

12-4-2022

American Attitudes Toward Nuclear Energy

Eric J. Kirchman
Colin Kuehl

Follow this and additional works at: <https://huskiecommons.lib.niu.edu/studentengagement-honorscapstones>



Part of the [American Politics Commons](#), and the [Environmental Studies Commons](#)

Recommended Citation

Kirchman, Eric J., "American Attitudes Toward Nuclear Energy" (2022). *Honors Capstones*. 1443.
<https://huskiecommons.lib.niu.edu/studentengagement-honorscapstones/1443>

This Student Project is brought to you for free and open access by the Undergraduate Research & Artistry at Huskie Commons. It has been accepted for inclusion in Honors Capstones by an authorized administrator of Huskie Commons. For more information, please contact jschumacher@niu.edu.

Northern Illinois University

American Attitudes Toward Nuclear Energy

A Capstone Submitted to the

University Honors Program

In Partial Fulfillment of the

Requirements of the Baccalaureate Degree

With Honors

Department Of

Environmental Studies

By

Eric Kirchman

DeKalb, Illinois

December 4, 2022

University Honors Program
Capstone Faculty Approval Page

Capstone Title (print or type)

American Attitudes Toward Nuclear Energy

Student Name (print or type) _____ Eric Kirchman _____

Faculty Supervisor (print or type) _____ Colin Kuehl _____

Faculty Approval Signature _____



Department of (print or type) _____ Environmental Studies _____

Date of Approval (print or type) _____ December 4th, 2022 _____

Date and Venue of Presentation _____ Honors Day (12/2/22) _____

Check if any of the following apply, and please tell us where and how it was published:

☐ Capstone has been published (Journal/Outlet):

☐ Capstone has been submitted for publication (Journal/Outlet):

Completed Honors Capstone projects are used for student reference purposes electronically in Huskie Commons.

If you would like to opt out and not have this student's completed capstone uploaded to Huskie Commons for reference purposes, please initial here: _____ (Faculty Supervisor)

American Attitudes Toward Nuclear Energy

Eric Kirchman¹

Abstract

Despite the mature underlying technology behind nuclear energy production, public support varies widely among the American public and has often changed over time. This paper seeks to analyze patterns in Americans' attitudes towards nuclear energy using aggregate polling data from previously collected national public surveys. Standard demographics such as age, education, and political affiliation are utilized in cross-sectional comparisons against public opinion. Males, conservatives and Republicans were found to have strong positive responses towards nuclear energy. Furthermore, time-series data indicates nuclear energy fell out of favor in the early 1980s. It was later favored again in the early 2000s. This attitudinal shift was presumably because of increasing concern over carbon emissions.

Keywords

Nuclear Energy— Attitude — Public Opinion — Survey

¹ Department of Environmental Studies, University of Northern Illinois University, DeKalb, Illinois

Contents

Introduction	2
0.1 Literature and background review	3
1 Methods and data collection	3
2 Data analysis	3
2.1 General attitudes	3
2.2 Political ideology	4
2.3 Political party	5
2.4 Education	5
2.5 Sex	6
2.6 Age	7
2.7 Race	7
2.8 Climate change	8
2.9 Attitudes over time	9
3 Results and conclusion	10

Introduction

It is vital not to underestimate how important public opinion is to our country. Public opinion has a strong impact on the laws and policies that are put in place (Smith, 2002). Since public opinion is so central to our country's political process, interest in public opinion has only grown over time. By gathering survey data on individual's attitudes and preferences towards a variety of topics, studies can reveal the public's priorities and desires. As such, statistical analyses like this project are often very insightful to understanding voter preferred policies. Nuclear energy is a well-established technology that has been used to meet energy needs since the 1950s. But its market share was always overshadowed by other energy sources, such as coal or natural gas. But the impending effects of climate change may change that dynamic. Using this technology to eliminate carbon emissions is a policy many would be in favor

of (Petrescu et al., 2016; Brook et al., 2014; Herbst & Hopley, 2007).

For others, however, nuclear energy is too dangerous or uneconomical (Beck, 1999). Despite having a foothold in the energy sector for over 60 years, conventional nuclear energy has garnered a fair amount of controversy (Pahner, 1976). Even environmentalists cannot agree whether nuclear energy is the best course of action for the future. Many of these anti-nuclear advocates believe in a different mixture of energy sources which will provide for the country's energy needs in a post-fossil fuel world. For environmentalists, sources often suggested as alternatives to fossil fuels are wind, solar, or biomass energy. As these sources do not have nuclear energy's aforementioned drawbacks, some believe these other fuel sources to be more sustainable and environmentally friendly (Cicia et al., 2012).

As society and human technology advances, its power requirements are ever increasing. With our current choice of energy sources, such as coal or natural gas, the effects of pollution become more evident as production increases. For this reason, many seek to pivot to a form of energy which can be reused, or has an infinite supply like solar or wind energy (Owusu & Asumadu-Sarkodie, 2016). Nuclear energy, while not technically a renewable form of energy per se, is a very clean form of energy which has a long lifespan and is oftentimes even discussed alongside renewable energies, furthering the mental correlation of the two. With increasing pressure to move away from fossil fuels to pursue renewable energies, is it possible the climate change crisis might change the public's perception in favor of nuclear energy? This is one such question this project seeks to answer. As mentioned previously, nuclear energy is not a renewable form of energy. Its fuel source has a limited lifespan in which it is useful to a power plant. Because of this limitation, many nuclear power plants were only designed and licensed to be in operation for forty years (Naus et al., 1995). Discussion about how to han-

dle this used fuel has been a topic of much debate over many decades. The United States Department of Defense attempted to resolve this problem by issuing the Yucca Mountain facility in Nevada as the official landfill for all US based nuclear fuel sources. However even this faced backlash as the risks were deemed too “immense” by some (Slovic et al., 1991). Historical political backgrounds such as this make the current politics around nuclear energy different from other renewable forms of energy, and therefore worth exploring.

This paper aims to examine national public opinion towards nuclear energy using previously collected academic survey datasets. It uses cross sectional data comparisons and a time series comparison across multiple datasets.¹ Analysis of this data is important because by using multiple sources of data, one can then verify the integrity of the results. On the other hand, if there is a mismatch of results, then this can disprove patterns that are found in one dataset, but not in another. It can also even tell if a pattern only applies within certain circumstances or with specific wording of a question.

0.1 Literature and background review

Both sides of the nuclear energy debate have been vocal in their cause, and have not yet been able to see eye-to-eye (Beck, 1999). For instance, pro-nuclear advocates argue that based on sheer energy potential, nuclear is more economical (Brook et al., 2014). Opponents then cite the large up-front cost and how more plants are scheduled to be shut down than are being built. Advocates would then counter that the decline in interest is due to a rise in misinformation and negative media coverage. (Herbst & Hopley, 2007). Both sides have their reasons to believe what they do, and each are often valid in their objections.

