



Lower use of academic affiliation by university faculty who study abortion in top U.S. newspapers

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ABSTRACT

Background: University faculty are considered trusted sources of information to disseminate accurate information to the public that abortion is a common, safe and necessary medical health care service. However, misinformation persists about abortion's alleged dangers, commonality, and medical necessity.

Methods: Systematic review of popular media articles related to abortion, gun control (an equally controversial topic), and cigarette use (a more neutral topic) published in top U.S. newspapers between January 2015 and July 2020 using bivariate analysis and logistic regression to compare disclosure of university affiliation among experts in each topic area.

Results: We included 41 abortion, 102 gun control, and 130 smoking articles, which consisted of 304 distinct media mentions of university-affiliated faculty. Articles with smoking and gun control faculty experts had statistically more affiliations mentioned (90%, $n = 195$ and 88%, $n = 159$, respectively) than abortion faculty experts (77%, $n = 54$) ($p = 0.02$). The probability of faculty disclosing university affiliation was similar between smoking and gun control ($p = 0.73$), but between smoking and abortion was significantly less (Ave Marginal Effects $- 0.13$, $p = 0.02$).

Conclusions: Fewer faculty members disclose their university affiliation in top U.S. newspapers when discussing abortion. Lack of academic disclosure may paradoxically make these faculty appear less 'legitimate.' This leads to misinformation, branding abortion as a 'choice,' suggesting it is an unessential medical service. With the recent U.S. Supreme Court landmark decision, *Dobbs v. Jackson Women's Health Organization*, and subsequent banning of abortion in many U.S. states, faculty will probably be even less likely to disclose their university affiliation in the media than in the past.

KEYWORDS

Induced abortion; communication; faculty; academic medical centers; information science; illegitimacy; print media; affiliation

Background

Abortion is one of the most common health care services in the United States (U.S.). By the age of 45, 'an estimated one in four U.S. women' will have had an abortion [1]. In any given year, about 1 million American women seek abortion services. The American College of Obstetricians and Gynecologists, an organization that sets the standards of women's reproductive health care in the U.S., specifically states that induced abortion is an essential component of health services for women [2]. According to the World Health Organization, 'reproductive health and rights are grounded in human rights' and are inextricably linked to the health of the public [3]. U.S.-based research suggests denying abortion access leads to greater economic disparities, worse health outcomes, domestic violence, single motherhood, and higher percent of children living in poverty [4–6]. Abortion bans and restrictions are considered human rights violations *because* they delay necessary care for pregnant persons, which in turn leads to higher rates of pregnancy-related medical

complications and death [7,8]. Despite abortion's commonality and its necessity for public health, abortion stigma from fear of judgment and violence silences the voices of patients, public health and medical professionals, leaving abortion as a fertile ground for misinformation [9,10].

Misinformation interferes with decision-making, endangers well-being and threatens public health [11]. Misinformation about abortion specifically leads people to erroneously believe abortion is dangerous, even though epidemiological statistics show that abortion is significantly safer than childbirth [12–14]. Misinformation links abortion with 'infertility, breast cancer, negative mental health outcomes and regret,' despite no scientific evidence supporting these associations [12,15].

The antidote to misinformation is bringing legitimate experts to the forefront of public health conversations [16]. Universities are historically trusted institutions that pursue new knowledge, employing faculty who make significant contributions to science

and public health. Faculty members are held to high standards of academic integrity, outlined in faculty codes of conduct, to maintain independent and objective thinking free from commercial or private sector interests. Because most universities require faculty to participate in research, faculty are correctly included in the broader designation of 'medical scientists and scientists' [17]. According to a 2022 Pew Research Center report, medical scientists and scientists reflect the highest percent (29%) of Americans who have 'a great deal of confidence' that they act in the best interests of the public. In comparison, only 25% of Americans say they have 'a great deal of confidence' in the military, 20% in police officers, 12% in religious leaders and 2% in elected officials [18]. Gallup polls show similar findings. In a 2022 survey, the percentage of Americans with a 'great deal of confidence' in science was 35% compared to the military (32%), police (19%), the church or organized religion (14%) and Congress (2%) [19]. As trusted sources of information, academic faculty members can play key roles in countering misinformation by disseminating accurate and evidence-based knowledge to the general public.

Paradoxically, because of the politicization of abortion, university faculty may choose not to disclose university affiliation due to fear of antiabortion harassment or violence [20]. Alternatively, university public relations departments that screen and pre-approve contact with popular media may incorrectly categorize abortion as a 'political' rather than a 'health care' issue, and fearing political fall-out from having faculty discussing such issues, enact policies that keep faculty from discussing them in public forums [21]. This 'legitimacy paradox' produces a vicious cycle in which knowledgeable and respected faculty members who provide or research abortions do not disclose their legitimate place of employment, which in turn, perpetuates a stereotype that abortion care is unnecessary or not within mainstream academia [22]. This stereotype erodes solidarity among medical and public health professionals and allows essential public health care services like abortion to be opportunistically vilified as a 'choice' and restricted by politicians and legislators.

Role of media to disseminate evidence-based information

Popular media is a common and pervasive source of public health information impacting public attitudes and beliefs [23,24]. One way the media accomplishes this is through the agenda-setting function, which asserts that the amount of attention given to topics in the media impacts the public's perceived salience of those topics [25]. For example, media coverage impacts the perceived prevalence, disease status, and

severity of various diseases [24,26]. Media amplifies abortion stigma, for example, by misrepresenting its complications, such as focusing on stories of women who sought hospital care after an abortion with pills, when in fact, only about 1% seek such care [27,28]. Misrepresented stories are further perpetuated through social media [29,30].

The relationship between media, public health and academic experts to inform communities and provide evidence-based information to influence policy on health-related topics has positively impacted public health advancements in the U.S. including clean water, alcohol use reduction, smoking cessation and sexually transmitted infection screening [31–34]. With the recent increase in vaccine refusal, physicians have utilized the media to address misinformation and provide education on vaccinations [35–38]. University faculty used social media to communicate to and 'mobilize the public in response' to lead contamination of drinking water in Flint, Michigan [39, 40]. In these examples, evidence-based science in the media benefitted public health efforts.

Despite these positive impacts in many public health arenas, this is not the case for abortion. Abortion is covered mostly as a political issue in the popular media, not a public health issue [41]. Thus, university faculty experts who discuss abortion in the media to inform public health are often subject to being politicized.

