

The Conditional Effects of Health on Voter Turnout

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Abstract

Context: Voting is the central instrument of democracy, yet there are a number of impediments that affect citizens' ability to turn out to vote. Health is one such impediment.

Methods: This study draws on 2012 and 2016 election data from the Cooperative Congressional Election Study and the American National Election Studies and uses objective validated measures of voter turnout as well as postelection data on respondents' reasons for nonvoting to examine the relationship between self-reported health and voter turnout.

Findings: The results indicate poor health depresses turnout among low-income voters but not high-income voters. A low-income citizen in poor health is 7 points less likely to turn out to vote than a low-income citizen in excellent health is. In contrast, a high-income citizen in poor health is just as likely to vote as a high-income citizen in excellent health is. Moreover, low-income citizens in poor health are 10 points more likely to cite sickness as an impediment to voting than are otherwise similar high-income citizens who are also in poor health.

Conclusions: The findings have implications for health policy and unequal electoral engagement and suggest that health may narrow the scope of US democracy as poor health pushes low-income citizens out of the electoral sphere while high-income citizens continue to turn out to vote regardless of their underlying health conditions.

Keywords health, voting, inequality

Casting a vote is central to democracy, yet there are often impediments to carrying out this duty. For one, the debilitating effects of poor health can, and have been shown to, dampen the likelihood of casting a vote. However, does poor health hinder all citizens equally?

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Research on the relationship between health and political participation has blossomed in recent years and the overarching finding is that poor health depresses political participation. However, some citizens may be able to overcome the costs of poor health more than other citizens. A poorer individual may abstain due to poor health while a richer individual may be able to compensate for poor health by, for example, paying for a ride to the polling station and back, or taking time away from work to vote—options that are likely to be unavailable to a poorer individual.

This study addresses the extent to which health affects electoral participation and whether it is conditional on one's underlying access to resources by examining data from the Cooperative Congressional Election Study (CCES) and the American National Election Studies (ANES) in the 2012 and 2016 US general elections. Using validated, rather than self-reported, measures of electoral participation, the findings indicate that health does indeed depress electoral participation. However, the findings here indicate that the effects of poor health are conditional on one's underlying resources. Poor health significantly and substantially reduces the likelihood that a low-income individual votes, but poor health has no discernible effect on high-income individuals. A rich individual in poor health is just as likely to vote as a rich individual in excellent health. On the other hand, a low-income individual with poor health is roughly 7 points less likely to vote than a low-income individual in excellent health. Moreover, drawing on data from the 2012 CCES on nonvoters' reasons for not voting, I show that low-income individuals in poor health are 10 points more likely to cite sickness as an impediment to voting than otherwise similar high-income individuals who are also in poor health.

The findings suggest that some citizens—high-income citizens—have the resources to overcome health-related costs that impede electoral participation while others—especially low-income citizens—are demobilized by poor health and alienated from the political system. The results have implications for our understanding of the relationship between health and electoral engagement and the ways in which health does—and does not—affect voter turnout.

Health and Political Participation

Voting is the central instrument of democracy. When voter turnout is more equal, policy outcomes more faithfully represent the preferences of all citizens (Avery and Peffley 2005; Hill and Leighley 1992). There are numerous explanations for why voter turnout is more or less equal, yet

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many point to resources. Individuals who have more resources have more time and skills and are therefore more likely to participate in politics, whether by voting or by other forms of participation (Verba, Schlozman, and Brady 1995).

In recent years, political scientists have expanded theories of political participation to include a central component of life: health. Better health enables one to more fully participate in the political sphere and it weighs heavily on whether one turns out to vote (Burden et al. 2017; Mattila et al. 2013; Pacheco and Fletcher 2015).

The positive effect of health on voter turnout has been shown at the cross-national level (Mattila et al. 2013) and in the US among young adults (Ojeda and Pacheco 2019) and older adults (Burden et al. 2017). While the advances in scholarship on health and political participation have been significant, research has been limited in two ways.