Nuclear energy opinion is worth researching not just because of its implications, but because of its rich history which defines the opinions of today. For instance, despite some research done to show that nuclear energy is safe when handled properly, historically the American public has been wary of its implementation within their country (Petrescu et al., 2016; Macilwain, 2011; Reilly, 1994). These concerns were and still are not completely unfounded. In its infantile stage, safety was not a priority when building and designing nuclear power plants (Beck, 1999). Even when safety protocols were reinforced with stricter precautions, lack of due diligence has been attributed to the cause of notorious nuclear power plant disasters. Other reasons for the early aversion of nuclear energy was the perceived connection of nuclear energy to nuclear weapons. Despite US policy makers attempting to distinguish the two technologies, the correlation still remained in many people’s minds (Baron & Herzog, 2020). When the demand for nuclear power was at its peak during the oil crisis of the 1970s, there grew a concern that there would not be enough uranium to meet the growing energy demand. However, as soon as the price of oil dropped, business went back to normal

(Beck, 1999). Even governmental support waned when Jimmy Carter in the second half of his presidency deprioritized nuclear energy (Kasperson et al., 1980). After having a long history of conflict while trying to adopt this technology, it is understandable that the public may be cynical towards further endeavors to use nuclear power.

1. Methods and data collection

Data was collected from three main sources, which will be referred to in the future as the Gupta, Bisconti, and Smith datasets. The first was from Gupta & Nowlin (2019), a researcher who did work tracking the nuclear “mood” in the United States three years ago. The data was sourced from the Roper iPoll database, using the terms *atomic energy*, *atomic power*, *nuclear energy*, and *nuclear power*, spanning the years 1945 to 2016. Latent opinion was aggregated using the Dyad Ratios Algorithm (DRA). The sample universe for this data was all Americans, and therefore should reflect the country’s opinion.

Another source was from Ann Bisconti (Bisconti, 2022a), an expert on public opinion and communications research on nuclear energy. Surveys were done on respondents who live within a ten mile radius of US nuclear power plants (Bisconti, 2022c). Roughly one thousand respondents were chosen, with those who work at the plant excluded from the survey. Responses should also be telling of the US population, however one might assume the opinions the residents have will be stronger than those not near a plant.

The third source was collected by Davis Smith. The data was aggregated through the 2010 General Social Survey (GSS) and utilized a list-assisted sampling frame for 72 percent of the population (Smith & Marsden, 2019). The sample universe includes respondents across the country. Although the focus of this database archive is on religion, this dataset specifically holds responses from both religious and non-religious respondents.

This project will compare two pairs of datasets, based on content. The Bisconti and Smith data will be used in the upcoming cross-sectional analyses, but in the timeline figures, the Bisconti and Gupta survey data will be examined.

2. Data analysis

2.1 General attitudes

The first comparison to be made is the juxtaposition of general attitudes across both survey groups. Before doing any cross sectional analysis, it is important to understand whether or not it is to be assumed that a demographic will show support. For instance, if the general sentiment is very positive but a select demographic has largely a negative sentiment, then this creates a stronger contrast than if the general sentiment is very positive, and a demographic’s response is only somewhat positive.

To begin, refer to Figure 1. This is a box chart which represents a few statistics about each survey. The dashed

¹Twitter sentiment analysis was not possible due to technical problems with Twitter

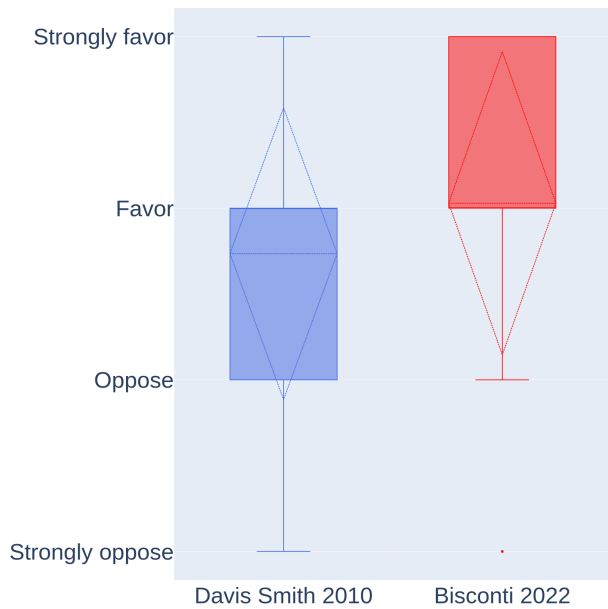


Figure 1. General nuclear energy attitudes

vertical line represents the mean of the opinions. Behind the scenes, these response categories are transformed into an integer scale and the mean of scale is calculated. This is then translated back into a relative position of where the mean should be plotted, and represents to the reader where the average lies. The dashed lines which make up a diamond shape is the standard deviation of the survey results. Both left and right sides of the box represent the lower and upper quartiles, and the lines outside of the box are called whiskers, which represent responses outside of the quartile ranges.

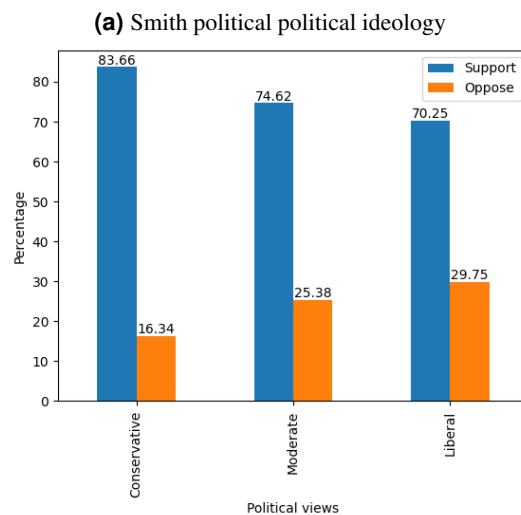
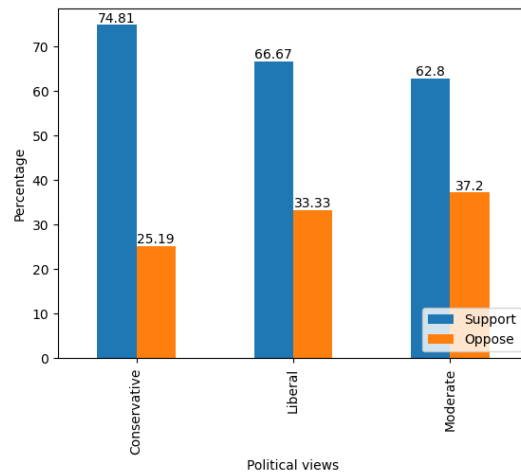
Looking to Figure 1 again, the average amount of support seems to lean slightly towards favor more than oppose. In the Smith survey, the mean was closest to neutral, as the results were split. This could be for a few reasons. For one, those who do have an opinion, don't feel strongly one way or another, and therefore simply chose a response from out of the two options. This could also be because the year before, there were many international talks about securing nuclear weapon free zones (Pelindaba Treaty, and the Central Asian nuclear-weapon-free zone). Despite nuclear weapons and nuclear energy being two different topics, Baron has shown that these two are often interchangeable in the public's eye (Baron & Herzog, 2020).

