

The Lurking Peril of the Pandemic: The Relationship Between COVID-19
News Consumption and Anxiety

A Senior Honors Thesis

Submitted in Partial Fulfillment of the Requirements
for Graduation in the Honors College

By
Amelia McCarthy
Mathematics Major

SUNY Brockport, State University of New York
May 18th, 2021

Thesis Director: Dr. Tasneem Zaihra, Associate Professor, Mathematics

Acknowledgements

I would like to thank my advisor, Dr. Tasneem Zaihra for her guidance throughout this entire process. I would also like to thank my family and friends for keeping my spirits up in this interesting year.

Abstract

This is a significant period in American history, as the COVID-19 pandemic has recently become a major part of daily life. While physical health has been the obvious focus during this time, mental health has also been severely impacted. Mental health is often given less importance in times of great physical danger such as this one. The country has also been inundated with news about the ongoing crisis. These factors led to the analysis of the relationship between the degree to which an individual follows the news surrounding the COVID-19 pandemic and their anxiety levels. The sample came from Wave 64 of the Pew Research Center's American Trends Panel, published on April 1, 2020. Chi square tests of independence revealed following COVID-19 news and anxiety level were significantly associated in general ($\chi^2 = 158.55$, 1 df, $p < .001$), as well as specifically among those who consider the pandemic a crisis, ($\chi^2 = 50.36$, 1 df, $p < .001$) and those who do not, ($\chi^2 = 3.89$, 1 df, $p = .048$). After adjusting for crisis perception, following COVID-19 news (OR 1.35, CI 1.24-1.47, $p < .001$) was significantly and positively associated with the likelihood of higher anxiety, suggesting those who follow news more closely are 1.35 times more likely to have higher anxiety. These results indicate that those who follow COVID-19 more closely may have higher anxiety than those who do not, and that those who do not consider the pandemic to be a crisis seem to receive the same effect from following the news as those who do.

Introduction

The COVID-19 pandemic is one of the most globally impactful events that has happened in recent years. As is the nature of a health-based emergency, the focus has been placed on physical health and preventing the spread to those at high risk of complications. However, there is an area given far less attention whose effect can be just as devastating: mental health.

Psychological factors are directly related to the leading causes of mortality in the world (World Health Organization, 2018). Research has found that health crises increase anxiety significantly among the population and can have lasting effects. In fact, epidemics have been known to affect mental health in greater numbers than its actual infections (Reardon, 2015). A study by Wang in China found that in the early stages of the pandemic, 53.8% of participants reported the psychological impact of COVID-19 to be moderate or severe (Wang et al., 2020). Higher levels of COVID-19 anxiety have been associated with more severe eating disorder pathology (Scharmer et al., 2020). A study from the University of Zagreb saw a significant increase in cyberchondria, wherein individuals experience negative emotions when searching symptoms online, at the very beginning of the outbreak (Jokic-Begic et al., 2020).

Though it is difficult to repeatedly expose oneself to an anxiety-inducing stimulus, the constantly evolving nature of COVID-19 makes it critical to stay informed on the current situation. These days there are many sources one can look to for information. Wang et al. (2020) found that 93.5% of participants utilized the internet for health information in the early stages of COVID-19 in China. Jokic-Begic et al. (2020) recorded 46% of participants reporting searching the internet frequently for information about COVID-19 in the first wave and 75% in the second. At the country's peak of infection in February 2020, Yao (2020) found the median level of

Chinese adults' COVID-19 news exposure to be four hours a day. However, consuming media in large amounts comes with its own risks.

A study from the University of Tokyo found the use of television and web media as COVID-19 information source to be positively and significantly correlated with fear and worry about COVID-19. Researchers surmised that high levels of access to this information leads people to overestimate the risk of the disease, which therefore increases their worry (Sasaki et al., 2020). Individuals may overestimate their chances of contracting the disease, experience a rise in catastrophic beliefs, and may even amplify physical symptoms (Shabahang, Aruguete & McCutcheon, 2020). Another study found a correlation between both frequency and duration of COVID-19 media consumption and increased mental distress. This relationship was much stronger in those who had pre-existing fears (Bendau et al., 2020). Those who are concerned may seek out coverage even more, which only increases their stress levels (Garfin, Silver, and Holman, 2020). A study of Iranian students found that searching for online health information and believing this information to be true was associated with higher anxiety (Shabahang, Aruguete & McCutcheon, 2020).

