

Health and Election Outcomes: Evidence from the 2020 U.S. Presidential Election

Political Research Quarterly
2022, Vol. 0(0) 1–13
© The Author(s) 2022
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/10659129221113256
journals.sagepub.com/home/prq


Costas Panagopoulos¹, and Aaron C. Weinschenk² 

Abstract

Recent research indicates that political developments and events can have important implications for health. In this study, we use data from a large, nationally representative survey ($N = 1750$) fielded in December 2020 to understand how the 2020 Presidential Election impacted self-reported health ratings. Several important findings emerge. First, many Americans report that their mental (14%) and general (6%) health has worsened compared to before the 2020 presidential election; similar number of Americans report improvements to their mental (15%) and general (8%) health. Second, those who voted for Trump and who disagree that Biden won the election are significantly less likely than their counterparts to report better mental, but not general, health compared to before the 2020 election. These relationships persist even in the context of a wide range of controls, including demographics, political predispositions, and perceptions of polarization.

Keywords

mental health, health and politics, health and elections, health, 2020 presidential election

Scholars working across a range of disciplines have become more interested in understanding whether and how political developments (e.g., polarization) and events (e.g., elections) are related to health outcomes. Research on the connection between politics and health has now been published in journals related to political science, medicine, psychology, biology, public health, and sociology. It is apparent that interest in the links between health and politics is widespread and growing. Given the salience of presidential elections in the United States, one important line of research that has emerged in this area has focused on assessing the health consequences of elections. Thus far, studies have found that U.S. presidential elections can have pronounced effects, at least on some measures of health. For example, Yan, Hsia, Yeung, and Sloan (2021) found that there were substantially more days of poor mental health in states that 2016 Democratic presidential nominee Hillary Clinton lost in the month following the election. Rosman et al. (2021) reported that there was a significant increase in cardiac arrhythmias (i.e., irregular heartbeat) during the 2016 US presidential election. Relatedly, Mefford et al. (2020) found that “[t]he rate of CVD [cardiovascular disease] hospitalizations in the 2 days after the 2016 presidential election was 1.62 times higher compared to the rate in the same 2 days the week prior” (27054).

In this study, we build upon and extend the growing body of research on the connection between elections and health outcomes. We are specifically interested in examining how factors related to the 2020 presidential election may be related to individual health. This study makes several contributions to the literature. First, while previous research has examined the 2008 (Stanton et al. 2010; Brown et al., 2021), 2012 (Ben-Ezra, et al., 2013), and 2016 (Hoyt, Zeiders, Chakua, Toomey, and Nair 2018; Gonzalez et al. 2018; Morey et al. 2021; Krueger, Westmoreland, Choi, Harper, Lightfoot, Hammack, and Meyer 2021; Abelson et al. 2020; Roche and Jacobson 2019; DeJonckheere, Fisher, and Chang 2018; Yan, Hsia, Yeung, and Sloan 2021; Neupert, Bellingtier, and Smith 2021) presidential elections, little research has examined the impact of the 2020 election on the health of Americans. This lacuna is especially

¹Department of Political Science, Northeastern University, Boston, MA, USA

²Department of Political Science, University of Wisconsin-Green Bay, Green Bay, WI, USA

Corresponding Author:

Aaron C. Weinschenk, Department of Political Science, University of Wisconsin-Green Bay, 2420 Nicolet Drive, Green Bay, WI 54311, USA.
Email: weinscha@uwgb.edu

important given how emotionally-charged and contentious the 2020 presidential election and its aftermath were (Weinschenk, van der Linden, and Panagopoulos 2021). Second, studies on the influence of elections on health typically focus on one dimension or measure of health (e.g., Maas and Lu 2021; Neupert, Bellintier, and Smith 2021; Yan, Hsia, Yeung, and Sloan 2021; Rosman et al. 2021). Here, our interest is in understanding whether the 2020 election influenced two different dimensions of health—changes in self-reported mental and general health. Previous research has indicated that both measures capture important but distinct aspects of an individual's health (Mavaddat, Kinmonth, Sanderson, Surtees, Bingham, and Khaw 2011; Lorem, Cook, Leon, Emaus, and Schirmer 2020). Examining multiple dimensions of health in the same study is also valuable because it allows for a direct comparison of whether election-related variables have similar effects across different facets of health. Finally, in contrast to many previous studies on elections, which often infer the impact of elections on health by comparing pre and post-election data on a health measure of interest (see, e.g., Stanton et al. 2010; Abelson et al. 2020; Roche and Jacobson 2019; DeJonckheere, Fisher, and Chang 2018; Brown, Solazzo, and Gorman 2021; Gonzalez, Ramirez, and Galupo 2018; Krueger et al. 2021; Rosman et al. 2021; Hoyt, et al., 2018), we measure two individual-level variables related to the 2020 election directly—vote choice (i.e., voting for the candidate who lost the election) and (dis)agreement that Joe Biden won the 2020 presidential election—and we examine their impacts on changes in self-rated health. We are not aware of previous studies that have measured an individual's acceptance of election results and examined how this orientation impacts general and mental health.

We proceed as follows. In the next section, we provide an overview of existing research on elections and health and discuss our expectations. We then turn to our data and measures. As a brief overview, we make use of data from an original, nationally representative survey ($N = 1750$) that we fielded in December of 2020. Next, we present the results from our empirical models. As a quick preview, we find that, at the aggregate level, many Americans reported that their mental (14%) and general (6%) health *worsened* compared to before the 2020 presidential election. Interestingly, similar numbers of Americans indicated that they experienced *improvements* to their mental (15%) and general (8%) health. In the context of individual-level models, we find that those who voted for Trump and who disagree that Biden won the election were significantly less likely than their counterparts to report better mental health compared to before the 2020 election. These relationships persist even in the context of a wide range of controls, including demographic attributes, political

predispositions, and perceptions about political polarization. We conclude by discussing the implications of our results and suggest several ideas for future research.

Previous Research and Expectations

As we noted above, a burgeoning literature on the association between politics and different dimensions of public health has developed. Researchers working in this area have measured “politics” in several different ways. For instance, while some studies (Smith, Hibbing, and Hibbing 2019; Smith 2022) have assessed politics using general questions (e.g., respondent ratings of statements such as “politics has caused me to be stressed”), other studies (e.g., Nayak, et al., 2021; Panagopoulos, et al., 2021; Fraser, et al., 2022) have asked people about their perceptions of specific features of the political system (e.g., levels of political polarization). Others have examined the role of government policies, such as those related to immigration, in shaping health outcomes (e.g., Hatzenbuehler et al. 2017). Finally, some scholars have sought to understand how *elections* influence health. Below, we provide an overview of key findings from the existing research on elections and health. We then move to an overview of our expectations.