From the Bisconti survey, a much more vocal response is observed. The public clearly favors nuclear energy, and perhaps this is due to the year in which the survey was taken, the year 2022. With green energy and green solutions becoming more accepted by the general public (Thomas et al., 2022), one might expect nuclear energy to be included under that favoritism.

Another reason for the high amount of support could be because all respondents are located near a nuclear plant (Bis-

conti, 2022b), and therefore fear of the unknown is not as strong an influence on the respondents. For those who do not know or understand the reasons for why the US would switch to nuclear, the idea of switching may seem alarming and unjustified.

2.2 Political ideology



(b) Bisconti political ideology

Figure 2. Political ideology percentage figures

The first cross-sectional analysis will be the respondent's attitude towards nuclear energy against the respondent's identifying political ideology. When breaking down the percentage of support between ideologies in Figures 2a and 2b, one should notice that conservatives make up the largest group which are in support of nuclear. In each survey, conservatives are 74% and 83% in support, respectively. Moderates and liberals were always within a 5% difference of each other, and had lower support. Nevertheless, neither group was in majority opposition.

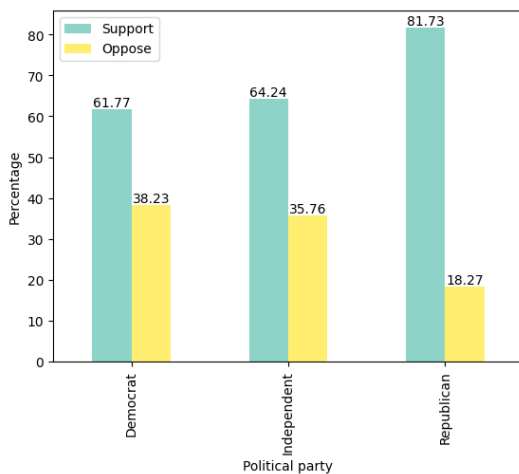
In both surveys, conservatives were the primary political ideology which showed the highest amount of favoritism.

Support for this result can be found in criticism from anti-nuclear advocates in previous research. These critics have argued that pro-nuclear energy scientists have been influenced by politically-charged conservative ideologies (Rothman & Lichter, 1987).

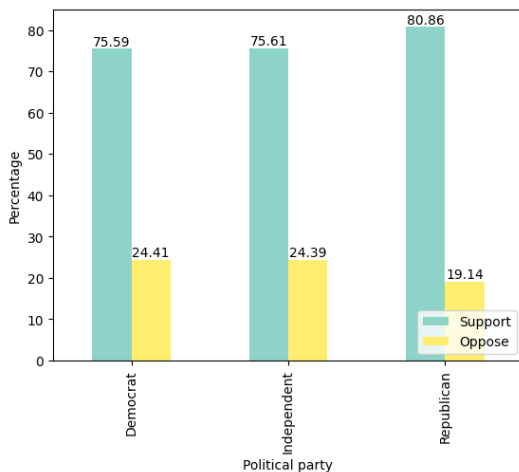
A possible rationale for why conservatives are more in support for nuclear energy in the Bisconti dataset could be because all the respondents were chosen because of their proximity to a nuclear plant. Energy plants of any type typically are located far away from large populations of people because of NIMBY attitudes. If the people interviewed are from sparsely populated places, like in a suburb or the country, they are typically more likely to be conservative (Cleutjens, 2021).

NIMBY Not in my backyard

2.3 Political party



(a) Smith political party percentage



(b) Bisconti political party percentage

Figure 3. Political party affiliation percentage figures

Intuitively, the next demographic feature to explore is political party affiliation. Figures 3a and 3b show that Republicans display attitudes similar to conservatives. Considering

Republican and conservative values have aligned in the past, it is not too surprising to see this shared opinion on nuclear energy. Additionally, independent and Democrat views are very comparable in Figures 3a and 3b.

Investigating further, there is an interesting lack of direct correlation between political views and party identification. For instance, in the Bisconti data, 72% of Republicans are also conservatives, while only 50% of Democrats consider themselves liberals. The Smith survey data is less correlated, as 64% of Republicans consider themselves conservatives, and 47% of Democrats are liberals.

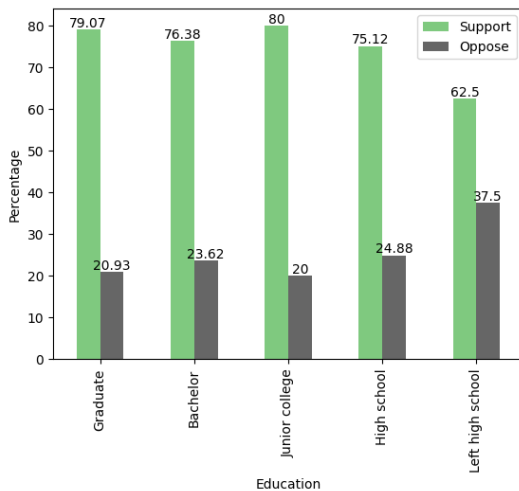
One might expect Republicans to have a negative attitude towards nuclear energy due to nuclear energy often being viewed as an opponent to traditional coal plants; a technology Republicans had often backed in the past. Likewise, there has been a common notion that Democrats support nuclear energy and renewable energies. Yet as can be told by both surveys, this is not the case. This is reinforced by the fact that the GOP supports development of all energy sources which are marketable and can be competitive without government interventions. This list of competitive energy sources includes nuclear energy according to the GOP 2016 political platform (Priebus, 2016). This reasoning is consistent with most Republican beliefs, as many are typically concerned about the economic considerations behind energy production (Gustafson et al., 2020). Furthermore, while green energy is often a talking point for Democrats, it was not until 2020 that nuclear power was endorsed in the written political platform. (Bryce, 2020). This could account partially for why Democrats responded with less positivity towards nuclear power.