Abortion in academic medicine

Abortion is a topic that is researched by faculty in U.S. academic institutions. A PubMed search of peer-reviewed articles published in 2019, showed that U.S.-based university faculty authored 362 of 503 (72%) abortion-related articles. Abortion is also a health care service that is offered to patients at numerous academic medical centers and hospitals throughout the U.S [42].

Despite the presence of abortion services and scholarship occurring at many U.S. academic institutions, well-established university faculty do not necessarily disclose their affiliation when they author commentaries or are interviewed by the popular media. We observed this in a New York Times op-ed, 'My Day as an Abortion Care Provider' written by obstetrician-gynecologist, researcher, and abortion provider Dr. Lisa Harris [43]. Although Dr. Harris is a prominent voice in the field of abortion and a published academic in abortion research, her university affiliation is not mentioned in this article. Another academic abortion provider complained of being censured by their hospital center when speaking about abortion in the same way as her colleagues who spoke openly about other public health topics [21]. Faculty who do not disclose their university affiliation when speaking publicly as

experts about abortion have a potentially negative consequence on public health. The politicization of abortion contributed to ending America's federal protections for abortion in June 2022 when the U.S. Supreme Court issued a landmark decision in the case of *Dobbs v. Jackson Women's Health Organization* [44]. Less than three months later, abortion is banned or limited in at least 18 U.S. states [45].

Driven by these examples of missing affiliation in the popular media and its potential harmful implications on the proliferation of abortion misinformation, we sought to answer the following questions: (1) What are the characteristics of faculty who publish, or are mentioned in the popular media on the topic of abortion? (2) Do faculty mentioned in the media for abortion differ from faculty who are experts in gun control (a similarly controversial topic) or cigarette smoking (a less controversial topic)? (3) Which of these characteristics are predictive of whether faculty members disclose their university affiliation?

Methods

Topics for comparison

Public opinion of abortion over the past 10 years has ranged from 50% believing abortion should be legal in most or all cases in 2010–59% in 2021 [46]. In comparison to abortion, public opinion toward gun control shifted from 44% believing gun laws should be made more strict in 2010–53% in 2021 [47]. We also included cigarette smoking as a less controversial (control) comparison topic because of its decades-long reduction of use, the well-established scientific association between smoking and lung cancer, smoking cessation as an accepted health care intervention covered by most insurance plans, and the widespread acceptance of smoking bans in public places [48–53]. This study does not include human subjects and thus institutional review board approval was not sought.

Search strategy

We searched articles using ProQuest U.S. Newsstream because of its breadth and advanced download capabilities [54]. We aimed to include newspapers (print media) with the largest circulation to assess the readership that most reflects the U.S. population [55]. In the ProQuest database, this included eight of the top 13 newspapers: USA Today, Wall Street Journal, New York Times, Los Angeles Times, Washington Post, (Minneapolis) Star Tribune, Chicago Tribune, and Boston Globe.

We included opinion pieces, news commentaries, editorials, and letters to the editor because these article types represented the first-person voice of an expert. For feasibility reasons, we excluded magazines, trade journals, reports, blogs, podcasts, websites, social

media, audio/video works, and news wires from the analysis. We defined university faculty as subject experts with an academic title and/or rank such as professorial ranks, including those within clinical and lecturer tracks, as well as adjunct professors. We excluded teaching associates, fellows, and residents, and restricted the search to U.S.-based articles published in English between January 1, 2015, and July 7, 2020 (when we gathered our data). Our initial search terms included: M.D., Ph.D., Dr., doctorate, principal investigator to capture faculty and the following subject-specific terms for abortion: abortion, pregnancy termination, terminate a pregnancy, for gun control: gun control, gun rights, second amendment, 2nd amendment, gun owner, gun violence, firearm, shooting, and for smoking: cigarette smoking, cigarette, smoking, e-cigs, e-cigarettes, electronic cigarettes. A complete list of our search strategy is outlined in Appendix A.1.

Article selection

The initial screening process for each topic entailed reviewing titles, article public health topic synonyms assigned by ProQuest [54] and periodicals in which the article was published [Appendix A.2]. We excluded duplicate articles, which included articles with identical titles, authors, and publications, occurring within the same period or had an online and print version with minor differences. After the initial exclusion screen, we assessed the remaining articles for eligibility with a full article review. Ambiguities about eligibility were resolved through consensus by the study's authors. We excluded articles that did not feature at least one of the three public health topics or a subject expert affiliated with an academic institution. We also excluded articles that referred to peer-reviewed publications to quote faculty. For example, we excluded a newspaper article that quoted what a faculty member wrote in an academic journal [56]. In articles that covered multiple subjects, we excluded faculty who did not address our topics of interest.

Data extraction

We first extracted the number of faculty experts who published or were mentioned in each article regardless of whether their university was disclosed in the article (a.k.a 'faculty occurrence'). If a single article was written by or mentioned/quoted by three separate faculty members, we counted three faculty occurrences. We then determined whether university affiliation was disclosed in association with that article. We defined university affiliation as mentioning the university directly or referencing a hospital, institute, or research center associated with the university. We counted hospitals, institutes, or centers as a university affiliation

disclosure in light of the complex nature of acquisitions, mergers, and partnerships between academic medical centers, community hospitals and research centers [22,57]. If the same faculty member published three separate articles, but only disclosed their affiliation twice, we counted it as two 'university affiliation disclosures.' If a university affiliation did not appear in the article, we performed a systematic search using Google incognito mode to determine if the expert did nonetheless have such an affiliation. We then verified their affiliation on their university's website and established faculty gender based on the pronouns used on the website faculty page.

Data analysis

We performed descriptive statistics with bivariate analysis using Fisher's exact tests to assess the association between article topic, affiliation, demographic and descriptive variables. We used stepwise logistic regression to identify possible predictors of university affiliation disclosure out of the following candidate variables: public health topic, gender, faculty rank, faculty school/department, university region, newspaper, year of publication, and the number of faculty occurrences. At each step, variables were chosen based on p -values, and the Akaike information criterion (AIC) was used to limit the total number of variables in the final model [58]. The significance level for bivariate analyses was set at $\alpha = 0.05$. Estimates from the final logistic regression model 'are reported as average marginal effects (AME) of each predictor, holding other predictors in the model at their actual value' and predicted probabilities [59]. We conducted the data analysis using R (R Studio Version 1.3.1093 and R Version 4.1.1). To address concerns about over-representation by individual faculty who are repeatedly called on by the media, we conducted a sensitivity analysis with bivariate analyses, excluding faculty who were mentioned in the data set three or more times. Using the differences between our main and sensitivity analyses, we elected to include the variable 'number of occurrences' in our stepwise regression model.

