Visual and Verbal Content Analysis of COVID-19 News Reports on Facebook

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Abstract

The biggest global news story of 2020–2021 was the COVID-19 pandemic. Although the virus was a scientific and medical issue, societal responses to the virus with regards to vaccine and mask mandates became highly debated political issues in the United States. Different news agencies in the US tend to have audiences that are politically biased; however, it is unknown how the multimodal content of COVID-19 news stories posted to social media might align with the audiences' political beliefs. A visual and textual content analysis was employed to investigate COVID-19 news stories that FOX (with a conservative audience), CNN (with a mixed audience), and NPR (with a liberal audience) posted to Facebook. The results showed differences among the news media in both the visual and textual modes that appear to corroborate with their audiences' biases. COVID-19 news from FOX was focused on the authority of Republican government officials, while NPR was often concerned with the effects that the virus has on daily life. CNN, meanwhile, took a more moderate, scientific approach. This study provides insights into how people from different political beliefs are exposed to different news content even if the main topic of the story is similar.

Keywords: *Content analysis, visual content analysis, news media, social media, COVID-19 pandemic*

Introduction

The most consequential global news story during 2020–2021 was the COVID-19 pandemic. Over the course of the pandemic, many people around the world received news about the transmission of COVID-19 on the Internet through social media. News media used social media platforms such as Facebook to publicize their news stories as these platforms allow the news to be shared widely by the users of the sites to others in their social networks. However, there is some concern that the speed at which news can travel these days can rapidly spread misinformation, or fake news. The misinformation as seen in politically biased news stories could potentially deepen the divides between various groups in society. This divide can be seen in the COVD-19 global pandemic, as politicized public debates about issues such as vaccines and mask mandates have been taking place. In the US, the support for or resistance to vaccines and mask mandates has largely been along political lines, with conservative Republicans being against vaccines and masks, while liberal Democrats are generally in support of these measures. In addition, the news content that is shared by individual news media organizations may be written for a particular audience to match their political beliefs whether they are either liberal, conservative, or somewhere in the middle. A survey of Americans from Pew Research Centre showed that "consistently liberal" readers trust news from National Public Radio (NPR) the most, "consistently conservative" readers trust FOX News the most, while those in the middle, or the "mixed" readers, trust the Cable News Network (CNN) the most (Grieco, 2020).

Therefore, due to the affordance of news media to use social media to spread news stories quickly to their respective audiences at different parts of the political spectrum, this study investigates news stories posted to Facebook by FOX, CNN, and NPR in order to uncover how these different news media portray COVID news stories. Since the news stories that have been posted to Facebook by the news media is inherently multimodal with both verbal words and visual image, this study will employ a verbal and visual content analysis of a sample of news stories published during the COVID-19 pandemic in the United States.

Literature Review

In December 2019, a life-threatening virus known as SARS-CoV-2 started spreading from Wuhan, China, and over the next two years, greatly affected the whole world. This virus is now commonly referred to as COVID-19. In January 2020, The World Health Organization (WHO) identified this as a "Public Health Emergency of International Concern" and in March 2020 as a global pandemic (World Health Organization, 2020). In the US, even though US President Donald Trump declared a national emergency on January 2020 after the reports about the first infected American, the responses to the pandemic such as embracing medical equipment, limiting travelling, and initiating testing processes were slow (Lemire et al., 2020). In 2020 in the US, there were three main waves, with each wave infecting more people. The first wave of pandemic occurred in mid-April when the numbers rapidly increased and all states declared emergency within their territories. After this wave subsided, many states relaxed the restrictions and, as a result, in June a second wave hit with daily case numbers surpassing 60,000 infections. The third wave began by mid-October and lasted through December 2020 and into January 2021 (Barone, 2020).

