,000 primary care physicians in 29 US states to a voter registration database, obtaining the physicians' political party affiliations. We then surveyed a sample of Democratic and Republican primary care physicians. Respondents evaluated nine patient vignettes, three of which addressed especially politicized health issues (marijuana, abortion, and firearm storage). Physicians rated the seriousness of the issue presented in each vignette and their likelihood of engaging in specific management options. On the politicized health issues—and only on such issues—Democratic and Republican physicians differed substantially in their expressed concern and their recommended treatment plan. We control for physician demographics (like age, gender, and religiosity), patient population, and geography. Physician partisan bias can lead to unwarranted variation in patient care. Awareness of how a physician's political attitudes might affect patient care is important to physicians and patients alike.

primary care | physicians | partisanship | politics | health care

In 2015, the US Federal Court of Appeals upheld a Florida state law that forbids physicians from discussing firearms with patients unless doing so is directly relevant to patient care (1). Firearms are hardly the only politicized issue in clinical medicine. When primary care physicians (PCPs) conduct patient interviews, they often engage patients in conversations that touch upon a range of politically sensitive issues, including sexuality, reproduction, and drugs. Because these issues bear directly on health and well-being, they are inextricably tied to a physician's routine work.

Two important bodies of research, one from medicine and the other from the social sciences, raise the possibility that physicians' political views may influence their clinical practice. Research on clinical practice has revealed substantial variation in patient care by region and at the level of the individual provider (2). Physicians of different genders, for example, have been found to provide different care (3). Physicians have also been found to provide different care to patients based on the patients' demographic characteristics, like race and ethnicity (4). Just as with other biases, a political or ideological bias might influence medical treatment, particularly on politically salient issues.

From the social sciences, there is recent and growing evidence that, for citizens who identify strongly as partisans, political beliefs can spill over into nonpolitical domains. For instance, whether one's favored party wins an election significantly affects one's happiness (5) as well as one's consumer spending habits (6). Political ideology affects one's evaluation of potential romantic partners (7) and job candidates (8).

Patient advocates and professional organizations seem to acknowledge that doctors with different ideological orientations will provide different care. For instance, the Human Rights Campaign, the largest gay rights organization in America, recommends patients seek referrals for lesbian, gay, bisexual, and

transgender (LGBT)-friendly doctors or consult an online directory where such providers are listed (9). The American Association of Pro-Life Obstetricians and Gynecologists provides an online tool enabling patients to find prolife providers (10).

Scholarly research has also demonstrated a high level of politicization in the medical profession, with sharp differences between Democratic and Republican physicians in their evaluation of the Affordable Care Act (11) and a 350% increase in physicians contributing political donations since the early 1990s (12, 13).

Altogether, the existing evidence leads us to investigate how physicians of different political worldviews engage with patients on politically sensitive issues. We focused on PCPs, who often take a patient's social history in the context of a new patient interview. Based on information gleaned from a history, practitioners may provide verbal counsel as well as particular treatment options when they learn about health risk behaviors. Counseling patients about a range of behaviors, including tobacco use, firearm storage, and obesity, results in real changes in patient behavior (14–16). We used clinical vignettes to evaluate physicians' clinical management, a technique validated by prior research (17).

We hypothesized that Republican and Democratic physicians' evaluations of the seriousness of the issue presented in the vignettes and the choices of treatment options will differ in ways consistent with political bias. We expected to see differences in evaluation and treatment on politicized issues but not on issues with less political salience.

A detailed accounting of our methodology can be found below and in *Supporting Information*. Our methodology consists of two main components: (i) identifying the voter registration records of PCPs, and (ii) conducting a survey of a stratified random sample of these physicians.

Significance

Political beliefs have been shown to spill over into nonpolitical domains, such as consumer spending, choice of romantic partner, and job hiring. Our evidence suggests that political beliefs predict the professional decisions of primary care physicians. On politicized health issues, like marijuana and abortion, physicians' partisan identity is highly correlated with their treatment decisions. Because physicians regularly interact with patients on politically sensitive health issues and because the medical profession is increasingly politicized (e.g., state governments are regulating politicized aspects of medicine), it is necessary to understand how doctors' own political worldviews may impact their actions in the medical examination room.

