

IS SOCIAL MEDIA A VIRUS: HOW SOCIAL MEDIA INFLUENCES ATTITUDES
TOWARD COVID-19

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Abstract

Recent research on the utilization of social media for receiving COVID-19 information finds most individuals utilize social media for knowledge on vaccines and evolving social distancing policies. Existing research on the influence of social media indicates these platforms can increase the likelihood of believing misinformation related to COVID-19. This paper utilizes regression modeling to analyze whether social media can increase negative sentiments toward COVID-19 policies. Results indicate social media does not display a strong relationship with more negative COVID-19 policies in isolation. Rather, higher social media usage can exacerbate existing negative COVID-19 sentiments when certain factors are present. These include lower levels of political knowledge, weaker social ties, and when users utilize specific social media platforms which better enable them to ignore conflicting information. However, this analysis found ideology also impacts the relationship between using social media and the development of COVID-19 policy sentiments, suggesting echo chambers and party tribalism likewise impact the internalization of COVID-19 information found on social media. These results offer partial support for the hypothesis that increasing social media usage can lead to negative sentiments toward COVID-19, especially when using social media platforms whose structure better enables the development of insulated environments.

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Since its invention, social media rapidly became more integrated within society, and now rests as a fundamental aspect of U.S. culture. What those classified as a platform for younger generations to remain connected became readily used by politicians and political elites to reach constituents with greater ease. In 2021, Pew Research Center reported the number of likes and favorites of politicians' social media accounts increased 586 percent between the 2016 and 2020 elections, while the total number of tweets from members of Congress increased from 142K to 215K over the same period.¹ However, the use of social media remains divided by generational lines, with 71 percent of 18- to 29-year-olds reporting using smartphones, computers, or tablets for news compared to 48 percent of those 65 and older. Likewise, 18- to 29-year-olds remain the age group most likely to use social media for news.² As of 2021, social media serves as a platform for both young and old to remain connected and create new connections.

The increased use of social media as a tool for information gathering, however, raises concerns over the spread of misinformation from unverified sources. A 2020 report found unverified source interactions on social media increased by over 2.5 billion between 2019 and 2020.³ Social media algorithms can place individuals in an almost parallel universe where different individuals see such distinct information from another person. These universes can cause these two individuals to feel unique perspectives about the U.S. political climate and policy issues.⁴ The rise of echo chambers within social media became one of the many factors blamed for increasing political polarization within the United States. This rise in "fake news" increased pressure on social media outlets to do more to combat misinformation on their platforms. In 2021,

¹ Shah, Sono, Widjaya, Regina, Smith, Aron, Rivero, Gonzalo and Chapekis, Athena. "Charting Congress on Social Media in the 2016 and 2020 Elections." <https://www.pewresearch.org/politics/2021/09/30/charting-congress-on-social-media-in-the-2016-and-2020-elections/> (accessed 11/10/, 2021).

² Shah, Sono et. al. 2021

³ Stewart, Emily. "America's Growing Fake News Problem, in One Chart." <https://www.vox.com/policy-and-politics/2020/12/22/22195488/fake-news-social-media-2020> (accessed 11/10/, 2021).

⁴ Cinelli, M., Quattrocioni, W., Galeazzi, A. et al. The COVID-19 social media infodemic. *Sci Rep* 10, 16598 (2020). <https://doi.org/10.1038/s41598-020-73510-5>

Twitter announced it would collaborate with Reuters and the Associated Press to debunk unverified information posted on the platform.⁵ As misinformation grows, social media platforms face increasing pressure to combat false and unverified data.

Social distancing increased the relevance of social media as individuals used these platforms to both remain in contact with friends and family while also staying informed on evolving information related to the pandemic. However, the politicization of COVID-19 policies within the United States also inevitably entered the social media landscape. As algorithms prioritize people's preferences, they can exacerbate the internalization of misinformation as fact when this information reinforces existing beliefs. As Cinelli et. al (2020) wrote, the transition from the "traditional news paradigm profoundly impacts the construction of social perceptions and the framing of narratives; it influences policy-making, political communication, as well as the evolution of public debate, especially when issues are controversial."⁶ COVID-19 intensified existing concerns around the use of social media for political communication as the number of unverified resources utilizing these platforms for their own motivations grew. Within weeks of the implementation of social distancing policies, misinformation spread swiftly and the influence of echo chambers within social media platforms on COVID policy issues became easily felt.

Yet as research from DuBois and Grant (2018) found, the influence of echo chambers can differ across social media platforms and individuals do not always avoid conflicting information.⁷ The mixed reaction to echo chambers within research suggests scapegoating social media as the exclusive cause of why individuals show receptiveness to "fake news" negates the impact of other factors. Amidst an ever-evolving public health crisis where information remains in a constant

⁵ Dang, Sheila. "Twitter Partners with AP, Reuters to Battle Misinformation on its Site." <https://www.reuters.com/technology/twitter-partners-with-ap-reuters-battle-misinformation-its-site-2021-08-02/> (accessed 11/10/, 2021).

⁶ Cinelli, M., Quattrociocchi, W., Galeazzi, A. et al, 2020.

⁷ Dubois, Elizabeth and Grant Blank. "The Echo Chamber is Overstated: The Moderating Effect of Political Interest and Diverse Media." *Information, Communication & Society* 21, no. 5 (May 04, 2018): 729-745, <http://www.tandfonline.com/doi/abs/10.1080/1369118X.2018.1428656>.

state of flux, individuals may rely on social media and unverified sources more frequently, especially when their social ties support this information. Researchers Melki et. al (2021) found a relationship between those with greater distrust of traditional media outlets and believing misinformation related to COVID-19, especially that found on social media.⁸ Therefore, assessing the relationship between social media use and attitudes toward COVID-19 related public health policies becomes an important aspect in preventing the future spread of misinformation. While supple research exists on the interactions between social media and political attitudes, the COVID-19 crisis caused a fundamental shift in the relationship individuals have with social media. Existing political polarization created an environment where people began to see their COVID-19 stance as an aspect of their identity, which they then share on social media platforms to differentiate themselves from other groups. However, how much does social media impact the formation of one's COVID-19 policy identity?

This research focuses on the impacts of social media on political learning during the COVID-19 pandemic. Social media now serves as a standard method of political communication between politicians and constituents in the United States and across the world. While historically political communication occurred through outlets such as CBS News' Walter Cronkite, the evolution of technology increasingly enabled political elites to reach citizens more quickly than nightly network news reports. With the invention of social media, journalists, actors, activists, and others reach audiences with immediacy and can gain influence overnight. Increased access to information enables individuals to gain political information more quickly however, the spread of misinformation happens simultaneously, allowing for two individuals to live in completely different realities than one another.

⁸ Melki, Jad, et al. "Mitigating Infodemics: The Relationship between News Exposure and Trust and Belief in COVID-19 Fake News and Social Media Spreading." PloS one 16.6 (2021): e0252830. CrossRef. Web.

Despite discussions of social medias' influence on society, research remains mixed on the true impact of political learning on social media on users. While para-social relationships become more prevalent, research indicates actualized social ties still hold a stronger impact than those created by social media and the internet.⁹ However, social distancing disallows users from accessing their social ties through in-person interaction. This thereby increased the relevancy of social media as a method of maintaining relationships and gaining information. As COVID-19 misinformation spreads faster than scientists and experts can contain, the United States faces an ongoing culture war between science and politics. However, research conflicts on whether social media should be the correct scapegoat for this phenomenon. Does social media increase the likelihood to agree with misinformation in times of uncertainty such as COVID-19 or do pre-existing feelings toward the government or other demographics influence this likelihood instead?

Social Media in Society

The rapid expansion of social media highlights its popularity and continued integration within society. What began as Facebook and Myspace evolved into an industry of platforms including YouTube, Twitter, Instagram, Snapchat, Reddit, and now more recently TikTok. The immediacy of social media helps politicians to remain accessible to their constituents. For politicians and activists, social media provides low-cost marketing, enabling them to reach larger audiences with greater ease.¹⁰ Anspach (2017) notes over the past decade more individuals view social media as a viable source of news, whether through pages from official news outlets or through friends and family.¹¹ While the original intent of social networking sites did not include political communication, the rapid growth of social media platforms as a method of political

⁹ Anspach, Nicolas M. "The New Personal Influence: How our Facebook Friends Influence the News we Read." *Political communication* 34.4 (2017): 590-606. CrossRef. Web

¹⁰ Petrova, Maria, Ananya Sen, and Pinar Yildirim. "Social Media and Political Contributions: The Impact of New Technology on Political Competition." *Management Science* 67.5 (2021): 2997-3021. CrossRef. Web.