First, it is unclear whether poor health depresses electoral participation among all adults equally. Research focused on the 2008 US election found that individuals with chronic health conditions such as heart disease were 2.6 percentage points less likely to report turning out to vote (Gollust and Rahn 2015). However, the authors note that the effect of chronic health conditions on self-reported voter turnout differed by respondents' socioeconomic status as well as race (Gollust and Rahn 2015: 1139).

Voter turnout among individuals with disabilities has also been shown to vary by individuals' underlying circumstances (Powell and Johnson 2019). In an original survey, Schur and coauthors examined the 1998 elections and found that self-reported voter turnout was diminished among individuals with disabilities but the effects intersected with age such that the negative effects on participation were strongest among older individuals (Schur et al. 2002: 182).

Similarly, in an important study, Ojeda and Pacheco (2019) found that belonging to an educated family can offset the effects of early poor health. The authors emphasize that scholars should consider how resources such as health, income, and education may interact and condition one another as they call for "new theorizing on how sets of resources, rather than individual resources themselves, may motivate or depress participation" (Ojeda and Pacheco 2019: 1164). It is, therefore, important to examine whether poor health depresses voter turnout among all individuals equally or whether the effects depend on individuals' underlying circumstances.

Second, much research that has examined the relationship between health and electoral engagement has drawn on self-reported measures of voting rather than voter-file validated measures. To be sure, researchers are

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always at the mercy of the data available to them. However, self-reported measures of voting are often inflated and such overreporting has consequences as it can bias results by artificially enlarging the impact of independent variables that are associated with the tendency to overreport (Ansolabehere and Hersh 2012; Bernstein, Chadha, and Montjoy 2001).

For example, if people in good health are more likely to overreport voting, then the effects of health on self-reported measures of voting may be in question. To date, little research has examined the relationship between health and voting using validated voter turnout measures among a national sample. Among recent work, Burden et al. (2017) used validated vote as an outcome, but used a sample of older voters who were initially residents of a single state.

Health, Circumstances, and Turnout

It remains to be seen whether health affects electoral participation equally and whether validated voter turnout offers results consistent with past research. There is reason to suspect that health functions differently for different individuals. Stoker and Jennings (1995) argue that major life transitions—such as marriage, in their example—absorb time, energy, and resources that diminish individuals' political engagement while Verba, Schlozman, and Brady (1995) argue that resources provide the time and skills to people to engage in politics. I integrate these ideas but argue that low-income individuals not only lack resources but also, following Stoker and Jennings (1995), face an array of circumstances that exacerbate the effects of poor health and deplete individuals' time and energy in ways that high-income individuals are largely spared.

Richer individuals have greater capacity to overcome the debilitating effects of poor health that may otherwise keep them from the voting booth. However, low-income individuals face considerable challenges that may prevent them from voting—such as access to transportation, childcare, erratic income, or taking time away from work—that may be compounded by poor health and absorb their time and energy.

Rising income inequality has enabled high-income individuals to more easily “outsource” domestic labor by purchasing the time and labor of others thereby freeing up time to conserve their own energy to engage in politics (Schneider and Hastings 2017).

Additionally, economic instability may further depress turnout among low-income individuals in poor health more so than high-income individuals who tend to have stable finances. Economic research has shown

that those in the lowest-income quartile experience distinct, and growing, economic insecurity and earnings instability relative to those with higher incomes (Gottschalk and Moffitt 2009).

Aside from material instability, low-income individuals are significantly more likely to work in industries such as retail and food services where work schedules are highly erratic and scheduling instability is pervasive. Recent research has documented that exposure to high levels of schedule instability has significant consequences for workers' health including elevated levels of psychological stress, sleep deprivation, and depression (Schneider and Harknett 2019). Relatedly, low-income individuals are least likely to have access to paid sick leave to take time off from their job to recover from an illness (Thelen 2019).