This increase in anxiety can also make management of the crisis more difficult. The results of this panic have been seen already through engagement in behaviors not recommended by officials. Behaviors like overcrowding hospitals, overbuying face masks and other medical supplies needed for healthcare workers, and purchasing excessive amounts of consumer items such as toilet paper have led to shortages and individuals taking advantage through price gouging. Though individuals should be taking the pandemic seriously, acting outside the active recommendations and going overboard can make the situation worse (Garfin, Silver, and Holman, 2020).

Despite the seemingly lose-lose situation, there have been evidence-based recommendations offered to navigate through an extremely stressful situation such as this while remaining informed and prepared. Wang et al. (2020) suggest using young people's reliance on smartphone apps to provide psychological intervention in an online format in order to reduce face-to-face interaction. It has been found that increasing the quality of health information one receives has a positive effect on one's mental health. Using social media as a primary information source was associated with a significantly higher level of mental distress when compared to official sources. It was theorized that this is due to social media's more unfiltered and emotional style (Bendau et al., 2020). Up-to-date, accurate, and evidence-based information were associated with lower stress levels (Wang et al., 2020). The public should utilize official sources like the Centers for Disease Control and Prevention or WHO for up-to-date recommendations and avoid repetitive stories which offer no new information (Garfin, Silver, and Holman, 2020). It has been suggested that focusing on critical thinking and improving knowledge about COVID-19 may reduce an individual's risk of falling prey to fake news on the subject, which can be dangerous (Greene and Murphy, 2020). It has been shown that when facts are communicated effectively to the public, individuals are able to accurately assess risk (Fischhoff, Wong-Parodi, Garfin, Holman, & Silver, 2018). Alternatively, Sasaki et al. (2020) advised *limiting* the frequency with which an individual engages with the news about COVID-19 in order to prevent mental health issues. Jokic-Begic et al. (2020) prescribe a warning to individuals about the danger of excessive media consumption as well as relying on unreliable sources, and to limit these behaviors to preserve one's mental health. Shabahang, Aruguete & McCutcheon (2020) place the responsibility on the media, encouraging caution when reporting

information about COVID-19. Sensationalism and disturbing images should be avoided (Garfin, Silver, and Holman, 2020).

Though studies have shown a relationship between media consumption and COVID-19 related anxiety (Sasaki et al., 2020)(Shabahang, Aruguete & McCutcheon, 2020), the distinction has not been made between those who do or do not consider the pandemic to be a crisis. The initial question formed was whether among the American Trends Panelists a relationship exists between how closely an individual follows the news surround COVID-19 and their anxiety level. It was hypothesized that there would be a positive linear relationship between level of media consumption and anxiety level, i.e. those who follow the news more closely will have higher anxiety than those who do not. In the United States there has been an additional obstacle in the fight to contain COVID-19, which is the disbelief furthered by a selection of public figures. Many Americans have been led to believe that the pandemic is not the crisis that the media makes it out to be. This led to questioning whether the relationship between how closely an individual follows the news surround COVID-19 and their anxiety level changes based on whether the individual considers the pandemic to be a crisis. It was hypothesized that those who do not consider the pandemic to be a crisis would not experience an increase in anxiety when following the news more closely.

Materials and Methods

The sample used for this study was collected as a part of the Wave 64 Survey of the American Trends Panel, which is a national, online panel of adults living in households in the United States. It was conducted by Ipsos Public Affairs for the Pew Research Center. It was taken from March 19th, 2020 to March 24th, 2020 from 11,537 members of the American Trends Panel. The measures that were used for the study were following COVID-19 news, which was a self-report of how closely the individual follows the news about COVID-19, Anxiety level, a self-report of how many days in the past week the individual felt anxious, and Perception of crisis, a self-report of how much of a crisis the individual considers COVID-19 to be.