Not surprisingly, the bulk of existing research on elections and health has focused on presidential elections, which are the most prominent elections in the United States. When examining the consequences of elections, scholars have typically examined how election wins and losses differentially impact people who might be empowered or disempowered by presidential candidates. Overall, research on the impact of presidential elections on health has consistently found that elections matter to peoples' health. Given the unprecedented nature of the 2016 election, it should not come as a surprise that a flurry of studies have emerged on the role of the 2016 presidential election and health (Hoyt, et al., 2018; Gonzalez et al. 2018; Morey et al. 2021; Krueger, Westmoreland, Choi, Harper, Lightfoot, Hammack, and Meyer 2021; Abelson et al. 2020; Roche and Jacobson 2019; DeJonckheere, Fisher, and Chang 2018; Yan, Hsia, Yeung, and Sloan 2021; Neupert, Bellintier, and Smith 2021). Across many different research designs, scholars have consistently found that the 2016 election impacted health in important ways in the United States. While the election had a negative impact on mental health among those living in states that voted for the losing candidate (Yan, Hsia, Yeung, and Sloan 2021), it also impacted a variety of other groups in society. Studies show that many groups that felt hostility or threats from the Trump campaign, including members of the LGBTQ community (Gonzalez et al. 2018; Krueger et al. 2021), members of racial or ethnic minority populations (Morey

et al. 2021; Krueger et al. 2021; Abelson et al. 2020), and young people (Hoyt, Zeiders, Chakua, Toomey, and Nair 2018; Roche and Jacobson 2019; Neupert, Bellingtier, and Smith 2021; DeJonckheere, Fisher, and Chang 2018), were negatively impacted by the 2016 election, especially in the domain of mental health. It is worth noting that although the 2016 election had wide ranging effects on health, previous presidential elections have impacted health as well. For example, using data collected before and after announcement of the 2008 presidential election winner, Stanton et al. 2010 found that those people who voted for the losing candidate experienced increased cortisol (i.e., stress hormone) levels, whereas those who voted for the winning candidate had stable cortisol levels. In a different study on the 2008 election, Brown, Solazzo, and Gorman (2021) found that Black men experienced a significant post-election decline in poor mental health days, an effect that is likely due to the election of the first Black president (e.g., symbolic representation). In short, the extant research makes it clear that elections have health consequences and likely impact people differently depending on how their identities intersect with who wins and loses.

Based on this research, we are interested in examining the role of the 2020 election in shaping health in the United States. We are specifically interested in understanding how vote choice (i.e., voting for Trump, the candidate who lost the election) and one's level of agreement that Joe Biden won the 2020 presidential election are related to self-reported health outcomes following the election. Our expectations about how these variables will be related to health stem from social identity theory. It has been well established by political scientists (Huddy, 2001; Huddy and Bankert 2018; Greene 2004) that partisanship is a genuine social identity and, consequently, that there is a motivation "to protect and advance the party's status and electoral dominance" (Huddy and Bankert 2018, 5). According to Huddy and Bankert (2018), an "internalized sense of partisan identity means that the group's failures and victories become personal" (5). It is important to note that research in psychology has found that threats to social identity can lead to a wide range of negative responses among those who perceive or experience threat, such as lowered self-esteem and discrimination against out-groups (Scheepers et al. 2009; Scheepers and Ellemers 2005). Similarly, Johnson et al. (2011) have noted that perceptions of defeat have generally been associated with the onset and exacerbation of a range of mental and psychiatric conditions and disorders, including depression, anxiety, and suicide. In the context of the current study, our expectation is that feelings of electoral defeat will be viewed as a threat to identity by those who supported the defeated candidate. As we noted above, past research has found that voters

who support the losing candidate have experienced declines in well-being (Pierce, Rogers, and Snyder 2016) and more stress and anxiety (Stanton et al. 2010; Hoyt et al. 2018) following elections. Thus, we hypothesize that those who voted for Trump (and who disagree that Biden won the election) will report worse health than their counterparts following the 2020 election. In this study, we examine two dimensions of health—mental and general health. Our expectation is that election loss will have a more pronounced impact on mental health than general health, given the psychological nature of partisanship and candidate support. However, we note that some previous studies have found that losing an election can impact health factors outside of the domain of mental health, such as heart arrhythmias (Rosman et al. 2021). Thus, it is worthwhile to examine the link between politics and self-reported general health as well.

Data and Measures

Our data come from a national survey that we designed and fielded following the November 2020 presidential election in the United States (fielded between December 11-16, 2020). The survey was administered by YouGov, a firm that uses advanced statistical techniques to recruit survey respondents online and produce a representative sample of the target population. For our survey, YouGov interviewed 1870 respondents who were then matched down to a sample of 1750 respondents to produce the final dataset. The respondents were matched to a sampling frame on gender, age, race, and education. The frame was constructed by stratified sampling from the full 2018 American Community Survey 1-year sample with selection within strata by weighted sampling with replacements.¹ In the [Supplementary Materials](#), we include a table comparing our sample to the U.S. population using data collected by the U.S. Census across several different demographic variables and find these features are comparable and similarly distributed. In addition, we note research shows that YouGov surveys are equivalent to representative surveys conducted via telephone (Ansolabehere and Schaffner 2014).

To measure health, we make use of two items that we included in the survey. More specifically, respondents were asked to self-assess how their general health compared to before 2020 election (with the response categories being "better," "about the same," or "worse") and how their mental health compared to before the 2020 election (again, using response categories of "better," "about the same," or "worse"). For both measures, we code "better" as +1, "about the same" as 0, and "worse" as -1. Given when the survey was administered, we note that respondents were asked these questions slightly more than one month after the 2020 presidential election.

Although there are a variety of ways to measure health, we note that self-reported measures of general and mental health are widely used. Research indicates that such measures, even if they are based on just one survey item, typically exhibit good measurement properties (e.g., correlate with relevant variables in expected ways) and are valid tools for assessing respondent health (e.g., Sawatzky, et al., 2010; Idler and Benyamini, 1997; Lundberg and Manderbacka, 1996; Wuorela et al., 2020; Ahmad, et al., 2014; Frandsen et al. 2016). Before proceeding, we acknowledge that, because our study relies on cross-sectional survey data (as opposed to a panel survey), our health measures necessarily require that we ask respondents to reflect on how their health compares to before the 2020 election. By mentioning the 2020 election in our health questions, we concede that, while there may be some benefits to this approach (see below), there is a possibility that priming the salience of the election and related events for respondents potentially magnified the magnitude of any effects we detect. As such, we view our estimates as an upper bound of likely effects. Furthermore, we are not aware of panel surveys conducted before and after the 2020 election that also include measures of self-rated mental and general health, but, if such data exists, it would be useful to examine the relationship between vote choice and perceptions about Biden's win on post-election health while controlling for pre-election health.