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There are several reasons why we linked physician records to voter registration records before conducting a survey. First, we were particularly sensitive to the idea that physicians' survey responses might be influenced by the population of patients they regularly see. Physicians with different ideological worldviews might sort into different practices and thus encounter different patient populations. To control for these possibilities, we not only asked the physicians about their patient population, but we also oversampled Democratic and Republican doctors who were in practice with one another (and were thus assumed to see a similar patient population). To oversample this group, we needed to determine their political affiliation ahead of the survey.

Second, linking the records enabled us to focus the study on Democrats and Republicans. We opted not to study political independents for the sake of efficiency: if there are partisan differences in clinical practice, we expected that they would be most apparent in the comparison between Democrats and Republicans. Third, linking the records enabled us to contact physicians at their home addresses as listed on voter registration files, rather than their work addresses where gatekeepers (e.g., administrative staff) may filter inessential mail that comes their way.

Finally, by using the public record of party affiliation, we did not need to ask physicians about their political affiliation. We purposefully designed the survey to not appear as a political study. For instance, all communications originated from the School of Medicine, not the Department of Political Science. Although at the end of the survey, in a series of demographic questions, we did ask physicians about their ideology, we did not also need to ask directly about partisanship. (We did not end up using the ideology measure in our analysis below because ideology and party are so closely connected in contemporary politics. Of all the Republican respondents to our survey, only three identified as liberal or very liberal. Of all the Democratic ones, only four identified as conservative or very conservative.)

Results

Perceptions of Seriousness. The central feature of the survey was a series of nine clinical vignettes. The vignettes covered a range

of scenarios, some of which were not thought to be especially aligned with political partisanship (alcohol use, tobacco use, helmets, obesity, and depression), others of which were suspected to be more politically salient (marijuana use, elective abortion, firearm storage, and engagement with sex workers). The marijuana, abortion, and firearm vignettes were suspected of being particularly political because there is a sharp partisan divide on these issues in the United States. The nine vignettes are summarized in Table 1.

Following the presentation of each vignette, our survey asked physicians to rate the seriousness of the problem presented by the vignette, on a 10-point scale. Table 1 shows the mean and SD of this 10-point response. The survey offered several management options based on the particular details of each vignette, and asked how likely the physicians would be to engage in each option, also on a 10-point scale. The survey instrument, which is available for review, also asked several other questions related to medical practice, physician attitudes, and demographics.

Fig. 1 shows two detailed views of physicians' ratings of seriousness. Fig. 1A illustrates the responses of Democratic versus Republican physicians. On some vignettes, like those relating to alcohol, obesity, and helmets, Republican and Democratic physicians rated the seriousness similarly. However, Democratic physicians rated vignettes related to marijuana, firearms, and abortion substantially differently than Republican physicians.

Fig. 1B shows the average difference in seriousness rating between Democratic and Republican physicians based on the regression analysis. Democratic physicians rated the firearms vignette as more concerning, and Republican physicians rated the marijuana and abortion vignettes as more concerning. These differences are based on a 10-point scale, and the SD of these items is 2.2–2.5. Accordingly, these effect sizes are quite large, and they only appear on the politically salient vignettes.

These effects do not appear to be the result of confounding by demographic factors or physician sorting. For the three vignettes that exhibited the strongest partisan differences—marijuana, abortion, and firearms—the partisan differences remain even when respondents are stratified by sex, church attendance, and patient socioeconomic status (SES) (Fig. 2).