2.4 Education

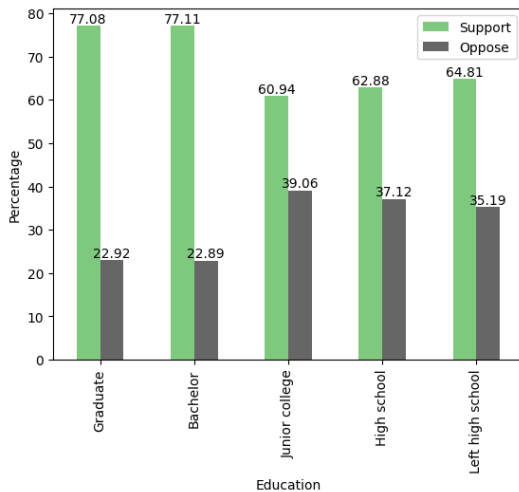
When comparing levels of education and opinions on environmental issues, a common thought process is that the higher the education, the more knowledgeable about environmental issues an individual would be. If the individual is educated on environmental issues, then they are more likely to make decisions on politicized topics using their background knowledge. In short, higher amounts of education will lead to more environmentally friendly attitudes in individuals. However, the data present in the following figures do not exactly align with this principle.

Figures 4a and 4b all show high support for nuclear energy, with no group falling below 60% support. Between the two datasets, there are only three columns which are similar to each other: graduate, bachelor, and those with less than a high school degree. For those who hold a master's or bachelor's degree, attitudes tend to be higher, around the 76% to 80% mark in favor of nuclear energy. One might expect this as these two groups might have a better grasp on the concept of nuclear fusion, and therefore these individuals are not likely to fear what they might already understand.

For those with less than a high school diploma, attitudes are more negative when compared to their more educated



(a) Respondent's education from the Bisconti dataset



(b) Respondent's education from the Smith dataset

Figure 4. Education percentage figures

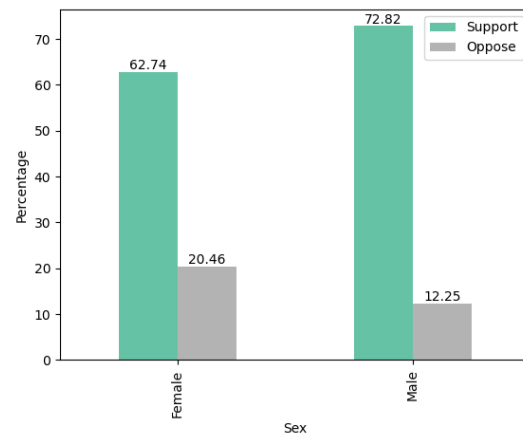
neighbors. One idea is that exposure to social media impacts the viewpoint of those who did not graduate high school more than those with higher degrees. Ayvaci in his paper “Determining the opinions of students from different grades about nuclear energy” suggested that while attitudes among students are mixed, opinions are formed in part due to their use of social media and media at large. The Bisconti and Smith surveys do not quantify social media usage of each group, but if one were to speculate that those without a high school degree are more familiar with the technology than other respondents, then one could say that social media has an overall negative influence on attitudes.

Moreover, there perceptible differences between the surveys when contrasting those who left high school and those who transitioned to a high school graduate. In the Figure 4a, once one has graduated high school, opinion increases by 13%, while in, figure 4b, attitudes decrease by 2 percentage points. Perhaps this is due to the variation of adequacy and ef-

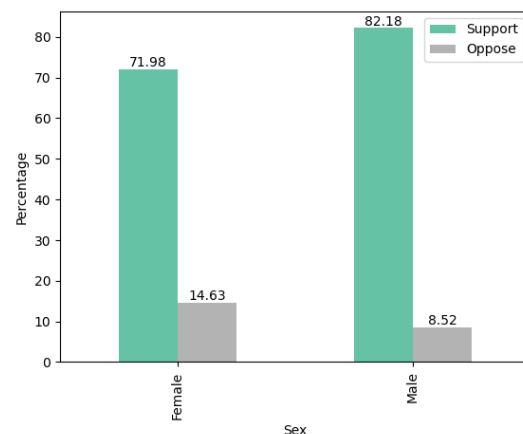
fectiveness in public schooling. Perhaps the education system in the towns with nuclear power plants are better at educating the students than those who likely do not have a nearby nuclear power plant. Then again, this is assuming that all residents will stay in the towns in which they were raised. If this is not the case, we can speculate that those who moved to the towns with nuclear plants were most likely already aware of the plant's existence, and therefore would be willing to live in an area located next to one.

The end results of this cross section does not show a significant correlation between education and attitudes after graduating high school.

2.5 Sex



(a) Percentage of support per sex from the Smith dataset



(b) Percentage of support per sex from the Bisconti dataset

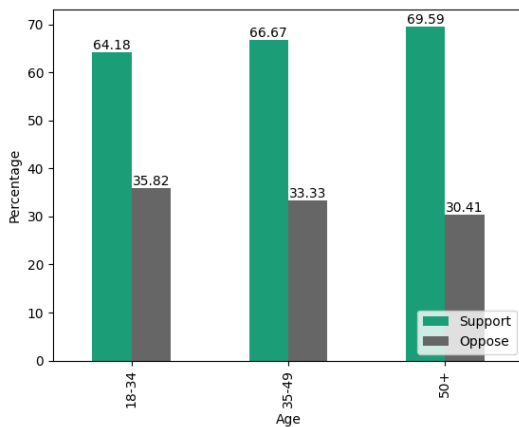
Figure 5. Sex percentage figures

In the cross section analysis of sex, demonstrated in Figures 5a and 5b, attitudes are found to be consistent across datasets. In both, males represent the sex which has a higher amount of support for nuclear energy, consistently being around 10% higher than females.

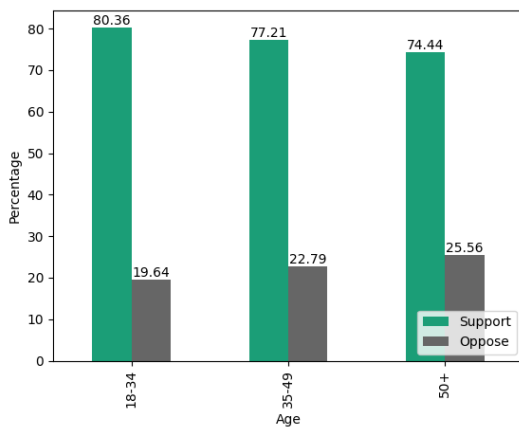
A possibility for this could be because men outnumber females in STEM fields. The enthusiasm for the fields in

general could be higher and could correlate to higher support for nuclear energy. But as seen before with the Figures, high levels of education does not equate to favoritism. It is not the education or degree, but possibly the field which influences attitude. Furthermore, results showing a comparatively higher amount of uncertainty among women is consistent with survey results from decades ago. Previous academic papers have suggested that this uncertainty lies in the concern over safety, and that the results may be even higher if one were to consider the “Don’t know” responses as another show of disapproval. (Kasperson et al., 1980).

2.6 Age



(a) Respondent’s age percentage from Smith data



(b) Respondent’s age percentage from Bisconti data

Figure 6. Age percentage figures

When it comes to a relation of age and opinions, both the Bisconti and Smith data show an inverse set of results in each plot. In Figure 5a, the older population favors nuclear energy more, while the younger generations favors it less. However in Figure 5b, the younger respondents support nuclear more over the older respondents.

