



CLOSUP Student Working Paper Series
Number 61

April 2020

Comparing Public Opinion and Legislation on Fracking in Pennsylvania

Anya Satyawadi, University of Michigan

This paper is available online at <http://closup.umich.edu>

Papers in the CLOSUP Student Working Paper Series are written by students at the University of Michigan. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the view of the Center for Local, State, and Urban Policy or any sponsoring agency

Center for Local, State, and Urban Policy
Gerald R. Ford School of Public Policy
University of Michigan

Comparing Public Opinion and Legislation on Fracking in Pennsylvania

Anya Satyawadi, University of Michigan

Environment 302

Abstract

In recent years, natural gas production has increased greatly in the United States. This is, in large part, because of an attempt to decrease dependence on foreign energy sources. With increased use of natural gas comes the use of hydraulic fracturing, especially popular in states with large shale reserves like Pennsylvania. However, hydraulic fracturing or “fracking” is a divisive issue that has separated many Pennsylvanians. The industry stimulates the economy within the state as well as provides thousands of jobs for Pennsylvanians. But, the environmental concerns regarding fracking worry many citizens of Pennsylvania. This paper seeks to decipher the relationship between the opinions of Pennsylvanians on the topic of fracking and the legislation passed by the Pennsylvania legislature by performing a content analysis. The content analysis focused on Letter(s) to the Editor from various Pennsylvania newspapers and legislation passed by the Pennsylvania legislature. The findings of this paper revealed that Pennsylvanians largely oppose fracking, while legislators largely support fracking. Water-related fracking issues are important to both Pennsylvanians and legislators. In Pennsylvania, there is a disconnect between the constituents and legislature on what the state should do about fracking, which is the larger issue that this paper demonstrates.

Introduction

The United States has seen a rapid shift from using coal as a resource due to the increasing movement towards cleaner forms of energy. Cheap natural gas has taken the place of coal as the result of this shift (Davis, 2017). The increase in production of natural gas is largely due to the development of hydraulic fracturing, more commonly known as fracking. The process of fracking is when liquid is sent down a well to fracture soft rock, like shale, to release natural

gas and, in some cases, oil, both of which are then captured for use (USGS, 2020). It is most commonly done in states and regions where this type of soft rock is present in large amounts.

Though natural gas has lower emissions than coal, there are a variety of issues relating to fracking that raise concern for many people, especially those directly impacted by the presence of natural gas companies. Largely, an issue that surrounds fracking is the environmental concern that comes from the extraction process. Air pollution and water contamination are the biggest issues that most people have with fracking. In addition to these two main concerns, there are also problems that result indirectly from these environmental concerns (Hadavi, 2020). These problems sometimes shape the opinions of those affected by the increasing presence of fracking in their community. However, not everyone who is in a community with fracking is opposed to the practice. Fracking is supported by those that believe that it provides economic benefit for local communities, especially jobs. This tension between the environmental and economic impacts of fracking is what makes the debate so contentious. It also makes policymaking relating to fracking difficult for lawmakers, as constituents are highly divided.

The result of this divisiveness has been varied amongst fracking policies throughout the world. Currently, the UK, Ireland, and France have banned fracking completely, and both Germany and the Netherlands have put a temporary halt to all drilling (Silverstein, 2019). In the United States, regulation over fracking is largely left to state governments. This has created a diversity of policies that have been instituted throughout the United States. Moreover, these policies represent the wide variety of positions of constituents across the country. Policymakers also have to contend with the pressure from people about the positives and negatives of fracking.

The state of Pennsylvania presents an interesting case regarding fracking. In western Pennsylvania, the presence of the Marcellus Shale Formation (Amico, 2014) has led to a different approach towards regulating fracking. This presents an interesting issue for regulators when deciding how to regulate fracking in Pennsylvania. In polls conducted in the state, it was found that 69% of Pennsylvanians support the Green New Deal, but only 39% of people polled support a ban on fracking (Friedman and Goldmacher, 2020). For many people in a swing state like Pennsylvania, fracking is an issue that can determine how a constituent votes, both locally and nationally. However, many liberal legislators in Pennsylvania do not favor fracking bans because of the support that many of their constituents have for fracking and the jobs it creates. There are an estimated 350,000 jobs that are related to fracking in Pennsylvania, which causes legislators and politicians to be wary when it comes to cracking down on it (Friedman and Goldmacher, 2020). This paper aims to understand the opinions on fracking of voters in Pennsylvania in comparison with the intent that state legislation has in relation to fracking.