It has widely been reported that two of the best ways that people can protect themselves and others from COVID-19 is to be vaccinated and to wear face masks in public. However, in the US, there was some resistance to both of these measures, and this resistance was mostly along political lines, with Republicans being against the measures more than Democrats. The first vaccines were made available in the US in December 2020 under emergency circumstances and have been shown to be highly effective against COVID-19 (Behring, 2021). Epidemiology experts state that even in the case of the many variants that have appeared, the chance of hospitalization or death for vaccinated people is low compared with those who are not vaccinated (Fowlkes et al., 2021). However, many Americans have become distrustful of news about the effectiveness of vaccines as reported by the news media. One poll shows that over 30% of Americans believe that the reported numbers of deaths from COVID-19 is a result of media and experts' disinformation and is just false propaganda (Jackson et al., 2022). In addition, some people believe that the pandemic is nothing more than a hoax where vaccine producers are able to sell their vaccines (Hall, 2020). Because of this, there has been some vaccine hesitancy among Americans (Schumaker, 2021) and as a result, many hospitals reported that unvaccinated patients have strained the hospitals and have caused a shortage of nurses and doctors (Bosman et al., 2021). In the US, a person's political beliefs and the political party that they support has a strong correlation for whether or not they are vaccinated. As of April 2021, the number of new cases, number of hospitalizations, and number of deaths were much higher in states that voted for Donald Trump over Joe Biden (Bump, 2021).

There are also numerous scientific studies showing that wearing a facemask highly reduces the chance of transmitting COVID-19. Earlier studies indicate that coughing is one of the major ways to spread the disease; however, newer studies indicate that talking is the main factor in spreading the disease from one person to another (Anfinrud, 2020). Regardless of the evidence that masks help to prevent the spread of COVID-19, the issue of whether or not people should be required to wear masks has been controversial in the US. In July 2020, President Donald Trump said that he did not think that wearing masks was necessary and there was no reason to mandate mask wearing (Robertson, 2020). As a result, Republican states were less likely to order mask mandates than Democrat states. Not only was the Trump administration against mask mandates, but many Americans also believed that the mandates infringed on their personal liberties (Lizza & Lippman, 2020). In sharp contrast, the first executive order that Democratic President Joe Biden enforced after becoming president in 2021 was to mandate stronger protocols related to COVID-19, such as implementing a mask mandate on all Federal properties.

As can be seen, information and beliefs in the US about the COVID-19 pandemic and what should be done about it vary widely. People's beliefs on these issues largely fall along party lines where Republicans are mostly against vaccines and masks while Democrats, in general, believe them both to be effective. This study aims to investigate whether these different opinions on the science and the

governmental response to the pandemic are portrayed in factual (non-editorial) news story posts on Facebook.

Content Analysis of News

Content analysis is a common way to analyze news stories and their headlines in order to gain a deeper understanding of the messages being delivered and the effects that they may have on their audiences. One content analysis study published in the year that COVID-19 began to spread around the world investigated whether news headlines portrayed vaccines in a positive or negative light. Five years of headlines from Spanish print media were analyzed, and the researchers found that headlines that showed vaccines in a positive light were more common than those which were disparaging about vaccines. The themes that were most common were "human interest" and "conflict." The headlines that were about human interest were mostly positive, while those with conflict were mostly negative. The researchers believed that showing vaccines in a positive light was an important health issue and that some of the under-represented themes in their data, such as responsibility and morality, should be used more often to help persuade people that vaccines are beneficial (Catalán-Matamoros & Peñafiel-Saiz, 2019).

As the COVID-19 pandemic quickly spread in 2020–2021, other researchers conducted content analyses on news stories and news headlines around the world. Different countries took different approaches to fighting COVID-19, and very often COVID-19 went from being a health issue to become a political issue. In many cases, the news about COVID-19 highlights many interesting aspects of various cultures and societies. In a content analysis of COVID-19 news headlines and accompanying images in Finnish national newspapers, it was found that the articles used negative stereotypes of Swedish citizens, underscoring the rivalry between the two countries. The stereotypes were categorized into three main types: moralizing (implying that Swedes ignore COVID-19 because they are arrogant), demonizing (showing Sweden as a COVID-19 hotspot that is under attack), and nationalizing (linking the actions of the people to the nation of Sweden) (Martikainen & Sakki, 2021). In the Indonesian context, a content analysis was done on online COVID-19 news from the country's national news organization. The analysis showed that the headlines covered social themes such as regulations, education, culture, and religion, and economic themes such as exchange rates, transportation, and tourism (Gandasari & Dwidienawati, 2020).