Following the COVID-19 news was measured with the question “How closely have you been following news about the outbreak of the coronavirus strain known as COVID-19?” and had four responses participants could choose from. These were 1 for “Very closely,” 2 for “Fairly closely,” 3 for “Not too closely,” and 4 for “Not at all closely.” Anxiety level was measured with the question: In the past 7 days, how often have you... a. Felt nervous, anxious, or on edge?” which had four responses participants could choose from. These were 1 for “Rarely or none of the time (less than 1 day),” 2 for “Some or a little of the time (1-2 days),” 3 for “Occasionally or a moderate amount of time (3-4 days),” and 4 for “Most or all of the time (5-7 days).” Crisis perception was measured with, “Would you say the coronavirus outbreak is...” and had four responses participants could choose from. These were 1 for “A significant crisis,” 2 for “A serious problem but not a crisis,” 3 for “A minor problem,” and 4 for “Not a problem at all.”

For the purpose of this study, for following COVID-19 news, responses 2, 3, and 4 were combined into “Fairly/not closely” while 1 was kept as “very closely.” For anxiety level, 1 and 2

were combined into “0 to 2 days” and 3 and 4 were combined into “3 to 7 days.” Finally, for crisis perception, 2, 3, and 4 were combined into “does not consider it a crisis” while 1 was “does consider it a crisis.”

Multiple chi square tests were conducted. The first compared following COVID-19 news and anxiety level. The other two split the sample by crisis perception to see if this moderated the relationship shown in the first test. Next, a logistic regression model was developed.

Results

Univariate

When asked “How closely have you been following news about the outbreak of the coronavirus strain known as COVID-19?” 35.04% of participants reported following the news not closely or fairly closely, and 64.96% reported following the news very closely (Figure 1). When asked, “In the past 7 days, how often have you felt nervous, anxious, or on edge?” 54.23% of participants reported feeling anxious less than 1 day or 1 or 2 days, and 45.77% reported feeling anxious 3 to 4 or 5 to 7 days (Figure 2). When asked “Would you say the coronavirus outbreak is... 1. A significant crisis, 2. A serious problem but not a crisis, 3. A minor problem, 4. Not a problem at all, 75.85% answered 1 and 25.15% answered 2, 3 or 4 (Figure 3).

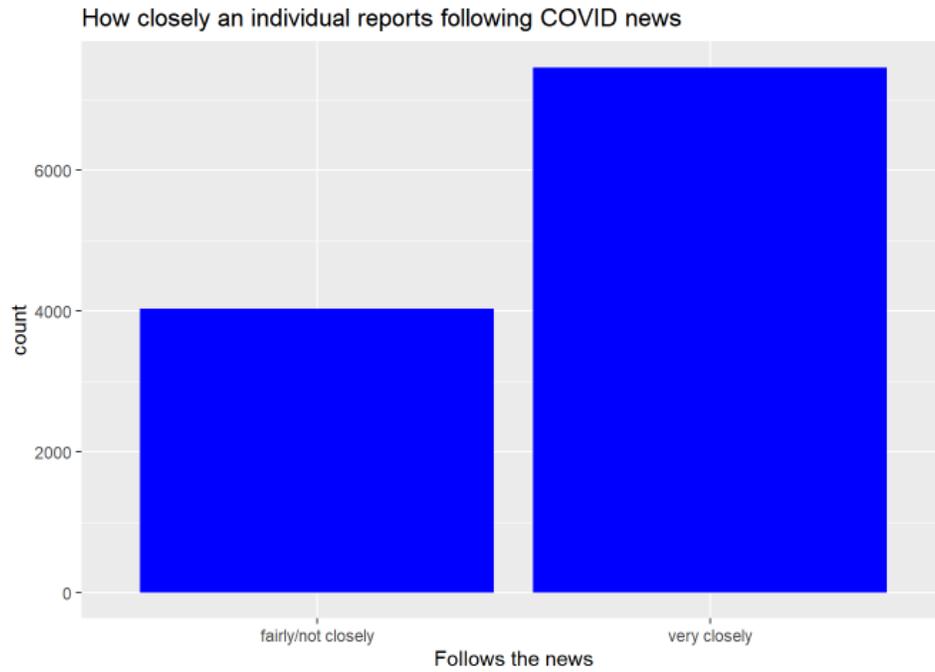


Figure 1. Count of how closely an individual reports following COVID-19 news.