Results

Proquest search results

The initial search for abortion-related articles yielded 469 articles, of which 41 were included, gun control yielded 926 articles, of which 102 were included, and cigarette smoking yielded 1,004 articles, of which 130 were included for a total of 273 articles (Figure 1). Among the 273 total articles, there were 465 individual faculty expert occurrences overall by 304 distinct faculty. The articles on smoking had 216 faculty

expert occurrences, gun control had 179 faculty expert occurrences, and abortion had 70 faculty expert occurrences. Among the 465 individual faculty expert occurrences, almost a third ($n = 136$) were by faculty who occurred in the data set three or more times.

Faculty occurrences by faculty characteristics

We compared characteristics of faculty who published or were mentioned (a.k.a. faculty occurrence) regardless of disclosure of university affiliation in the included articles overall and by individual public health topic (Table 1). We found significant differences between the public health topics and faculty occurrence based on gender and the number of times faculty occurred in the media. Overall, a greater percentage of male faculty (68%, $n = 315$) than female faculty (32%, $n = 150$) occurred in the popular media ($p < 0.001$). However, among abortion articles, *females* occurred 1.5 times more than males. Overall, we found almost half (48%, $n = 223$) of faculty had one occurrence, as opposed to 3 or more (29%, $n = 136$) ($p < 0.001$). Proportions of smoking experts occurring once or three or more times were essentially the same (39%). Whereas, more than half of the faculty occurrences on controversial topics (abortion or gun control) appeared in the media only once. Notably, faculty rank did not differ across article topics. Regardless of the public health topic, full professors predominated the media occurrences (48% overall, $n = 224$) compared to media occurrences by faculty in lower faculty ranks. Overall, the majority of faculty disclosed their university affiliation in their respective popular media articles ($n = 408$, 88%). However, more articles with smoking and gun control faculty experts had affiliations mentioned (90%, $n = 195$ and 88%, $n = 159$, respectively) than abortion faculty experts (77%, $n = 54$) ($p = 0.02$).

Faculty occurrences by university characteristics

Overall, Schools of Medicine had more than half (55%, $n = 257$) of faculty occurrences, followed by Schools of Public Health (19%, $n = 88$) and the social sciences/humanities (13%, $n = 60$), although university school/department differed by article topic ($p < 0.001$) (Table 1). Compared to smoking articles, gun control articles had a similar percentage of faculty occurrences from Schools of Medicine (56%, $n = 100$), whereas abortion articles had proportionally fewer faculty occurrences from Schools of Medicine (47%, $n = 33$ vs. 57%, $n = 124$). Faculty from Schools of Law represented the controversial topics (gun control and abortion) more than the non-controversial topic, smoking. Overall, universities located in the Northeast had the highest

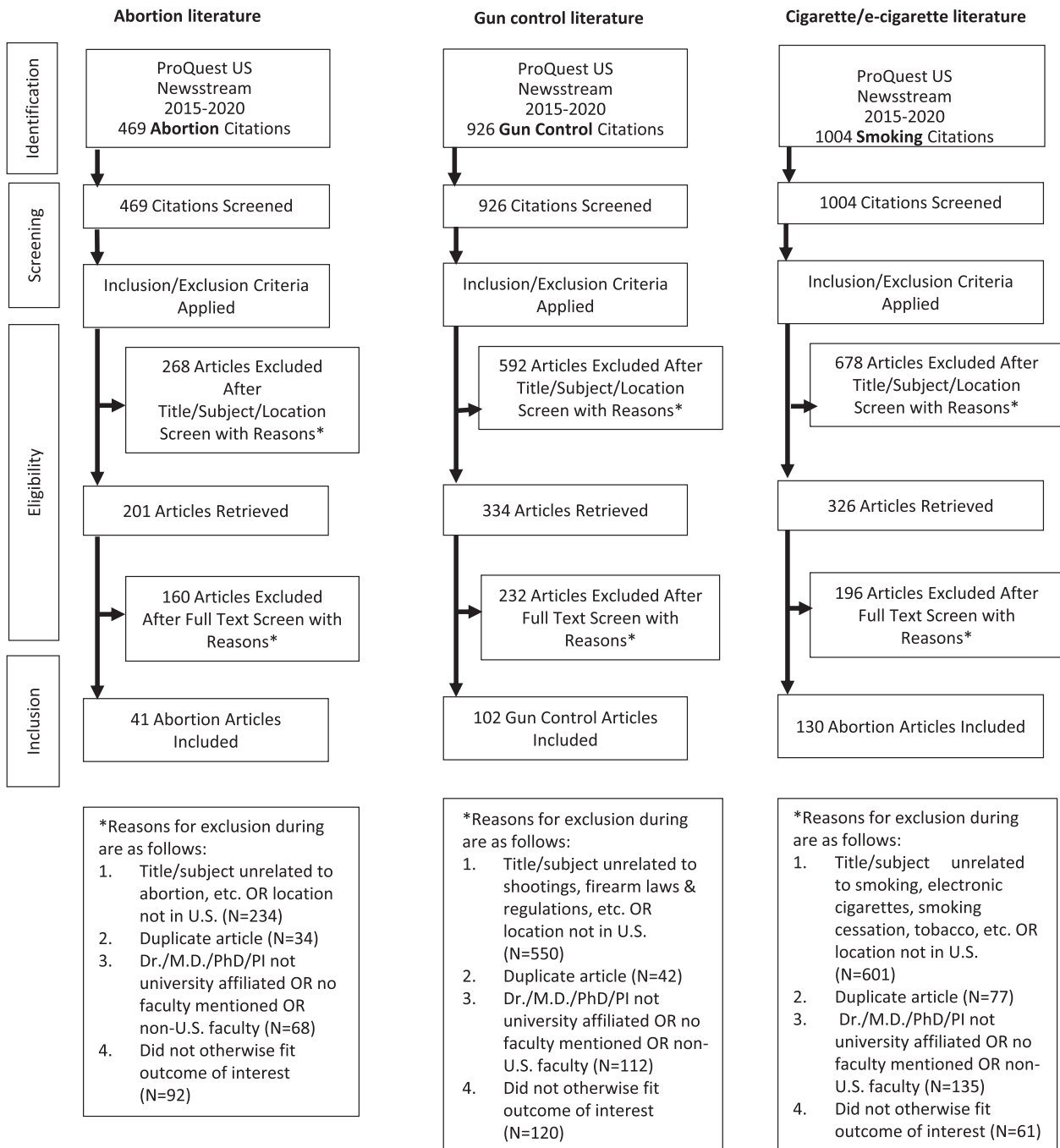


Figure 1. Flow diagram of literature searches and study selection processes of abortion, gun control and cigarette smoking in the popular media.

percentage of faculty occurrences (41% overall, $n = 189$), whereas universities in the Midwest had the lowest (10%, $n = 47$) ($p = 0.009$). University regions differed by article topic ($p = 0.009$), with a higher proportion of abortion faculty occurrences having university affiliations in the West (36%, $n = 25$) than smoking (23%, $n = 49$) or gun control (26%, $n = 46$).