Purpose of This Study

In general, traditional media bias in the US has leaned towards the politically liberal side (Groseclose & Milyo, 2005; Croteau, 1999). However, recent studies have shown that since the 20th century, news media in the United States have adopted a more conservative bias (Zuckerman, 2019). Some news media with conservative audiences, such as FOX News, providing more opinionated commentary as opposed to stating factual events (Benkler et al., 2018). Currently in the United States, news from FOX is preferred by those who align themselves with the conservative side of the political spectrum, meaning those who usually vote for candidates from the Republican Party. On the opposite side of the spectrum, NPR is seen as promoting the liberal side, and their audience is mostly made up of those who vote for candidates from the Democrat Party. CNN appears to be in the middle of the spectrum, with members from both sides getting their news from CNN. However, the presence of political biases in the audience of a news media does not necessarily mean that the actual news content from that media itself is biased. Therefore, this study is an attempt to find evidence of biases in the news that can be related to audiences' biases.

One of the biggest news stories of the past two years was the COVID-19 pandemic, which at least in the United States, has been the source of much public debate about issues such as vaccinations and mask mandates. These two sides of the debates have been strongly linked to the different sides of the political spectrum. In general, the conservative side has been largely against the use of vaccines and masks in public, while the liberal side has followed the medical advice from neutral parties such as scientists and doctors. Therefore, using a content analysis approach, this study will investigate news

stories that were posted to Facebook by FOX, CNN, and NPR regarding the COVID-19 pandemic. The objective of the study is to gain a better understanding of how different political biases might be manifest through both textual and visual modes in the news stories released to various audiences.

The research question to be answered is the following: What are the differences in the textual and visual content of COVID-19 news articles from FOX, CNN, and NPR as posted to Facebook?

Methodology

Data Collection

During 2020-–2021, various news media were publishing articles and reporting news about the COVID-19 virus every day. This provides an extremely large amount of data that could be analyzed. To reduce the amount of data, but still find interesting and useful results, three main time periods were selected that match with various events regarding the course of the pandemic in the US. The three periods were:

1. **Period 1: 14–21 July 2020**: This was at the peak of the second and largest wave at that time. Mandates for required mask wearing were being debated in the US Congress during this time. Donald Trump was the President of the US.
2. **Period 2: 25–31 December 2020**: This period covers the Christmas holiday travel period. At this time, the US was experiencing the third wave of cases, which was much higher than the second wave in Period 1, mostly due to the appearance of new highly contagious variants. At this time, Joe Biden had won the presidency, but had not yet taken office.
3. **Period 3: 11–18 May 2021**: This period covers a low point of the virus in the US before another wave hit later in the year. At this time, the Center for Disease Control (CDC) was recommending the removal of the controversial mask mandates. By this point, Joe Biden had been President of the US for several months.

Since this study is investigating the politization of the COVID-19 pandemic as seen through news articles, it was desirable to choose one news media that has a liberal audience, one that has a conservative audience, and one whose audience is somewhere in the middle between the two extremes. A survey from Pew Research Centre investigating how audiences respond to the news media shows that and "consistently conservative" readers trust FOX News the most "mixed" readers trust CNN the most, and "consistently liberal" readers trust NPR the most (Grieco, 2020). Therefore, to attempt to answer the research question, this study will compare and contrast the textual and visual content of news articles from FOX, CNN, and NPR.

The data were collected from FOX, CNN, and NPR from their respective official Facebook pages. In order to collect the data, the Facebook search tool was used to identify the posts with specific keywords such as COVID-19, coronavirus, virus, and pandemic during the time periods listed above. All news stories that contained at least one of these keywords were collected by taking a screenshot of the Facebook post for that news article. Each screenshot contains both textual and visual modes across four main elements from top to bottom: the logo of the news media and the date in the upper left corner, the text above the image which provides a summary or snippet of the news article, a static image that is assumed to be related to the news story, and the text below the image which contains the URL of the news organization and the headline of the story. A total of 59 multimodal news stories were collected as screenshots across the three time periods listed above. From this data, 17 were from CNN, 15 from FOX and 27 screenshots belonged to NPR News as can be seen in Table 1.