Table 1. Patient vignettes

Issue	A healthy-appearing, 38-y-old male [28-y-old female] patient comes to your office for a physical. This is his [her] first appointment with you. He [She] does not have any known prior chronic medical issues. During the patient interview, the patient...	How serious of a problem, on a 1–10 scale?
Alcohol	...acknowledges consuming about 20 alcoholic beverages in a typical week but denies any related physical concerns.	7.8 (1.6)
Marijuana	...acknowledges using recreational marijuana approximately three times per week but denies any related physical concerns.	5.7 (2.3)
Tobacco	...acknowledges engaging in social smoking, consuming ~15–20 cigarettes per week (2–3 per day), a habit that began at age 18. The patient denies any related physical concerns.	8.2 (1.7)
Sex worker	...acknowledges having had sexual intercourse with sex workers several times in the last year. The patient denies any physical symptoms related to sexual behavior.	8.4 (1.8)
Depression	...acknowledges having intermittent bouts of depression. He completed a PHQ-9 screening tool in your office and scored a 10. He denies suicidal thoughts.	8.2 (1.5)
Firearms	..., who is a parent with two small children at home, acknowledges having several firearms at home.	7.4 (2.5)
Obesity	..., who has a BMI of 31, acknowledges having no regular exercise. The patient denies any physical complaints related to his weight.	7.8 (1.5)
Abortion*	...acknowledges having had two elective abortions in the last 5 y. She denies any physical complaints or complications associated with these procedures. She is not currently pregnant.	5.7 (2.5)
Helmets	...acknowledges commuting to work by motorcycle. He acknowledges rarely wearing a helmet but that he is a safe driver and has never been in a serious collision.	8.4 (1.9)

Italics identify more politicized issues. The rightmost column shows unweighted overall means and SDs on a 10-point scale on which respondents indicated the seriousness of the problem presented in the vignette. Number of observations range from 231 to 233 per item. BMI, body mass index; PHQ-9, Patient Health Questionnaire 9.

*Indicates a vignette with a female patient rather than a male patient.

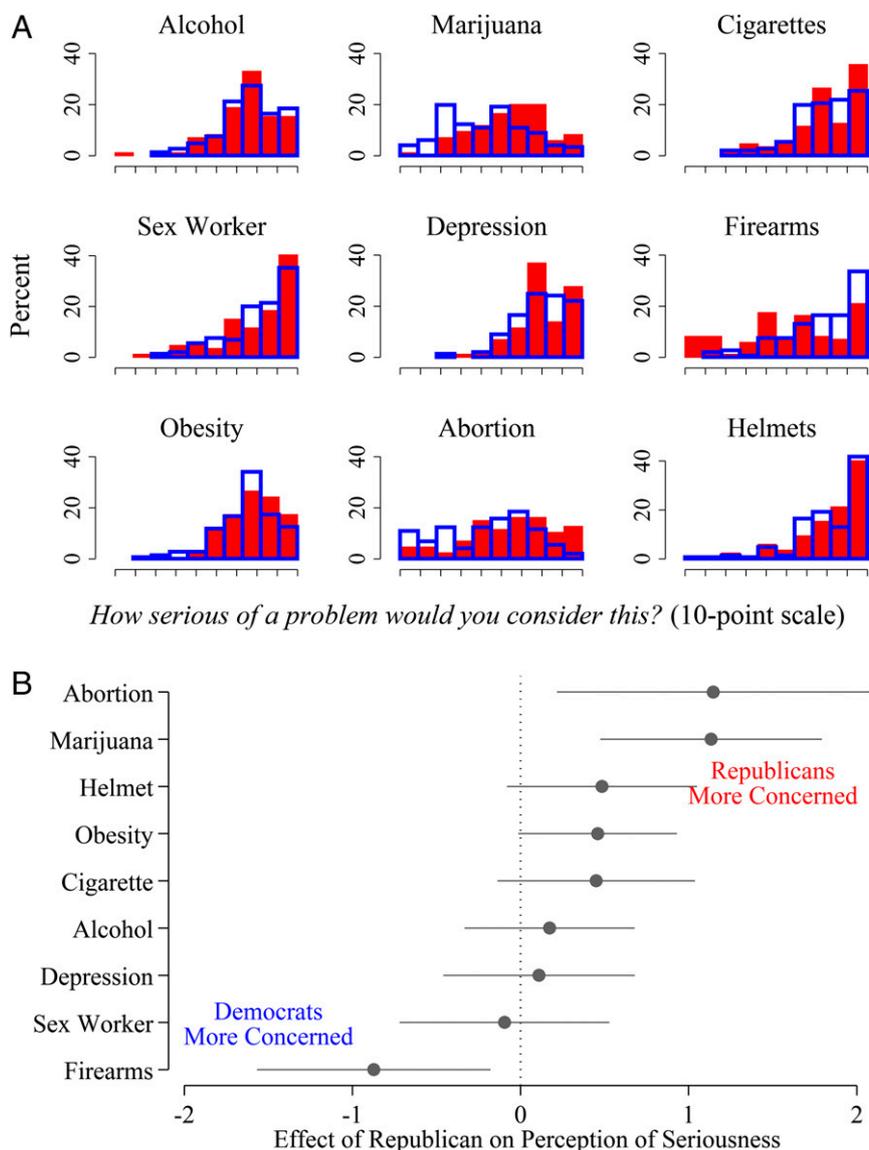


Fig. 1. Perceptions of seriousness, by party affiliation. (A) Histograms for each vignette by party affiliation. Red represents Republicans; blue represents Democrats. (B) Circles represent coefficients from regressions, with 95% CIs.