Literature Review

Research that has been done regarding fracking policies in the United States is vast and complex. The literature can be split into two categories: first, the opinion of the public on different policies regarding hydraulic fracturing, and, second, the efficacy of current policies that are being enacted across the United States. In order to answer the question posed earlier in this paper, it is important to consider analyses of what policies people want to see enacted. The current success of different fracking policies is another key factor to consider when looking at proposed legislation.

Public Opinion

The public opinion on fracking has been something that many policy researchers have studied. Mayer & Malin (2018) found that, in the state of Colorado, the citizens prefer regulation at the state and local level for fracking, but also at the federal level. This article also found that trust is a key variable in determining the safety that citizens perceive. The authors indicate that it is possible that the people of Colorado have more trust in the industry protecting the peoples' interests, and, therefore, they feel as though they need less local regulation. The paper also attributes neoliberal ideals adopted by the state and local government to the shift of policies rather than the peoples' opinions. Neoliberal ideals, in this context, are defined as supporting the investment of big natural gas companies and promotion of the natural gas industry to support economic growth. Additionally, neoliberal ideals emphasize the free market and capitalistic ideals, which lends them to letting the market set the boundaries for natural gas companies - in other words, less regulation. This attribution to neoliberal policies can also be seen in Sica & Huber (2017), which explains how energy has been linked to neoliberal policies that make policy about extraction more about the economic benefit it presents rather than the actual net benefit. Sica & Huber (2017) more specifically argue that states may think that they are acting to the advantage of the constituents, but the history of energy policy in Pennsylvania, in particular, shows that states may be acting in the interests of outside development.

However, not all constituents may want to actively participate in policy making. Eaton and Kinchy (2016) show an evaluation of how people react to fracking policy, where there is apathy and the public has difficulty in getting their opinions heard. The paper concludes that many people in small communities struggle with being apathetic to issues, like fracking, and that

this apathy makes it difficult for organization at the local level. The issue is that people want to speak up, but they are not always successful in doing so. In particular, the paper detailed how silence from the public does not necessarily mean that policies are effective and the public approves of them, which is essential to understanding the importance of public opinion being heard and understood.

In terms of public opinion, there are effective policies that support self-regulation from companies rather than the government acting as a regulatory force. The Lee et. al. (2019) paper shows from surveys done in Colorado that the public is more willing to support companies if they have a third party “green certification”. This means that, if companies demonstrate that they have tried to become more environmentally conscious, then the public is more likely to support them. In turn, self-regulation appears to be an alternative resolution to regulation by the government.

Effectiveness of Current Policies

There is a variety of policy research done on the current policies that different states, municipalities, and other local parties have enacted. These policies show that there are multiple ways to regulate fracking, and that, though banning is the most widely known, there are other ways to enact policy. In Davis et. al (2017), it was found that economic and political factors play into environmental policy in relation to fracking. Political factors, as defined by the paper, include political party affiliations or ideologies, while economic factors incorporate investment by the oil and gas industry as well as tax rates. This means that, when regulators make decisions with passing policy, there are multiple elements that determine the success or failure of legislation.

When it comes to policies, there are different priorities to weigh in order to make sure that the policy is successful when it is enacted. Ziorgiannis et. al. (2016) show that the regulations in Pennsylvania are strong in terms of their phrasing, but they are limited when it comes to the application of the legislation. This is essential for understanding that, though legislation can have a certain intent, it does not mean that the legislation is successful, which could be the case for fracking legislation in Pennsylvania.

Rabe et. al. (2013) demonstrate the case of fracking for Pennsylvania. In their paper, the authors discuss Act 13, the law that Governor Corbett signed in 2012 in Pennsylvania, which instituted an impact fee on natural gas companies. The authors note that it is important to understand that this impact fee does less than a tax, and it is more supportive towards the oil and gas industry than towards Pennsylvania constituents. Act 13 created many issues surrounding its support of the rapid growth of the gas and oil industry. This paper is important to understanding the status quo of Pennsylvania, and the research that has been done about fracking and Pennsylvania.

Overall, the literature on public opinion and fracking shows that understanding the public's thoughts on policy is important in order to have effective and meaningful policies on issues that impact constituents. But, it also demonstrates that policymakers take many factors into consideration when setting policies. This paper examines whether regulators' intent in legislation related to fracking match the concerns that constituents have with fracking. In other words, it seeks to answer the question: how do the opinions of Pennsylvanians compare to the intent of proposed state legislation related to hydraulic fracturing?

Methods

In order to make the comparison between views of constituents and intent of legislations, this study will conduct a content analysis of newspaper articles and statements of intent in legislation. The newspaper articles are from Pennsylvania publications and specifically focus on letters to the editor to gauge the opinion of Pennsylvanians. The letters to the editor are sourced from the Newsbank database, and they seek to represent the opinions of everyday voters. However, it is important to acknowledge that these local newspapers received many letters that were from activists in the area. The legislation was gathered from the Pennsylvania General Assembly's Bill Tracker, where there is a PDF copy of each bill put before the legislature. These documents have a statement of intent, which is what this paper uses to analyze the purpose of each bill that mentions hydraulic fracturing.