I argue the combination of these circumstances that affect low-income individuals, but from which high-income individuals are largely shielded, should yield differences in the way that health is related to voter turnout. Two individuals—one with a low income and one with a high income—who are both in poor health face a different set of circumstances when election day approaches.

While a low-income individual confronts an array of additional impediments that should exacerbate poor health and depress turnout, a high-income individual who is in poor health is more likely to be able to take time off from work or other obligations to recover from an illness, purchase the labor of others to attend to personal responsibilities in the home or elsewhere to conserve the energy needed to cast their vote, unilaterally adjust their work schedule to align with the hours polls are open, or arrange for someone to bring them to and from the polls if they are not able to do so of their own volition. In this sense, health should weigh heavily on the likelihood that low-income individuals turn out to vote, yet health should play no meaningful role in the likelihood that high-income individuals cast a vote.

In addition, this study employs objective validated voter turnout measures. Given the inflation that plagues surveys with self-reported measures of voting, examining the relationship between health, resources, and voter turnout with validated voter turnout measures is important to clarify the extent to which results from self-reported measures of voter turnout are accurately measuring the association between health and voter turnout given that overreporting turnout is common and correlated with particular characteristics (Ansolabehere and Hersh 2012; Bernstein, Chadha, and Montjoy 2001).

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Hypotheses

Given the above discussion, *better health should be associated with a greater likelihood of validated voting*. However, *health status should be moderated by income such that the effects of health on validated voter turnout are strongest at low ends of income and dissipate as income increases*.

Data

To examine the relationship between health and (validated) voting, this study uses the Cooperative Congressional Election Study (CCES) 2012 wave and the American National Election Studies (ANES) 2012 and 2016 waves. The CCES is a large national survey administered by YouGov before and after elections. The 2012 CCES is the only general election wave that included a measure of self-reported health. It also contains data for 54,535 respondents and therefore allows for reliable estimates from fine-grained subgroup analyses of health and voter turnout. Importantly, the survey offers validated voter turnout measures that are verified using election voter files. In this way, the data offer an empirical validation of voting behavior that minimizes the error associated with overreporting in self-reported voting behavior (Ansolabehere and Hersh 2012).

The CCES is also appropriate as it contains a wide range of other measures that affect voter turnout such as residential mobility and permanency, family status, and affiliation with organizations that increase turnout, such as labor unions. Moreover, the predictor of interest—health—was asked of respondents *prior* to the election and the outcome of interest, voter turnout.

Importantly, the CCES also allows for analysis of the actual operative mechanism between health and voter turnout, as it contains an item in which nonvoting respondents were asked to offer reasons for why they did not vote. While this item is a self-reported question and asked in the postelection survey only of those who stated that they did not vote, the data nonetheless allow for important empirical insight into the presumed mechanism that health impedes voter turnout. These results are presented in the additional analysis below.

In addition to CCES, I also draw on data from the 2012 and 2016 American National Election Studies (ANES) as robustness checks. Although they contain significantly smaller samples, the 2012 and 2016 ANES waves include measures of self-reported health status and also contain

validated voter turnout measures. In this way, the additional analyses using the ANES data provide a robustness check to test whether the results hold using different surveys and in different election years.

Method

Dependent Variable

The dependent variable is voter turnout. The CCES used Catalist to match respondents to the state voter files and thereby objectively validate the respondents' voting behavior and turnout.

Validated measures of voter turnout, which match respondents using state voter files, are important to avoid the biases associated with self-reported voter turnout and the tendency for respondents to lie about participating in an election to avoid being seen as abrogating a socially desirable civic duty. Validated voter turnout, therefore, allows us to examine the relationship between health and objectively valid participation in elections.

To construct the dependent variable—voting in the 2012 (CCES, ANES) and 2016 (ANES) elections—I have drawn on this validated measure resulting in a binary variable with 1 indicating that the respondent voted and 0 otherwise. Using this measure from the CCES data, 62% of respondents voted in the general election, in line with estimates of actual voter turnout in the 2012 general election.