Table 1 *Number of Facebook Posts about COVID-19 Collected by News Media and Time Period*

News Media	Period 1	Period 2	Period 3	TOTAL
CNN	7	5	5	17
FOX	4	7	4	15
NPR	11	8	8	27
TOTAL	22	20	17	59

Data Analysis

To analyze the content of the multimodal news articles on Facebook, the verbal text and the image were analyzed separately. The verbal text was analyzed using content analysis, which identified themes inductively from the content, while the visual content analysis followed the visual content analysis framework by Bell (2001). This framework recommends first starting with a hypothesis that leads to variables of study and their respective values. The hypothesis for this study is that different news media will report on the COVID-19 in different ways that match with the political biases of their main audiences. Based on the context of COVID-19 and the politicization of the virus in the US, the key aspects that might be found in COVID-19 news articles are at the intersection of the virus itself, the government's response, and the effect on society. Based on this hypothesis, the variables and values developed by the researchers to be studied can be seen in Table 2.

Table 2 *Variables and Values for the Visual Content Analysis*

Variables	Possible Values
Type of People	• Anonymous: Regular citizens who are not in positions of power • Authority: People in power such as governmental officials
Political Party	• Republican: Members of the conservative Republican Party (e.g., Donald Trump) • Democrat: Members of the liberal Democrat Party (e.g., Joe Biden) • Neutral: People who are not explicitly representing a political party
Context	• Societal: Images which show how COVID is affecting day-to-day life in the society. • Governmental: People or places which are associated with the government • Medical: Images about medicine, such as hospitals or people being vaccinated.
Masked?	• Yes: The person in the image is fully wearing a face mask • No: The person in the image is not fully wearing a face mask

In the analysis, one value was chosen for each variable in each news article. The frequencies and percentage of appearance of values for all news articles were tabulated for each of the three news media and reported in the Results section.

Results

This study is a content analysis of news articles about COVID-19 in the US, as posted by three news media (CNN, FOX, and NPR) on Facebook. News articles that are posted on Facebook are multimodal, in that they have both a textual mode (the article summary or introductory sentence at the top and the headline of the article at the bottom) and a visual mode (a big image, usually a photograph) in the middle of the post. The results of the content analysis, both the textual and visual modes, are reported in the following section.

Textual Content Analysis

First, the content of the textual mode of the posts were analyzed quantitatively. Nine themes were inductively derived from the data. The frequencies of the themes for each of the three news media can be seen in Table 3, which shows the differences in the main focus of each of the three news media in the textual mode. The total number of themes found in the textual modes for CNN, FOX, and NPR was 42, 42, and 76, respectively. Since these numbers are not equal for all three, the frequencies are not comparable. Therefore, percentages were calculated to show the contribution of each theme for each news media. The most common theme for CNN is medicine (e.g., vaccines) at 28.7%. In contrast, FOX focused on people in authority (e.g., President Trump) at 26.2% of all themes, and NPR's most common theme was safety regulations (e.g., mask mandates) at 18.4%.

Table 3 *Frequencies and Percentages of Themes Found in the Textual Mode*

Theme	Frequency			Percentage		
	CNN	FOX	NPR	CNN	FOX	NPR
Anonymous Person	5	4	12	11.9	9.5	15.8
Person with Authority	4	11	7	9.5	26.2	9.2
Named Location	4	9	12	9.5	19.2	15.8
Medicine	12	7	11	28.6	14.9	14.5
COVID Statistics	3	2	5	7.1	4.3	6.6
Safety Regulations	4	4	14	9.5	9.5	18.4
Medical Organization	2	2	1	4.8	4.8	1.3
Business Organization	1	0	2	2.4	0.0	2.6
Government	7	8	12	16.7	19.0	15.8
Total	42	42	76	100.0	100.0	100.0

Noting the highest and lowest percentages for each theme can also show differences in the data set. When looking at the numbers of the news media compared to the other two, the highest values for each were as follows: CNN was the highest of the three for the themes of medicine and COVID statistics. FOX had the highest percentage for person with authority, named location, and government. NPR led the three news media in the themes of anonymous person, safety regulations, and business organizations. When looking at the news media with the lowest number for each theme, CNN was lowest in named locations, FOX was lowest in anonymous people, COVID statistics, and business organizations, while NPR was lowest of the three in the themes of person with authority, medicine, and medical organizations.