Our key independent variables are based on two questions that we included in the survey. First, we included a question asking who respondents who they voted for in the 2020 presidential election. We code those who voted for the losing candidate (Trump) as "1" and those who voted for the winning candidate (Biden) as "0." Second, we make use of a question that asked respondents to rate their level of agreement with the statement "Joe Biden won the 2020 presidential election in the U.S." We code those who disagree as -1, those who neither disagree/agree as 0, and those who agree as +1. Not surprisingly, this measure is highly correlated with vote choice ($r = -0.81$, $p < .001$), with those who voted for Trump being much less likely to agree that Biden won the election.

We include several control variables in our statistical models. More specifically, we incorporate measures of partisanship (coded 1-7, where higher indicates greater identification with the Republican party) and ideology (coded 1-3, where higher indicates greater conservatism). These variables should be highly correlated with our two key independent variables for obvious reasons but may also be related to health. There is some evidence that conservatives and Republicans are healthier than their counterparts, potentially because values associated with these identities may also be related to health-promoting

behaviors, such as eating, exercise or smoking habits or a willingness to seek medical help right away rather than waiting (Pacheco and Fletcher 2015; Subramanian and Perkins 2010; Rapeli, Mattila, and Papageorgiou 2020; Mattila, et al., 2018). Related to ideology and partisanship, we also include a measure asking respondents whether the political divide between Republicans and Democrats is much greater now, greater now, about the same, less now, or much less now than in the past (coded from 1-5, where higher values indicate greater perceived polarization). Recent research has indicated that polarization is related to health, with those who perceive the political environment to be polarized reporting poorer health than those who do not (Nayak, et al., 2021; Panagopoulos, Fraser, Aldrich, Kim, and Hummel 2021; Fraser, et al., 2022). Studies conducted prior to (Motta 2021) and throughout (Callaghan et al. 2021) the COVID-19 pandemic in the United States also reveal the partisan (and polarized) nature of vaccine hesitancy and other forms of protective health behavior in the U.S. and highlight the various ways that partisan identity can influence protective and pro-social health behavior and, in turn, health outcomes. We note that in addition, perceptions of polarization may also be correlated with candidate support. Research on the impact of electoral loss on political perceptions has indicated that voters who supported the losing candidate tend to express more negative views about many aspects of government and politics than their counterparts (e.g., lower trust, lower efficacy, less satisfaction with democracy, etc.) (Craig, Martinez, Gainous, and Kane 2006; Blais and Gélinau 2007). This line of research has not focused heavily on the impact of election loss on perceptions of polarization, but a related body of work has found that campaigns can heighten partisan tensions and that people become much more affectively polarized by election day compared to a year earlier (Sood and Iyengar 2016). Thus, one hypothesis is that supporters of the losing candidate may feel that there exists greater polarization after experiencing defeat. We also include a measure of political interest. Smith (2022) has found that politically interested people are more likely to report negative health impacts from politics. Research has also found that political interest is related to ideology and candidate support. A 2021 Pew Research report, for example, indicated that "an above-average share of committed conservatives say they follow what's going on in government and public affairs most of the time."²

We also control for a set of usual demographic variables: race/ethnicity (coded as a series of dummy variables), age (in years), income (coded from 1-16, where 1 corresponds to under \$10,000 per year and 16 corresponds to \$500,000 or more per year), educational attainment (coded from 1-6, where 1 corresponds to no high school diploma and 6 corresponds to a post-graduate degree), and

unemployment status (1=unemployed, 0=employed). Previous research has shown that demographics are often important correlates of political preferences like vote choice (Weinschenk 2019; McClurg and Holbrook 2009) and are also related to different measures of health (Veenstra 2000; Adler and Ostrove 2006; Prus 2007; Smith 2022). Descriptive statistics for all variables included in this study are provided in the [Supplemental Materials](#).

Results and Analysis

We begin our analysis by presenting aggregate data on changes in health after the 2020 presidential election. [Table 1](#) below shows the percentage of people in each of the response categories for both health measures. Turning first to the mental health measure, we see that most respondents (71%) reported that their mental health was “about the same” compared to before the presidential election. However, sizeable numbers of individuals reported *worse* mental health (14%) and *improved* mental health (15%) after the election. We note that some deterioration in mental health can be consequential (e.g., for physical functioning, job performance, relationships, etc.) (see [Ohrnberger, Fichera, and Sutton, 2017](#)), even if it

offset by improvements in mental health for others.³ When it comes to the general health measure, we again see that most respondents (87%) report that their health was “about the same” compared to before the 2020 election. About 8% of individuals reported better overall health and about 6% reported worse health compared to before the election. Overall, the aggregate level data in [Table 1](#) indicate that there is some variation in changes to health after the election.⁴ In [Tables 2](#) and [3](#), we provide a look at the distributions of both health measures by respondent vote choice and perceptions about whether Biden won the 2020 election. Overall, those who voted for Biden and who agree the Biden won the election are more inclined than Trump supporters and those who disagree that Biden won to report improved mental health. Among Biden voters, 23% reported better mental health compared to before the election; among Trump voters, the percentage reporting better mental health is 7%. Similarly, among those who agree that Biden won, 19% reported better mental health; for those who disagree that Biden won, just 7% reported better mental health. When it comes to the general health measures, we see similar distributions when comparing Trump and Biden voters and those who agree that Biden won and those who disagree about Biden’s victory. In short, there do not appear to be substantial differences in general health across vote choice or perceptions about whether Biden won the 2020 election. We next turn to an individual-level analysis of the factors that explain changes in health following the 2020 presidential contest.

In [Table 4](#), we present a series of ordered logistic regression models in which our two health measures are used as dependent variables and vote choice is the key independent variable of interest.⁵ Model 1 shows the

Table 1. Overall distribution of health ratings.

	Mental health, %	General health, %
Better	15	8
About the same	71	87
Worse	14	6

Notes: Total number of observations is 1750 for both measures.

Table 2. Distribution of health ratings by 2020 Presidential Vote Choice.

	Among Biden Voters		Among Trump Voters	
	Mental health, %	General health, %	Mental health, %	General health, %
Better	23	8	7	7
About the same	65	87	80	89
Worse	12	5	13	5

Table 3. Distribution of Health Ratings by Agreement/Disagreement that Biden Won the 2020 Election.

	Agree Biden Won		Disagree Biden Won	
	Mental health, %	General health, %	Mental health, %	General health, %
Better	19	9	7	7
About the same	68	86	77	89
Worse	13	5	16	5

Table 4. Vote choice and health after the 2020 presidential election.