Faculty occurrences by newspaper and year of publication

Overall, the percentage of articles published with faculty occurrences in each of the eight newspapers differed by public health topic ($p < 0.001$) (Table 1).

Nearly half of abortion articles (43%) were published in The New York Times (NYT). Yet, the number of abortion articles published in the NYT ($n = 30$) was still almost less than half of the articles on gun control ($n = 64$) and smoking ($n = 57$) over the same period. Conversely, only 13% of abortion articles ($n = 9$) were published in the Wall Street Journal (WSJ), compared to 24% of gun control articles ($n = 43$) and 32% of smoking ($n = 70$). Notably, the Washington Post (WaPo) and Star Tribune (ST), did not publish any articles on abortion during the time period studied, but did publish a few articles on gun control ($n = 12$ (WaPo), $n = 3$ (ST), respectively) and smoking ($n = 2$ (WaPo), $n = 6$ (ST)). Overall, the distribution of articles

Table 1. Descriptive characteristics overall and by topic ($N = 465$, where N is faculty occurrences with 304 distinct faculty)

	Overall, $N = 465^1$	Smoking, $N = 216^1$	Gun Control, $N = 179^1$	Abortion, $N = 70^1$	p -value ²
Gender*					<0.001
Man	315 (68%)	151 (70%)	136 (76%)	28 (40%)	
Woman	150 (32%)	65 (30%)	43 (24%)	42 (60%)	
Faculty Rank					>0.9
Administrator	36 (7.7%)	20 (9.3%)	12 (6.7%)	4 (5.7%)	
Affiliate	63 (14%)	29 (13%)	25 (14%)	9 (13%)	
Assistant	42 (9.0%)	23 (11%)	14 (7.8%)	5 (7.1%)	
Associate	71 (15%)	29 (13%)	30 (17%)	12 (17%)	
Professor	224 (48%)	101 (47%)	88 (49%)	35 (50%)	
Emeritus	29 (6.2%)	14 (6.5%)	10 (5.6%)	5 (7.1%)	
School/Department*					<0.001
Medicine	257 (55%)	124 (57%)	100 (56%)	33 (47%)	
Public Health	88 (19%)	61 (28%)	20 (11%)	7 (10%)	
Social Sciences/ Humanities	60 (13%)	15 (6.9%)	35 (20%)	10 (14%)	
Law	40 (8.6%)	8 (3.7%)	20 (11%)	12 (17%)	
Other	20 (4.3%)	8 (3.7%)	4 (2.2%)	8 (11%)	
University Region*					0.01
West	120 (26%)	49 (23%)	46 (26%)	25 (36%)	
Northeast	189 (41%)	98 (45%)	65 (36%)	26 (37%)	
Midwest	47 (10%)	29 (13%)	12 (6.7%)	6 (8.6%)	
South	109 (23%)	40 (19%)	56 (31%)	13 (19%)	
Newspaper*					<0.001
Star Tribune	9 (1.9%)	6 (2.8%)	3 (1.7%)	0 (0%)	
Boston Globe	43 (9.2%)	21 (9.7%)	10 (5.6%)	12 (17%)	
Chicago Tribune	23 (4.9%)	12 (5.6%)	5 (2.8%)	6 (8.6%)	
Washington Post	14 (3.0%)	2 (0.9%)	12 (6.7%)	0 (0%)	
Wall Street Journal	122 (26%)	70 (32%)	43 (24%)	9 (13%)	
USA Today	35 (7.5%)	26 (12%)	5 (2.8%)	4 (5.7%)	
LA Times	68 (15%)	22 (10%)	37 (21%)	9 (13%)	
NY Times	151 (32%)	57 (26%)	64 (36%)	30 (43%)	
Year of Publication*					<0.001
2015	41 (8.8%)	13 (6.0%)	27 (15%)	1 (1.4%)	
2016	37 (8.0%)	15 (6.9%)	13 (7.3%)	9 (13%)	
2017	42 (9.0%)	12 (5.6%)	27 (15%)	3 (4.3%)	
2018	120 (26%)	44 (20%)	54 (30%)	22 (31%)	
2019	200 (43%)	116 (54%)	55 (31%)	29 (41%)	
2020	25 (5.4%)	16 (7.4%)	3 (1.7%)	6 (8.6%)	
Affiliation Disclosed*	408 (88%)	195 (90%)	159 (89%)	54 (77%)	0.02
Number of Faculty Occurrences*					<0.001
1	223 (48%)	85 (39%)	97 (54%)	41 (59%)	
2	106 (23%)	46 (21%)	44 (25%)	16 (23%)	
3+	136 (29%)	85 (39%)	38 (21%)	13 (19%)	

¹n (%)²Fisher's Exact Test for Count Data with simulated p -value (based on 2000 replicates)*indicates category of significance, $p < 0.05$

across publication years (2015–2020) differed by public health topic ($p < 0.001$). Among smoking articles, the percentage of faculty occurrences in 2019 was nine times higher than in 2015. Among abortion articles, the percentage of faculty occurrences in 2019 was almost 30 times higher than in 2015.

Sensitivity analyses

We performed a sensitivity analysis of faculty representing a public health topic that occurred only once or twice in the media ($N = 329$ faculty mentions of 276 distinct faculty members, data not shown). Similar to our results of the entire cohort, we found significant differences between the public health topics and faculty disclosure based on gender (male faculty 62% vs. female faculty 38%), the school within the university (Schools of Medicine most represented at 57%), newspaper (NYT most represented at 34%) and year of publication. We also found abortion faculty experts were significantly less likely to

disclose their affiliations compared to smoking or gun control experts (72% vs 89% and 86%, respectively; $p = 0.02$).