Sampling

The data sample for the legislation was found by entering "(hydraulic fracturing)" in the "By keyword/phrase (Bill Text)" section of the PA General Assembly's website. The search engine required that the user input the legislative session for any search, so this is repeated for the legislative sessions from 2011-2014 (two sessions). These two sessions are selected because the highest number of legislation relating to fracking appeared -- the total is 103 results. However, due to the fact that legislation can get amended, the number of legislation read is 63. These years are then used to narrow down the time period of articles in Newsbank. The search terms used in Newsbank are ("letters to the editor" AND "fracking"), and there are 132 news articles found in Pennsylvania from the years 2011 and 2014. There are some duplicate articles

and some of the same letters were sent to different publications. After eliminating these duplicates, there are a total of 103 newspaper articles analyzed.

Coding Scheme

Thematic coding was used to analyze the data from the newspapers and legislation. The major themes throughout the letters to the editor as well as from Pennsylvania bills were included in the coding scheme. Out of the total letters to the editor, 20/132 (~15%) letters were examined to determine these themes. A total of 5/103 (~5%) pieces of legislation were analyzed to add to the codebook. In all there were 22 codes (shown in table 1), which span economic and environmental considerations.

In addition to the themes gathered from the articles and legislation, there were three additional themes considered in this study: positive, negative, and neutral feelings towards fracking. These themes were applied to all samples and served to compare the bills with the opinions of constituents. Table 1, shown below, lists the frames used in this coding scheme and their codes.

Table 1: Coding Scheme with Code Number and Frames (McKenny, 2018)

Theme Code Number:	Frames for fracking:
1*	Support fracking
2*	Oppose fracking
3*	Neutral on fracking
4	Local community economic growth
5	Greater investment in Pennsylvania
6	Natural Gas Impact Fee
7	Best alternative choice (to coal, oil, other non-renewables)

8	Positive infrastructure development
9	Water contamination (carcinogenic chemicals or any dangerous chemicals in water - groundwater and surface water)
10	Dangerous to public health
11	Supporting growth of large energy firms
12	Water scarcity
13	Earthquakes
14	Permanent landscape changes (negative industrial development)
15	Future expenses as natural resources are used up (worry about renewability of natural gas)
16	Air pollution
17	Fugitive methane
18	Noise pollution
19	Decreasing property values
20	Damage or loss of state protected parks
21	Habitat disturbances
22	Decrease in tourism

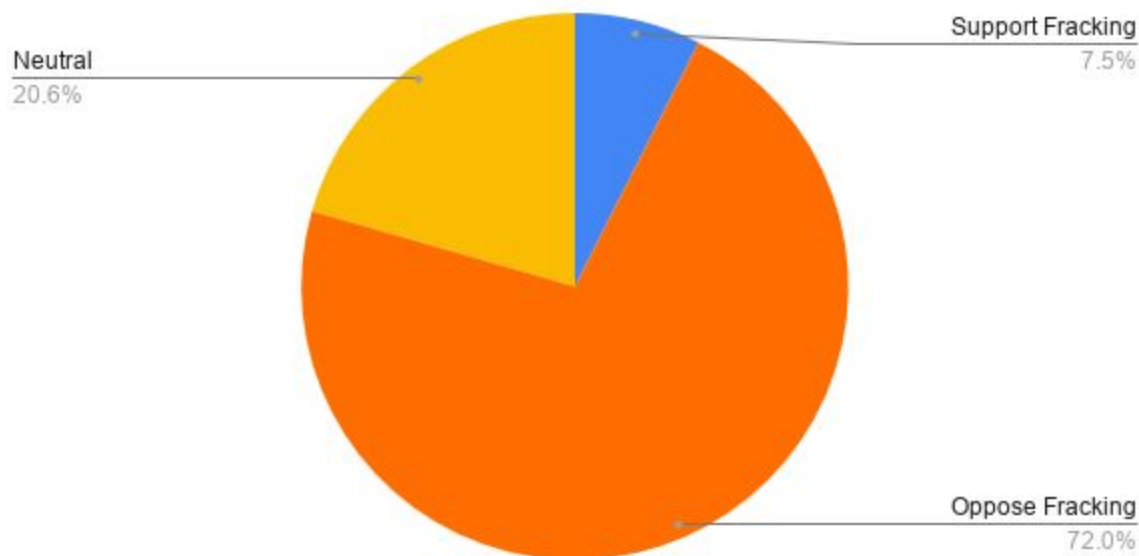
*codes 1,2,3 are mandatory codes for all documents