	M1, mental	M2, mental	M3, mental	M4, general	M5, general	M6, general
	b/se	b/se	b/se	b/se	b/se	b/se
Voted Trump 2020	−0.731*** 0.126	−0.581* 0.247	−0.528* 0.247	−0.151 0.176	0.125 0.384	0.110 0.385
Polarization worse			−0.241** 0.084			0.067 0.117
Partisanship (GOP)		−0.051 0.056	−0.051 0.056		−0.137 0.079	−0.136 0.079
Ideology (conservative)		0.044 0.145	0.052 0.145		0.331 0.191	0.325 0.19
Male		0.101 0.139	0.107 0.139		−0.005 0.208	−0.007 0.207
Black		0.213 0.257	0.229 0.259		0.174 0.405	0.172 0.405
Hispanic		0.182 0.237	0.157 0.236		0.481 0.355	0.489 0.354
Asian		0.155 0.553	0.22 0.539		−0.932 0.668	−0.952 0.67
Native American		−0.038 0.438	0.116 0.441		1.45 0.992	1.411 0.98
Age		−0.007 0.004	−0.006 0.004		−0.025*** 0.006	−0.026*** 0.006
Income		−0.007 0.024	−0.013 0.024		0.001 0.032	0.003 0.031
Education		−0.007 0.052	−0.009 0.053		−0.143 0.077	−0.143 0.076
Political interest		0.117 0.092	0.174 0.095		−0.04 0.146	−0.055 0.142
Unemployed		−0.562 0.316	−0.546 0.318		−0.685 0.503	−0.69 0.503
Cut point 1	−2.366*** 0.123	−2.523*** 0.597	−3.208*** 0.653	−3.058*** 0.154	−4.318*** 1.06	−4.138*** 1.09
Cut point 2	1.419*** 0.098	1.300* 0.596	0.647 0.647	2.435*** 0.135	1.814 1.061	1.996 1.106
State fixed-effects?	—	✓	✓	—	✓	✓
Pseudo R ²	.02	.04	.05	.00	.09	.09
Chi ²	33.52	89.96	101.56	0.74	94.61	98.54
N	1373	1129	1129	1373	1129	1129

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed tests).

relationship between vote choice and mental health changes without any control variables. Overall, there is a negative and statistically significant effect, indicating that Trump voters report worse mental health compared to Biden voters following the 2020 election. Models 2 and 3 add the control variables discussed above as a way of making sure the relationship in Model 1 holds up in the presence of other possible predictors. Given the importance of partisan polarization on health detected in extant scholarship, and to avoid any potential bias resulting from omitted variables, Model 3 adds to Model 2 the polarization measure described above. The inclusion of polarization represents an additional robustness check on our

findings regarding vote choice and, as discussed below, does little to affect the impact of other variables included in the estimations. Overall, the models in Table 4 indicate that the relationship between vote choice and mental health is robust and negative.⁶ In short, Trump voters are more likely to report worse mental health than Biden voters.⁷ Interestingly, in a recent analysis, Smith (2022) found that “people who reported voting for Trump in the 2020 election reported fewer negative health effects from politics” (8). He noted that this finding was “somewhat surprising” and “seems inconsistent with the fact that their favored candidate lost the election” (8). According to Smith, one possible explanation is that this finding “may

simply be a function of the highly unusual aftermath of the 2020 election—many Trump supporters continued to believe their candidate would serve a second term despite overwhelming evidence to the contrary” (8). It is important to note that there are some differences between the Smith study and this one. For instance, the survey used by Smith was collected during a slightly different context (approximately two weeks after the election; our survey was fielded over a month after the 2020 election). It is possible that the effects of voting for the losing presidential candidate on health vary depending on the national political context, which can change considerably even within a short amount of time.⁸ In the week or two following the election, Trump supporters may have believed that it was likely that Trump would still win the 2020 election. However, by mid-December (which is when our survey was collected), Trump voters may have become more aware of the news that after December 8, 2020 there were no additional legal avenues available for Trump to dispute the election results (i.e., that it was unlikely that Trump would actually become the president).⁹

It is worth noting that in Model 3, the polarization measure exerts a statistically significant relationship with mental health (and, importantly, it does little to alter the relationship between vote choice and mental health we observe in Models 1 and 2). The coefficient indicates that those who believe that polarization is much greater now than in the past are more likely than their counterparts to report worse mental health compared to before the 2020 election. This is an interesting finding given that some previous research has found that polarization has a more important impact on physical health, compared to mental health (Fraser, et al., 2022). Accordingly, we view this as an open question that warrants further scrutiny.

While vote choice is related to changes in mental health, the final three models in Table 4, which use change in general health following the 2020 election as the dependent variable, indicate that there is not a statistically significant relationship in any of the models. Thus, it appears that, at least following the 2020 presidential election, the (negative) impact of voting for the candidate who lost largely affected mental, but not general, health. We note that our polarization measure does not have a statistically significant relationship with changes in general health in any of the models. Again, Fraser et al. (2022) found that perceived polarization (measured as the perceived difference from the average voter in one’s state of residence) exerted a statistically significant effect on the number of days of poor physical health, a finding that stands in contrast to the results we report. The only variable that has a statistically significant impact on general health in Table 4 is age.

Overall, the coefficient indicates that older people are less likely than young people to report better general health following the 2020 election.

In Table 5, we present the same series of models as we do in Table 4 with one exception—in these models we use perceptions about Biden’s victory as the key independent variable of interest. The use of this measure serves as a robustness check on the results in Table 4. Overall, we find a similar pattern of results when we compare Tables 4 and 5. Turning to the mental health models (Models 1-3), we see that the perceived Biden victory measure is statistically significant across each specification. As expected, those who agree that Biden won the presidential election are more likely than those who do not to report better mental health. Once again, the polarization measure has a negative and statistically significant effect on changes to mental health following the 2020 election (and the addition of this variable does not significantly alter the relationship between perceptions of Biden’s victory and mental health). Those who think polarization is much greater now than in the past are more likely than those who think it is much less now than in the past to report worse mental health. When we look at the general health models (Models 4-6), we see that the perceived Biden victory measure is not statistically significant in any of the models, which is consistent with what we found in Table 4. Similarly, the polarization measure is not a statistically significant predictor of changes in general health. Consistent the models in Table 4, we again see that age is negatively related to perceptions about general health. Interestingly, the coefficients for partisanship and ideology are statistically significant in Models 5 and 6, although the signs are in opposing directions. We do not have a clear sense of why this pattern exists, but we encourage additional research on the role of political predispositions in shaping perceptions about general health.

To provide a sense of the magnitude of the relationship our key independent variables and mental health after the 2020 Presidential Election, Figure 1 shows the predicted probabilities of reporting “better” mental health (the effects are similar in size if we use “worse” as the predicted category). The left panel shows that while the probability of reporting better mental health is low for both groups, it is lower for Trump voters than Biden voters. Indeed, the predicted probability is 0.19 [0.15, 0.23] for Biden voters and 0.12 [0.09, 0.17] for Trump voters. Overall, these differences are very modest, but they are statistically significant. The right panel shows the relationship between perceptions of Biden’s victory and mental health. Again, the probability of reporting better mental health is

Table 5. Perceptions of Biden victory and health after the 2020 presidential election.