Visual Content Analysis

Next, the visual content analysis was conducted following Bell (2001), who recommended selecting variables with corresponding values based on a hypothesis. The hypothesis for this study is that since the COVID pandemic has been politicized in the US, and the three US news media chosen for this study represent the center (CNN), right-wing (FOX), and left-wing (NPR) of the political spectrum, hence there may be differences in the way that these news media report the same stories. The variables and values in this case were described in the methodology section, and Tables 4, 5, 6, and 7 show the frequencies of the values for the four variables: person type, political party, contexts, and mask wearing, respectively.

As can be seen in Table 4, CNN and NPR both favored showing anonymous people over people in authority, with anonymous people making up 29.4% and 19.2% of the of the people from CNN and NPR, respectively. FOX, on the other hand, had an extremely strong preference for including authority figures in their visuals, with 71.4% of the images showing someone in authority while only 7.1% of images showed anonymous people. These people in authority were government officials from Federal, State, and Local Government levels. Not all photographs showed people, as can be seen in the "None" category in Table 4. These images could show, for example, government or business buildings or vaccine vials and syringes.

Table 4 *Frequencies and Percentages of Person Types Used in the Visual Mode*

Media	Frequencies			Percentages		
	Anon.	Auth.	None	Anon.	Auth.	None
CNN	8	5	4	47.1	29.4	23.5
FOX	1	10	3	7.1	71.4	21.4
NPR	12	5	9	46.2	19.2	34.6

Images of people in authority was a common theme in news articles, as those in government were making decisions that were newsworthy. Therefore, it might be useful to see how many right-wing conservative (e.g., Donald Trump), left-wing liberal (e.g., Joe Biden), or neutral (e.g., Dr. Anthony

Fauci) authority figures were shown by the different news media. As can be seen in Table 5, both FOX and NPR had a majority of images of Republican (conservative) authority figures with 55% and 83%, respectively. Meanwhile, CNN was more balanced between conservative, liberal, and neutral with 40%, 40%, and 20%, respectively.

Table 5 *Frequencies and Percentages of Political Parties of Authority Figures Used in the Visual Mode*

Media	Context Frequencies			Context Percentages		
	Rep.	Dem.	Neut.	Rep.	Dem.	Neut.
CNN	2	2	1	40	40	20
FOX	5	2	3	55	18	27
NPR	5	1	0	83	17	0

For the context variable in the images, the possible values were medicine, government, and society. Table 6 shows large differences in the percentages among the three news media. FOX was almost exclusively showing images with a government context at 84.6% of all images. NPR, on the other hand, chose images reflecting society most often, at 52% of all images. CNN also showed a different preference, with medicine being the most common context value at 41.2%. Another figure that stands out in this table is that FOX did not show any images representing society in the data for this study.

Table 6 *Frequencies and Percentages of Contexts Used in the Visual Mode*

Media	Context Frequencies			Context Percentages		
	Medicine	Government	Society	Medicine	Government	Society
CNN	7	6	4	41.2	35.3	23.5
FOX	2	11	0	15.4	84.6	0.0
NPR	7	5	13	28.0	20.0	52.0

The final table in this section, Table 7, shows how the three news media approached the issue of mask wearing through the images that they chose to accompany the news articles. For this variable, NPR was the one news media that strongly preferred to show people wearing masks with two-thirds of the images of people in their news stories wearing masks in public that covered their nose and mouth. In the other extreme, FOX did not show a single mask-wearing person in the 10 images with people. CNN was in the middle of the three news media, but still showed a low percentage of people (23.1%) wearing masks in the images selected to accompany their news articles.

Table 7 *Representations of Mask Wearing in the Visual Mode*

Media	Yes	No	Yes (%)
CNN	3	10	23.1
FOX	0	10	0.0
NPR	10	5	66.7

In summary, the results of the tabulation of the four variables and their corresponding values (Tables 4, 5, 6, and 7) showed very strong differences between the representations shown in the visual mode of news stories posted to Facebook. The next section below discusses each of the news media in turn and further analyzes the text and images that they chose to show as posts on their Facebook feeds.