¹¹ Anspach, Nicolas M, 2017.

engagement changed how political parties connect with voters, especially as Millennials and Generation Z reached voting age.

As social media evolved from a new to established method of social engagement within society, concerns grew over the development of echo chambers and increased polarization in a period where the increasing divisiveness in American politics was already noticeable. Research finds social media algorithms allow for self-selection toward news sources that align with one's ideology, enabling the continued reinforcement of previously held ideas (Pariser, 2011; Stroud, 2011; Sunstein, 2001, Anspach, 2017).¹² Increased choice provided by social media increases the difficulty of changing attitudes as people can avoid conflicting content. The differences in how Republicans and Democrats use social media exacerbate these concerns as the differences in content and utilization aggravate political chasms. Bail et. al (2018) found statistically significant differences in how exposure to opposing views on social media increased polarizing views between Democrats and Republicans.¹³ However, Feetz and Ortiz (2021) found lower levels of political knowledge and political interest display more significant impacts on this phenomenon.¹⁴ As Carpenter (2018) notes social media can intensify negative feelings as people often do not experience similar encounters when interacting face to face.¹⁵ These dynamics also enable others to hold greater awareness toward these social violations when reading them on the Internet.¹⁶ Social media allows for individuals to hide behind relative anonymity, and the lack of accountability afforded to users creates an environment of misinformation or "bad behavior" to flourish.

¹² Pariser, 2011; Stroud, 2011; Sunstein, 2001, Anspach, 2017.

¹³ Bail, Christopher A., et al. "Exposure to Opposing Views on Social Media can Increase Political Polarization." *Proceedings of the National Academy of Sciences - PNAS* 115.37 (2018): 9216-21. MEDLINE. Web.

¹⁴ Feezell, Jessica T., and Brittany Ortiz. "'I Saw it on Facebook': An Experimental Analysis of Political Learning through Social Media." *Information, communication, and Society* 24.9 (2021): 1283-302. CrossRef. Web

¹⁵ Carpenter, Jordan, et al. *Article Political Polarization and Moral Outrage on Social Media*. 52 Vol. Web.

¹⁶ Carpenter, Jordan, et al.

Cognitive Dissonance and Social Media

Concerns over echo chambers are not unique to social media, with early researchers positing this phenomenon in work on the development of belief systems and theories of cognitive dissonance. Festinger and Carlsmith (1959) theorized the existence of cognitive dissonance, where conflicting behaviors and attitudes create discomfort in individuals, leading them to either ignore the new information or change their behavior.¹⁷ As Mullainathan and Washington (2007) wrote, when not addressed, this dissonance may lead to misperception or misinterpretation of information, or anxiety reduction tactics such as the “rejection or refutation of the information, seeking support from those who agree with one's belief and attempting to persuade others to accept one's belief.”¹⁸ Individuals selectively read sources which reinforce existing beliefs in an attempt to avoid experiencing cognitive dissonance. Zaller (1992) found people often resist arguments inconsistent with predisposed political beliefs, however, only when they possess the level of political knowledge needed to recognize the contradiction.¹⁹ Jost (2006) likewise found individuals can be motivated by system justification, which refers to the tendency to rationalize the societal status quo even when social change would be in one's self-interest.²⁰ While the predisposition for humans to seek a world that makes sense from their personal experiences and beliefs already occurs, social media creates a unique channel for this to happen more acutely through information filtering due to an increase in choices.

¹⁷ Festinger, L., & Carlsmith, J. M. (1959). Cognitive consequences of forced compliance. *The Journal of Abnormal and Social Psychology*, 58(2), 203–210. <https://doi.org/10.1037/h0041593>

¹⁸ Mullainathan Sendhill, and Washington Ebonya. *Sticking with Your Vote: Cognitive Dissonance and Political Attitudes.*, 2007. Web.

¹⁹ Zaller, John R. *The Nature and Origins of Mass Opinion.* New York, NY, US: Cambridge University Press, 1992. Web.

²⁰ Jost, J. (2006). The end of the end of ideology. *PsycEXTRA Dataset*. <https://doi.org/10.1037/e633962013-003>.

The Influence of Echo Chambers

Identifying the influence of echo chambers within research often faces obstacles due to the individuality of social media algorithms and natural inconsistencies in human behavior. Anspach (2017) found reading news from sources which conflict with one's political attitudes may reduce political extremism as exposure to the conflicting information may cause an individual to re-evaluate their opinions.²¹ However, Dubois and Grant (2018) found echo chambers occur differently from platform to platform. Further, their research indicates individuals often self-select information and sources they agree with, however, they do not avoid conflicting information completely.²² Conflicts within research highlight the individuality of how people process the information they receive through primary and secondary processing. An individual's social circle can alter the influence of social media on political attitudes. Individuals may perceive information posted by those with whom they hold weaker social ties differently than that posted by a closer friend or family member. More often, these social ties produce a more powerful interaction with the formation of attitudes than whether this occurred on social media.

The secondhand nature of political learning on social media contributes to the inconsistency of social media's influence. Kushin and Yamamoto (2010) wrote political learning on social media platforms often happens in passing and as an unintended after effect of going online (623).²³ As acquiring political information occurs secondary to an individual's primary reason for going online, the influence of political learning on social media may be weaker than other mediums. However, other methods of political learning can also display this interaction. Bode (2018) notes offline networks also play a role in the dissemination of information, and information from sources people deem legitimate will be received with greater positivity

²¹ Anspach, 2017.

²² Dubois and Grant, 2018.

²³ Kushin, M. J., & Yamamoto, M. (2010). Did Social Media Really Matter? College Students' Use of Online Media and Political Decision Making in the 2008 Election. *Mass Communication & Society*, 13(5), 608-630.

regardless of the medium.²⁴ What citizens learn about politics depends on the opportunities available, and these opportunities vary on personal and group circumstances.²⁵ Factors such as one's social circle, level of engagement while online, and the frequency of social media use compound how influential information will be to an individual and what information they see. Two people who share the same political affiliation can view two different social media feeds based on what time they log on, their circle of friends, and what channels they hold with the greatest value. Moreover, Guess (2019) finds differences in the accuracy of respondents' self-described social media habits depending on the platform they most frequently use.²⁶ Therefore, the influence of echo chambers can be difficult to assess given in the individualized nature of algorithms and social media habits.

Influence of Demographics on Social Media

Using social media is often correlated with age, and various generations utilize platforms in different ways. Kushin and Yamamoto (2010) wrote political actors shifted toward social media because “young adults were relying less on traditional news media and more on new online media for political information” (609).²⁷ Holt, Stromback, and Ljungberg's (2013) data similarly revealed older generations (e.g., Baby Boomer, Silent Generation) were more likely to continue using traditional forms of media (e.g., television, radio) and this likelihood increased with age.²⁸ As young adults access social media more frequently, they face greater exposure to news on social media platforms than older generations. However, this access may also create greater media literacy comparative to generations with less experience on the Internet. For younger

²⁴ Bode, Leticia. "Political News in the News Feed: Learning Politics from Social Media." *Mass Communication and Society* 19.1 (2016): 24-48. CrossRef. Web.

²⁵ Delli, Carpini, and Keeter, 1996; Feezell and Oritz, 2021.

²⁶ Guess, Andrew, et al. "How Accurate are Survey Responses on Social Media and Politics?" *Political communication* 36.2 (2019): 241-58. CrossRef. Web.

²⁷ Kushin, M. J., & Yamamoto, M, 2010.

²⁸ Holt, K., Shehata, A., Strömbäck, J., & Ljungberg, E. (2013). Age and the effects of news media attention and social media use on political interest and participation: Do social media function as leveler? *European Journal of Communication*, 28(1), 19-34.

generations, Zeng and Abidin (2021) write internet content such as memes “function as collective symbols for community identification around specific political causes, such as human rights advocacy, the #MeToo movement, and anti-racism campaigns during COVID-19”.²⁹ For young adults, social media can act as a vessel to promote political causes, express frustration toward older generations, and establish group identity. Increased polarization over political issues on social media can lead to utilizing social media to promote group identity in contrast to someone else, especially for young adults for whom social media is an ingrained channel of communication within youth culture.