Results

Newspapers

After reading the 103 newspaper Letter(s) to the Editor, as Figure 1 demonstrates, there is a majority opposition (72%) to fracking by Pennsylvania constituents. More constituents are neutral towards fracking than are in support of fracking. This is especially surprising considering the fact that fracking is still not banned in the state of Pennsylvania. It is important to note,

Figure 1. Support, Oppose, and Neutral Frames in PA Newspapers



however, that many of the people who wrote letters to the editor were often part of an organization (usually an environmentally conscious one) to increase the visibility of fracking issues to the larger community.

Unsurprisingly, the code that was most prevalent amongst newspapers is code 9 (water contamination), which appears 41 times out of the 103 newspapers articles. This can be seen in Figure 3 below. Water contamination is one of the largest concerns that people have with fracking. The least frequent code is code 19, which is the issue of decreasing property values. Code 19 only appears in 1 of the 103 articles. Framing of support or, in most cases, opposition of fracking was very direct by those writing opinion pieces:

“Senator Yaw: Regarding your ‘Pennsylvania Natural Gas Expansion and Development Initiative’... not that my opinion counts (although you are “supposed” to represent me)

but I don't think your new bill is a good idea." (Lynne Whelden, The Daily Review & Sunday Review (Towanda, PA))

"The notion that fracking is safe is patently false. A tanker truck of chemicals for every frack necessitates the exemptions from the Clean Water Act, clean drinking water act and Superfund act they've bought from congress." (Steve Izzo, York Daily Record)

Similarly, many people are very clear in their concern regarding the water dangers surrounding fracking:

"If you think the price of natural gas is high, think about the cost of having to buy and transport enough water for your town, your farm, your home-forever." (Lisa Ladd-Kidder, Berks- Mont Newspapers)

"There have been dumpings of fracking fluid into both the Delaware and Susquehanna rivers and so far neither the EPA nor the Basin Commissions have indicated that the pollutants added have violated federally set safe-levels. What is their plan should pollutant levels indicate that the river water is not safe to drink? Will it take weeks, months, or decades for the waters to reach safe drinking levels..." (Marty Borko, The Daily Review & Sunday Review (Towanda, PA))

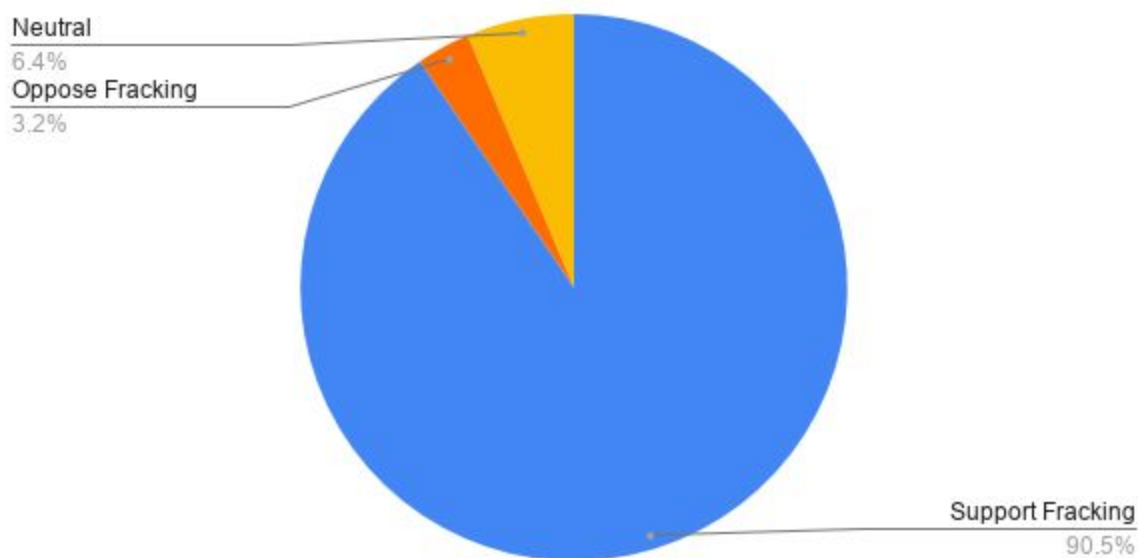
These quotations demonstrate the strong opinions of Pennsylvanians who write opinion pieces to the editor, and they also give an example for how codes were determined from the text.