Discussion

The current study reports on an investigation of potential media bias in the reports of COVID-19 from news media whose audiences are segregated by political affiliation. Most of the previous studies that looked at media bias investigated the sentiment of the content, i.e., whether the topic or political figure was presented in a positive or negative light (see Groeling, 2008, for a review of the literature from previous decades). Similarly, there have been recent studies investigating the bias in COVID reporting that also considered the sentiment of the news. One study compared the NY Times coverage of COVID to that of the Global Times from China. The NY Times was found to have a negative view of China's role in the pandemic while the Global Times criticized President Trump's slow and ineffective response (Abbas, 2022). Another study used automated sentiment analysis methods to show that COVID news reports from various countries had different sentiment values. For example, news reports from South Korea showed sadness and anger, which were not present in COVID stories from the US (Xu, et al., 2022). The current study, however, did not look at subjective sentimental aspects of the news; it instead conducted an objective quantitative study of the multimodal content that was presented in the news stories. By conducting a textual and visual content analysis of COVID-19 news reports posted to Facebook by CNN, FOX, and NPR, clear differences can be seen in the way that these three news media represent the news about the pandemic. The remainder of this section will provide further discussion of the results of how each news media compares and contrasts with the others.

FOX's Pro-Republican and Anti-Restrictions Content

FOX has been criticized for presenting biased news reports to appeal to their conservative, Republican audience. The results of this study are in line with these criticisms, as was seen very clearly above. In general, Republican politicians representing their conservative base have ignored the scientific consensus that masks, vaccines, and other scientific approaches can be effective tools in the fight against COVID-19. In the textual content analysis, the themes of medicine and COVID statistics from FOX were much lower than the other two news media. In fact, only two FOX news stories mentioned COVID statistics and, even then, numbers were not used, but only said "a surge in COVID-19 cases." FOX never reported the actual numbers of cases or deaths from to the virus. It seems that, in general, FOX was not interested in educating the general public about the dangers of the COVID-19 virus or the steps that could be taken to prevent it. Instead, they focused on the people in authority, usually Republicans, who were fighting against the mask mandates and forced quarantines. For example, headlines from FOX included the following summaries:

> Children exposed to classmates who tested positive for COVID-19 will no longer have to quarantine in Ohio, Gov. Mike DeWine announced yesterday.

> A Los Angeles County supervisor called on California Gov. Gavin Newsom on Friday to immediately lift the state's mask mandate.…

In the first summary, a Republican official is attempting to reduce the restrictions, while in the second summary a Democratic official is being attacked for his insistence that masks are still needed.

Biases from FOX can be seen in the visual content as well. In all of the news articles analyzed from FOX showing people, not a single person was wearing a mask. This is in sharp contrast to NPR where two-thirds of the people shown were wearing masks. In addition, FOX focused on government and government officials and the people in authority who were highlighted in the news stories, most of whom were from the Republican Party. There were only two cases of Democrats being shown in the FOX news reports. One was California Governor Gavin Newsome, who was being attacked for his beliefs as shown in the quote above. The other was Representative Tulsi Gabbard, who in fact holds conservative views even though she is registered with the Democratic Party. Focusing on Republican leaders in the first time period for this data makes some sense, as the federal government was controlled by President Donald Trump and other Republicans. However, even though the third time period of this study was during Joe Biden's presidency, President Biden and Vice President Kamala Harris never appeared in a FOX news story in the data collected for this study. It seems as if FOX was

not willing to present Biden as the rightful winner of the presidential election, instead choosing to side with Trump's accusation that an election victory was stolen from him.

CNN's Scientific Approach

CNN, on the other hand, was more balanced in their politics and also showed more emphasis on the scientific aspects of the COVID-19 pandemic. In the textual mode, CNN was much more likely to talk about medical issues and mathematical statistics than both FOX and NPR. Another difference can be seen in the texts that contained a location theme. When CNN talked about locations, they were usually talking about the medical or statistical situation at the location, rather than about the government officials there, as shown in the comments about the Governors of Ohio and California from FOX above. An example of CNN's approach to the news can be seen in these headlines:

> Florida has more COVID-19 than most countries in the world. These stats show how serious the problem is.

