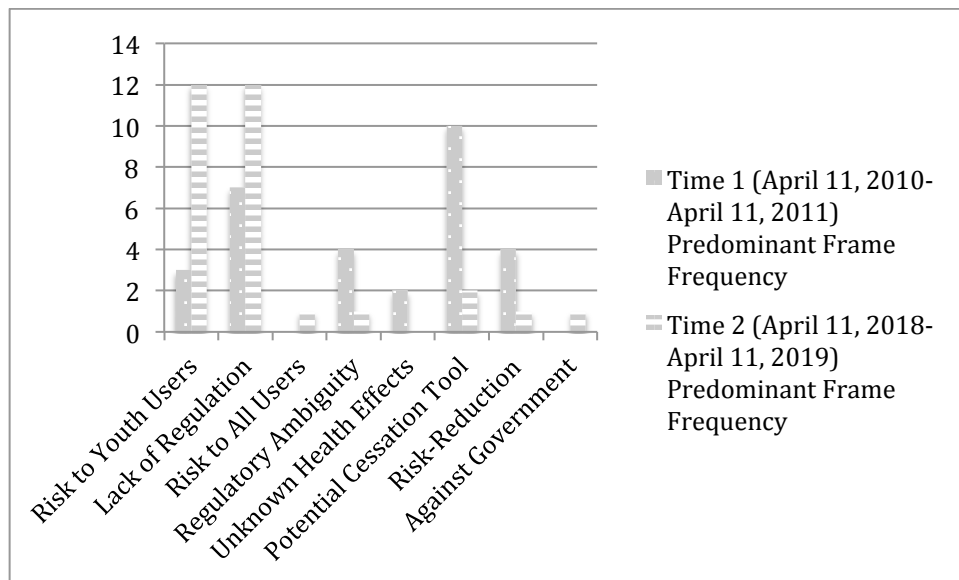


The appearance of frames between both time periods was not evenly distributed. While the predominant frames in Time 1 included both harm-minimization and precautionary principle frames, Time 2 was predominantly comprised of precautionary principle frames: only four of the 30 predominant frames were harm-minimization frames.

Figure 8: Predominant Frame Frequencies across Time 1 and Time 2



Each frame is described in greater detail, below:

***Frames supporting harm-minimization:***

*Potential Cessation Tool*

The most common frame in Time 1, expressed in 23.2% of all frame mentions and 33.3% of predominant frames is conversely present in only 7.7% of mentions and 6.6% of the predominant frames in Time 2. Proponents of this frame state that e-cigarettes are a potentially effective method of cessation and should be left relatively

unregulated to support the adult's freedom to use the devices to quit. As Julie Woessner, 47, stated "I believe these things will save lives,"... "And I want to make sure they remain legal and accessible and that people know about them" (Gregorian, 2010).

Proponents of *Potential Cessation Tool* use personal anecdotes to support their claim that e-cigarettes are effective cessation devices: "I've cut my smoking by about 75 percent through vaping getting my nicotine from an electronic cigarette that delivers a smokeless vapor without all the tars and other gunk that you get from burning tobacco and when this pack is gone I expect to never buy another" (Knapp, 2010). Many pieces also included statistics, either about the amount of money that users would save by using e-cigarettes to quit, or in Time 2, citing data from recent studies conducted in England that found that e-cigarettes can be effective at helping users quit cigarettes.

*Potential Cessation Tool* and *Risk-Reduction* are frequently observed in the same article. While *Potential Cessation Tool* claims that users can quit cigarettes through the promotion of e-cigarettes, *Risk-Reduction* claims that e-cigarettes may not help a user quit, however they are better than cigarettes.

### *Risk-Reduction*

*Risk-Reduction* is the second most commonly appearing frame supporting e-cigarettes in Time 1. It is found in 11.6% of all frame mentions and 13.3% of predominant frames. In Time 2, while found in 10.3% of all frame mentions, *Risk-Reduction* is only present in 3.3% of articles as the predominant frame. Proponents of this frame state that e-cigarettes, while not necessarily an effective cessation tool, are much better for the user than combustible cigarettes. Public health would be promoted by

switching all cigarette users to e-cigarettes. Limiting access to e-cigarettes could prove to be a mistake by limiting cigarette users' access to a product with fewer carcinogens than what they're currently using.