	M1, mental	M2, mental	M3, mental	M4, general	M5, general	M6, general
	b/se	b/se	b/se	b/se	b/se	b/se
Agree Biden won	0.276*** 0.062	0.237* 0.096	0.194* 0.099	0.074 0.083	0.134 0.154	0.145 0.156
Polarization worse			-0.246** 0.079			0.065 0.109
Partisanship (GOP)		-0.102* 0.049	-0.107* 0.048		-0.129* 0.063	-0.127* 0.064
Ideology (conservative)		0.128 0.128	0.141 0.127		0.530** 0.161	0.525** 0.16
Male		0.094 0.13	0.104 0.13		0.088 0.187	0.084 0.187
Black		0.079 0.232	0.081 0.233		0.104 0.332	0.105 0.333
Hispanic		0.039 0.22	0.005 0.219		0.109 0.3	0.121 0.299
Asian		0.128 0.468	0.181 0.46		-0.672 0.632	-0.687 0.635
Native American		0.096 0.433	0.228 0.44		1.35 0.969	1.321 0.962
Age		-0.004 0.004	-0.003 0.004		-0.023*** 0.005	-0.023*** 0.005
Income		-0.021 0.022	-0.024 0.022		0.000 0.029	0.000 0.029
Education		0.041 0.046	0.039 0.046		-0.08 0.069	-0.079 0.068
Political interest		0.214** 0.081	0.264** 0.081		0.004 0.125	-0.008 0.12
Unemployed		-0.573* 0.269	-0.545* 0.268		-0.589 0.378	-0.598 0.376
Cut point 1	-1.786*** 0.074	-1.371** 0.519	-2.130*** 0.595	-2.835*** 0.112	-3.387*** 0.869	-3.187*** 0.941
Cut point 2	1.889*** 0.074	2.376*** 0.526	1.649** 0.594	2.488*** 0.099	2.549** 0.873	2.750*** 0.954
State fixed-effects?	—	✓	✓	—	✓	✓
Pseudo R ²	.01	.04	.05	.00	.07	.07
Chi ²	20.174	94.25	108.84	0.796	104.65	106.54
N	1750	1360	1360	1750	1360	1360

Notes: * $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed tests).

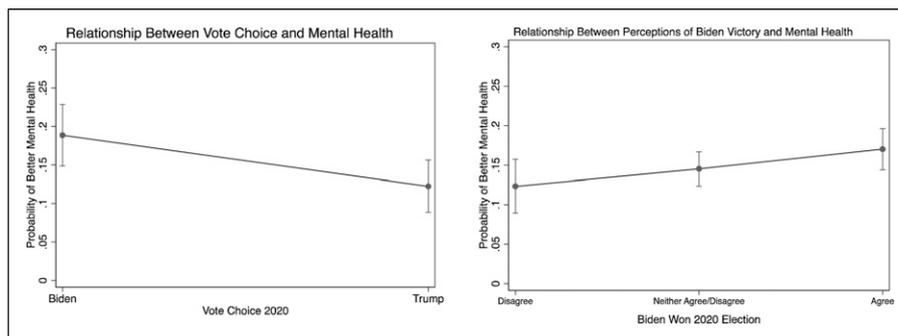


Figure I. Relationship between Vote Choice (left panel), Perceptions of Biden Victory (right panel), and Mental Health after the 2020 Presidential Election.

Notes: Left panel derived from Model 3 in Table 4 and right panel derived from Model 3 in Table 5

low for both groups, but the predicted probability of reporting better mental health is higher for those who agree that Biden won the election, 0.17 [0.14, 0.20], compared to for those who disagree that Biden won, 0.12 [0.09, 0.16].

Discussion and Conclusion

Given the divisive and polarized nature of American politics today, it is not surprising that scholars have recently started to devote considerable attention to understanding whether and how politics impacts different dimensions of health. There is now mounting evidence from numerous disciplines that politics matters for people's health. In fact, most studies that have examined the association between politics and health have found evidence that politics impacts important health outcomes. The results of this study contribute to the body of literature focusing on how different elements of presidential elections can impact important health outcomes. Using data from a nationally representative survey, we found that those who voted for Trump and who disagreed that Biden won the election were significantly less likely than their counterparts to report better mental health compared to before the 2020 election. Importantly, these relationships persisted even while accounting wide range of controls. Although not the central focus of our analyses, we also found evidence that another political factor influences health—perceptions of political polarization. We found that those who believe that polarization is much greater now than in the past are more likely than their counterparts to report worse mental health compared to before the 2020 election. Our results underscore the point that political factors are relevant to health.

This study has a number of important implications. Our analysis showed that perceptions about growing polarization and losing elections (or disagreeing about who won) can take a toll on mental health. It is possible that the health effects of politics may result in long-term consequences for society. For example, worsened mental health due to political events and experiences could have an economic impact. Previous studies have shown that mental health can have tremendous economic consequences (Trautmann, Rehm, and Wittchen 2016). In addition, it is possible that feelings of extreme anger or frustration after losing an election will lead people to engage in harmful actions (e.g., violence, destruction, etc.). Mental illness has also been found to be associated with higher incidence of suicide (Cavanagh et al. 2003) and homicides (Fazel et al. 2009). In short, the impact of politics on mental health could be serious and long-term, with enormous societal consequences, and researchers have only begun to scratch surface. Additional research is desperately needed in order to understand the extent to

which the impact of politics on health extend to other areas of society.

It is important to acknowledge the limitations of this study. For instance, we relied on self-reported health data. Although, as we noted above, researchers have found that such measures are valid and reliable, collecting other non-self-reported health measures would be extremely valuable. If similar results emerge when using different measures, it would bolster the findings reported here. We also note that this analysis, like most other analyses in this area, is observational and thus leaves open questions about the causal impact of politics on health. Investigations into the causal mechanisms linking health and politics have been rare, though we encourage additional research in this area.

Notwithstanding our emphasis on election-related (or induced) changes in perceived general and mental health, we also recognize that the period during which our survey was conducted (early Dec. 2020) coincided with both a wave of new COVID-19 infections in the U.S. as well as news of federal emergency use authorization in the United States for mRNA vaccines designed to prevent COVID-19 infection. These developments could have conceivably affected respondents' perceptions of their health, perhaps especially their mental health. The effects of these concurrent developments could have been acute, and potentially even countervailing, especially given high levels of polarization in vaccine attitudes and uptake (Motta 2021; Callaghan et al., 2021; Kerr, Panagopoulos and van der Linden 2021). While we concede the current study cannot disentangle such potential confounds, we are heartened by the fact that our key survey items referenced the election specifically, and not other developments, including, but not limited to, COVID-19 conditions. As such, we expect individuals' responses involved cognitive processing that reflected heightened recall and retrieval of information related to the election itself, but we cannot be certain that other developments were overlooked. Accordingly, we encourage subsequent research that can adjudicate more directly between any such confounding effects.