In addition to voter turnout, this study draws on data from the 2012 CCES to analyze the reasons respondents offer for not voting. This provides an additional test of the presumed mechanism in the voter turnout models and the extent to which low- and high-income individuals cite health as an impediment to participating in elections at the same rate.

The turnout models contain binary outcomes and are estimated with logistic regression models. In the additional analyses—in which the models predict respondents' reasons for not voting—the outcome (reasons for not voting) consists of nominal unordered categories. These analyses are conducted using multinomial logistic regression models. All analyses are conducted with survey weights.

Independent Variables

The two main independent variables are health status and income. First, health status is measured by a question that gauges individuals' self-reported health on a five-point reverse-coded scale from poor (1) to

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excellent (5). It should be noted that self-reported health status is not without error as an indicator of health. Recent research has found that self-reported health status not only measures actual health but also appears to gauge health “optimism,” which is correlated with political participation (Pacheco 2019). Therefore, it is difficult to completely disentangle the extent to which self-reported health status measures the effect of health as opposed to that of health optimism.

However, although not an objective measure of health, self-reported health status is widely used and is a largely accepted measure of individuals’ health that correlates with actual health status and is commonly used in public health research (Boardman 2006) as well as political science and policy research (Burden et al. 2017; Ojeda and Pacheco 2019; Pacheco and Fletcher 2015). Moreover, while health optimism may cause bias in the estimated main effects, to the extent that optimism operates similarly among high- and low-income individuals, the conditional relationship examined here should be less prone to bias.

Additionally, research linking self-reported health status to mortality has shown that self-reported health status is a valid and reliable proxy for objective health as the authors of a recent study conclude: “Self-rated health is a strong predictor of mortality and, therefore, a valid indicator of overall health” (Schnittker and Bacak 2014).

The second independent variable of interest—respondents’ access to resources—is expected to condition the effect of health. This is measured using respondents’ reported household income. The original multipoint item is collapsed to create a three-point household income measure: –1 (low income, less than \$40,000), 0 (middle income, between \$40,000 and \$99,999), 1 (high income, \$100,000 and above).¹

Health is expected to affect low-income individuals’ likelihood of voting but diminish as income increases and become negligible for high-income individuals who can compensate for poor health by drawing on excess resources.² Therefore, the models presented include both a logistic regression model with no interaction terms as well as a model with an interaction term between health and income. The expectation is that both health and income will be positive while the interaction term should be negative such that the positive effects of health are most significant at low

1. Additional analyses that use a more granular 16-point income measure yield substantively similar results and can be found in the SI. Given the consistency across models, the 3-point measure is used here to facilitate presentation and interpretation.

2. Education may also moderate the relationship between health and voting. Additional analyses, found in the SI, examine this relationship, and the results are substantively similar to the results with income.

values (for low-income individuals) of the income variable. The models are estimated with weighted logistic regression models.

In addition to the models with and without interaction terms using the full sample, three separate models are estimated on subsets of the sample: low-income, middle-income, and high-income respondents. This is another test of the conditional relationship that also tests whether the interaction is nonlinear. The models with the CCES and the ANES data contain the same measures.

Controls

There are other factors that may affect whether or not individuals vote that have been shown to affect political participation and are included as controls in the models (Rosenstone and Hansen 1993; Wolfinger and Rosenstone 1980). These include education (have a college degree or not), gender, race, marital status, age, and ethnicity. Given the curvilinear relationship between age and turnout (Plutzer 2002), the model also includes a control for age squared. Additionally, a binary variable is included if the respondent is a union member, as union members are more likely to vote than nonunion members (Kerissey and Schofer 2013). A binary control is also included to account for religious attendance (1 = attend once a week or more, 0 = otherwise). Personal responsibilities, employment, and mobility can affect whether one votes. Therefore, controls are included for whether the respondent is a homeowner, the length of time they have lived at their current residence, employment status, and whether or not they have a child younger than the age of 18.