Proponents of *Risk-Reduction* present e-cigarettes to be, while not harmless, a less-harmful alternative to cigarettes: "If cigarette smokers switched to e-cigarettes, Nitzkin said, 'we could eliminate 98 percent of the illness and death' attributed to tobacco use" (Howington, 2010); "It's not a gateway; it's a safer alternative" (Shearer, 2019). In tandem with statistics of the number of people who currently use cigarettes, the knowledge that e-cigarettes are less harmful makes the *Risk-Reduction* frame more effective, helping the reader to conceptualize how many lives could be saved if users switch entirely to e-cigarettes.

#### *Against Government Intervention:*

*Against Government Intervention* is present in 8.7% of all frame mentions and 0% of predominant frames in Time 1. In Time 2, *Against Government Intervention* is present in 3.3% of all frame mentions, and 3.8% of predominant frames. Proponents of *Against Government Intervention* state that the government should not be able to regulate e-cigarettes, either because doing so would be bad for businesses: "Why punish the vast majority of law-abiding convenience-store owners when it doesn't seem, at least from the statistics, that their stores are a major source for minors gaining access to flavored tobacco products?" (Kotsopoulos, 2018) or because it is the individual's right to decide what they want to consume: "'You can sign up to go into the service at 18, you can get a permit to carry a gun at 18,' [Ronald J. Malborough, chairman of the Millbury Board of

Health] said. ‘Here we are, or the state is, telling us you have to be 21 (to buy tobacco products)’” (Minimum age to buy tobacco now 21, 2019).

### **Frames supporting the precautionary principle**

#### *Risk to Youth Users:*

While present in only 14.5% of total frame mentions and 10% of predominant frames in Time 1, *Risk to Youth Users* is present in 32.1% of all frame mentions in Time 2 and 40% of predominant frames. *Risk to Youth Users* is the most frequently appearing frame in Time 2. Proponents of *Risk to Youth Users* state that the high rates of youth e-cigarette users are concerning, and because of that, action must be taken to reduce the increasing rates: “About 34 million adults still smoked in 2017, and 2.7 million middle- and high-school students smoked cigarettes and cigars last year. These are not just statistics They are people, many of whom will die prematurely of heart disease, cancer, stroke and other tobacco-related illnesses” (FDA limits on Big Tobacco show promise, 2018).

Proponents of *Risk to Youth Users* cite former FDA Commissioner, Scott Gottlieb, and his statement that “Teen vaping is ‘an epidemic,’” (FDA on target with crackdown, 2018). E-cigarettes are being marketed as adult cessation devices, however youth are hooked on these products with no intention to quit cigarettes. These addiction rates are evermore concerning because “There is ‘conclusive evidence’ that more than 80 percent of all smokers begin smoking before the age of 18, according to studies by the Centers for Disease Control” (Klaft, 2010). This frame supports the precautionary

principle public health argument by arguing that ending youth addiction will pose greater health benefits later on.

### *Risk to All Users*

While this frame is not present in Time 1, it appears in 5.1% of all frame mentions and 3.3% of predominant frames in Time 2. Proponents of *Risk to All Users* state that the negative health effects posed by e-cigarette consumption extend beyond just youth, but to all people who use them. This frame extends beyond *Unknown Health Effects*, stating that while there have been no longitudinal studies of e-cigarettes, enough information is known to state that they contain harmful chemicals and pose a health risk to users: “A common misconception is that vaping is a healthy alternative to smoking. As [Dr. Richard] Stacey [University of Nebraska at Omaha health professor] explained, nicotine consumption still produces health problems—even without the toxic chemicals in cigarettes” (Vaping devices pose a threat to young students, 2018).

Proponents of this frame cite public health leaders and recent studies, which indicate that e-cigarettes do, in fact, pose a health risk: “Combined data from two national surveys of more than 69,000 people 18 and older carried out in 2014 and 2016 showed that compared with people who never used e-cigarettes, daily users almost doubled their risk for heart attack” (Bakalar, 2018); “A separate study by the Harvard T.H. Chan School of Public Health that found common e-cigarette flavors may harm users’ lungs” (Bloomberg, 2019).