On the marijuana and firearms vignettes, Republicans and Democrats exhibit similar differences across gender and religious categories. On the abortion vignette, the partisan effect is stronger among men (1.8-point difference for men compared with a 0.8-point difference for women) and similar among religious attendees and nonattendees. Even though Republican physicians are more likely to be male and religious than Democratic physicians, and even though male and religious physicians might treat patients differently than female and nonreligious physicians, Fig. 2 and the regression coefficients in Fig. 1 demonstrate that the partisan effect is independent of these cohort differences.

As with physician demographics, we show that patient population does not appear to explain the partisan differences that we observe. The lower part of Fig. 2 illustrates that doctors who see the lowest SES populations do not exhibit partisan differences on the firearms item, but otherwise there are no notable trends by patient population. In *Supporting Information*, we address two other ways to account for physician sorting and patient population. First, we compare physicians in mixed-

partisan practices versus physicians in the general sample. Second, we estimate a model that employs practice-level fixed effects, analyzing just those practices for which we have multiple respondents.

Management/Treatment Plans. Fig. 3 shows the various treatment options offered in the survey for the four more politicized issues. Republicans are more likely to discuss health risks of marijuana, urge the patient to cut down, and discuss legal risks. Republicans are more likely to discuss the mental health aspects of abortion and to encourage the patient not to have more abortions. Although Democratic and Republican physicians did not differ on the judgment of seriousness of using sex workers (a vignette that reflects a moral issue but not one that corresponds to a sharp partisan division), Republican physicians are more likely to discuss legal risks and discuss the impact on personal relationships. Democratic physicians may be more likely to urge patients not to store firearms at home, but Republican physicians are significantly more likely to ask about the safe storage of the weapons.

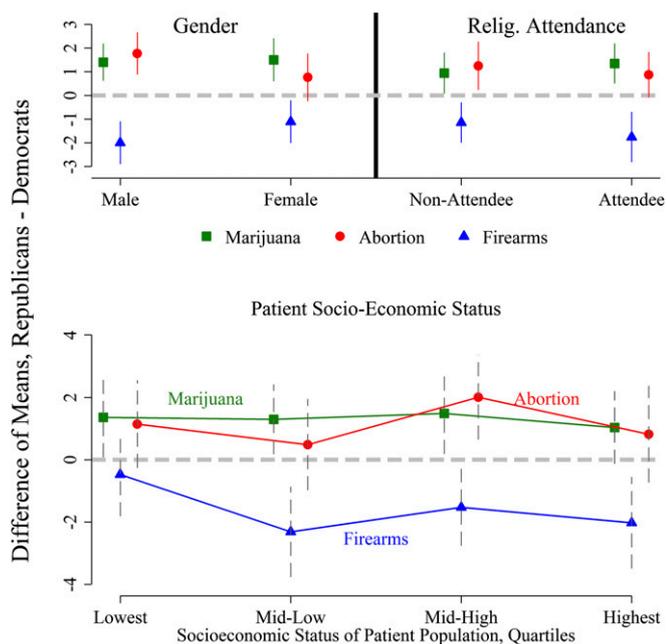


Fig. 2. Perceptions of seriousness, by subgroup. Difference of means with 95% confidence intervals are shown. The lower plot uses quartiles of a principal-components factor analysis based on a physicians' perceptions of their patient population.

Republicans, in general, were more likely to say that they would engage in active treatment options than Democrats. However, the degree of difference varies by the politicization of the issue. As Fig. 4 shows, on the less politicized issues of alcohol and cigarettes, Republican physicians appear only slightly more likely to discuss health risks than Democratic physicians. On the marijuana vignette, the difference is over three times larger.