Beyond age, a person’s trust in media and government sources similarly play a significant role in the likelihood to utilize social media for news. Himelboim et al. (2012) reported, “those who already trust information from diverse sources also are heavier users of various media spaces for purposes of acquiring political information” (pg. 107).³⁰ News credibility influences information-seeking behavior and often a positive relationship exists between trust in media and the use of traditional news outlets.³¹ Similarly, Melki et. al (2021) found the fewer respondents said they trusted traditional sources, such as the federal government, the more likely individuals were influenced by social media misinformation about COVID-19.³² This level of trust in media and government can evolve over time or due to external events, such as times of crisis. Citizens under threat will show greater reliance on the news media, a phenomenon that occurred in the aftermath of crises such as 9/11 and COVID-19.³³ Reliance on media increases during times of crisis as individuals seek to reduce anxiety and conduct risk assessments.³⁴

²⁹ Zeng, Jing, and Crystal Abidin. “#OkBoomer, Time to Meet the Zoomers’: Studying the Memefication of Intergenerational Politics on TikTok.” null (2021): 1-23. Web.

³⁰ Himelboim, I., Lariscy, R. W., Tinkham, S. F., & Sweetser, K. D. (2012). Social Media and Online Political Communication: The Role of Interpersonal Informational Trust and Openness. *Journal of Broadcasting & Electronic Media*, 56(1), 92-115. doi:10.1080/08838151.2011.648682.

³¹ Rune and Aalberg, 2021; Fletcher and Park, 2017; Val 2021.

³² Melki et. al., 2021

³³ Val Aelst, Peter, et al. "Does a Crisis Change News Habits? A Comparative Study of the Effects of COVID-19 on News Media use in 17 European Countries." *Digital Journalism* (2021) Web.

³⁴ Lachlan et al., 2016; Val Aelst, et. al., 2021.

COVID-19 Pandemic and Social Media

Since the start of COVID-19, information shared on social media contributed to the politicization of pandemic-related policies such as social distancing and vaccine requirements. The onslaught of the pandemic created a shift in social media usage, where the relevance of social media grew as people sought updates in an evolving crisis, and mediums such as TikTok rose in popularity for their short-format videos. Although research exists on the impacts of other media usage in times of crisis such as 9/11, gaps in research on the impact of newer platforms and the COVID-19 pandemic exist. Social distancing disallows for offline networking and learning, requiring individuals to seek information through social networking and para-social relationships with journalists, influencers, or activists online. Melki et. al (2021) investigated the likelihood to believe false information related to COVID-19 based on social media usage however, this research only examines the broader impacts of social media use rather than examining different platforms.³⁵ Similarly, Val Aelst et. al (2021) analyzed the impacts of social media on COVID-19 policy, however, this research examines the European Union and not the United States, which reports higher levels of polarization toward vaccines.³⁶

Social media offers a unique channel for information spreading due to the unprecedented access it provides to unverified information. What trends and what users consider relevant exist in a state of constant evolution. The pandemic and social distancing created an environment where social media became more relevant for social interaction than before. Market intelligence found per minute social media usage increased from 75 to 82 minutes per day between 2019 and 2020.³⁷ Likewise, Pew Research Center reported in 2021 almost 60 percent of surveyed Americans utilize social media for information on vaccines, making social media a primary method for information

³⁵ Melki et al., 2021.

³⁶ Val Aelst, Peter, et al, 2021.

³⁷ Williamson, D. A. (2020, June 2). US social media usage. Insider Intelligence. Retrieved November 7, 2021, from <https://www.emarketer.com/content/us-social-media-usage>.

gathering within the pandemic.³⁸ However, survey research also indicates Americans utilize social media for news on COVID-19 more so than other issues. Pew Research found 77 percent of Americans indicating they use social media platforms such as TikTok for vaccine news, compared to only four percent who reported using the platform for general news information.³⁹ While social media can help individuals diffuse through public health information quickly, the increasing number of unverified actors utilizing social media for their own motives creates significant obstacles. Public health and government agencies face an uphill battle in the fight of containing the spread of COVID-19 misinformation. In 2021, the Center for Disease Control reported how uncertainties regarding the COVID-19 virus exacerbated the rapid spread of misinformation on social media, and insufficient research exists on the effect of exposure to misinformation and subsequently corrected data to date.⁴⁰ Given the speed at which unverified individuals and organizations can spread harmful and false information, those who utilize social media for news with greater propensity face an increased risk of receiving inaccurate information.

This research will analyze whether increased social media usage can strengthen negative sentiments toward COVID-19 policies. Moreover, this research hopes to assess whether ideology and political polarization can additionally influence sentiments toward COVID-19 policies. Discussions surrounding the impact of social media on politicized reactions to COVID-19 policies occurred since the beginning of the pandemic. However, prior research suggests broader political polarization has been growing over the last 10 years.⁴¹ This research will investigate the impact of social media on sentiments toward COVID-19 policies such as social distancing. It

³⁸ Mitchell, Amy and Liedke, Jacob. "About Four-in-Ten Americans Say Social Media is an Important Way of Following COVID-19 Vaccine News." <https://www.pewresearch.org/fact-tank/2021/08/24/about-four-in-ten-americans-say-social-media-is-an-important-way-of-following-covid-19-vaccine-news/> (accessed 11/10/, 2021).

³⁹ Mitchell and Liedke, 2021.

⁴⁰ Vraga, E. K., & Bode, L. (2021). Addressing COVID-19 misinformation on social media preemptively and responsively Retrieved from <https://stacks.cdc.gov/view/cdc/102462>

⁴¹ Dimcock, Michael, Kiley, Jocelyn, Keeter, Scott and Doherty, Carroll. "Political Polarization in the American Public." <https://www.pewresearch.org/politics/2014/06/12/political-polarization-in-the-american-public/> (accessed 11/21/, 2021).

hopes to address the research question as to whether ideology impacts social media behavior and subsequent COVID-19 sentiments. More specifically, this research will examine the following hypothesis:

H1: Greater social media usage creates more negative sentiments toward COVID-19 policies

Data and Methods

This study draws on observational time series data from the 2020 American National Election Studies Survey (ANES). This sample includes only survey respondents which completed both the pre-and post-election surveys and excludes respondents flagged by the ANES for eligibility concerns. In total, the analysis includes 7,236 cases of survey data. To assess the impact of social media usage, trust in media and government, ideology, and political knowledge on COVID-19 policy sentiments, this research employs a series of multivariate regression analyses comparing self-reported high social media users with self-reported low social media users, as well as regressions focusing on liberal, conservative, and moderate or unsure individuals separately.

This analysis represents COVID-19 policy sentiments and social media behavior through a scale based on survey responses to answered questions related to respondents' COVID-19 opinions and self-reported social media usage. For both scales, an individual with a higher score showed more negative reactions to COVID-19 policies and higher social media usage. Both scales utilize a rank system for point allocation to each variable to factor variability in COVID-19 policy opinions and social media usage. Points in both scales align to the Likert Scales from the ANES data, where points range from one (lowest) to five (highest).

The variables included within the COVID-19 policy sentiment scale include disagreeing with the need for social distancing measures on voting day, the belief COVID-19 was created in a

lab, the belief COVID-19 can be treated with non-CDC approved treatments, low reported temperature ratings to Dr. Antony Fauci and scientists as well as the Center for Disease Control (CDC) and World Health Organization (WHO). Individuals who reported themselves as more confident in these opinions received additional points toward this score to factor individuals with stronger beliefs.

Due to the frequency of inaccurate self-reporting of social media activity (e.g., how often users access social media in a day), this study categorizes individuals as high or low social media users based on the number of platforms respondents report visiting. This study placed individuals into four categories based on the distribution of data: those who report using one or fewer social media platforms, those who report using between two to three social media platforms, those who report using three to four social media platforms, and those who report more than four social media platforms. Individuals who use three or more social media platforms (e.g., the higher two groups) were categorized as high social media users, those who identified as using fewer than three platforms (e.g., the lower two groups) were categorized as lower frequency social media users.