There are several other research ideas that stem from our analyses. First, we encourage researchers to include health measures in surveys that also include political content. It would be useful to develop additional data sources that can be used to explore the association between politics and health outcomes. At this point, the number of survey datasets focusing on health and politics is limited. Second, it would be particularly valuable to collect data on the same respondents over time so that researchers could try to understand whether health outcomes change over time in response to political developments. Above, we noted that contextual factors may play a role in shaping how politics impacts health. Data

collected on the same people at different points in time (and in different political contexts) will likely be helpful in developing a more nuanced understanding of how politics and health intersect. It would also be interesting to examine the longevity of the impact of politics on health. The effects could be short term, or they could manifest long term. At this point, we know very little about whether and how such effects endure. Finally, while this study (and many previous studies) has focused on the health implications of presidential elections, it could be interesting to explore how different types of elections (congressional, gubernatorial, etc.) impact health. It would be valuable to know whether the health effects of elections are widespread or constrained to the most visible types of elections.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Funding for the survey was provided Northeastern University.

Informed Consent

Respondents participated in the survey by informed consent.

IRB approval

was obtained from Northeastern University, IRB# 20-07-05.

Data Availability

The datasets generated during and/or analyzed during the current study are available at: acweinschenk.net/health2020election.html

ORCID iD

Aaron C. Weinschenk  <https://orcid.org/0000-0002-2278-0349>

Supplemental Material

Supplemental material for this article is available online.

Notes

1. The matched cases are weighted to the sampling frame using propensity scores. The matched cases and the frame were combined, and a logistic regression was estimated for inclusion in the frame. The propensity score function included age, gender, race/ethnicity, years of education, and region. The propensity scores were grouped into deciles of the estimated propensity score in the frame and post-stratified

according to these deciles. The weights were then post-stratified on 2016 presidential vote choice, and a four-way stratification of gender, age, race, and education, to produce the final weight.

2. According to Pew's analysis, committed conservatives are "Staunchly conservative and overwhelmingly Republican." Among people in this group "nearly all voted for Donald Trump for president in 2020." For additional details, see the following report: <https://www.pewresearch.org/politics/2021/11/09/committed-conservatives/>
3. We note that the contentious nature of the 2020 election prompted the American Psychological Association to develop a list of evidence-based advice aimed at helping people address some dimensions of mental health, such as stress and anxiety. See, for example, <https://www.apa.org/news/press/releases/2020/10/election-stress>.
4. One possible concern with our measures is that the directional movement we observe, which is of roughly equal magnitude in either direction, is a product of measurement error, such as satisficing behavior by respondents (i.e., perhaps some of the survey's least attentive respondents systematically chose the first or last response options in order to avoid fully grappling with survey content; see [Krosnick 1991](#)). To examine this possibility, we leverage several pieces of available information to examine whether the aggregated quantities in [Table 1](#) vary across measures of survey response quality. First, we compared the distributions among those who answered the survey very quickly (2 standard deviations below the average completion time) versus the rest of the survey respondents. To do so, we used a Kolmogorov-Smirnov test of the equality of distributions, where the null hypothesis is that distribution of some variables (here, self-reported changes in mental and general health) is the same across two groups. For the mental health measure, the p -value for the Kolmogorov-Smirnov test was $>.05$ ($p = .437$), meaning that the distribution of the mental health measure is not statistically distinguishable across the two groups (i.e., the distributions are the same for those who answered the survey quickly vs. those who completed it at less rapid pace). For the general health measure, we find a similar pattern. The p -value associated with the Kolmogorov-Smirnov test was $>.05$ ($p=0.08$). Again, this indicates that the distribution of the health measures is comparable across the two groups. In short, it does not appear that we see more equal distributions of response options across the measure's endpoints ("worse" and "better") for respondents who completed the survey quickly. We also compared the distributions of the health measures for those who answered with the first response category on each survey question (about 30 questions in our dataset) +2 standard deviations above the mean compared to all other respondents. We found similar results as above. For the general health measure, the p -value was $>.05$ (0.674), and

for the mental health measure, the p -value was also $>.05$ ($p = 0.534$). In short, the distributions of our health measures do not appear to be statistically distinguishable when we compare these two groups of respondents. Finally, we did the same thing for respondents who answered with the last response on each question (again, using about 30 different questions that we included on the survey) +2 standard deviations above the mean compared to all other respondents. Again, the results indicate that the distributions are comparable across the two groups of respondents. For the general health measure, the p -value was $>.05$ (0.349) and for the mental health measure, the p -value was $>.05$ ($p = 0.978$). Overall, then, we conclude the response distributions we observe in our sample are credible and not simply statistical artifacts. We thank an anonymous reviewer for encouraging us to investigate this idea.

5. The correlation between our self-reported general and mental health measures is $r=0.39$ ($p < .001$).
6. As a robustness check, we coded vote choice in a different way. More specifically, we coded Trump voters as “1,” those who voted for Biden as “0,” and those respondents who voted for “someone else” for president (just 3% of our sample) as “0.” Overall, the estimates were very similar to those reported in Table 2, indicating that the results are robust to alternative ways of measuring vote choice.
7. In addition to examining the direct effect of voting for Trump versus Biden, we examined whether there was an interaction between vote choice and the candidate who won a respondent’s state of residence in predicting mental health. One possibility is that Trump supporters residing in states that Trump won might report better mental health than those living in states that Biden won (i.e., that living in a state that the candidate won might mute some of the negative effects of losing nationally). We did not find a statistically significant interaction between vote choice and whether Trump won or lost a respondent’s state of residence. A graph showing the results (derived from models that include all of the controls in Model 3 in Table 4 except state fixed-effects) is provided in the Supplemental Materials Appendix. We also examined the interaction between vote choice and Trump’s margin of victory (an alternative measure of Trump support) in predicting mental health. Again, we did not find a statistically significant interaction effect. A graph showing the results (again, derived from models that include all of the controls in Model 3 in Table 4 except state fixed-effects) is provided in the Supplemental Materials.
8. In addition, we note that our measures of health are not identical. Smith used measures from a 32-item questionnaire designed to measure the health-related impacts of political engagement. Thus, the measures are not necessarily equivalent across studies (e.g., they may be capturing different dimensions of health).
9. <https://www.politico.com/news/2020/12/08/trumps-deadline-looms-443561>