Lastly, individuals who identify as “strong” partisans and those at the poles of the ideological scales may be more engaged than others. To account for this, dummy variables are included in the model to account for those who identify as strong partisans and those who identify as very liberal or very conservative.³

Results

The results are reported in table 1. The first two columns contain the models using the full CCES sample. Model 1, the first column, does not

3. Variable details, descriptions, coding schemes, and ranges can be found in the online appendix. Additional models in the SI estimate the turnout model with only the two main predictors—health and income—and their interaction to examine the results without the array of controls (Achen 2005). The models in the SI then add sets of controls sequentially as well as a model with state fixed effects. The results are consistent across the range of specifications.

Table 1 Health and Voter Turnout, 2012 CCES

	(1) Full	(2) Full with interaction	(3) Low income	(4) Middle income	(5) High income
Income	0.19*** (0.02)	0.35*** (0.05)			
Health status	0.05*** (0.01)	0.04** (0.01)	0.06*** (0.02)	0.06*** (0.02)	-0.03 (0.03)
Health status × income		-0.05** (0.01)			
College degree	0.43*** (0.02)	0.43*** (0.02)	0.77*** (0.05)	0.32*** (0.03)	0.30*** (0.06)
Age	0.01*** (0.00)	0.02*** (0.00)	0.01 (0.01)	0.02*** (0.01)	0.00 (0.01)
Age squared	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)
Union member	0.10* (0.04)	0.10* (0.04)	0.31*** (0.08)	0.02 (0.05)	0.02 (0.10)
Female	0.09*** (0.02)	0.10*** (0.02)	0.17*** (0.03)	0.06* (0.03)	0.03 (0.06)
Black	-0.14*** (0.03)	-0.14*** (0.03)	0.12** (0.04)	-0.37*** (0.05)	-0.39*** (0.11)
Hispanic	-0.55*** (0.04)	-0.55*** (0.04)	-0.45*** (0.06)	-0.67*** (0.05)	-0.26* (0.13)
Asian	-0.71*** (0.07)	-0.71*** (0.07)	-0.49*** (0.14)	-0.79*** (0.09)	-0.86*** (0.15)
Strong ideology	0.07* (0.03)	0.07* (0.03)	0.09† (0.05)	0.06 (0.05)	0.08 (0.09)
Strong partisan	0.56*** (0.02)	0.56*** (0.02)	0.63*** (0.03)	0.53*** (0.03)	0.44*** (0.06)
Married	0.09*** (0.02)	0.09*** (0.02)	0.05 (0.04)	0.07* (0.03)	0.37*** (0.07)
Homeowner	0.13*** (0.02)	0.13*** (0.02)	0.20*** (0.04)	0.07* (0.03)	0.09 (0.08)
Length at current residence	0.24*** (0.01)	0.23*** (0.01)	0.19*** (0.02)	0.26*** (0.02)	0.32*** (0.05)
Have child <18 years	-0.19*** (0.02)	-0.19*** (0.02)	-0.37*** (0.04)	-0.07* (0.04)	-0.13 (0.07)
Religious attendance	0.19*** (0.02)	0.19*** (0.02)	0.16*** (0.04)	0.20*** (0.03)	0.21** (0.07)
Unemployed	-0.11*** (0.03)	-0.11*** (0.03)	-0.12** (0.04)	-0.11* (0.05)	-0.06 (0.16)
Intercept	-1.12*** (0.09)	-1.07*** (0.09)	-1.28*** (0.14)	-1.30*** (0.14)	-0.31 (0.29)

(continued)

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Table 1 Health and Voter Turnout, 2012 CCEs (*continued*)

	(1)	(2)	(3)	(4)	(5)
	Full	Full with interaction	Low income	Middle income	High income
AIC	60328.87	60321.71	23535.25	29320.02	7264.36
BIC	60496.97	60498.66	23674.39	29467.39	7390.18
Log likelihood	-30145.43	-30140.85	-11749.63	-14642.01	-3614.18
Deviance	62535.64	62525.18	24218.39	30446.29	7599.42
Number of observations	51400	51400	16817	26561	8022

***p < 0.001, **p < 0.01, *p < 0.05, †p < 0.1

include the interaction between health and income while model 2, the second column, includes the interaction term. The results from model 1 are in line with past research: those individuals in better health are significantly more likely to turn out to vote.