Additional scales were created for other independent variables such as overall reported distrust in media, overall reported distrust in government and political elites, the frequency of logging on to platforms, and frequency of posting political content on social media. Scoring for these variables also aligned to their position on a one to five Likert Scale. Within social media, those who score higher in these variables post more political content on social media platforms more frequently and report accessing these platforms more frequently overall. These variables, along with the number of social media platforms visited, were combined to create an overall social media activity score. Individuals who scored the highest in overall social media activity were the most likely to report using four or more social media platforms, use multiple platforms regularly (e.g., multiple times per day), and more frequently post political content on multiple

social media platforms. Within the trust in government scale, individuals were scored based on answers to questions on how many people in the government they believe to be corrupt, how much they trust the government to do the right thing, how much trust they have in election officials, how much they trust people over the government, and how much they trust politicians overall. Within the trust in media scale, individuals were assessed on how much they believe the media lies to withhold the truth from citizens and how much trust they report in the media overall. Those who scored higher in these variables showed greater distrust toward traditional media outlets and government and government officials.

Table 1: Ideology Group by Overall Social Media Activity Level

	No Activity	Lowest	Low to Medium	Medium to High	High	Total
Liberal	91 (7.5%)	320 (26.5%)	527 (43.7%)	249 (20.6%)	19 (1.6%)	1,206
Conservative	265 (11.4%)	896 (38.5%)	1,016 (43.7%)	143 (6.2%)	5 (0.2%)	2,324
Moderate	231 (9.8%)	847 (35.8%)	995 (42.0%)	283 (12.0%)	11 (0.5%)	2,366
Unsure	220 (16.4%)	516 (38.5%)	514 (38.4%)	84 (6.3%)	6 (0.4%)	1,340
Total	807 (11.1%)	2,579 (35.6%)	3,052 (42.2%)	759 (10.5%)	41 (0.6%)	7,236

Table 2: Ideology Group by Total Platforms Used

	One or Fewer	Two to Three	Three to Four	More Than 4	Total
Liberal	226 (18.7%)	143 (11.9%)	408 (33.8%)	429 (35.6%)	1,206
Conservative	649 (27.9%)	548 (23.1%)	712 (30.6%)	425 (18.3%)	2,324
Moderate	555 (23.5%)	439 (18.6%)	729 (30.8%)	643 (27.2%)	2,366
Unsure	430 (32.1%)	307 (22.9%)	361 (26.9%)	242 (18.1%)	1,340
Total	1,860 (25.7%)	1,427 (19.7%)	2,210 (30.5%)	1,739 (24.0%)	7,236

Approximately 42 percent of respondents fell within the lowest and low to medium social media activity levels. Liberals had higher reported social media usage than other groups and were

more likely to fall within the medium to high and high social media activity categories. Overall, 16 percent of respondents reported identifying as some degree of liberal (e.g., very liberal, liberal, or slightly liberal), 32 percent of respondents reported identifying as some degree of conservative (e.g., very conservative, conservative, or slightly conservative), 32 percent reported identifying as a moderate, and 18 percent reported feeling unsure of their ideological placement on a seven-point scale.

This research uses multivariate linear regression models to compare respondents' overall COVID-policy sentiment score with scores related to social media activity, including reported total platforms used, the total reported frequency of social media, the total reported frequency of posting political content. Additional independent variables incorporated include self-reported ideology, overall reported distrust toward government and political elites, and overall reported distrust toward traditional media outlets. Prior research indicates ideology, trust in government, and trust in media often show a greater correlation with negative COVID-19 policy sentiments and drive individual likelihood for utilizing social media as a news source.⁴² These variables were included within regression models to assess any statistical significance of social media variables was connected to these factors. Given the strong correlation between political party and COVID-19 policy sentiments, regression modeling includes this variable to control for the impact of ideology given the polarizing nature of COVID-19 policies.

Results:

Cross tabulations of social media activity by ideology indicate some social desirability within respondents. Despite 30 percent of overall respondents indicating they use more than three social media platforms, approximately 35 percent fell within the low activity level and 40 percent fell within the “low to medium” category based on their respondents to question regarding their

⁴² Melki et al., 2021.

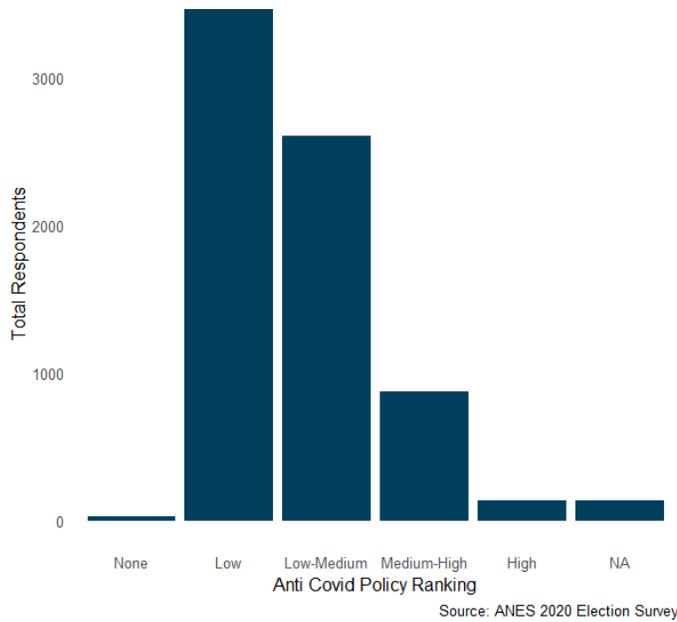
social media frequency. While liberals are significantly more likely to report using more social media outlets than any other group, with 35 percent of liberals indicating they use at least four social media outlets, only one percent would fall within the highest overall activity category. These self-reports would contradict findings within scatter plot matrices in Figure 5 of the appendix, which indicates a strong positive correlation between the number of platforms used by respondents and their overall social media activity. Further prior research from Guess et. al (2019) reflects this analysis and found individuals can underreport or over-report social media activity depending on demographic variables such as age.⁴³

Within COVID-19 policy attitudes, descriptive analysis suggests most respondents indicate positive support toward COVID-19 policies regardless of ideology. As shown in Figure 1, most respondents fall within the low or low to medium categories indicating they hold negative reactions to COVID-19 reactions between one to 25 percent of the time or between 25 to 50 percent of the time. Negative reactions to COVID-19 policies may largely depend on individual self-interest. For example, one may firmly believe in requiring the vaccine but show a more negative reaction to increased social distancing regulations due to long-term pandemic fatigue or when it impacts employment. In this sense, individuals may take small allowances in what aspects of COVID-19 policies they do not abide by, however, when asked, indicate positive feelings to broader COVID-19 public health policies. Alternatively, individuals may indicate more positive feelings to social distancing due to social desirability and feeling obligated to support COVID-19 public health initiatives despite not abiding by these policies in private. Analysis indicates partial support for H1, that greater social media use creates more negative policy attitudes for COVID-19. Within the overall model, increased social media use only slightly increased negative sentiments toward COVID-19. However, isolating models by high and low social media users resulted in different levels of influence. As shown in Tables 3 and 4, increased

⁴³ Guess, Andrew, et al. "How Accurate are Survey Responses on Social Media and Politics?" *Political communication* 36.2 (2019): 241-58. CrossRef. Web.

social media usage corresponded with a greater increase in negative COVID-19 policy sentiments among low social media users, compared to high social media users. However, as liberals encompass a larger proportion of cases within the high social media user group, and conservatives encompass a larger proportion of the low social media user group, ideology may

Figure 1: Degree of Anti COVID Policy Sentiments



conflate these findings. Instead, they may more broadly reflect the impacts of tribalism and party polarization on COVID-19 policy attitudes. While many target social media as the instigator for not supporting public health policies, these models suggest social media usage more often exacerbates existing feelings held by individuals.