### *Unknown Health Effects*

*Unknown Health Effects* is found in 17.4% of all frame mentions and 6.6% of predominant frames in Time 1. In Time 2, this frame is found in 7.7% of all mentions and in no predominant frames. Proponents of *Unknown Health Effects* assert that the long-term health effects of e-cigarettes are generally unknown—either regulation is needed, or users should proceed with caution. To back this claim, proponents cite the lack of credible data to support the idea that e-cigarettes are not harmful to health: “Ultimately, we’ll need good studies to assess the long-term safety of vaping” (Shmerling, 2019); “Very little data exists on the safety of e-cigarettes, and the FDA has warned that they are potentially addicting and contain harmful toxins,’ said Edward Langston with the America Medical Association” (Smith, 2011); “Michael Levy, director of the FDA’s division of new drugs and labeling compliance, said in a news conference that the agency is ‘interested in finding out whether e-cigarettes can be proven safe and effective’” (Maugh, 2010). Proponents also cite general concern and confusion among currently addicted users: “‘So my biggest concern, [Julian Lavandier, 21, student at Colorado State University] said, ‘is, you know, right now I’m puffing, puffing, happy, worry-free, and then in 20 years I’ll have to explain to my kids why I’ve developed popcorn lung—or some new form of lung cancer,’ Lavandier said. ‘Because I didn’t know what the risks were of e-cigarettes’” (Daley, 2018).

### *Lack of Regulation*

This frame is present in 17.4% of all frame mentions and 23.3% of predominant frames in the Time 1 and in 29.5% of all mentions and 40% of predominant frames in the second. In both time periods, *Lack of Regulation* is the second most appearing frame. Proponents of this frame state that e-cigarettes remain generally unchecked by federal

and local governments. In order to promote health, supporters of this frame state that e-cigarettes should be better regulated. Doing so could promote the adult smoker's desire to use e-cigarettes as a risk-reduction tool as well as to help reduce rates of youth users. Many proponents include calls to action in their articles, directing the reader to reach out to their local representatives to help pass regulatory legislation: "Please ask your supervisor to vote yes, and join the San Francisco Marin Medical Society, Marin County Office of Education, American Heart Association, California Medical Association, American Cancer Society, parents, and teachers among many others in this important public health policy" (MA, Willis, Heeling); "In the future, people should encourage their lawmakers to fight the nicotine-based industries and be aware of new ways these industries will market themselves. More addictive products are bound to be developed, and the next generation will have their own challenges" (Vaping devices pose a threat to young students, 2018).

Proponents also place a large amount of importance on the FDA's ability to regulate products: "The appellate court said the FDA should regulate them under the 2009 legislation that set up a Center for Tobacco Products" (Wilson, 2010); "It's time for FDA officials to come to their senses by reclassifying (and promulgating reasonable regulation for) e-cigarettes as tobacco products" (Wilson, 2010).

### *Regulatory Ambiguity*

This frame is present in 7.2% of total frame mentions and 13.3% of predominant frames in Time 1. In the second, this frame is present in 3.8% of total frame mentions and 3.3% of predominant frames. While proponents of this frame maintain that some form of

regulation over e-cigarettes is necessary, they do not clearly describe the mechanisms and responsibilities the government should approach regulation: “The Board of Health deserves credit for taking on the issue of youth access to tobacco”... “But the board also must weigh the potential unintended consequences of its actions, which could have financial implications on business owners who have never contributed to the problem” (Kotsopoulos, 2018). Proponents also assert that it is important to take measured steps toward regulation and to ensure that the wellbeing of all individuals is taken into account “‘We have to be really careful not to overreact to the youth problem’ said David Abrams, professor of social and behavioral sciences at New York University” (FDA Plans to Impose Severe Restrictions, 2019).

## DISCUSSION

In the initial search, the frequency of articles was quite low in Time 1 versus in Time 2. These frequencies may reflect increasing national attention to the topic as rates of e-cigarette use increased. The proliferation of e-cigarette products on the market and related advertising may have further contributed to this attention. Additionally, while Time 1 did include coverage of local legislation changes, Time 2 had a greater frequency of federal hearing coverage, which could increase coverage and discourse concerning what the government should do about e-cigarettes. Time 2 also had a greater frequency of opinion and editorial pieces. This might indicate that e-cigarettes were more frequently discussed in public discourse, compelling more people to publish their opinions on the matter.