Legislation

Of the 63 pieces of legislation examined, most of the legislation (90.5%) supported fracking. The code that was most prevalent amongst the legislation is code 9 (water contamination) as well, which is surprising since the overall purpose of most legislation is to

promote fracking. However, it is important to highlight that the second most prevalent code was code 6 (natural gas impact fee/tax), which appears 13 times. This point needs to be emphasized

Figure 2. Support, Oppose, and Neutral Frames in PA Legislation



because, unlike the codes in newspapers, the second most prevalent code links to economic benefits that come from fracking. There were many codes, which were environmentally related, that are not mentioned once in legislation.

Very few pieces of legislation oppose fracking. In fact, only 3.2% of legislation, which is 2 bills or resolutions, directly oppose fracking. More legislation is neutral towards fracking, which amounts to 6.4% of the total. This is another unsurprising result, as currently fracking is not banned in Pennsylvania. Another important observation with regard to the legislation is that much of it focuses on definitions relating to fracking and natural gas drilling rather than taking significant action. Moreover, the language urges other governmental agencies to take action, but it is unclear if there is any follow through. For example:

“Resolved, That the House of Representatives urge the Department of Environmental Protection to establish an evaluation and approval process for the use of acid mine drainage in the extraction of natural gas.” (House Resolution No. 745, P.N. 3611)

Additionally, most of the bills detail the method through which companies should disclose the materials being used during the process of hydraulic fracturing. However, these types of bills are either amended or created anew to reiterate the importance of the powers of the Department of Environmental Resources. Many of the bills have a language similar to this:

“An act relating to the development of oil and gas and coal; imposing duties and power on the Department of Environmental Resources; imposing notification requirements to protect landowners...for the creation of an Oil and Gas Technical Advisory Board, for oil and gas well inspections, for enforcement and for penalties...” (Senate Bill No. 127, P.N. 103)

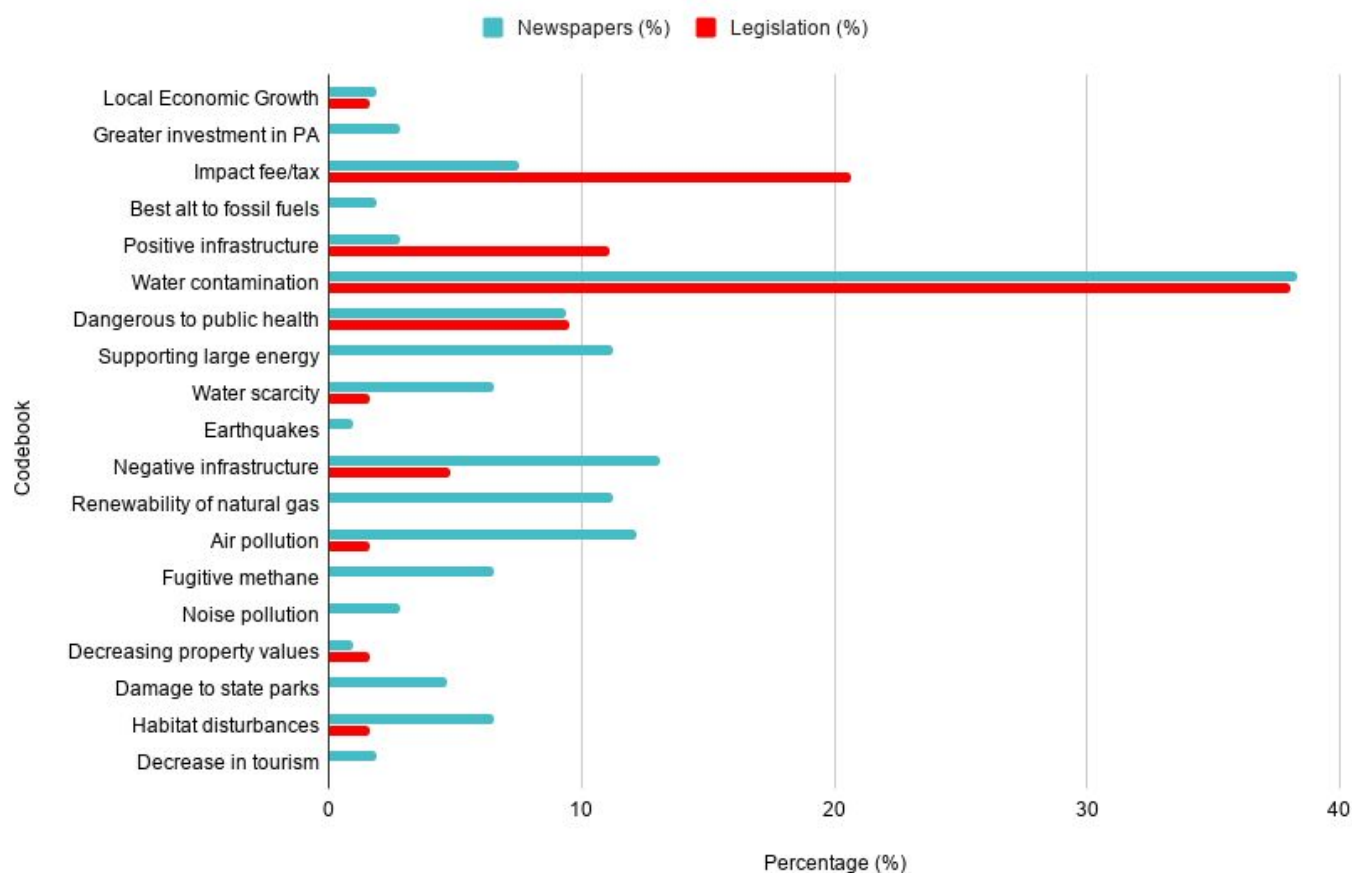
The excerpts from the state legislation show a different way of addressing the problems of fracking raised by constituents, but they emphasize the economic priority of the state government.