Respondents within the high social media category, however, display higher negative reactions to COVID outright compared to those in the low category, highlighting that those within the high social media group possessed more negative COVID-19 policies before the incorporation of other variables. Individuals with pre-existing negative sentiments toward COVID-19 likely feel exacerbated negative sentiments when exposed to these factors, rather than social media or other factors serving as the instigator to these negative policy views. Both models possess an R Squared between .321 and .368, indicating they predict approximately roughly 32 to 37 percent of data variability. These inconsistencies and variability within each model suggest

while social media usage can have a demonstrated impact on COVID-19 policy attitudes, this is only true for certain individuals and under certain conditions.

Table 3: Linear Regression Model of Respondent Anti COVID Policy Score, High SM Users

Variable	Estimate	Std. Error	Statistic	P Value	Lower CI	Upper CI
Intercept	5.181	0.61	8.496	< 0.001	3.985	6.377
Overall Political Interest	-0.147	0.054	-2.752	0.006	-0.252	-0.042
Discussing Politics Frequency	-0.081	0.021	-3.832	< 0.001	-0.123	-0.04
Frequency of Posting Political Content on Social Media	0.279	0.047	5.875	< 0.001	0.186	0.372
Political Knowledge	-2.281	0.273	-8.348	< 0.001	-2.816	-1.745
Conservative Ideology	0.527	0.183	2.884	0.004	0.169	0.885
Moderate Ideology	0.592	0.137	4.315	< 0.001	0.323	0.862
Unsure Ideology	1.549	0.195	7.954	< 0.001	1.168	1.931
Distrust in Media Scale	0.414	0.033	12.505	< 0.001	0.349	0.479
Distrust in Gov/Elites Scale	-0.018	0.02	-0.884	0.377	-0.058	0.022
Overall Social Media Score	-0.133	0.675	-0.198	0.843	-1.457	1.19
Use Facebook	-0.748	0.228	-3.284	0.001	-1.194	-0.301
Use TikTok	0.166	0.107	1.543	0.123	-0.045	0.376
Use Twitter	-0.495	0.13	-3.795	< 0.001	-0.75	-0.239
Use YouTube	0.174	0.247	0.707	0.48	-0.309	0.658
Use Reddit	-1.024	0.134	-7.654	< 0.001	-1.287	-0.762
Trump Thermometer Rating	0.025	0.003	9.968	< 0.001	0.02	0.03
Biden Thermometer Rating	-0.006	0.003	-2.298	0.022	-0.011	-0.001

*Residual standard error: 2.941 on 3620 degrees of freedom
Multiple R-squared: 0.368, Adjusted R-squared: 0.365
F-statistic: 124 on 17 and 3620 DF, p-value: < 2.2e-16*

In isolation, social media variables did not show a strong relationship with negative COVID-19 policy attitudes, indicating social media itself does not create more negative attitudes to COVID-19 policies as shown in Figure 4 in the appendix. Instead, the influence of social media on COVID-19 policy attitudes is dependent on the existence of other variables. Variables such as the strength of social ties, ideology, political knowledge exhibited a greater impact on all

models. Both high and low social media users who identified as conservative or unsure of their political ideology were more likely to hold more negative COVID-19 attitudes while identifying as liberal did not appear statistically significant. Individuals who express feeling uncertain of their ideology are more likely to have lower levels of political knowledge and exhibit less political engagement, leading them to be more susceptible to misinformation both on social media and through other outlets. As found in prior research, individuals with stronger social ties are less likely to use alternative sources for news information, and therefore be less susceptible to misinformation.⁴⁴

Table 4: Linear Regression Model of Respondent Anti Covid Policy Score, Low SM Users

Variable	Estimate	Std. Error	Statistic	P Value	Lower CI	Upper CI
Intercept	4.401	0.532	8.267	< 0.001	3.357	5.445
Overall Political Interest	0.059	0.059	1.01	0.312	-0.056	0.174
Discussing Politics Frequency	-0.064	0.022	-2.953	0.003	-0.107	-0.022
Frequency of Posting Political Content on Social Media	0.416	0.101	4.121	< 0.001	0.218	0.614
Political Knowledge	-1.434	0.254	-5.636	< 0.001	-1.932	-0.935
Conservative	0.062	0.204	0.305	0.76	-0.338	0.462
Moderate	0.261	0.174	1.497	0.134	-0.081	0.603
Unsure	0.593	0.21	2.829	0.005	0.182	1.004
Distrust in Media Scale	0.332	0.034	9.692	< 0.001	0.265	0.4
Distrust in Gov/Elites Scale	0.075	0.022	3.45	0.001	0.032	0.117
Overall Social Media Score	2.766	1.408	1.964	0.05	0.005	5.528
Use Facebook	-1.162	0.242	-4.798	< 0.001	-1.636	-0.687
Use TikTok	-0.116	0.541	-0.215	0.83	-1.178	0.945
Use Twitter	-1.21	0.332	-3.646	< 0.001	-1.861	-0.559
Use YouTube	-0.344	0.116	-2.972	0.003	-0.57	-0.117
Use Reddit	-1.503	0.437	-3.44	0.001	-2.359	-0.646
Trump Thermometer Rating	0.018	0.002	7.299	< 0.001	0.013	0.022
Biden Thermometer Rating	-0.017	0.003	-6.547	< 0.001	-0.023	-0.012

Residual standard error: 3.031 on 3265 degrees of freedom

⁴⁴ Melki et al, 2021, Anspach, 2017.

Multiple R-squared: 0.3254, Adjusted R-squared: 0.3219
F-statistic: 92.64 on 17 and 3265 DF, p-value: < 2.2e-16

The similar results between high and low social media users suggest the impacts of long-term existence within an echo chamber can create similar outcomes regardless of one's pre-existing behavior on and relationship with media platforms. As noted in Table 3, among high social media users, TikTok and YouTube lead to an increase in negative views toward COVID-19 policies. However, across both models, having higher demonstrated political knowledge and speaking with greater frequency to friends and family about politics also showed a strong likelihood toward more positive feelings toward COVID-19 policies. As social media provides unprecedented access to unverified information, the power of the interaction of these variables with social media in the context of COVID-19 messaging further emphasizes how social media can be both a tool for and obstacle in spreading verified public health information. For some individuals, social media can inform and teach users about new or updated information related to COVID-19. However, for others, social media can exacerbate levels of misinformation, especially when this information validates a user's feelings, fears, or experiences and or a user lacks the strong social ties to verify this information through other means.

Analysis of the interaction of ideology with social media usage and COVID-19 sentiments indicates ideology does influence behavior and perspectives on COVID-19. Ideology's reaction with these variables highlights the influence of echo chambers within social media on policy perspectives. Those who fall within the highest categories of negative COVID-19 sentiments are more likely to heavily utilize social media for their information among all ideologies. Moreover, a higher distrust in traditional media sources and a propensity to post political content on social media was associated with more negative COVID-19 policy sentiments regardless of ideology. However, allegiances to certain values or groups can drive these negative sentiments rather than by social media itself. As shown in the frequency of discussing politics with family variable, this indicated a decline in negative COVID-19 policy sentiments for all

ideologies except conservatives, which showed the likelihood for both a positive and negative relationship. If the social circle of someone who identifies as conservative largely supports COVID-19 policies, discussions with these individuals would likely influence that person to hold more positive views of COVID-19 policies. However, a social circle with negative views can help produce the opposite outcome.

The performance of social media platforms within each model highlights how the structures of each social media platform can lead to differences in political learning. As noted in Figure 3 in the appendix, liberals using TikTok and YouTube were more likely to align with fewer negative reactions to COVID-19, while among conservatives the opposite interaction occurred. YouTube and TikTok enable users to filter information to a much greater extent than other platforms. Platforms such as Facebook, instead expose users to a greater amount of conflicting content depending on the views of a users' friends, family, and other connections. The structure of TikTok and YouTube enables users to ignore content they dislike, and algorithms more easily filter information to what they anticipate the user will want to see. More active users of both platforms are significantly more likely to exist in an echo chamber compared to users who utilize other platforms. The distribution of each variable coefficient within Figure 3 highlights the impacts of echo chambers and cognitive dissonance in COVID-19 policy sentiments. Multiple social media platforms offer a large distribution, indicating even within each ideological group, different variables may hold different levels of interaction. These differences highlight how social media exacerbate existing negative opinions toward COVID-19 policies by reinforcing ideas already held by the respondent, rather than acting as the catalyst for these negative sentiments originally.