Discussion

Our findings suggest that Republican and Democratic physicians differently assess the seriousness of patient health issues that are politically salient. Republican physicians also differ from Democratic physicians in the treatments offered to patients who present with those health issues. The direction of the differences is consistent with expected political leanings (Democratic physicians are more concerned about guns in the home; Republicans are more concerned about patient drug use and a patient having had abortions). The data analysis suggests these differences cannot be otherwise explained by demographic traits of physicians or by the patient populations they encounter.

Of course, party identification may be a surrogate measure of some other, unmeasured characteristic (e.g., a personality trait, ideology, socialization) that is correlated both with political allegiance and with treatment approach. Evidence like that presented in Fig. 4 leads us to believe that whatever is driving our results is closely related to politics. The figure shows that Republican physicians are not just generally more assertive in treatment than Democrats (which might be attributable to a personality difference), but that they are particularly more assertive on the marijuana vignette, an issue with political salience but with a lower associated health risk (18).

To be clear, we cannot say with any certainty what the root cause of partisan differences in treatment is. However, regardless of the underlying mechanism that affects physician judgment, the evidence suggests a clear effect from the patient's perspective. If we assume that a patient selects a physician based on the physician's practice location, gender, age, and so forth (i.e., control

variables in our models), but not on other factors correlated with political party, which is a reasonable assumption, then we expect patients to get different medical care depending on whether they happen to have selected a Republican or Democratic physician.

This study demonstrates the connection between provider political orientation and medical care. Our initial findings should compel further research seeking to replicate and extend our work. Our survey achieved a reasonable response rate given the lack of financial incentives offered to respondents, and although a substantial body of work suggests that response rates in this range do not generate biased responses (19), this topic merits financial support and attention to extend the work.

Future research could include examinations of partisan differences in actual clinical care, not just in survey responses. Researchers could accomplish this either by using public records of reimbursements or by linking party affiliation data to internal records of partnering provider networks. Although our initial study focused on politicized issues related to abortion, marijuana, and firearms, future studies that use clinical records might examine other politically sensitive topics, such as end-of-life care in Medicare patients and treatments related to LGBT health.

Our study faces a familiar set of limitations that should be acknowledged. We only solicited 1,529 physicians in 29 states and, without offering respondents incentives, achieved a response rate of 20%. As we report in *Supporting Information*, comparisons between the sample and population on observable variables are encouraging, but the respondents are not perfectly representative. Specifically, Democrats were more likely to respond to our solicitation than Republicans. As another matter, our method of linking physicians to voter registration records provided us with important tools in pursuing the research question. However, we were not able to match all physicians to public records, and this too may result in unknown biases. Finally, although survey vignettes have been validated as strong indicators of actual clinical practice, our study is limited by the potential for misreporting bias to affect the results. By not alerting physicians to the political nature of the study, we hope to have avoided one important set of concerns about misreporting bias, but the problem remains that responses may not perfectly convey the true professional judgments of the respondents.