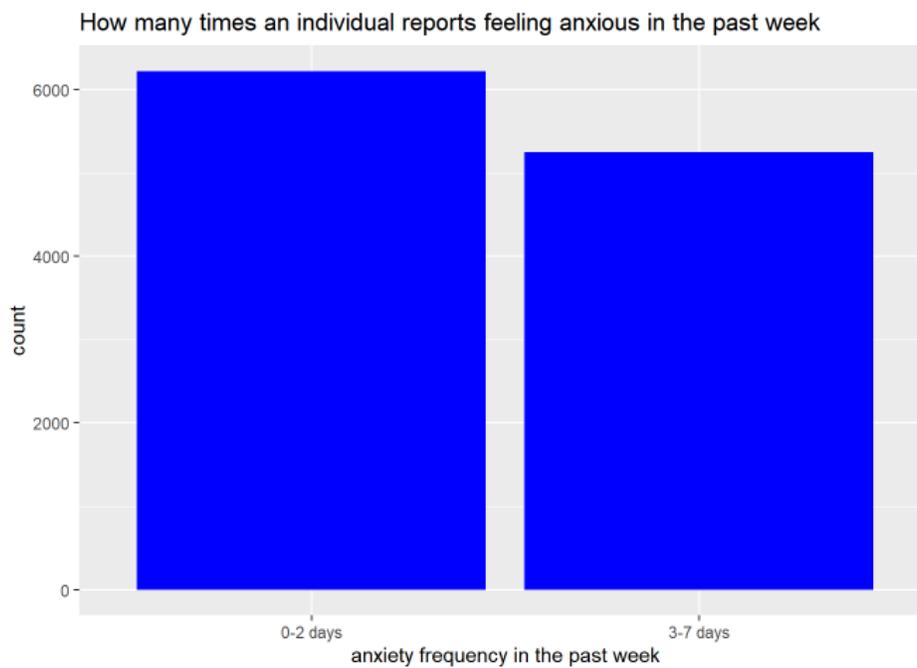


Figure 2. Count of how often an individual felt anxious in the past week.