We also performed a sensitivity analysis of faculty representing a public health topic that occurred in the media at least three times ($N = 136$ faculty mentions of 28 distinct faculty, data not shown). Overall, we found significant differences between the public health topics and faculty disclosure based on university school/department (Schools of Medicine most represented at 51%), region (Northeast most represented at 45%), newspaper (NYT most represented at 29%) and year. Although not significant, overall, male faculty made up 82% of this cohort, whereas female faculty only had 18% ($p = 0.09$). In contrast to earlier findings about abortion articles, male faculty occurred more than twice as female faculty (69% vs. 31%, respectively). Overall, the likelihood of disclosing affiliation by faculty with 3+ occurrences in the media did not differ by public health topic ($p = 0.30$).

Table 2. Average Marginal Effects from Stepwise Logistic Regression Predicting University Affiliation Disclosure

	Affiliation Disclosed		AME ²	95% CI ³	p-value
	No, N = 57 ¹	Yes, N = 408 ¹			
Topic					
Smoking	21 (37%)	195 (48%)	–		
Abortion	20 (35%)	159 (39%)	–0.13	(–0.232, – 0.022)	0.02
Gun Control	16 (28%)	54 (13%)	0.01	(–0.047, 0.068)	0.73
Gender					
Man	37 (65%)	278 (68%)	–		
Woman	20 (35%)	130 (32%)	0.06	(0.005, 0.116)	0.03
Faculty Rank					
Administrator	1 (1.8%)	35 (8.6%)	–		
Affiliate	22 (39%)	41 (10%)	–0.33	(–0.454, – 0.214)	0.00
Assistant	5 (8.8%)	37 (9.1%)	–0.08	(–0.176, 0.018)	0.11
Associate	14 (25%)	57 (14%)	–0.15	(–0.239, – 0.052)	0.00
Professor	13 (23%)	211 (52%)	–0.03	(–0.124, 0.057)	0.47
Emeritus	2 (3.5%)	27 (6.6%)	–0.04	(–0.098, 0.018)	0.18
University Region					
West	10 (18%)	110 (27%)	–		
Northeast	26 (46%)	163 (40%)	–0.09	(–0.188, 0.015)	0.09
Midwest	8 (14%)	39 (9.6%)	–0.07	(–0.132, – 0.008)	0.03
South	13 (23%)	96 (24%)	–0.06	(–0.129, 0.016)	0.13
Number of Faculty Occurrences	1 [1, 2]	2 [1, 3]	0.04	(0.009, 0.065)	0.01

¹n (%) or Median [IQR].

²AME = Average Marginal Effects.

³CI = Confidence Interval.

Note: coefficient estimates are presented as average marginal effects calculated while holding any other predictors at their actual value.

Predicted probabilities of university affiliation disclosure

We determined the average marginal effects (AME) from a backward and forward stepwise logistic regression model to evaluate the probability of university affiliation disclosure based on five predictors:

public health topic, faculty gender, faculty rank, university region, and the number of faculty occurrences while controlling for other variables in the model (Table 2). Abortion as a public health topic was a significant predictor of being less likely to disclose university affiliation (AME – 0.13, p = 0.02). Other significant

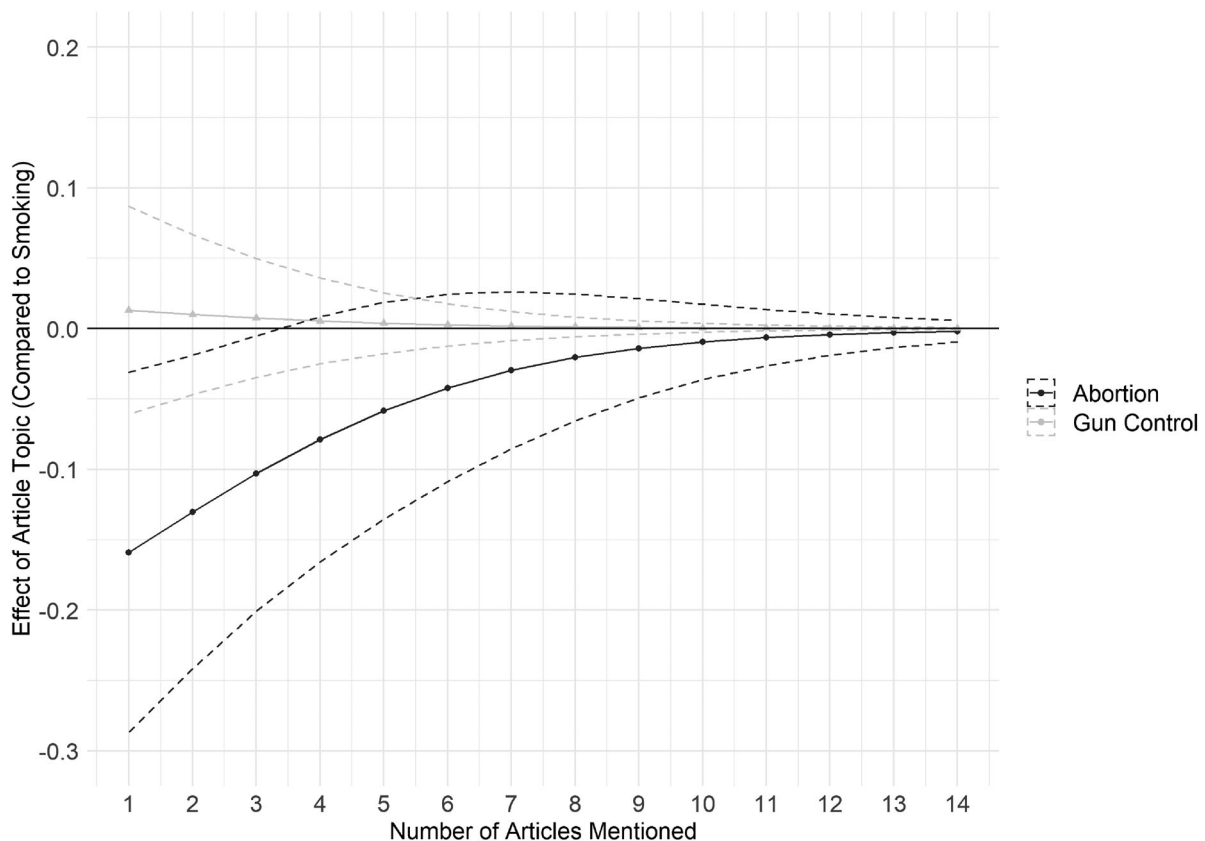


Figure 2. Average marginal effects of article topic and number of articles mentioned on disclosure of university affiliation. Effects below zero indicate lower predicted probabilities of disclosing university affiliation compared to smoking articles.