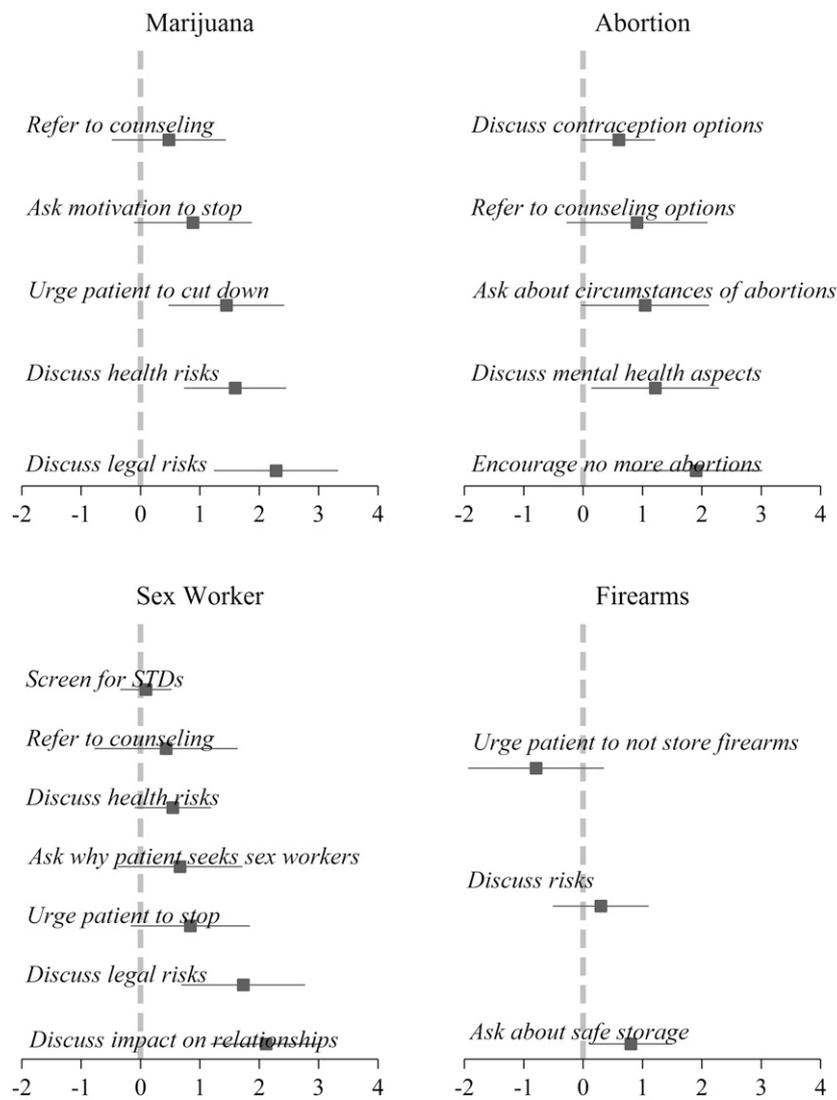
Conclusion

Having acknowledged these limitations, our study suggests the following conclusions. For patients, our study suggests that they may need to be aware of their physician's political worldview, especially if they need medical counsel on politically sensitive issues. As mentioned, advocacy groups like the Human Rights Campaign already attend to this regarding LGBT patients, and our evidence suggests that such sensitivity is warranted. Just as a patient may seek out a physician of a certain gender to feel more comfortable, the evidence suggests that a patient may need to make the same calculation regarding political ideology.

For physicians, the evidence calls for heightened awareness and training surrounding treatment on politically salient issues. Given the politicization of certain health issues, it is imperative that physicians consider how their own political views may impact their professional judgments.

Methods

Survey Sample. We downloaded the National Provider Identification (NPI) file of US physicians and identified physicians in the primary care specialties of internal medicine, family medicine, general practice, and adult medicine. (The NPI file is a comprehensive listing of physicians who are covered by the Health Insurance Portability and Accountability Act. Some physicians who do not use electronic systems and do not accept insurance may not have an NPI number.) We restricted our attention to physicians practicing in the 29 US states in which registered voters are listed in the public record according to their party affiliation. Previous research has shown that these states are representative of the nation as a whole (20, 21). We drew a 50% simple



How Likely to Include in Treatment Plan, Republican Effect

Fig. 3. Partisan differences in treatment plans on politicized issues. Points represent coefficients from regression, with 95% CIs. Positive values indicate that Republicans are more likely to include a particular item in a treatment plan; negative values indicate that Democrats are more likely to do so.

random sample of PCPs in these states (42,861 physicians) who were listed with their name, gender, and work address.

We transmitted the identifying information from the NPI record to Catalyst, a political data firm that aggregates voter registration records and vends these data to political organizations, researchers, and government agencies (22, 23). Based on the name, gender, and work address, we were able to match 57% of the physicians to a unique record on the public voter file. (Physicians would not match to a unique record either because they are not registered voters or because their name and location linked to multiple plausible matches on the voter file.) [Overall, in the United States, approximately 71% of citizens are registered (24). Among physicians who are citizens, we would expect a higher rate of registration because registration is positively correlated with SES, but, of course, many of the practicing physicians listed in the NPI file are not American citizens.] All comparisons were among physicians who were matched. On covariates available in the NPI file (e.g., gender, specialty, physicians per practice address), the matched records appeared nearly identical to the records originally transmitted to Catalyst (Figs. S1–S3 and Table S1). Among physicians who matched to voter registration records, 35.9% were Democrats, 31.5% were Republicans, and the remaining 32.6% were independents or third-party registrants. Among the partisans, 53% were Democrats, and 47% were

Republican. Because of this nearly even split, we did not stratify the sample based on individual physician partisanship.