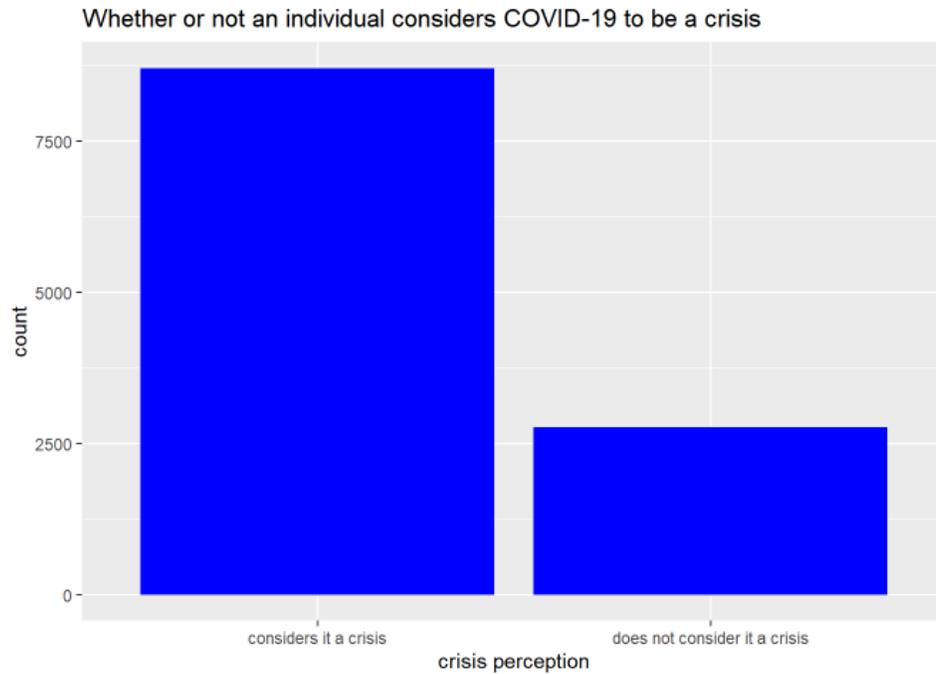


Figure 3. Count of individuals who consider the pandemic to be a crisis.

Bivariate

A chi square test of independence revealed that following COVID-19 news and anxiety level were significantly associated, ($\chi^2 = 158.55$, 1 *df*, $p < .001$) (Figure 4). The average anxiety level for fairly/not closely and very closely can be seen in Figure 6.

Test statistic	df	P value
158.6	1	2.341e-36 ***

Figure 4. Chi Square test of Independence for COVID-19 news and anxiety level.

	fairly/not closely	very closely
0-2 days	0.6222	0.4993
3-7 days	0.3778	0.5007

Figure 5. Proportion of anxiety by level of following news

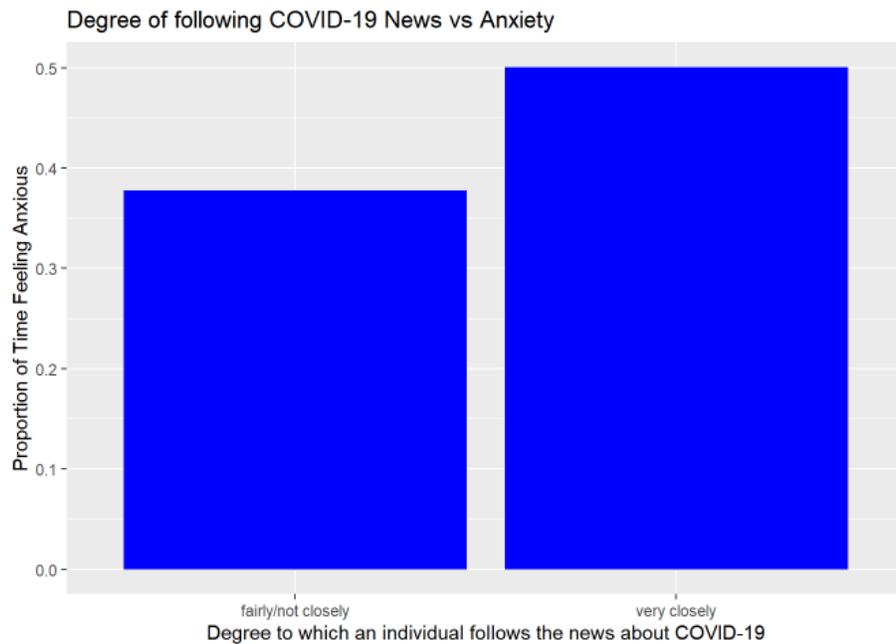


Figure 6. The degree to which an individual follows the news about COVID-19 news and anxiety level.

Multivariate

Chi square tests of independence revealed following COVID-19 news and anxiety level were significantly associated among those who consider the pandemic a crisis, ($\chi^2 = 50.36$, 1 *df*, $p < .001$) (Figures 7, 8) as well as those who do not consider the pandemic a crisis, ($\chi^2 = 3.89$, 1 *df*, $p = .048$) (Figures 9, 10). These levels can be seen in Figure 11. For those believing it a crisis,

following COVID-19 news (*OR* 1.35, *CI* 1.24-1.47, $p < .001$) was significantly and positively associated with the likelihood of higher anxiety (Figures 12, 13). The odds ratio suggests those who follow COVID-19 news more closely are 1.35 times more likely to have higher anxiety.