In the Bisconti dataset, the results are as one might expect. Those within the age range of 18 to 34 fall in favor of nuclear energy. The generations which would expect to

see the results of climate change in their lifetime are more willing to move from traditional fossil fuels, while those who will not see the impacts are more likely to be against nuclear energy. Those who old enough to not see the majority of effects could even be part of or financially tied to the fossil fuel industry. Voting for another industry would be against their own best interests, as doing so would harm their own fiscal earnings. Furthermore, the older populations have experienced numerous nuclear disasters, which made headlines, while the younger respondents have not, perhaps swaying the older respondent’s opinion against the idea.

However the results from the Smith dataset may be considered unanticipated. It is impossible to determine whether this shift in attitude from this dataset to Bisconti’s was due to the location or the time transition. While it is true that attitudes did fall from the year 2010, the year this survey was taken, to 2016 (12), one cannot say for certain whether patterns continued to trend downwards. One possible explanation is that the shift in attitudes is due to the change in generation in respondents. For instance, those who were age 38 in the 2010 survey are now 50 years of age, and those who were 22 are now 35. This shift’s these respondents in a new age bracket. Assuming that their attitudes remain largely the same, it could explain why patterns begin to shift downwards for the older generations twelve years later.

2.7 Race

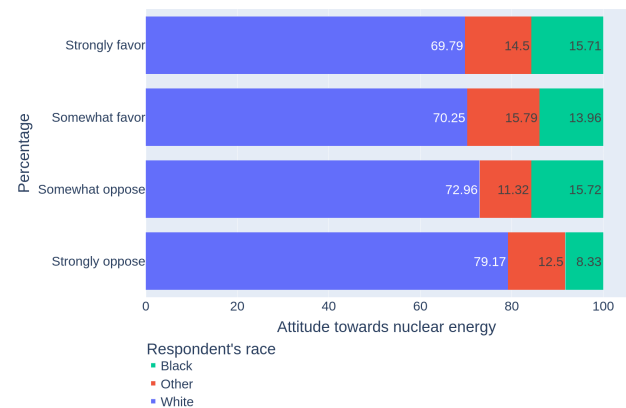


Figure 7. Respondent’s race from the Bisconti dataset

Race is an important consideration when talking about demographics because it has been a source of strife throughout US history. So when scrutinizing Figures, 9a and 9b, it is critical to realize that there is much more insight to be gained than what this data can demonstrate to a reader explicitly. First of all, the largest group of a single race within each dataset is the White population, followed by the second largest group, the Black population. The rest of the respondents make up the smallest group, the “other” category. In these graphs, we notice a conflicting result between the two surveys.

In Figure 9a, White respondents are found to be the least likely to favor nuclear energy. Yet in Figure 9b from the Smith

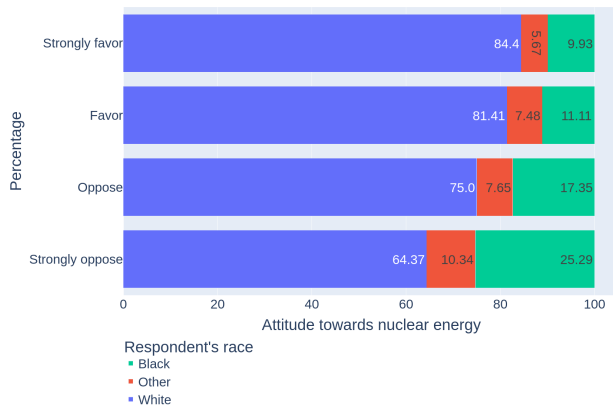
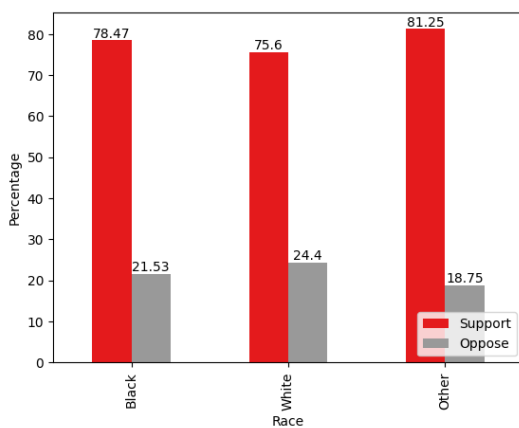
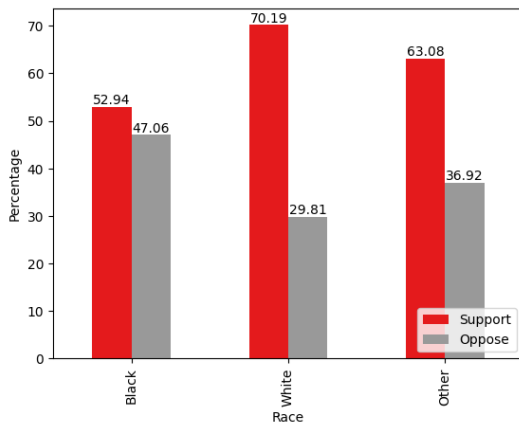


Figure 8. Respondent's race from the Smith dataset



(a) Respondent's race from the Bisconti dataset



(b) Respondent's race from the Smith dataset

Figure 9. Race percentage figures

dataset, the White group was the primary group which was in favor of nuclear energy. Although this may be true, there is very little difference in opinions in the Bisconti figure. All opinions are about 75%, which is above any race in the Smith dataset.

In the Smith dataset, perhaps White respondents align

more closely to the effects of YIMBY, whereas Black respondents and respondents of other races align closer to the effects of NIMBY. The reason for YIMBY is often a sign of support for local development and affordable housing (Brown & Glanz, 2018). This data cannot tell us whether the White population is correlated with the same respondents who stated that they were conservatives. However, if they were, then this would be consistent with the conservatives value of prioritizing economic growth. Creating a local nuclear power plant would create both white collar and blue collar jobs for the nearby residents.

Equally important of note is that these results explain that once a nuclear plant has been introduced into a local neighborhood, the community is widely accepting of the plant.