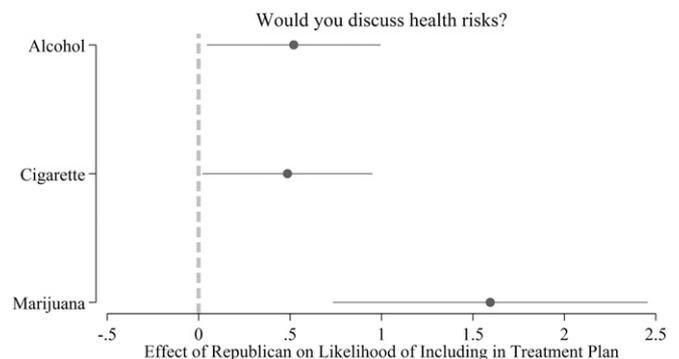


Fig. 4. Partisan differences are especially pronounced on politicized issues. Note: Points represent coefficients from regression, with 95% CIs.

Altogether, we solicited 1,529 physicians.

Survey Administration. In September 2015, we sent an introductory postcard to the physicians, alerting them to a larger packet of materials forthcoming in the mail. Two weeks later, we mailed a packet that included a consent document, survey instructions, a paper version of the survey, and a prepaid return envelope. All correspondence went by mail to physicians' home addresses, which we obtained from the voter file. Respondents were invited to take the survey online or on paper. In December 2015, we resolicited individuals from whom we had not yet heard. We offered no incentives for participation, financial or otherwise.

Our study was approved by the Yale University Human Subjects Committee, Protocol 1506016032. Respondents were shown an "informed consent" script as part of the survey materials, which explained that participation in the study was voluntary and that completion of the survey implied consent.

We achieved a response rate of 20%, a rate consistent with contemporary surveys of professional elites (like physicians) that offer no incentives. [For example, a 2009 survey of scientists conducted by Pew generated a response rate of 25% (25).] As detailed in *Supporting Information*, respondents did not differ significantly from those solicited on characteristics including gender, medical specialty, block-group median household income, or in the proportion in the oversample of mixed-partisan practices. The respondents were slightly older (mean age: 53 vs. 49) and were more Democratic (63% vs. 53%) than the nonrespondents (Tables S2–S5). Although Democrats were more likely to respond than Republicans, the survey instrument (which can be reviewed in the replication materials) offered no obvious indication of this being a politically oriented study.

Given the relatively small number of physicians solicited and the response rate, our sample size is not large. For our key dependent variables, our sample size is 231–233 physicians. Despite the sample size, we witness strong and consistent support for our hypotheses. As indicated above, the relationship

between partisanship and medical treatment persists even within subgroups of our sample, such as gender and religiosity cohorts, and among Democratic and Republican physicians in practice with one another. Although we approach small samples with caution, such caution here is balanced against the consistency and strength of the evidence.

Statistical Analysis. In addition to simple histograms and differences of means, we used regression analysis. The dependent variable was either the physician's rating of the seriousness of the issue or the physician's assessment of their likelihood of choosing a specific management plan. The key independent variable was a binary indicator that distinguishes Republicans (1) from Democrats (0). We included controls for physician age, gender, and religious attendance, and an indicator that distinguishes physicians in the oversample of mixed-partisan practices from physicians in the general sample.

We controlled for patient population by using a scale generated from respondents' estimates of the percentage of their patients who are college educated, on Medicaid, generally healthy, black/African American, and non-English speaking. These items were combined using principal-components analysis to generate a single continuous scale indicative of the patient population's SES.

In addition to controlling for patient population of the individual physician, our regression analysis employs state fixed effects, such that average state differences in responses are accounted for. Our model also employs robust SEs clustered at the physician's practice address.