Considers COVID-19 a crisis:

Test statistic	df	P value
50.36	1	1.281e-12 ***

Figure 7. Chi Square test of following COVID-19 news and anxiety for those who consider COVID-19 a crisis.

	fairly/not closely	very closely
0-2 days	0.5501	0.4646
3-7 days	0.4499	0.5354

Figure 8. Proportion of anxiety by level of following news for those who consider COVID-19 a crisis

Does not consider COVID-19 a crisis:

Test statistic	df	P value
3.894	1	0.04847 *

Figure 9. Chi Square test of following COVID-19 news and anxiety for those who do not consider COVID-19 a crisis

	fairly/not closely	very closely
0-2 days	0.7274	0.6922
3-7 days	0.2726	0.3078

Figure 10. Proportion of anxiety by level of following news for those who do not consider COVID-19 a crisis

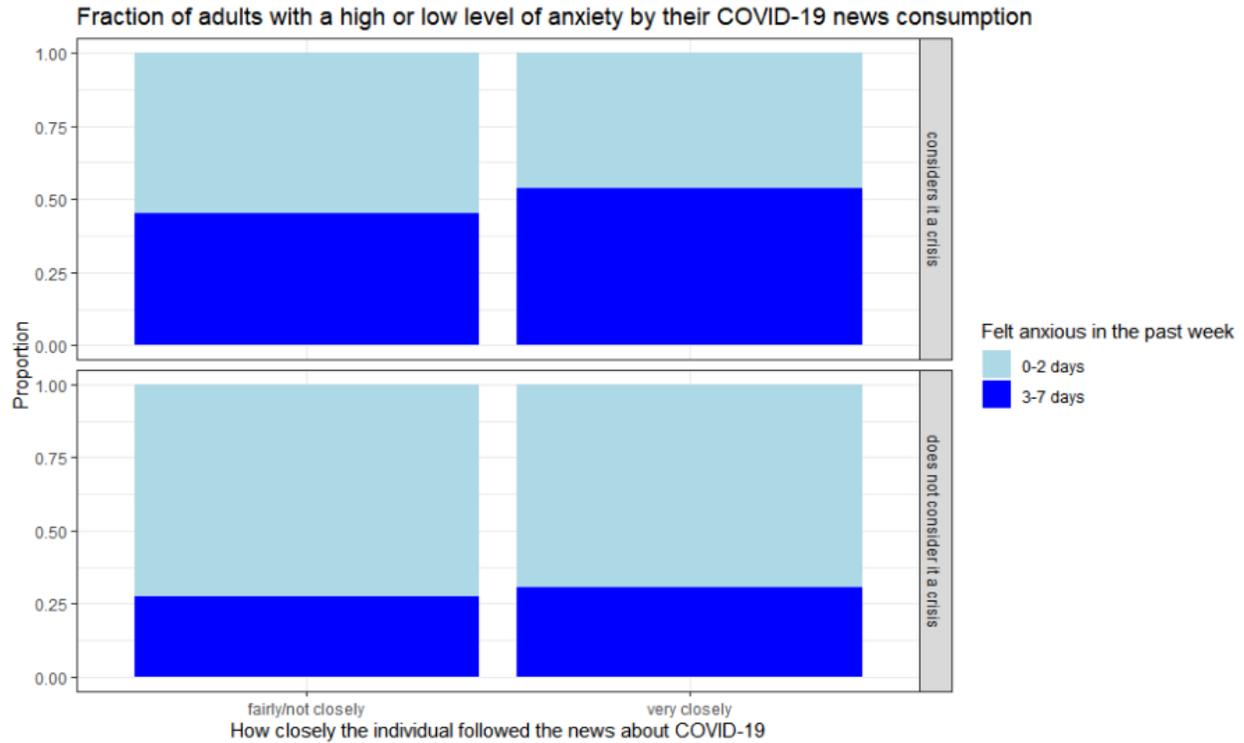


Figure 11. Fraction of adults with high or low anxiety by how often they follow the news about COVID-19 separated by whether they consider the pandemic to be a crisis.