Conclusion:

This research set to examine the potential relationship between social media usage and COVID-19 policy attitudes. Prior research from Melki et. al (2021) found trusting COVID-19

news on social media predicted beliefs in COVID-19 myths.⁴⁵ These findings support prior research in finding higher usage of social media can predict more negative attitudes toward COVID-19. However, the impact of social media is contingent on other factors such as trust in mainstream media sources and level of political knowledge. Moreover, regression modeling focusing on social media variables in isolation found social media does cause more negative COVID-19 attitudes directly. These negative attitudes instead become exacerbated among certain individuals who already feel negatively toward public health policies related to COVID-19.

This research does indicate implications for how different social media platforms may elicit or create environments for different behaviors. Both TikTok and YouTube interacted differently depending on ideology, while other platforms such as Twitter were consistently associated with positive views of COVID-19 policy sentiments. Within the ANES survey, 50 percent of respondents who noted using Twitter identified as liberal, the highest of any platform while platforms such as YouTube showed a larger conservative audience. Different social media platforms appear to create their own subculture or ecosystem, where users may regulate their behavior in different ways or discover the same information from a different angle. Dubois and Grant (2018) reported similar findings noting the influence of echo chambers can differentiate between Facebook and Twitter.⁴⁶ Social media platforms that create more insulated environments produce different outcomes than those which force users to see posts from connections with different views, such as Facebook.⁴⁷ The ever-evolving ways users interact with social media likely drives research inconsistencies. The true impact of echo chambers on user behavior and sentiments can fluctuate depending on social ties, education, platform, and other factors. Additional research on different platforms can help assess how echo chambers impact different individuals and how users alter their behavior across different platforms.

⁴⁵ Melki et al., 2021.

⁴⁶ Dubois and Grant, 2018.

⁴⁷ Dubois and Grant, 2018.

The primary limitations of this research focus on the availability of data related to social media usage within the ANES. As the questions surrounding the frequency of use of specific platforms asked for only Facebook, Twitter, and Reddit, scoring of individuals' social media usage is based on these categories only. Likewise, respondents self-report their social media usage, individuals may overreport or underreport their usage due to a lack of awareness or due to social desirability. Additional research should investigate other social media platforms such as YouTube and TikTok in greater detail to compare how these platforms differ from Facebook and Twitter. Peter Val Aelst (2020) found individuals may rely on media in times of crisis and when these situations constantly fluctuate.⁴⁸ This could serve as the base for future research comparing social media usage in COVID-19 to other times of crisis.

Future research should also consider the impact of alternative social media platforms. As mainstream platforms such as Facebook and Twitter remove individuals such as Q'Anon supporters from their platforms, these individuals flock to alternative platforms which do not regulate posts or fact check information. Over time, the rise of these platforms could exacerbate the influence of echo chambers within media channels. Moreover, the migration of fringe groups to alternative platforms increases the difficulty of combatting misinformation related to COVID-19 or other issues.

⁴⁸ Val Aelst, Peter, et al, 2021.

References

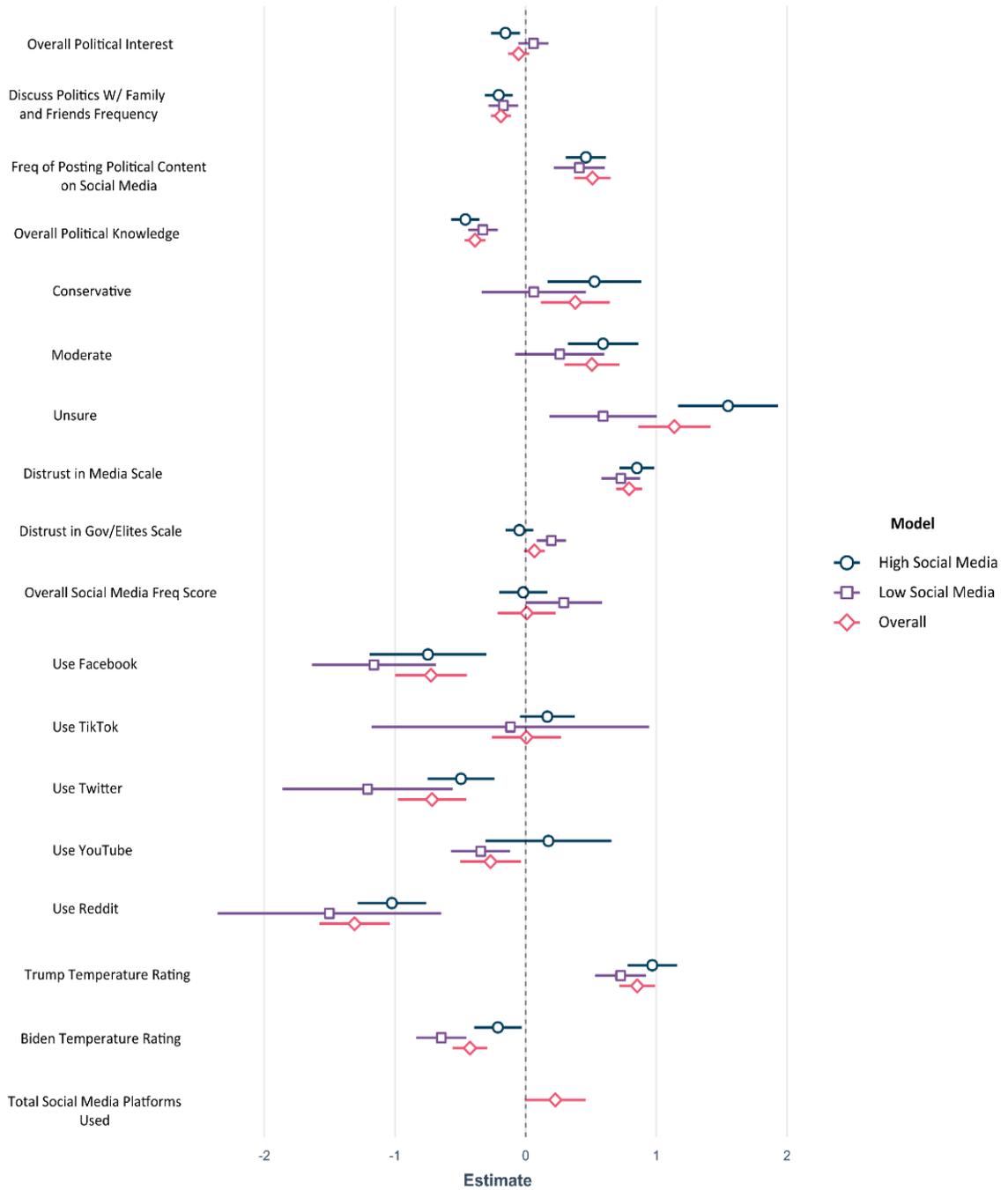
- Anspach, Nicolas M. "The New Personal Influence: How our Facebook Friends Influence the News we Read." *Political Communication* 34, no. 4 (Oct 02, 2017): 590-606, <http://www.tandfonline.com/doi/abs/10.1080/10584609.2017.1316329>.
- Bail, Christopher A., Lisa P. Argyle, Taylor W. Brown, John P. Bumpus, Haohan Chen, M. B. Fallin Hunzaker, Jaemin Lee, Marcus Mann, Friedolin Merhout, and Alexander Volfovsky. "Exposure to Opposing Views on Social Media can Increase Political Polarization." *Proceedings of the National Academy of Sciences - PNAS* 115, no. 37 (Sep 11, 2018): 9216-9221, <https://www.jstor.org/stable/26531294>.
- Bode, Leticia. "Political News in the News Feed: Learning Politics from Social Media." *Mass Communication & Society* 19, no. 1 (Jan 02, 2016): 24-48, <http://www.tandfonline.com/doi/abs/10.1080/15205436.2015.1045149>.
- Carpenter, Jordan, William Brady, Molly Crockett, Weber, and Walter Sinnott-Armstrong. *Article Political Polarization and Moral Outrage on Social Media*. Vol. 52.
- Converse, Philip E. "The Nature of Belief Systems in Mass Publics (1964)." *Critical Review (New York, N.Y.)* 18, no. 1-3 (Jan 01, 2006): 1-74, <http://www.tandfonline.com/doi/abs/10.1080/08913810608443650>.
- Dang, Sheila. "Twitter Partners with AP, Reuters to Battle Misinformation on its Site." <https://www.reuters.com/technology/twitter-partners-with-ap-reuters-battle-misinformation-its-site-2021-08-02/> (accessed 11/10/, 2021).
- Dimcock, Michael, Kiley, Jocelyn, Keeter, Scott and Doherty, Carroll. "Political Polarization in the American Public." <https://www.pewresearch.org/politics/2014/06/12/political-polarization-in-the-american-public/> (accessed 11/21/, 2021).
- Dubois, Elizabeth and Grant Blank. "The Echo Chamber is Overstated: The Moderating Effect of Political Interest and Diverse Media." *Information, Communication & Society* 21, no. 5 (May 04, 2018): 729-745, <http://www.tandfonline.com/doi/abs/10.1080/1369118X.2018.1428656>.
- Feezell, Jessica T. and Brittany Ortiz. "I Saw it on Facebook!: An Experimental Analysis of Political Learning through Social Media." *Information, Communication & Society* 24, no. 9 (Jul 04, 2021): 1283-1302, <http://www.tandfonline.com/doi/abs/10.1080/1369118X.2019.1697340>.
- Fletcher, Richard and Sora Park. "The Impact of Trust in the News Media on Online News Consumption and Participation." *Null* 5, no. 10 (2017): 1281-1299, <https://doi.org/10.1080/21670811.2017.1279979>.
- Guess, Andrew, Kevin Munger, Jonathan Nagler, and Joshua Tucker. "How Accurate are Survey Responses on Social Media and Politics?" *Political Communication* 36, no. 2 (Apr 03, 2019): 241-258, <http://www.tandfonline.com/doi/abs/10.1080/10584609.2018.1504840>.
- Himmelboim, Itai, Ruthann Weaver Lariscy, Spencer F. Tinkham, and Kaye D. Sweetser. "Social Media and Online Political Communication: The Role of Interpersonal Informational Trust and Openness." *Null* 56, no. 1 (2012): 92-115, <https://doi.org/10.1080/08838151.2011.648682>.