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1. *Wolfschlaeger v. Governor of Florida*, 797 F. 3d 859 (US Ct. App., 11th Cir. 2015).
2. Wennberg JE (2002) Unwarranted variations in healthcare delivery: Implications for academic medical centres. *BMJ* 325(7370):961–964.
3. Krähenmann-Müller S, et al. (2014) Patient and physician gender concordance in preventive care in university primary care settings. *Prev Med* 67:242–247.
4. Hall WJ, et al. (2015) Implicit racial/ethnic bias among health care professionals and its influence on health care outcomes. *Am J Public Health* 105(12):e60–e76.
5. Pierce L, Rogers T, Snyder JA (2015) Losing hearts: The happiness impact of partisan electoral loss. *J Exp Pol Sci* 3(1):44–59.
6. Gerber AS, Huber GA (2009) Partisanship and economic behavior. *Am Polit Sci Rev* 103(3):407–426.
7. Anderson A, Goel S, Huber G, Malhotra N, Watts DJ (2014) Political ideology and racial preferences in online dating. *Sociol Sci* 1:28–40.
8. Iyengar S, Westwood SJ (2015) Fear and loathing across party lines. *Am J Pol Sci* 59(3): 690–707.
9. Human Rights Campaign (2015) *Coming Out to Your Doctor*. Available at www.hrc.org/resources/coming-out-to-your-doctor. Accessed December 28, 2015.
10. American Association of Pro-Life Obstetricians and Gynecologists (2016) *Pro-Life OB/GYN Directory*. Available at aaplog.wildapricot.org/directory. Accessed January 5, 2016.
11. Kaiser Family Foundation; The Commonwealth Fund (2015) *Experiences and Attitudes of Primary Care Providers Under the First Year of ACA Coverage Expansion*. Issue Brief (The Commonwealth Fund, New York), Publication 1823, Vol 17, pp 1–21.
12. Bonica A, Rosenthal H, Rothman DJ (2014) The political polarization of physicians in the United States: An analysis of campaign contributions to federal elections, 1991 through 2012. *JAMA Intern Med* 174(8):1308–1317.
13. Frank E, Carrera J, Dharamsi S (2007) Political self-characterization of U.S. medical students. *J Gen Intern Med* 22(4):514–517.
14. Stead LF, Bergson G, Lancaster T (2008) Physician advice for smoking cessation. *Cochrane Database Syst Rev* 2(2):CD000165.
15. Post RE, et al. (2011) The influence of physician acknowledgment of patients' weight status on patient perceptions of overweight and obesity in the United States. *Arch Intern Med* 171(4):316–321.
16. Albright TL, Burge SK (2003) Improving firearm storage habits: Impact of brief office counseling by family physicians. *J Am Board Fam Pract* 16(1):40–46.
17. Peabody JW, et al. (2004) Measuring the quality of physician practice by using clinical vignettes: A prospective validation study. *Ann Intern Med* 141(10):771–780.
18. Lachenmeier DW, Rehm J (2015) Comparative risk assessment of alcohol, tobacco, cannabis and other illicit drugs using the margin of exposure approach. *Sci Rep* 5:8126.
19. Langer G (2003) About response rates. *Public Perspective* 2003(May/June):16–18.
20. McGhee E, Krimm D (2009) Party registration and the geography of party polarization. *Polity* 41(3):345–367.
21. Hersh ED, Nall C (2015) The primacy of race in the geography of income-based voting. *Am J Pol Sci* 60(2):289–303.
22. Hersh ED (2015) *Hacking the Electorate* (Cambridge Univ Press, Cambridge, UK).
23. Hersh ED (2013) Long-term effect of September 11 on the political behavior of victims' families and neighbors. *Proc Natl Acad Sci USA* 110(52):20959–20963.
24. US Census Bureau (2012) Reported voting and registration, by sex and single years of age, November 2012. *Voting and Registration*. Available at www.census.gov/hhes/www/socdemo/voting/publications/p202012/tables.html. Accessed September 15, 2016.
25. Pew Research Center (2009) *Scientific Achievements Less Prominent Than a Decade Ago* (Pew Research Center, Washington, DC), pp 1–98.
26. Brady Campaign to Prevent Gun Violence (2015) *The Brady Campaign State Scorecard, March 2015*. Available at www.crimadviser.com/data/Brady-State-Scorecard-2014.pdf. Accessed August 1, 2016.