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.1704	0.03726	-4.574	4.788e-06
covidfolvery closely	0.3009	0.0419	7.183	6.839e-13
crisisdoes not consider it a crisis	-0.8673	0.04874	-17.8	7.566e-71

Figure 12. Logistic Regression model

	OR	2.5 %	97.5 %
(Intercept)	0.84	0.78	0.91
covidfolvery closely	1.35	1.24	1.47
crisisdoes not consider it a crisis	0.42	0.38	0.46

Figure 13. Odds Ratio Table

Classification Tree

A classification tree model (Figure 14) revealed that crisis perception (89) was the biggest determining factor in predicting anxiety level when compared to following COVID-19 news (11) with an accuracy rate of 58% and an error rate of 42%. The model predicts that those who do not consider COVID-19 a crisis will have a lower level of anxiety. For those who do consider it a crisis, those who follow the news more closely are predicted to have higher anxiety while those who follow it less frequently are predicted to have lower anxiety. The fits matrix can be seen in Figure 15.

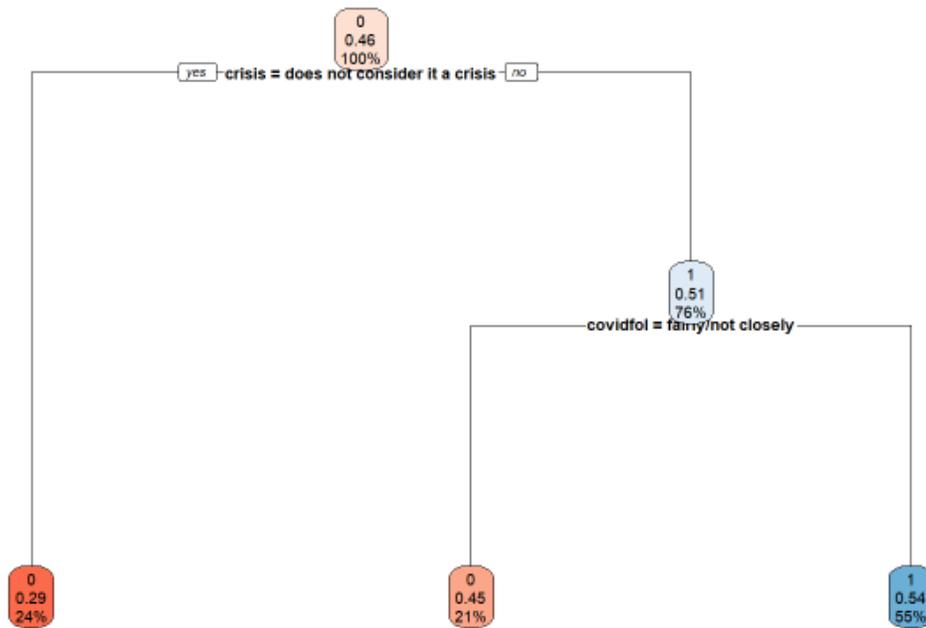


Figure 14. Classification Tree Model

Red predicts lower anxiety and blue predicts higher anxiety.

		Predicted	
		0	1
Actual	0	3290	2936
	1	1870	3384

Figure 15. Fits Matrix for Classification Tree

Discussion

From these results it was concluded that Americans who follow the news surrounding the COVID-19 pandemic more closely may have higher anxiety levels than those who do not follow the news as closely. When introducing the potential confounder of crisis perception, those who do not consider the pandemic to be a crisis seem to receive the same effect from following the news as those who do consider the pandemic to be a crisis. This did not align with the hypothesis of the study. This could be due to individuals disbelieving in the severity of the situation, but still being affected by the current emergency culture. The classification tree model suggests that while crisis perception is a superior predictor of anxiety, those who do consider the pandemic to be a crisis can be made more anxious through overexposure to news. This is concurrent with recent findings about mental health and COVID-19, as well as other disasters and diseases. One limitation of this study was that it was not possible to control for general anxiety disorders, as it was not included in the survey used. These individuals may have very high anxiety regardless of how closely they follow the news. Future research could focus on methods to decrease anxiety while staying informed. It is very important to physical health to stay abreast of the critical updates, but this comes at the cost of one's mental health. It may be necessary to restructure the way that the media produces content, decreasing the emphasis on catastrophizing to draw people in. As this may come at the cost of viewers, it would likely be met with resistance.