Combined Results

The actual comparison of the Pennsylvania newspapers and legislation show the prevalence of each code, in percentages, in each type of content. As seen in Figure 3, there are more codes mentioned in Letter(s) to the Editor over the legislation. Largely, this can be attributed to the difference between the intents of both. The letters to the editor tend to use many arguments whereas the legislation is pointed towards one issue. On average, newspapers had 11.8 codes, while the legislation had 5.5 codes. The newspaper articles have a little more than

twice the number of codes that the legislation does on average. For the purpose of this figure

Figure 3. Comparison between newspapers and legislation with every code



(Figure 3), it is important to highlight codes 4-22.

Overall, the most prevalent code in both newspapers and legislation is code 9 (water contamination), and this code was referenced 65 times between the legislation and newspapers. The least prevalent code is code 13 (earthquakes), which is referenced 1 time in newspapers and not at all referenced in legislation. It is evident from these results that the legislation is able to address the largest concern brought up by constituents. But, another observation from the data is that the legislation does not address many other issues highlighted by the constituents.

Figure 4. Prevalence of Support, Oppose, and Neutral in Newspapers and Legislation

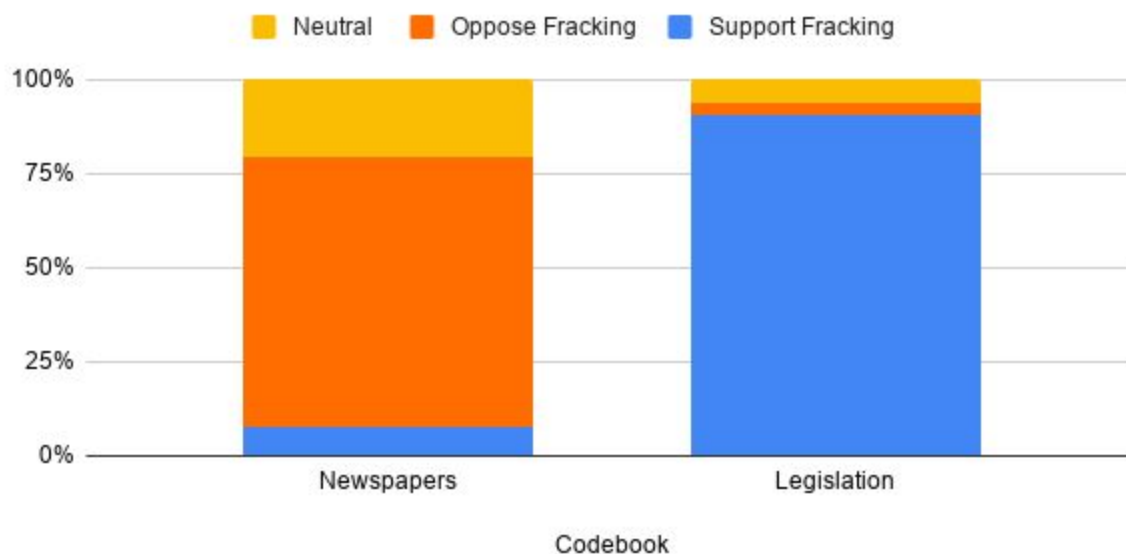


Figure 4 shows the prevalence of support, opposition, and neutrality within the analysis of both components of this analysis. This figure demonstrates the largest disparity between the constituents of Pennsylvania and their government. The legislation, though it attempts to address some concerns of constituents, largely still promotes fracking, which is what the public greatly opposes.