> Miami-Dade County is considered the epicenter of the coronavirus in Florida with a 33.5% coronavirus positivity rate

In the visual mode, CNN was also more focused on the lives of regular people rather than authority figures. For example, the two headlines above were matched with photographs of regular people living their lives during the pandemic. When CNN did show authority figures, there was a balance between Democrats and Republicans as opposed to FOX's sole focus on Republicans. For CNN, when Trump was president, Republicans were more likely represented. But after Biden became the president (third period of this study), Democrats were shown. In this way, CNN showed that they supported the legitimacy of Biden's presidency. Somewhat surprisingly, though, CNN did not often show people following the mask mandates, with only about one-third of the images showing masked people. However, the first example above about the "serious stats" in Florida was combined with a photo showing a crowded street with no one wearing masks. The reader can make the inference that the COVID case numbers were very high because no one was taking precautions against becoming infected. Another image was photos of people who had died from COVID, and a third one was of an anonymous person in her home where a mask was not needed.

NPR's Focus on the Pandemic's Effect on Society

The third news media, NPR, has a strong following of people on the liberal, left-wing side of the political spectrum. In other words, their audience greatly supports the Democratic Party and are often concerned with issues such as social change and the lives of ordinary citizens regardless of their background. For the data in this study, this was reflected in the choice of themes used in the textual mode. The most common theme was safety regulations. In addition, similar to CNN, NPR also used the medical and COVID statistics theme much more often than FOX. Through this, NPR showed that they were concerned not with the decision makers as FOX was, but in how the decisions and the actual science behind the pandemic affected everyday life. Example article summaries show NPR's focus on statistics and how they affect real people.

> New modeling suggests the U.K. coronavirus variant is about 50% more transmissible than previous versions. Scientists don't know why yet – but urge diligence in mask-wearing, hand-washing, and social distancing.

> The CDC's new guidance does not have any specific advice for vaccinated parents with unvaccinated kids in their households. We dug into the current guidance for kids and parents, and talked with infection prevention expert Dr. Emily Landon about the risks.

In this way, NPR showed that they were sympathetic to the difficult situation that real people all over the nation were facing. They showed that they believed that science was the solution and that vaccines were an important way to fight the virus. They wanted to play a role in helping to educate people about the science and to provide support for the many changes that they were going thorough.

This perspective can be seen in the visual mode as well. Concerning mask wearing, two-thirds of all people shown in images from NPR were wearing masks, which was substantially higher than CNN and FOX. NPR's images were also much more focused on the social context rather than medical or governmental. This was especially true in the third time period of this study when the mask mandates were being lifted. NPR's audience was still supportive of mask mandates, so when the mandates were being lifted, NPR posted stories that might help people understand the situation and to get advice from scientific experts, such as shown in the second summary above advising parents how to deal with unvaccinated kids.

Future Work

The results of this study show very strong differences between the textual and visual content from different news media that have different types of audiences. However, it seems that this issue can be researched further. A deeper text analysis focusing on linguistic features might yield additional insights. Anecdotally, it seemed as if the language used by FOX was very simple and repetitive, while the language from NPR was more complex. A detailed text analysis or a corpus linguistics approach could be taken to see if this was actually the case.

Another potential avenue for future research is through the affordances of social media. In this study it was assumed that the news media were writing to their respective audiences. It might be interesting to investigate the audience's opinion of the stories by tabulating the numbers of likes and shares on each post. Research in this area could shed more light on what multimodal content resonates with each news media's audience.

Conclusion

The purpose of this study was to compare and contrast the textual and visual content of COVID-19 news articles from FOX, CNN, and NPR posted to Facebook in order to uncover how news stories might be presented to different audiences with different political biases. FOX is aimed at conservatives who support the Republican Party, while NPR is directed at those on the other side of the political spectrum who generally vote for the Democrat Party. CNN is considered to be in the middle with an audience made up of people from both sides of the political spectrum. As might be expected, the results uncovered political biases in the textual and visual modes of news stories posted to Facebook, such as FOX's heavy focus on Republican government officials and a lack of people wearing masks, and NPR being more concerned with the social changes that regular people were going through. These differences were very clear in the data even though the main topic of the news stories was the same. This brings to light issues of truth in media as well as implicit biases in the news content. It can be seen through these results how biased multimodal messages about the pandemic on social media to different audiences might cause further divisions in the society as each audience has their own view of reality, rather than bringing people together to fight the common COVID-19 enemy.

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