References

- “American Trends Panel Wave 64” Pew Research Center, Washington, D.C. (17 Dec. 2020)
<https://www.pewresearch.org/social-trends/dataset/covid-19-late-march-2020/>.
- Bendau, A., Petzold, M. B., Pyrkosch, L., Mascarell Maricic, L., Betzler, F., Rogoll, J., Große, J., Ströhle, A., & Plag, J. (2021). Associations between COVID-19 related media consumption and symptoms of anxiety, depression and COVID-19 related fear in the general population in Germany. *European Archives of Psychiatry and Clinical Neuroscience*, 271(2), 283–291. <https://doi-org.brockport.idm.oclc.org/10.1007/s00406-020-01171-6>.
- Fischhoff, B., Wong-Parodi, G., Garfin, D. R., Holman, E. A., & Silver, R. C. (2018). Public understanding of Ebola risks: Mastering an unfamiliar threat. *Risk Analysis*, 38, 71–83. <http://dx.doi.org/10.1111/risa.12794>.
- Garfin, D. R., Silver, R. C., & Holman, E. A. (2020). The novel coronavirus (COVID-2019) outbreak: Amplification of public health consequences by media exposure. *Health Psychology*, 39(5), 355–357. <https://doi.org/10.1037/hea0000875>
- Greene, C. M., & Murphy, G. (2020). Individual differences in susceptibility to false memories for COVID-19 fake news. *Cognitive Research: Principles and Implications*, 5. <https://doi-org.brockport.idm.oclc.org/10.1186/s41235-020-00262-1>

- Jokic-Begic, N., Lauri Korajlija, A., & Mikac, U. (2020). Cyberchondria in the age of COVID-19. *PLoS ONE*, 15(12). <https://doi-org.brockport.idm.oclc.org/10.1371/journal.pone.0243704>
- Qiu J., Shen B., Zhao M. A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations. *Gen Psychiatr.* 2020 Mar 6;33(2) doi: 10.1136/gpsych-2020-100213. eCollection 2020.
- Reardon, S. (2015). Ebola's mental-health wounds linger in Africa. *Nature*. 519, 13-4.
- Sasaki, N., Kuroda, R., Tsuno, K., & Kawakami, N. (2020). Exposure to media and fear and worry about COVID-19. *Psychiatry and Clinical Neurosciences*, 74(9), 501–502. <https://doi-org.brockport.idm.oclc.org/10.1111/pcn.13095>
- Scharmer, C., Martinez, K., Gorrell, S., Reilly, E. E., Donahue, J. M., & Anderson, D. A. (2020). Eating disorder pathology and compulsive exercise during the COVID-19 public health emergency: Examining risk associated with COVID-19 anxiety and intolerance of uncertainty. *International Journal of Eating Disorders*, 53(12), 2049–2054. <https://doi-org.brockport.idm.oclc.org/10.1002/eat.23395>
- Shabahang, R., Aruguete, M. S., & McCutcheon, L. E. (2020). Online health information utilization and online news exposure as predictors of COVID-19 anxiety. *North American Journal of Psychology*, 22(3), 469–482.

Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, Ho RC. Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China. *Int J Environ Res Public Health*. 2020 Mar 6;17(5):1729. doi: 10.3390/ijerph17051729. PMID: 32155789; PMCID: PMC7084952.

World Health Organization. (2018). *Global Health Estimates 2016: disease burden by cause, age, sex, by country and by region, 2000-2016*. Geneva: WHO.

Yao, H. (2020). The more exposure to media information about COVID-19, the more distressed you will feel. *Brain, Behavior, and Immunity*, 87, 167–169. <https://doi-org.brockport.idm.oclc.org/10.1016/j.bbi.2020.05.03>

Appendix

R output: <https://rpubs.com/amdm918/767502>

Disclaimer

The opinions expressed herein, including any implications for policy, are those of the author and not of Pew Research Center.