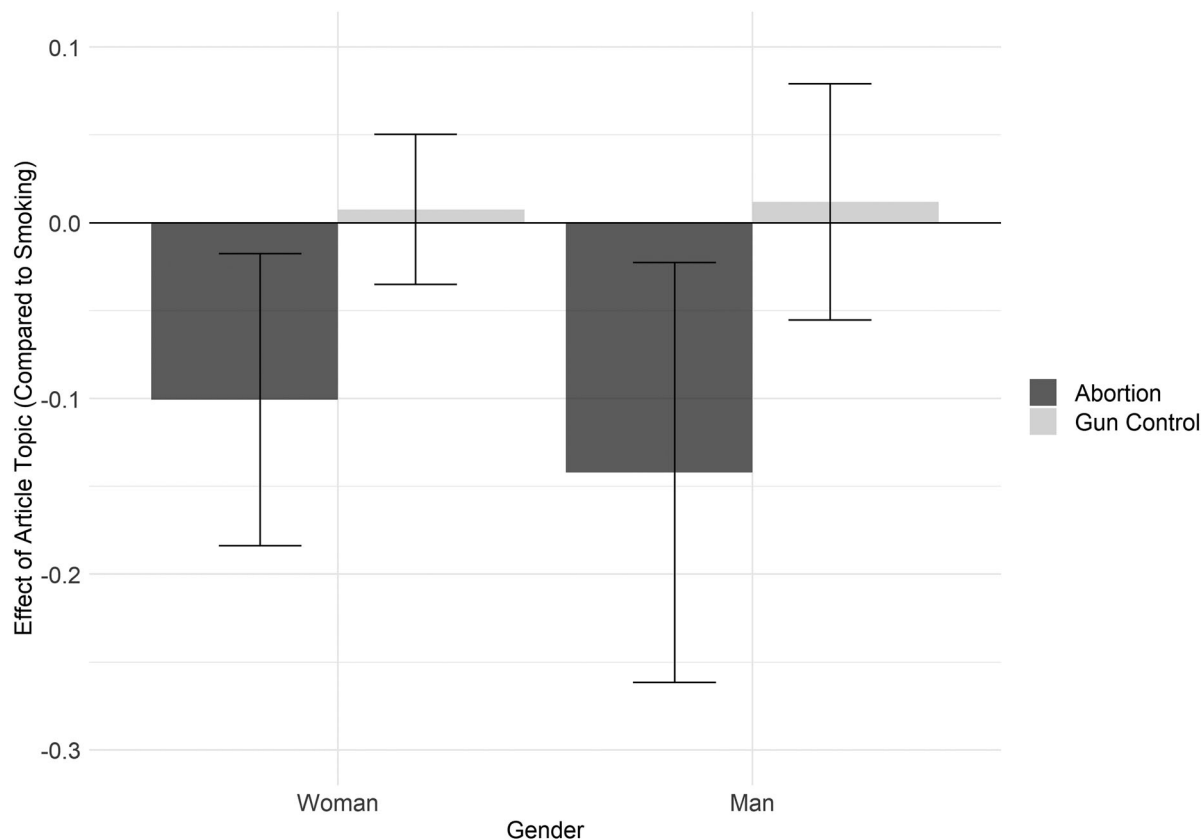


Figure 3. Average marginal effects of article topic on disclosure of university affiliation by gender. Effects below zero indicate lower predicted probabilities of disclosing university affiliation compared to smoking articles.

predictors of being less likely to disclose university affiliation included being a male faculty member ($AME_{\text{woman}} 0.06, p = 0.03$) an associate or affiliate professor ($AME - 0.15$ or $- 0.33$, respectively; $p = 0.0$), and Midwest as the university region ($AME - 0.07, p = 0.03$) (Table 2).

Using AME, we explored probabilities of university affiliation disclosure by the number of faculty occurrences, comparing abortion and gun control faculty occurrences to smoking faculty occurrences. As this is a direct test of the effect of an article topic, the confidence intervals on the test provide information to judge the significance of group differences. We found no significant difference between the probability of affiliation disclosure regarding smoking and gun control faculty occurrences (Figure 2). Compared to smoking, the probability of affiliation disclosure regarding abortion faculty occurrences was significantly lower ($AME_{\text{abortion}} - 0.16; p = 0.02$). It took until abortion faculty experts had at least four occurrences in the media to no longer find significant differences in affiliation disclosure as smoking faculty experts (figure 2).

Gender appeared to play a role in the likelihood of disclosure of university affiliation (Figure 3). Within both gun control and abortion, more men were represented in the popular media than women. However, on average, women's probability of disclosing their university affiliation was 0.061 higher than men's.

Discussion

Over the 4.5 years studied, we found comparatively fewer university faculty experts published or mentioned in abortion opinion pieces, news commentaries, editorials, or letters to the editor compared to faculty experts in gun control, despite both being considered controversial topics. The paucity of publications discussing the importance of safe and legal abortion as a public health issue potentially influences public opinion and contributes to misinformation [41]. We found that abortion experts who *do publish* in the popular press, have significantly lower predicted probability of disclosing their affiliation compared to faculty who discuss smoking or gun control. Reasons for the lack of university disclosure were not elucidated in this study. However, because the majority of faculty from Schools of Medicine are also potentially abortion providers, some may choose not to disclose due to fear of anti-abortion harassment or violence. It is also likely that abortion faculty experts may be discouraged by their public relations departments to utilize their university affiliations if abortion is categorized as a 'political' topic.

We found notable gender disparities, with significantly more male faculty published or mentioned in the popular media compared to female faculty. This is consistent with the literature evaluating op-eds by academics in which male authors make up almost

84% of the published essays [60,61]. On the topic of abortion, more female faculty were published or mentioned than male faculty, although this was not surprising, given that women represent the majority of obstetrics/gynecology specialists and public health degree recipients [62,63]. And yet, despite being less represented in the overall discourse in articles in top newspapers, female faculty have a significantly higher probability of disclosing their university affiliation than male faculty, suggesting women may feel a greater need to utilize their affiliation to legitimize them as experts.

Our study had several limitations. For feasibility purposes, we restricted our article search to only a single search engine, which may have limited the number of articles included in this review. Our decision to include only newspaper articles (print media) from the top eight newspapers may have limited the generalizability, especially since none of the newspapers included were from Southern states. While most Americans reportedly get their news from news websites or apps, research suggests that those aged 18–29 years are more likely to get their news via social media, which also limited the generalizability of our findings [64]. Some of our descriptions regarding university faculty may have been misclassified since we obtained faculty information from university websites, which could have had outdated information. Another limitation was the short time frame studied. Other pressing current events over the 4.5 years may have impacted the number of articles published in each category, which could have biased our results.