Analysis

The comparison of Pennsylvania laws and the opinions of Pennsylvanians is important to understand the role that fracking plays in the state. When understanding the role that public opinion plays in the research of fracking policies, it is important to emphasize that the public has a certain amount of trust in state and local governments in doing what is best for them regarding fracking policies (Mayer & Malin, 2018). But, both Mayer and Malin (2018) and Sica and Huber

(2017) demonstrate that the emergence of neoliberal policies in the energy sector makes it difficult for the government to balance the best decision for their constituents with the best economic choice. However, as neoliberalism indicates, the government leans more towards a free-market approach, favoring the economic choice. This can help to explain Figure 4 and answer the question as to why the laws favor fracking when the people oppose it. Ultimately, much of legislation indicates that there will be taxes or fees imposed on fracking companies. This money usually ends up going back into the government, which incentivizes the presence of fracking for the government. This type of policy should be a red flag for constituents of Pennsylvania as they oppose fracking on the grounds of environmental concern. Though some letters mention the idea of taxes, most emphasize that a total ban on fracking would be more effective. Moreover, many of the concerns that did not have much prevalence in the newspapers and laws are issues that occur with the continuance of fracking as more long-term effects. Not only will this impact the health of citizens, this will also have detrimental consequences on the surrounding infrastructure of the towns where fracking has become increasingly popular.

Another important factor to highlight is that which is discussed in Eaton and Kinchy (2016). Many Letter(s) to the Editor are written by people who are active in their communities, especially in various types of environmental activism. But, as Eaton and Kinch (2016) suggest, there are also groups of people in more rural communities that may have difficulty in overcoming apathy surrounding the issue or having their voices heard. Additionally, education on the benefits and drawbacks of fracking may be less accessible. This means that there is a populace that is unheard from, and that they may have differing opinions or no opinions on fracking in Pennsylvania. This might explain why this paper finds high opposition for fracking

(72%), while just 39% of Pennsylvanians in Friedman and Goldmacher's (2020) polling say they support a fracking ban.

The results support Ziorgiannis et. al. (2016) in finding that the legislation in Pennsylvania is strong and addresses issues raised by constituents. As mentioned previously, much of the legislation focused on creating agencies or commissions to monitor the pollution that fracking creates. But, as Ziorgiannis et. al. (2016) found, it is difficult to determine the success of such organizations in policing fracking companies. Davis et. al. (2017) also emphasizes the difficulty in passing legislation, as there are a variety of factors, political and economic, that play a part in fracking policy. As such much of the legislation is not as effective in accomplishing what it seeks to achieve. Davis et. al. (2017) explanation about fracking policy may explain why the data shows that the Pennsylvania laws only cover certain codes.

Additionally, the prevalence of code 6 (natural gas impact fee/tax) in legislation lends itself to the idea that the Pennsylvania legislature hopes to achieve what constituents want through taxing companies to discourage certain behavior, as Rabe et. al. (2013) mentions this is something that is not as effective in mitigating environmental issues. Many Pennsylvanians reiterate the thought that environmental issues are of greater concern, as they say in their letters, the presence of fracking in the present is already a perceived high risk to the health of citizens and the environment.

Conclusion

The limitations in this study and their implications are important to acknowledge in order to understand the impact that this paper has in future policy papers. First, the limits set on the years for both the legislation and newspapers are from 2011 to 2014, which are significantly in

the past for an emerging issue. Outside of the years analyzed, the number of articles and laws are limited and, thus, do not present the entirety of the issue. Along the same lines, it is important to recognize that those writing Letter(s) to the Editor may have been outliers in their communities and do not represent the entirety of their community. Another limitation of this paper is that all of the research was conducted by one researcher, and, thus, the quality of analysis and the consistency would be much improved by many researchers performing multiple content analyses.

The research presented in this paper opens up various policy implications for the future of fracking in Pennsylvania. Awareness of the dangers of fracking are apparent in communities across Pennsylvania, and government inaction is another issue that the public opinion highlights. The legislature attempts to answer the public's concerns, while at the same time supporting fracking. An important avenue to pursue following this paper is to perform a content analysis on the reports of agencies that are supposed to be regulating fracking within the state. This paper also emphasizes the importance in understanding the long-term implications of fracking policy, especially if the state government continues to defy public opinion. There are negative consequences that constituents are worried about which could begin to outweigh the massive economic benefits of fracking. It is important for policymakers to listen to the public and make decisions for the betterment of the people whom they serve. As this paper highlights, there is an obvious disconnect between the legislature and the public, and policymakers need to take action. But, policymakers are not the only ones that can take action. The people who are writing letters to the editors, whether they be activists or concerned citizens, should note that letters are not

effective in changing policy about fracking, as this paper shows. People must find other ways to bring about change and communicate better with their policymakers.