References

- Abelson, Sara, Sarah Lipson, Sasha Zhou S, and Daniel Eisenberg. 2020. “Muslim Young Adult Mental Health and the 2016 US Presidential Election.” *JAMA Pediatrics* 174 (11): 1112-1114.
- Adler, Nancy, and Joan Ostrove. 2006. “Socioeconomic status and health: What we know and what we don’t.” *Annals of the New York Academy of Sciences* 896: 3-15.
- Ahmad, Farah, Anuroop K Jhaji, Donna Eileen Stewart, Madeline Burghardt, and Arlene S Bierman. 2014. “Single item measures of self-rated mental health: a scoping review.” *BMC Health Services Research* 14: 398.
- Ansolabehere, Stephen, and Brian Schaffner. 2014. “Does Survey Mode Still Matter? Findings from a 2010 Multi-Mode Comparison.” *Political Analysis* 22(3): 285-303.
- Ben-Ezra, Menacham, Yuval Palgi, G James Rubin, Yaria Hamama-Raz, and Robin Goodwin. 2013. “The association between self-reported change in vote for the presidential election of 2012 and posttraumatic stress disorder symptoms following Hurricane Sandy.” *Psychiatry Research* 210(3):1304-1306.
- Blais, André, and François Gélinau. 2007. “Winning, Losing and Satisfaction with Democracy.” *Political Studies* 55(2): 425-441.
- Brown, Tony, Alexa Solazzo, and Bridget Gorman. 2021. “‘Yes We Can!’ The Mental Health Significance for U.S. Black Adults of Barack Obama’s 2008 Presidential Election.” *Sociology of Race and Ethnicity* 7(1):101-115.
- Callaghan, Timothy, Ali Moghtaderi, Jennifer A. Lueck, Peter Hotez, Ulrich Strych, Avi Dor, Erika Franklin Fowler, and Matthew Motta. 2021. “Correlates and disparities of intention to vaccinate against COVID-19.” *Social Science & Medicine* 272: 113638.
- Cavanagh, J. T. O., A. J. Carson, M. Sharpe, and S. M. Lawrie. 2003. “Psychological Autopsy Studies of Suicide: A Systematic Review.” *Psychological Medicine* 33(3): 395-405.
- Craig, Stephen C., Michael D. Martinez, Jason Gainous, and James G. Kane. 2006. “Winners, Losers, and Election Context: Voter Responses to the 2000 Presidential Election.” *Political Research Quarterly* 59(4): 579-592.
- DeJonckheere, Melissa, Andre Fisher, and Tammy Chang. 2018. “How has the presidential election affected young Americans?” *Child and Adolescent Psychiatry and Mental Health* 12, 8, DOI: [10.1186/s13034-018-0214-7](https://doi.org/10.1186/s13034-018-0214-7).
- Fazel, Seena, Gautam G. Gulati, Louise Linsell, John R. Geddes, and Martin Grann. 2009. “Schizophrenia and Violence: Systematic Review and Meta-Analysis.” *PLoS Med* 6 (8), e1000120.
- Frandsen, Louise, Villumsen, Line, Hjorth, Cathrine, Nielsen, Berit, Ullits, Line, Torp-edersen, Christian, Bøggild, Henrik, and Overgaard, Charlotte. 2016. “The relationship between self-reported mental health and redeemed prescriptions of antidepressants: A register-based cohort

- study." *BMC Psychiatry*. 16: 189. DOI: [10.1186/s12888-016-0893-7](https://doi.org/10.1186/s12888-016-0893-7).
- Fraser, Timothy, Daniel Aldrich, Costas Panagopoulos, David Hummel, and Daniel Kim. 2022. "The Harmful Effects of Partisan Polarization on Health." *PNAS Nexus* 1(1): pgac011.
- Gonzalez, Kirsten, Johanna Ramirez, and M. Paz Galupo. 2018. "Increase in GLBTQ minority stress following the 2016 US presidential election." *Journal of GLBT Family Studies* 14(1-2): 130-151.
- Greene, Steven. 2004. "Social identity theory and political identification." *Social Science Quarterly* 85(1): 138-153.
- Hatzenbuehler, Mark, Seth Prins, Morgan Flake, Morgan Philbin, Somjen Frazer, Daniel Hagen, and Jennifer Hirsch. 2017. "Immigration policies and mental health morbidity among Latinos: A state-level analysis." *Social Science & Medicine* 174: 169-178.
- Hoyt, Lindsay, Katharine H. Zeiders, Natasha Chaku, Russell B. Toomey, and Rajni L. Nair. 2018. "Young adults' psychological and physiological reactions to the 2016 U.S. presidential election." *Psychoneuroendocrinology* 92: 162-169.
- Huddy, Leonie. 2001. "From Social to Political Identity: A Critical Examination of Social Identity Theory." *Political Psychology* 22(1): 127-156.
- Huddy, Leonie, and Alexa Bankert. 2018. "Political Partisanship and Ideology as Identities" in *Oxford Research Encyclopedia of Politics*, Ed. William Thompson. Oxford University Press.
- Idler, Ellen, and Yael Benyamini. 1997. "Self-Rated Health and Mortality: A Review of Twenty-Seven Community Studies." *Journal of Health and Social Behavior* 38: 21-37.
- Johnson, Judith, Patricia A. Gooding, Alex M. Wood, Peter J. Taylor, and Nicholas Tarrier. (2011). "Trait Reappraisal Amplifies Subjective Defeat, Sadness, and Negative Affect in Response to Failure versus Success in Nonclinical and Psychosis Populations." *Journal of Abnormal Psychology* 120(4): 922-934.
- Kerr, John, Costas Panagopoulos, and Sander van der Linden. 2021. "Political polarization on COVID-19 pandemic response in the United States." *Personality and Individual Differences* 179: 110892.
- Krosnick, Jon. 1991. Response Strategies for Coping with the Cognitive Demands of Attitude Measures in Surveys." *Applied Cognitive Psychology* 5(3): 213-236.
- Krueger, Evan, Drew Westmoreland, Soon Kyu Choi, Gary Harper, Marguerita Lightfoot, Philip Hammack, and Ilan Meyer." 2021, Mental Health Among Black and Latinx Sexual Minority Adults Leading Up to and Following the 2016 U.S. Presidential Election: Results from a Natural Experiment." *LGBT Health* 8(7): 454-462.
- Lundberg, Olle, and Kristiina Manderbacka. 1996. "Assessing reliability of a measure of self-rated health." *Scandinavian Journal of Public Health* 24(3): 218-224.
- Maas, Alexander, and Liang Lu. 2021. "Elections have Consequences: Partisan Politics may be Literally Killing Us." *Applied Health Economics and Health Policy* 19(1): 45-56.
- Mattila, Mikko, Lauri Rapeli, Hanna Wass, and Peter Soderlund. 2018. *Health and Political Engagement*. New York: Routledge.
- McClurg, Scott, and Holbrook Thomas. 2009. "Living in a Battleground: Presidential Campaigns and Fundamental Predictors of Vote Choice." *Political Research Quarterly* 62(3): 495-506.
- Mefford, Matthew T, Murray Mittleman, Bonnie Lia, Lei Qiana, Kristi Reynolds, Hui Zhou, Teresa Harrison, Alan Geller, Stephen Sidney, Richard Sloan, Elizabeth Mostofsky, and David Williams. "2020, Sociopolitical stress and acute cardiovascular disease hospitalizations around the 2016 presidential election." *Proceedings of the National Academy of Sciences* 117 (43) 27054-27058.
- Morey, Brittany N., San Juanita Garcia, Tanya Nieri, Tim A. Bruckner, and G. Link. Bruce 2021. "Symbolic disempowerment and Donald Trump's 2016 presidential election: Mental health responses among Latinx and white populations." *Social Science & Medicine* 289(2021): 114417.
- Motta, Matthew. 2021. "Republicans, Not Democrats, Are More Likely to Endorse Anti-Vaccine Misinformation." *American Politics Research* 49(5): 428-438.
- Nayak, Sameera, Timothy Fraser, Costas Panagopoulos, Daniel P. Aldrich, and Daniel Kim. 2021. "Is divisive politics making Americans sick? Associations of perceived partisan polarization with physical and mental health outcomes among adults in the United States." *Social Science & Medicine* 284: 113976.
- Neupert, Shevaun, Jennifer Bellingtier, and Emily Smith. 2021. "Emotional reactivity changes to daily stressors surrounding the 2016 U.S. presidential election." *Current Psychology* 40(6): 2832-2842.
- Ohrnberger, Julius, Eleonora Fichera, and Matt Sutton. 2017. "The relationship between physical and mental health: A mediation analysis." *Social Science & Medicine* 195: 42-49.
- Pacheco, Julianna, and Jason Fletcher. 2015. "Incorporating health into studies of political behavior: Evidence for turnout and partisanship." *Political Research Quarterly* 68(1):104-116.
- Panagopoulos, Costas, Timothy Fraser, Daniel Aldrich, Daniel Kim, and David Hummel. 2021. "Bridging the Divide: Does Social Capital Moderate the Impact of Polarization on Health?" *Political Research Quarterly*. ■■■: 106591292110345.
- Pierce, Lamar, Todd Rogers, and Jason A. 2016. "Losing Hurts: The Happiness Impact of Partisan Electoral Loss." *Journal of Experimental Political Science* 3(1): 44-59.