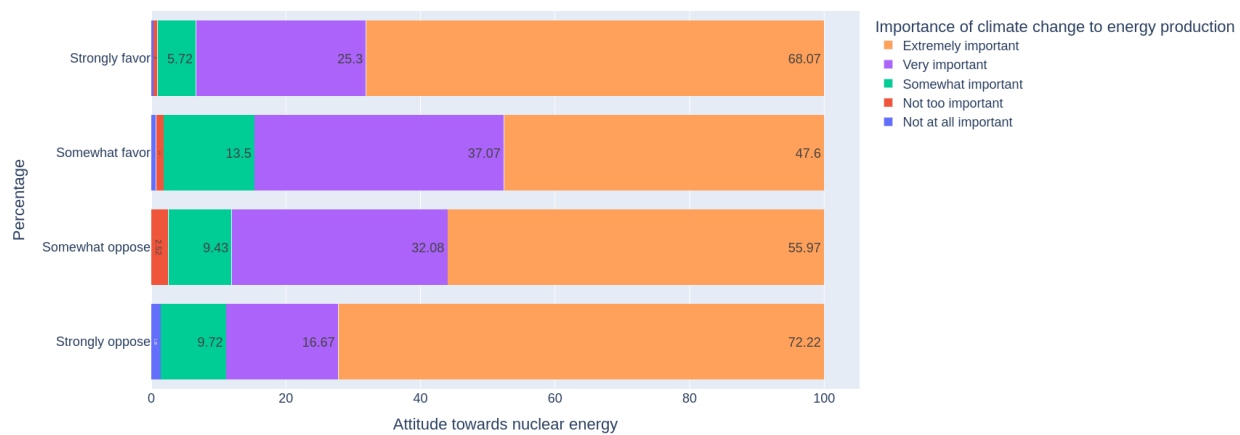
YIMBY Yes in my backyard

2.8 Climate change

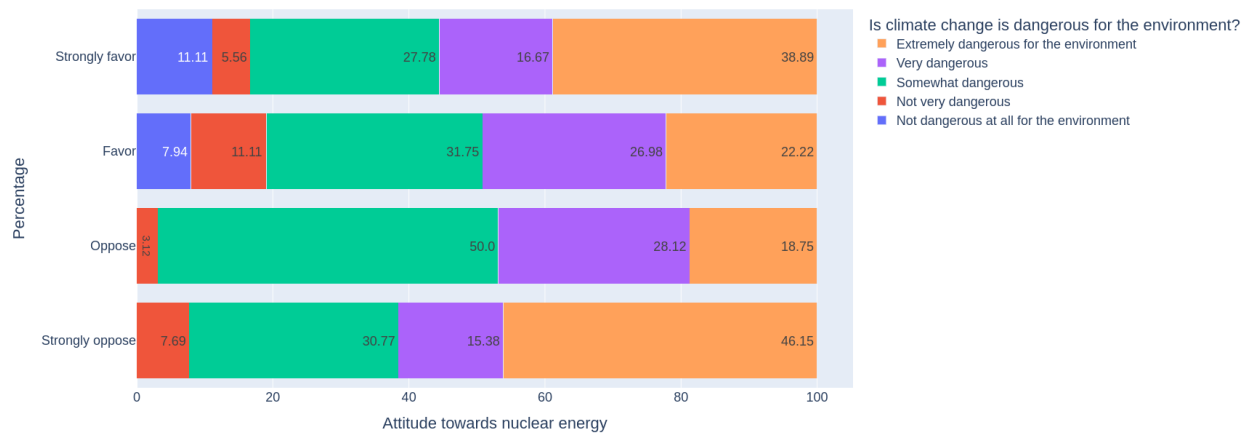
The discussion around climate change has been ever growing for a number of decades now and has been quite contentious. In the discussion of climate change, nuclear energy is often brought up as an alternative to other CO2 emitting fuel sources. So one would expect that if one believes strongly in the impacts of climate change, one would have at least some preference towards nuclear energy.

Unfortunately, an exact comparison of the respondent's views of climate change cannot be found in these two datasets. Figures 11a, 11b, 10a and 10b attempt to measure this concept using related questions and a few assumptions for why a respondent might answer one way or another. The Bisconti survey asks respondents whether they believe climate change is important to the production of energy, while the Smith survey asks whether respondents believe climate change is dangerous to the environment. It would be logical to believe that if climate change is dangerous to the environment because our current energy infrastructure enables it, one should also believe that climate change is also important to the production of energy. Likewise, if one believes the impacts of climate change are overestimated, they also would believe that climate change should not be seriously taken into consideration when it comes to energy production. And the reverse would be true as well, following this train of thought. Therefore, with these two questions, one can create a rough translation of sentiment between the surveys.

The bar charts in Figure 11a and 11b show the percentage of support for each group which responded differently to the importance of climate change. The Bisconti data shows an even split between almost all groups. The only group which had a sizable difference in attitude was the respondents who claimed the climate change was "Not very important", which is 64% while all the other groups are in the range of 75% to 80%. If respondents did care about nuclear energy because they care about the effects of climate change, one would expect the "Not at all important" category to be as low, if not lower than the "Not too important" category. What this then



(a) Bisconti dataset



(b) Smith dataset

Figure 10. Percentage of respondents of each level of support belonging to each categorical opinion of climate change.

conveys to the reader is that climate change has little to no effect on respondent's opinion of climate change.

Figures 10a and 10b present a similar narrative. Contrary to what one might believe, those who are concerned about climate change are not necessarily in favor of nuclear energy. A logical thought process would be to assume that if one favors nuclear energy, they likely favor it because the respondent is concerned about environmental impacts. As a result, failure to change the current energy production landscape will worsen the effects of climate change. However, one can observe that the two largest groups ("Strongly favor" and "favor") are those who deeply care about climate change, and those who may not even believe in climate change.

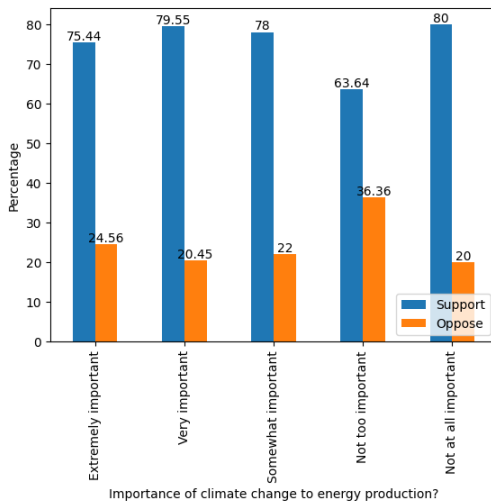
One compelling conclusion would be that those who are in the "strongly oppose" category are conservatives, whereas most of respondents in the "strongly favor" are liberals or independents. This would explain why there is a large demographic of those who don't consider climate change to be important, and yet support nuclear energy. The presence of a group of respondents who believe climate change is "Not dangerous at all for the environment", yet favor nuclear energy in the Smith survey would seem to agree with this notion.