- Holt, Kristoffer, Adam Shehata, Jesper Strömbäck, and Elisabet Ljungberg. "Age and the Effects of News Media Attention and Social Media use on Political Interest and Participation: Do Social Media Function as Leveler?" *European Journal of Communication* 28, no. 1 (2013): 19-34, <https://doi.org/10.1177/0267323112465369>.
- Jost, John T. "The End of the End of Ideology." *The American Psychologist* 61, no. 7 (Oct, 2006): 651-670, <https://www.ncbi.nlm.nih.gov/pubmed/17032067>.
- Karlsen Rune and Aalberg Toril. "Social Media and Trust in News: An Experimental Study of the Effect of Facebook on News Story Credibility." *Digital Journalism* (July 21, 2021), <https://doi.org/10.1080/21670811.2021.1945938>.
- Kushin, Matthew James and Masahiro Yamamoto. "Did Social Media really Matter? College Students' use of Online Media and Political Decision Making in the 2008 Election." *Null* 13, no. 5 (2010): 608-630, <https://doi.org/10.1080/15205436.2010.516863>.
- Lachlan, Kenneth A., Patric R. Spence, Xialing Lin, Kristy Najarian, and Maria Del Greco. "Social Media and Crisis Management: CERC, Search Strategies, and Twitter Content." *Computers in Human Behavior* 54, (2016): 647-652, <https://www.sciencedirect.com/science/article/pii/S0747563215003982>.
- Melki, Jad, Hani Tamim, Dima Hadid, Maha Makki, Jana El Amine, and Eveline Hitti. "Mitigating Infodemics: The Relationship between News Exposure and Trust and Belief in COVID-19 Fake News and Social Media Spreading." *PloS One* 16, no. 6 (Jun 04, 2021): e0252830, <https://search.proquest.com/docview/2537632661>.
- Mitchell, Amy and Liedke, Jacob. "About Four-in-Ten Americans Say Social Media is an Important Way of Following COVID-19 Vaccine News." <https://www.pewresearch.org/fact-tank/2021/08/24/about-four-in-ten-americans-say-social-media-is-an-important-way-of-following-covid-19-vaccine-news/> (accessed 11/10/, 2021).
- Mullainathan Sendhill and Washington Ebonya. *Sticking with Your Vote: Cognitive Dissonance and Political Attitudes*, 2007.
- Pariser, Eli. *The Filter Bubble: What the Internet is Hiding from You*. London, UK: Penguin Group, 2011.
- Petrova, Maria, Ananya Sen, and Pinar Yildirim. "Social Media and Political Contributions: The Impact of New Technology on Political Competition." *Management Science* 67, no. 5 (May, 2021): 2997-3021.
- Shah, Sono, Widjaya, Regina, Smith, Aron, Rivero, Gonzalo and Chapekis, Athena. "Charting Congress on Social Media in the 2016 and 2020 Elections." <https://www.pewresearch.org/politics/2021/09/30/charting-congress-on-social-media-in-the-2016-and-2020-elections/> (accessed 11/10/, 2021).
- Singh, Spandana and Margerite Blase. *Protecting the Vote; how Internet Platforms are Addressing Election and Voter Suppression-Related Misinformation and Disinformation*. New America, 2020, <http://www.jstor.org/stable/resrep26363>.

- Spandana, Singh and Margerite Blase. *Protecting the Vote; how Internet Platforms are Addressing Election and Voter Suppression-Related Misinformation and Disinformation.*, 2020.
- Stewart, Emily. "America's Growing Fake News Problem, in One Chart." <https://www.vox.com/policy-and-politics/2020/12/22/22195488/fake-news-social-media-2020> (accessed 11/10/, 2021).
- Stroud Natalie. *Niche News: The Politics of News Choice*. New York, NY: Oxford, 2011.
- Val Aelst, Peter, Fanni Toth, Castro Laia, Vaclav Stetka, Claes de Vreese, Aalberg Toril, Cardenal Ana Sofia, et al. "Does a Crisis Change News Habits? A Comparative Study of the Effects of COVID-19 on News Media use in 17 European Countries." *Digital Journalism* (21 July, 2021), <https://doi.org/10.1080/21670811.2021.1943481>.
- Vraga, Emily K. and Leticia Bode. *Addressing COVID-19 Misinformation on Social Media Preemptively and Responsively*. Vol. 27, 2021, <https://stacks.cdc.gov/view/cdc/102462>.
- Zaller, John R. *The Nature and Origins of Mass Opinion*. New York, NY, US: Cambridge University Press, 1992.
- Zeng, Jing and Crystal Abidin. "'#OkBoomer, Time to Meet the Zoomers': Studying the Memefication of Intergenerational Politics on TikTok." *Null* (2021): 1-23, <https://doi.org/10.1080/1369118X.2021.1961007>.