- Prus, Steven. 2007. "Age, SES, and health: A population level analysis of health inequalities over the lifecourse." *Sociology of Health & Illness* 29(2): 275-296.
- Rapeli, Lauri, Mikko Mattila, and Achillefs Papageorgiou. 2020. "Breaking a habit: The impact of health on turnout and party choice." *Party Politics* 26(2):133-142.
- Roche, Michael, and Nicolas Jacobson. 2019. "Elections have consequences for student mental health: An accidental daily diary study." *Psychological Reports* 122(2): 451-464.
- Rosman, Lindsey, Elena Salmoirago-Blotcher, Rafat Mahmood, Hannan Yang, Qufeng Li, Anthony J. Mazzella, Jeffrey Lawrence Klein, Joseph Bumgarner, and Anil Gehi. "2021, Arrhythmia Risk During the 2016 US Presidential Election: The Cost of Stressful Politics." *Journal of the American Heart Association* 10(11): e020559.
- Sawatzky, Richard, Pamela Ratner, Joy Johnson, Jacek Kopec, and Bruno Zumbo. 2010. "Examining the Associations among Self-Reported Physical and Mental Health Status and Several Life Domains of Relevance to Adolescents' Quality of Life." *Health and Quality of Life Outcomes*. 8(17): 1-11.
- Scheepers, D., and Ellemers N. 2005. "When the pressure is up: The assessment of threats to social identity in low and high status groups." *Journal of Experimental Social Psychology* 41: 192-200.
- Scheepers, D., Ellemers N., and Sintemaartensdijk N. 2009. "Suffering from the possibility of status loss: Physiological responses to social identity threat in high status groups." *European Journal of Social Psychology* 39(6): 1075-1092.
- Smith, Kevin. 2022. "Politics is making us sick: The negative impact of political engagement on public health during the Trump administration." *PLoS One* 17(1): e0262022.
- Smith, Kevin, Matthew Hibbing, and John Hibbing. 2019. "Friends, relatives, sanity, and health: The costs of politics." *PLoS One* 14(9): e0221870.
- Sood, Gaurav, and Shanto Iyengar. 2016. *Coming to Dislike Your Opponents: The Polarizing Impact of Political Campaigns*. Working Paper.
- Stanton, Steven, Kevin Labar, Ekjyot K Saini, Cynthia M Kuhn, and Jacinta C Beehner. 2010. "Stressful politics: voters' cortisol responses to the outcome of the 2008 United States Presidential election." *Psychoneuroendocrinology*. 35(5): 768-774.
- Subramanian, SV, and Jessica Perkins. 2010. "Are Republicans healthier than Democrats?" *International Journal of Epidemiology* 39:930-935.
- Trautmann, Sebastian, Jurgen Rehm, and Hans-Ulrich Wittchen. 2016. "The economic costs of mental disorders: Do our societies react appropriately to the burden of mental disorders?" *EMBO Reports* 17(9):1245-1249.
- Veenstra, Gerry. 2000. "Social Capital, SES and Health: An Individual-Level Analysis." *Social Science & Medicine* 50: 619-629.
- Weinschenk, Aaron. 2019. "That's Why the Lady Lost to the Trump: Demographics and the 2016 Presidential Election." *Journal of Political Marketing* 18(1-2): 69-91.
- Weinschenk, Aaron, Costas Panagopoulos, and Sander van der Linden. 2021. "Democratic Norms, Social Projection, and False Consensus in the 2020 U.S. Presidential Election." *Journal of Political Marketing* 20 (3-4): 255-268. DOI: [10.1080/15377857.2021.1939568](https://doi.org/10.1080/15377857.2021.1939568).
- Wuorela, Maarit, Sirkku Lavonius, Marika Salminen, Tero Vahlberg, Matti Viitanen, and Laura Viikari. 2020. "Self-rated health and objective health status as predictors of all-cause mortality among older people: a prospective study with a 5-10-and 27-year follow-up." *BMC Geriatrics* 20(120) DOI: [10.1186/s12877-020-01516-9](https://doi.org/10.1186/s12877-020-01516-9)
- Yan, Brandon, Renee Hsia, Victoria Yeung, and Frank Sloan. 2021. "Changes in Mental Health Following the 2016 Presidential Election." *Journal of General Internal Medicine* 36(1): 170-177.
- Mavaddat, Nahal, Ann Kinmonth, Simon Sanderson, Paul Surtees, Sheila Bingham, and Kay Tee Khaw. What determines Self-Rated Health (SRH)? A cross-sectional study of SF-36 health domains in the EPIC-Norfolk cohort. *Journal of Epidemiology and Community Health* 2011; 65(9): 800-806.
- Loiem, Geir, Sarah Cook, David Leon, Nina Emaus, and Henrik Schirmer. Self-reported health as a predictor of mortality: A cohort study of its relation to other health measurements and observation time. *Scientific Reports* 2020; 10(4886): 1-9.