2.9 Attitudes over time

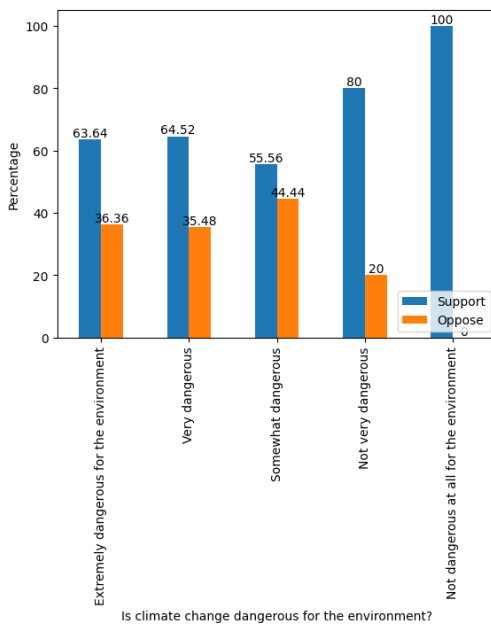
When comparing the data between the Gupta and Bisconti datasets in Figure 12, immediately one will notice that the values match very closely. The Gupta data does have more spikes in opinion than the Bisconti, which is somewhat more consistent. This is quite interesting, as it suggests the Bisconti data is a fairly representative sample of America's opinions as a whole when it comes to the general question of if Americans support the use of nuclear energy in this country.

Additionally, the Gupta and Bisconti data (Figure 13) shows that support was always high in the past few decades, and was never outnumbered by those who opposed it until around 2016. Support ranges from 58% to almost 70% from the Gupta data alone, but it resides in a smaller range than the Bisconti survey. Again, this could be due to both location and time period. The Bisconti data was always higher overall, but this is especially true when comparing data from the past with respondents who do not necessarily live near a nuclear plant.

In the years prior to 2008 as shown in Figure 13, the two surveys conflict with each other, as the Bisconti survey trends in the opposite direction of the Smith dataset. This graph shows a steady decline in the late 1970s, and a slow uptick in



(a) Respondent's attitudes on climate change in the Bisconti dataset



(b) Respondent's attitudes on climate change in the Smith dataset

Figure 11. Climate change opinions

support until the year 2010. This significant drop in opinion in the year 2011 is undoubtedly due to the Fukushima nuclear accident in Japan. Until this point, it was the largest and one of the most discussed nuclear disasters in the history of humankind (Hasegawa et al., 2015).

By the 1970s, support for nuclear energy was dying. For the early half of this decade, more plants were scheduled to be built than were actually completed and it was predicted by the US Atomic Commission that half of all US energy generation would be produced by nuclear power plants (Davis, 2012). But with oil prices dropping a few years later, people saw the end of the tunnel for the oil crisis. Therefore, the creation of new

nuclear plants was deemed unnecessary. This can be seen by the data point in 1993, where support for building new plants was at roughly 31% while support for nuclear energy was over 60%. And during the rise in opposition in the early 1980s, more traditional conservative-minded economics became a popular concept for the country, as the idea of conserving energy fell to the wayside when oil prices dropped. This is one possible explanation for the lack of support during this time frame.

3. Results and conclusion

In conclusion, the use of nuclear power plants as a energy production is a divisive topic for the country. Throughout most of the 1980s and '90s, Americans were mostly in opposition to nuclear energy. In the decade prior, the oil crisis was a catastrophe which affected all Americans back at home. Many had concerns about the days of cheap oil being gone. Moreover, the recent disaster, later named the "Three Mile Island accident", led many to change their minds about the new technology.

It was not until the early 2000s that attitudes began to change. The reason for this change was likely due to rising concerns over climate change, then often called global warming. Many events were started around this time, with a focus on the impact that carbon dioxide had on the environment and on the world. Conferences like the Millennium Summit, and Conference of Parties (COP) 6 were formal global discussions about how each country might together solve a common problem. These conferences were well talked about not only within political and scientific circles, but among the general population as well. Mounting concerns like these are likely to sway public opinion.

Attitudes typically range wildly from as low as 30% to as high as 70% in support, and the mean of support was 57%. There was a brief period of time from around the year 2000 to 2006 in which Americans supported nuclear energy, but many did not want any new plants to be built. As of recently, most are in favor of nuclear energy, as can be seen by both the Bisconti and Smith survey data.

Furthermore, there are few factors within standard demographics records which can predict a respondent's probability for supporting nuclear energy. Political ideology (political leaning) is one such feature as conservatives tend to favor nuclear energy more. Furthermore, political party affiliation is also an indication for support. Republicans for instance, also favor nuclear energy noticeably more than independents or Democrats. Whether or not one is concerned with climate change is unrelated. On a case by case basis, there are patterns to be found in respondent's opinion of climate change, however this cannot be deduced to mean that the country's opinion on nuclear power is dependent on opinions of climate change. The last indicator can be seen taken from the respondent's sex where males tend to strongly favor nuclear energy much more than females.