Ultimately, this paper effectively compares the intent of legislation in Pennsylvania and the public opinion of Pennsylvanians. It demonstrates that there is a support for fracking in the laws passed by policymakers, while Pennsylvanian constituents - or at least those that write Letter(s) to the Editor - actually oppose fracking for its negative consequences. Additionally, it shows that fracking policies do not reflect the desires of their constituents. Lawmakers must consider the implications of this divide for the future of Pennsylvania.

References

- Davis, C. (2017). Fracking and environmental protection: An analysis of U.S. state policies. *The Extractive Industries and Society*, 4(1), 63–68.
<https://doi.org/10.1016/J.EXIS.2016.12.009>
- Eaton, E., Kinchy, A. (2016). Quiet voices in the fracking debate: Ambivalence, nonmobilization, and individual action in two extractive communities (Saskatchewan and Pennsylvania). *Energy Research & Social Science*, 20, 22–30.
<https://doi.org/10.1016/J.ERSS.2016.05.005>
- Lee, M. H. W., Clark, A., Rupp, J., Wietelman, D. C., & Graham, J. D. (2019). Public opinion toward hydraulic fracturing: The effect of beyond compliance and voluntary third-party certification. *Energy Policy*, 128, 306–315.
<https://doi.org/10.1016/J.ENPOL.2018.12.034>
- Friedman, L., Goldmacher, S. (2020, January 27). In Crucial Pennsylvania, Democrats Worry a Fracking Ban Could Sink Them. Retrieved from
<https://www.nytimes.com/2020/01/27/us/politics/pennsylvania-democrats-fracking.html>
- Letter to the Editor, 2/8/11. (2011, February 8). Daily Review, The & Sunday Review (Towanda, PA), p.
4. Available from NewsBank: Access World News is provided by the University of Michigan

Library: [http://haproxy.newsbank.com:11021:11021/apps/news/document-view?
p=AWNB&docref=news/1354671781889400.](http://haproxy.newsbank.com:11021:11021/apps/news/document-view?p=AWNB&docref=news/1354671781889400)

Letter to the Editor. (2012, December 23). Daily Review, The & Sunday Review (Towanda, PA),
p. 5. Available from NewsBank: Access World News is provided by the University of
Michigan Library:

[http://haproxy.newsbank.com:11021:11021/apps/news/document-view?
p=AWNB&docref=news/14362BD0A4BD0F50.](http://haproxy.newsbank.com:11021:11021/apps/news/document-view?p=AWNB&docref=news/14362BD0A4BD0F50)

Letter to the Editor: Is lower price of gas worth losing supply of clean water? . (2011, December
21). Berks-Mont Newspapers (PA). Available from NewsBank: Access World News is provided
by the University of Michigan Library:

[http://haproxy.newsbank.com:11021:11021/apps/news/document-view?
p=AWNB&docref=news/16DC6B3FACB9D828.](http://haproxy.newsbank.com:11021:11021/apps/news/document-view?p=AWNB&docref=news/16DC6B3FACB9D828)

Mayer, A., Malin, S. (2018). Keep it local? Preferences for federal, state, or local
unconventional oil and gas regulations. *Energy Research & Social Science*, 44, 336–345.
<https://doi.org/10.1016/J.ERSS.2018.05.028>

Rabe, B.G., Borick, C. (2013). Conventional politics for unconventional drilling? Lessons from
Pennsylvania’s early move into fracking policy development. *Rev. Policy Res.*, 30,
321-340. <http://dx.doi.org/10.1111/ropr.12018>

Sica, C. E., Huber, M. (2017). “We Can’t Be Dependent on Anybody”: The rhetoric of “Energy Independence” and the legitimation of fracking in Pennsylvania. *The Extractive Industries and Society*, 4(2), 337–343. <https://doi.org/10.1016/J.EXIS.2017.02.003>

Silverstein, Ken, (2019, November, 17). *Will the UK’s temporary ban on natural gas fracking impact U.S. policy?*. Forbes.

Amico, C. (2015). Shale Play: About the Data. *National Public Radio: StateImpact*.
<https://stateimpact.npr.org/pennsylvania/shale-play-about-the-data/>

What is hydraulic fracturing?. (2020). USGS.

https://www.usgs.gov/faqs/what-hydraulic-fracturing?qt-news_science_products=0#qt-news_science_products.

Zirotiannis, N., Alcorn, J., Rupp, J., Carley, S., Graham, J. D. (2016). State regulation of unconventional gas development in the U.S.: An empirical evaluation. *Energy Research & Social Science*, 11, 142–154. <https://doi.org/10.1016/J.ERSS.2015.09.009>