This review reveals important knowledge gaps. Future confirmatory analyses are needed to determine the strength and magnitude of these associations. Further studies should include social media, which has a growing presence as places where public health information is sought [65]. Further studies should also include additional faculty expert demographics such as age and race/ethnic background to identify other important disparities. Future studies should also include qualitative methods to explore reasons why faculty experts do or do not disclose their university affiliation in the media.

Conclusions

In conclusion, this systematic review of published newspaper articles addressing abortion, gun control, or smoking by university faculty described faculty characteristics and predictors of university disclosure. We found that major newspapers are publishing fewer articles about abortion than an equally controversial topic, gun control and fewer articles by female than male faculty. While the majority of faculty disclose their university affiliation, abortion expert faculty had a significantly 13% lower probability of doing so,

eroding the perceived importance of this important public health issue. Anti-abortion laws continue to proliferate across the country, some with punitive laws against abortion providers [66]. Such tactics will likely make faculty members or their associated institutions reluctant to disclose their affiliations if prosecution is a possibility. Nonetheless, in a climate where political beliefs increasingly drown out scientific evidence [67–69], universities should take the reins to actively encourage their faculty who are experts in abortion to publish more in the popular press. Today, more than ever, academic institutions, their faculty and administrators urgently need to take a strong and united stand on abortion health care access to remain important players in providing research findings and scientific facts to improve the health of the public.

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Author contributions

EMG and ARL conceived the project idea. EMG, ARL, JDW defined the search terms and oversaw the entire project. MM performed the newspaper search and wrote the first draft of the paper. EKT performed the data analysis.

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Appendix A: ProQuest Search Terms and Subjects

Appendix A.1 ProQuest search terms for abortion, gun control, and cigarette/e-cigarette smoking

Abortion:

(Abortion OR 'pregnancy termination' OR 'terminate pregnancy') AND (M.D. OR PhD OR Dr. OR doctorate OR 'principal investigator') AND (pub.exact('New York Times' OR 'The Washington Post' OR 'Wall Street Journal (Online)' OR 'Boston Globe (Online)' OR 'Chicago Tribune' OR 'USA Today (Online)' OR 'Boston Globe' OR 'Star Tribune' OR 'Los Angeles Times' OR 'USA TODAY' OR 'Wall Street Journal') AND loc.exact('United States US') AND bdl(10000267) AND at.exact('News' OR 'Commentary' OR 'Editorial' OR 'Letter to the Editor') AND stype.exact('Newspapers') AND la.exact('ENG') AND pd(20150101-20201231)) AND pd(2015–2020)

Gun Control:

('gun control' OR 'gun rights' OR 'second amendment' OR '2nd amendment' OR 'gun owner' OR 'gun violence' OR 'firearm' OR 'shooting') AND (M.D. OR PhD OR Dr. OR

doctorate OR 'principal investigator') AND (pub.exact('New York Times' OR 'The Washington Post' OR 'Wall Street Journal (Online)' OR 'Boston Globe (Online)' OR 'Chicago Tribune' OR 'USA Today (Online)' OR 'Boston Globe' OR 'Star Tribune' OR 'Los Angeles Times' OR 'USA TODAY' OR 'Wall Street Journal') AND loc.exact('United States US') AND bdl(10000267) AND at.exact('News' OR 'Commentary' OR 'Editorial' OR 'Letter to the Editor') AND stype.exact('Newspapers') AND la.exact('ENG') AND pd(20150101-20201231)) AND pd(2015–2020)

Cigarette/E-cigarette Smoking:

('cigarette smoking' OR cigarette OR smoking OR 'e-cigs' OR 'e-cigarettes' OR 'electronic cigarettes') AND (M.D. OR PhD OR Dr. OR doctorate OR 'principal investigator') AND (pub.exact('New York Times' OR 'The Washington Post' OR 'Wall Street Journal (Online)' OR 'Boston Globe (Online)' OR 'Chicago Tribune' OR 'USA Today (Online)' OR 'Boston Globe' OR 'Star Tribune' OR 'Los Angeles Times' OR 'USA TODAY' OR 'Wall Street Journal') AND loc.exact('United States US') AND bdl(10000267) AND at.exact('News' OR 'Commentary' OR 'Editorial' OR 'Letter to the Editor') AND stype.exact('Newspapers') AND la.exact('ENG') AND pd(20150101-20201231)) AND pd(2015–2020)

Appendix A.2 ProQuest subjects for article inclusion: abortion, gun control, and cigarette/e-cigarette smoking

Abortion: Abortion, Women's health, Reproductive Health, Obstetrics, Gynecology, Pro life movement, Childbirth & labor, Pregnancy, Pro choice movement.

Gun Control: Shootings, School Violence, Mass Murders, Firearm Laws & Regulations, Firearms, Firearm Accidents & Safety, Suicides & Suicide Attempts.

Cigarette/E-cigarette Smoking: Smoking, Electronic Cigarettes, Smoking Cessation, Tobacco, Nicotine, Cigarette Industry.

Appendix B.1. Descriptive Statistics by Topic, Among Faculty with <3 Occurrences (N = 329, where N is faculty mentions with affiliation with 276 distinct faculty members)