Through my media frame analysis, I observed that, in fact, the predominant messages have shifted in the print news media as the rates of e-cigarette use have increased over time. The most frequently appearing frame was *Potential Cessation Tool* in Time 1, positing that e-cigarettes could prove to be beneficial to current adult smokers. During this time period, *Lack of Regulation* was the second most frequently used frame, acknowledging the fact that there was still concern over the implications of leaving this addictive product unregulated. In Time 2, when the rates of youth e-cigarette use skyrocketed from approximately 1.5% of youth 2011 to 20.8% in 2018, the predominant frames became *Risk to Youth Users* and *Lack of Regulation (FDA Proposes Regulations, n.d.)*. In this analysis, the *Potential Cessation Tool* frame clearly lost ground as the rates of youth e-cigarette use increased.

### *Limitations*

There are several limitations to consider with respect to this study. The first was the relatively small sample size of 30 articles from each period (April 11, 2010- April 11, 2011 and April 11, 2018-April 11, 2019). This small sample may not be representative of the full scope of arguments that are being expressed in these two time periods. To mitigate this limitation, I did utilize a random selection procedure from the two datasets of articles that met the initial criteria. Additionally, NexisUni did not sample from all publications, so I added a supplementary manual search from five national papers. Ideally, the same search method would have been used to maintain consistency. Finally, to ensure validity of my frame identification and definition, it would have been ideal to have at least one other analyst reviewing and analyzing the articles. Hopefully, by

reviewing both public health literature and newspaper articles as part of this study I was able to capture the true range of frames and debate.

In spite of these limitations, this study does provide important insight into the ways in which the framing of the e-cigarette debate has changed over time. Because the news media play a powerful role in shaping discourse, it is advantageous to public health advocates to understand how the e-cigarette debate is being presented to the public. Not only do frames influence public discourse, but they help to shape the ways in which policy agendas are set, as well as how policy makers view the issue.

## CONCLUSION

As a snapshot of current debate, framing analysis provides important insight into the ways in which a certain issue is both being delivered to and received by the public. This study of frames on both sides of the public health debate of e-cigarettes reveals that the climate and discourse of the debate did change over time, with the increase of youth e-cigarette users. The frequencies of each frame across Time 1 and Time 2 are unbalanced. It is important to note this imbalance in frame frequencies in each dataset as this likely reflects an imbalance in public conversation. Amplifying the voice of one argument can detract from the conversation of the other. In the few editorials in my sample, proponents of the precautionary principle argument even include calls to action, asking the reader to contact their local representatives and promote regulation in their area. It is possible that this call to action could be reflected in future policy agendas and decisions. Conversely, there are very few mentions of harm-minimization frames in Time 2. If, in fact, e-cigarettes do prove to be an effective cessation tool for current smokers, as

Zhuang, Cummins, Sun, & Zhu, 2016 has indicated, then an entire population of people who could benefit from the devices are not well represented in discussion about e-cigarettes. At the same time, the health needs of youth should not be ignored, either. The increased probability of using cigarettes after initial use of e-cigarettes could prove to be a massive public health problem if these youth e-cigarette become the next generation of cigarette smokers.

### *Implications*

In fact, as media coverage of this issue was trending more towards the precautionary principle, federal, state, and local regulatory and legal actions to control the epidemic of youth e-cigarette use were being initiated.

While Congress approved the FDA to regulate e-cigarettes in 2009, regulations were not actually implemented until 2016. The 2016 regulation required e-cigarette manufacturers to seek marketing authorization, banned e-cigarette sales to youth under 18 years old, required photo I.D. for purchase, and banned sales through vending machines (FDA's Deeming Regulations for E-Cigarettes, 2018).

In April of 2018, the FDA took additional action, although not regulatory in nature. Among other things, they requested documents from JUUL to be able to better assess what was driving youth use, and in October 2018, the FDA proceeded to seize thousands of documents from JUUL headquarters (Hoffman, 2018). The following month, Gottlieb stated that the FDA's Center for Tobacco Products would re-evaluate their compliance policy to extend to e-cigarettes. This review could trigger increased regulation of e-cigarette flavorings although has not yet been implemented. Additional

actions at the state level have included investigations into youth use of JUUL by the attorneys general of various states such as Iowa, Massachusetts, and North Carolina (Jackler, et al., 2019).

While the observed shift in newspaper coverage may be only one aspect of the policy environment, it seems likely that by presenting youth use of e-cigarettes as an urgent public health issue, newspaper coverage may have increased the pressure on these policymakers to take action.

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