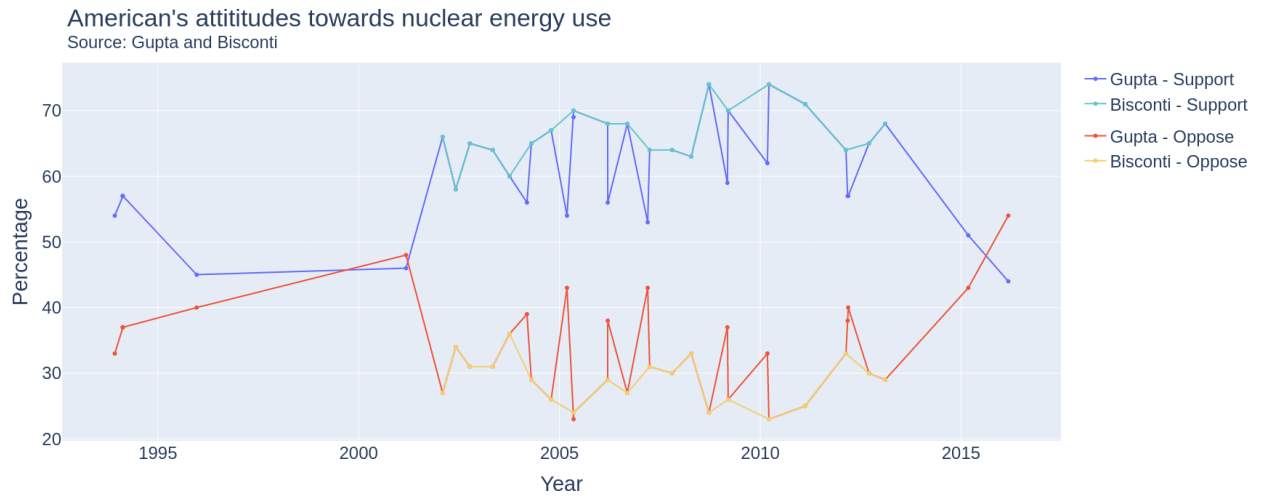


Figure 12. Respondent's responses over the years

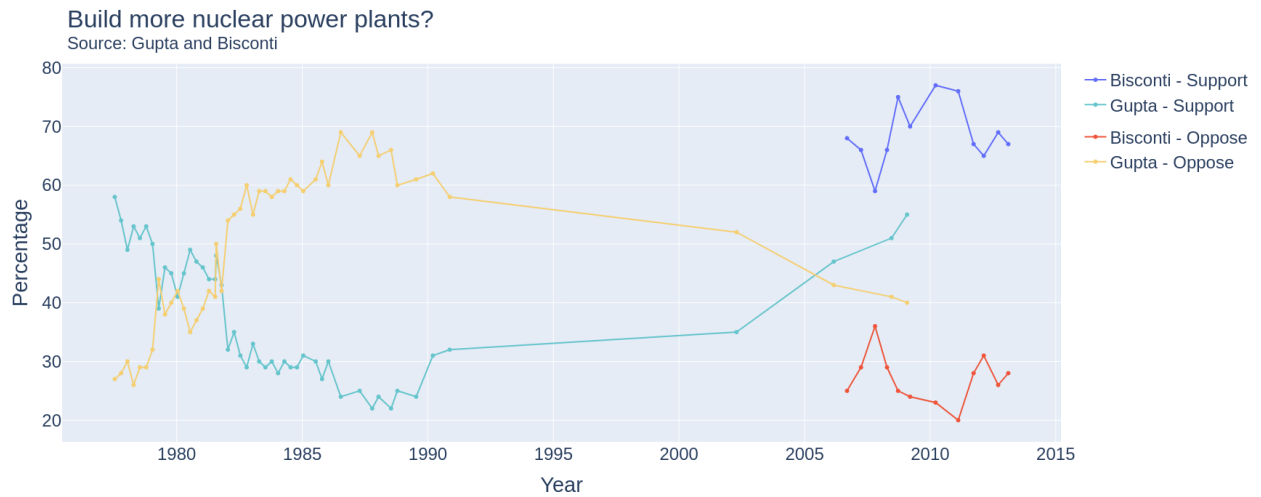


Figure 13. Respondent's responses over the years

References

- Baron, J., & Herzog, S. (2020). Public opinion on nuclear energy and nuclear weapons: The attitudinal nexus in the United States. *Energy Research & Social Science*, 68, 101567.
- Beck, P. W. (1999). Nuclear energy in the twenty-first century: Examination of a contentious subject. *Annual Review of Environment and Resources*, 24, 113.
- Bisconti (2022a). 2206631 - SPSS final data.
- Bisconti (2022b). Public opinion and communications about nuclear energy.
URL <https://www.bisconti.com/>
- Bisconti, A. (2022c). Reverse NIMBY: Nuclear power plant neighbors say “yes.”.
- Brook, B. W., Alonso, A., Meneley, D. A., Misak, J., Blees, T., & van Erp, J. B. (2014). Why nuclear energy is sustainable and has to be part of the energy mix. *Sustainable Materials and Technologies*, 1, 8–16.
- Brown, G., & Glanz, H. (2018). Identifying potential NIMBY and YIMBY effects in general land use planning and zoning. *Applied Geography*, 99, 1–11.
- Bryce, R. (2020). After 48 years, Democrats endorse nuclear energy in platform.
- Cicia, G., Cembalo, L., Del Giudice, T., & Palladino, A. (2012). Fossil energy versus nuclear, wind, solar and agricultural biomass: Insights from an Italian national survey. *Energy Policy*, 42, 59–66.
- Cleutjens, I. (2021). Rural conservatism then and now: How the rise of social media has influenced the degree of conservatism in rural areas of the United States.
- Davis, L. W. (2012). Prospects for nuclear power. *Journal of Economic perspectives*, 26(1), 49–66.
- Gupta, K., & Nowlin, M. (2019). Tracking the nuclear ‘mood’ in the United States: Introducing a long term measure of public opinion about nuclear energy using aggregate survey data. *Energy Policy*, 133, 110888.
- Gustafson, A., Goldberg, M. H., Kotcher, J. E., Rosenthal, S. A., Maibach, E. W., Ballew, M. T., & Leiserowitz, A. (2020). Republicans and Democrats differ in why they support renewable energy. *Energy Policy*, 141, 111448.
- Hasegawa, A., Tanigawa, K., Ohtsuru, A., & Yabe (2015). Health effects of radiation and other health problems in the aftermath of nuclear accidents, with an emphasis on Fukushima. *The Lancet*, 386(9992), 479–488.
- Herbst, A. M., & Hopley, G. W. (2007). *Nuclear energy now: why the time has come for the world’s most misunderstood energy source*. John Wiley & Sons.
- Kasperson, R. E., Berk, G., Pijawka, D., Sharaf, A. B., & Wood, J. (1980). Public opposition to nuclear energy: Retrospect and prospect. *Science, Technology, & Human Values*, 5(2), 11–23.
- Macilwain, C. (2011). Concerns over nuclear energy are legitimate. *Nature*, 471(7340), 549–549.
- Naus, D., Oland, C., & Ellingwood, B. (1995). Extending the lifespan of nuclear power plant structures. Tech. rep., Oak Ridge National Lab.
- Owusu, P. A., & Asumadu-Sarkodie, S. (2016). A review of renewable energy sources, sustainability issues and climate change mitigation. *Cogent Engineering*, 3(1), 1167990.
- Pahner, P. D. (1976). A psychological perspective of the nuclear energy controversy.

- Petrescu, F. I., Apicella, A., Petrescu, R. V., Kozaitis, S., Bucinell, R., Aversa, R., & Abu-Lebdeh, T. (2016). Environmental protection through nuclear energy. *American Journal of Applied Sciences*, 13(9), 941–946.
- Priebus, R. (2016). Republican platform.
URL <https://www.ogop.org/wp-content/uploads/2016/08/GOP-full-platform.pdf>
- Reilly, K. C. (1994). Global benefits versus local concerns: The need for a bird's eye view of nuclear energy. *Ind. LJ*, 70, 679.
- Rothman, S., & Lichter, S. R. (1987). Elite ideology and risk perception in nuclear energy policy. *American Political Science Review*, 81(2), 383–404.
- Slovic, P., Layman, M., & Flynn, J. H. (1991). Risk perception, trust, and nuclear waste: Lessons from yucca mountain. *Environment: Science and Policy for Sustainable Development*, 33(3), 6–30.
- Smith, D., & Marsden, P. (2019). General social survey 2010 cross-section and panel combined.
- Smith, E. (2002). *Energy, the Environment, and Public Opinion*. Energy, the Environment, and Public Opinion. Rowman & Littlefield Publishers.
URL <https://books.google.com/books?id=hjwKSN9t7ycC>
- Thomas, M., DeCillia, B., Santos, J. B., & Thorlakson, L. (2022). Great expectations: public opinion about energy transition. *Energy Policy*, 162, 112777.