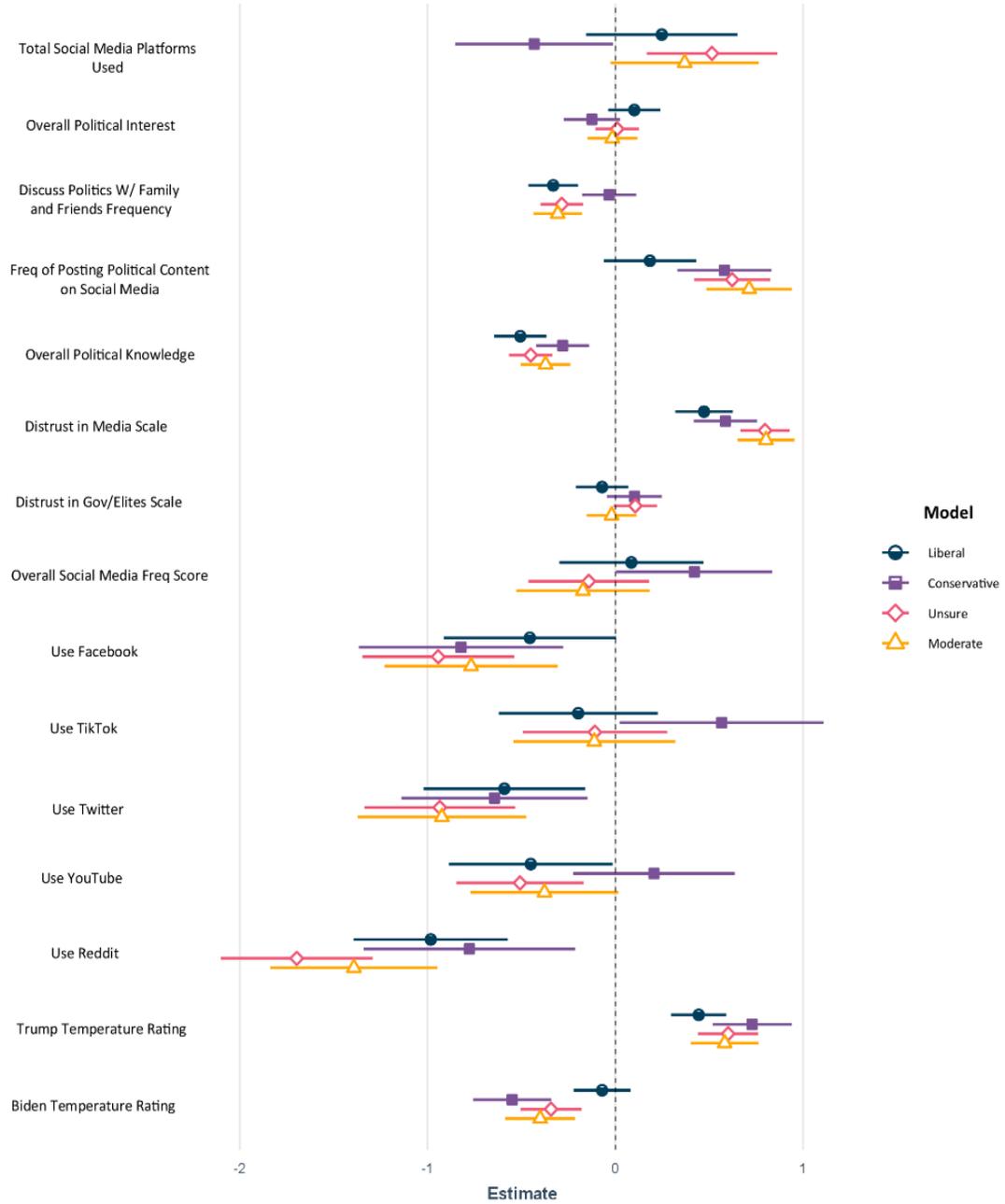
Appendix

Figure 2: Summary of Coefficients in Social Media Models by Dependent Variable, Anti COVID Policy Sentiments



**Higher (e.g., positive scoring) indicates an increase in negative COVID-19 sentiments*

Figure 3: Ideology Model Variable Coefficient Distribution by Anti COVID Policy Sentiment Score



*Higher (e.g., positive scoring) indicates an increase in negative COVID-19 sentiments

Figure 4: Social Media Total Activity By Overall COVID-Policy Sentiments

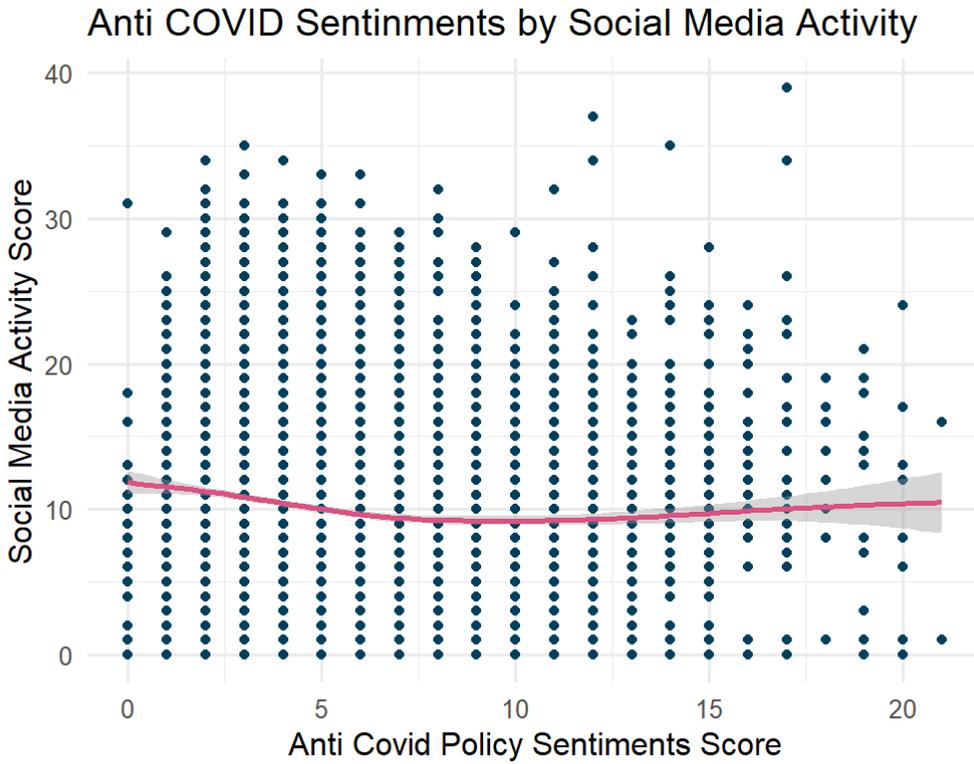
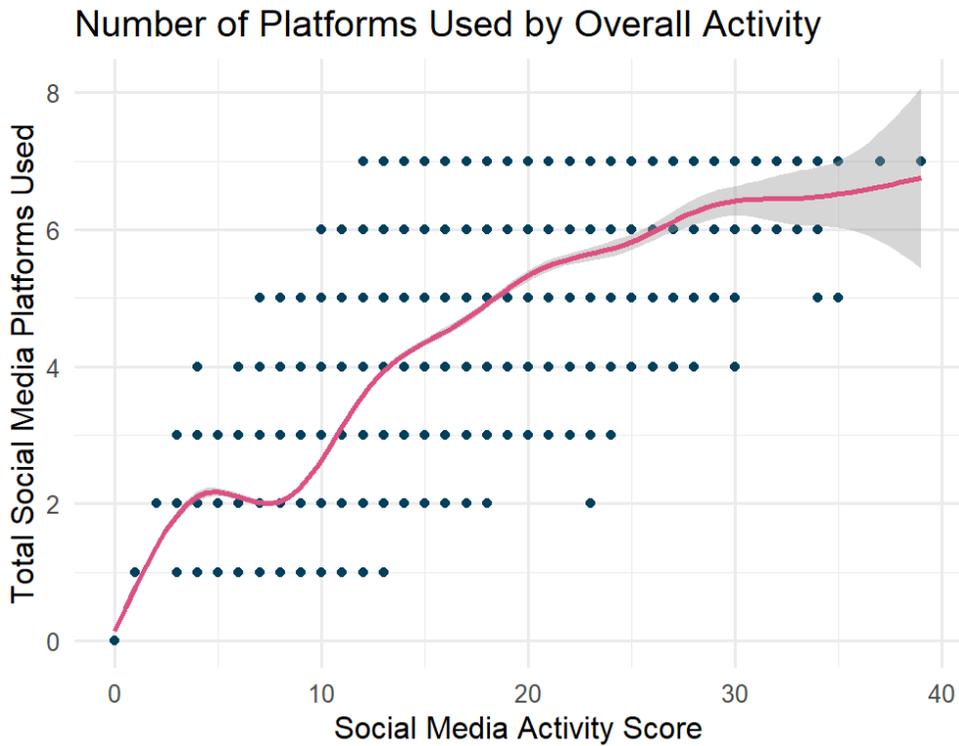


Figure 5: Social Media Activity by Total Reported Used Platforms



Positive relationship highlights social desirability likely exhibited by respondents reporting usage

About the Author

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Although originally from Southern California, for the past five years her professional career has focused largely within higher education research in Washington D.C. She currently works as a consultant for Kennedy and Company Education Strategies utilizing data to model student behavior related to enrollment and retention at U.S. higher education institutions. Her work also includes using labor market analytics to assess employer, student, and economic demand for new academic programs.