	Overall, N = 329 ¹	Smoking, N = 131 ¹	Gun Control, N = 141 ¹	Abortion, N = 57 ¹	p-value ²
Gender**					<0.001
Man	204 (62%)	84 (64%)	101 (72%)	19 (33%)	
Woman	125 (38%)	47 (36%)	40 (28%)	38 (67%)	
Faculty Rank					0.8
Administrator	29 (8.8%)	13 (9.9%)	12 (8.5%)	4 (7.0%)	
Affiliate	47 (14%)	17 (13%)	22 (16%)	8 (14%)	
Assistant	42 (13%)	23 (18%)	14 (9.9%)	5 (8.8%)	
Associate	62 (19%)	23 (18%)	27 (19%)	12 (21%)	
Professor	128 (39%)	49 (37%)	56 (40%)	23 (40%)	
Emeritus	21 (6.4%)	6 (4.6%)	10 (7.1%)	5 (8.8%)	
School/Department*					<0.001
Medicine	187 (57%)	80 (61%)	83 (59%)	24 (42%)	
Public Health	49 (15%)	31 (24%)	11 (7.8%)	7 (12%)	
Social Sciences/Humanities	49 (15%)	10 (7.6%)	29 (21%)	10 (18%)	
Law	28 (8.5%)	2 (1.5%)	14 (9.9%)	12 (21%)	
Other	16 (4.9%)	8 (6.1%)	4 (2.8%)	4 (7.0%)	
University Region					0.09
West	76 (23%)	34 (26%)	29 (21%)	13 (23%)	
Northeast	128 (39%)	53 (40%)	50 (35%)	25 (44%)	
Midwest	37 (11%)	19 (15%)	12 (8.5%)	6 (11%)	
South	88 (27%)	25 (19%)	50 (35%)	13 (23%)	
Newspaper**					<0.001
Star Tribune	5 (1.5%)	3 (2.3%)	2 (1.4%)	0 (0%)	
Boston Globe	26 (7.9%)	9 (6.9%)	7 (5.0%)	10 (18%)	
Chicago Tribune	21 (6.4%)	11 (8.4%)	4 (2.8%)	6 (11%)	
Washington Post	9 (2.7%)	1 (0.8%)	8 (5.7%)	0 (0%)	
Wall Street Journal	88 (27%)	41 (31%)	38 (27%)	9 (16%)	
USA Today	19 (5.8%)	13 (9.9%)	5 (3.5%)	1 (1.8%)	
LA Times	50 (15%)	18 (14%)	28 (20%)	4 (7.0%)	
NY Times	111 (34%)	35 (27%)	49 (35%)	27 (47%)	
Year of Publication					<0.001
2015	30 (9.1%)	9 (6.9%)	20 (14%)	1 (1.8%)	
2016	27 (8.2%)	11 (8.4%)	7 (5.0%)	9 (16%)	
2017	30 (9.1%)	9 (6.9%)	21 (15%)	0 (0%)	
2018	88 (27%)	25 (19%)	43 (30%)	20 (35%)	
2019	138 (42%)	67 (51%)	48 (34%)	23 (40%)	
2020	16 (4.9%)	10 (7.6%)	2 (1.4%)	4 (7.0%)	
Affiliation Disclosed*	278 (84%)	116 (89%)	121 (86%)	41 (72%)	0.02
Number of Faculty Occurrences					0.6
1	223 (68%)	85 (65%)	97 (69%)	41 (72%)	
2	106 (32%)	46 (35%)	44 (31%)	16 (28%)	

¹n (%).

²Fisher's Exact Test for Count Data with simulated p-value (based on 2000 replicates).

Appendix B.2. Descriptive Statistics by Topic, Among Faculty with 3+ Occurrences ($N = 136$, where N is faculty mentions with affiliation, (28 distinct faculty members))

	Overall, $N = 136^1$	Smoking, $N = 85^1$	Gun Control, $N = 38^1$	Abortion, $N = 13^1$	p -value ²
Gender					0.09
Man	111 (82%)	67 (79%)	35 (92%)	9 (69%)	
Woman	25 (18%)	18 (21%)	3 (7.9%)	4 (31%)	
Faculty Rank					0.11
Administrator	7 (5.1%)	7 (8.2%)	0 (0%)	0 (0%)	
Affiliate	16 (12%)	12 (14%)	3 (7.9%)	1 (7.7%)	
Assistant	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Associate	9 (6.6%)	6 (7.1%)	3 (7.9%)	0 (0%)	
Professor	96 (71%)	52 (61%)	32 (84%)	12 (92%)	
Emeritus	8 (5.9%)	8 (9.4%)	0 (0%)	0 (0%)	
School/Department					<0.001
Medicine	70 (51%)	44 (52%)	17 (45%)	9 (69%)	
Public Health	39 (29%)	30 (35%)	9 (24%)	0 (0%)	
Social Sciences/ Humanities	11 (8.1%)	5 (5.9%)	6 (16%)	0 (0%)	
Law	12 (8.8%)	6 (7.1%)	6 (16%)	0 (0%)	
Other	4 (2.9%)	0 (0%)	0 (0%)	4 (31%)	
University Region					<0.001
West	44 (32%)	15 (18%)	17 (45%)	12 (92%)	
Northeast	61 (45%)	45 (53%)	15 (39%)	1 (7.7%)	
Midwest	10 (7.4%)	10 (12%)	0 (0%)	0 (0%)	
South	21 (15%)	15 (18%)	6 (16%)	0 (0%)	
Newspaper					<0.001
Star Tribune	4 (2.9%)	3 (3.5%)	1 (2.6%)	0 (0%)	
Boston Globe	17 (12%)	12 (14%)	3 (7.9%)	2 (15%)	
Chicago Tribune	2 (1.5%)	1 (1.2%)	1 (2.6%)	0 (0%)	
Washington Post	5 (3.7%)	1 (1.2%)	4 (11%)	0 (0%)	
Wall Street Journal	34 (25%)	29 (34%)	5 (13%)	0 (0%)	
USA Today	16 (12%)	13 (15%)	0 (0%)	3 (23%)	
LA Times	18 (13%)	4 (4.7%)	9 (24%)	5 (38%)	
NY Times	40 (29%)	22 (26%)	15 (39%)	3 (23%)	
Year of Publication					<0.001
2015	11 (8.1%)	4 (4.7%)	7 (18%)	0 (0%)	
2016	10 (7.4%)	4 (4.7%)	6 (16%)	0 (0%)	
2017	12 (8.8%)	3 (3.5%)	6 (16%)	3 (23%)	
2018	32 (24%)	19 (22%)	11 (29%)	2 (15%)	
2019	62 (46%)	49 (58%)	7 (18%)	6 (46%)	
2020	9 (6.6%)	6 (7.1%)	1 (2.6%)	2 (15%)	
Affiliation Disclosed	130 (96%)	79 (93%)	38 (100%)	13 (100%)	0.30
Number of Faculty Occurrences					<0.001
3	39 (29%)	20 (24%)	18 (47%)	1 (7.7%)	
4	20 (15%)	12 (14%)	4 (11%)	4 (31%)	
5	15 (11%)	15 (18%)	0 (0%)	0 (0%)	
6	12 (8.8%)	12 (14%)	0 (0%)	0 (0%)	
7	14 (10%)	14 (16%)	0 (0%)	0 (0%)	
8	8 (5.9%)	0 (0%)	0 (0%)	8 (62%)	
14	28 (21%)	12 (14%)	16 (42%)	0 (0%)	
facultyID	157 (88, 206)	194 (136, 206)	94 (94, 190)	54 (54, 75)	<0.001

¹n (%); Median (IQR).²Fisher's Exact Test for Count Data with simulated p -value (based on 2000 replicates); Kruskal-Wallis rank sum test.