Model 2 indicates that the positive effect of health is conditional on one's underlying access to resources, in line with expectations. The interaction term is significant ($p < .01$) and negative, indicating that the positive effects of health on voting are most pronounced for low-income individuals. Models 3, 4, and 5 predict validated voter turnout among low-, middle-, and high-income respondents. The results further support the expectation of conditional effects of health on voter turnout. Health is significant and positive ($p < .001$) in the models with low- (model 3) and middle-income (model 4) respondents, but has no effect on the likelihood that high-income respondents turn out to vote.

To facilitate interpretation of the interaction term in model 2 and gauge the magnitude of the effects of health, model 2 in table 1 is used to estimate the predicted probability that a low- and high-income individual votes based on his or her underlying health status. All other variables in the model are held constant at their median values to isolate how health differentially affects low- and high-income individuals' likelihood of turning out to vote.

Figure 1 reports the results with health status along the horizontal axis. The lines indicate the predicted probability of voting with the shading representing 95% confidence intervals. High-income estimates are represented by a solid line while low-income estimates are represented by a dotted line.

The results demonstrate the conditional effect of health for low- and high-income individuals. A high-income individual in poor health is no

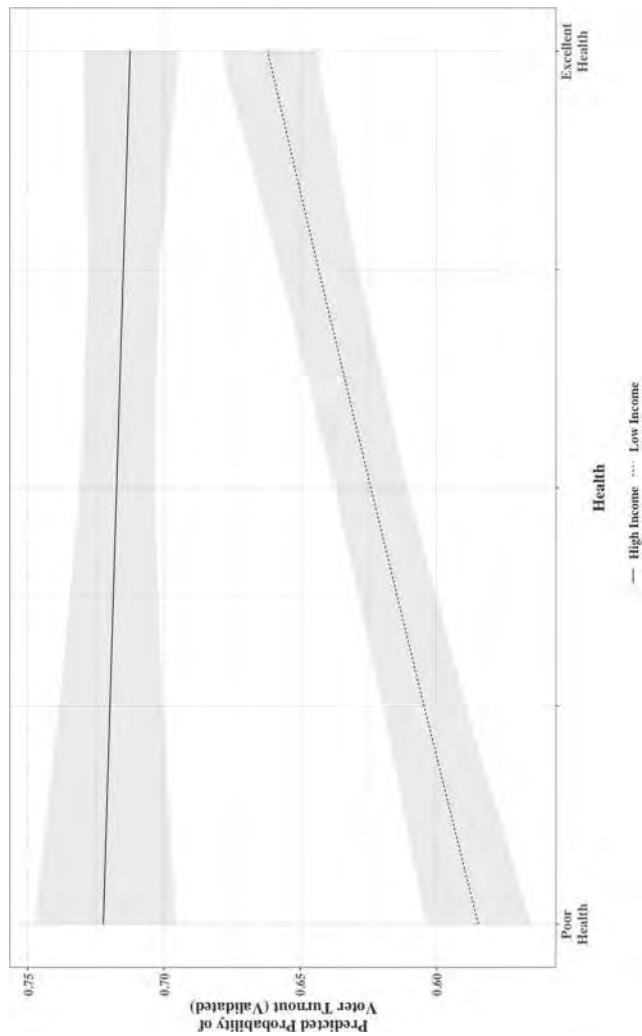


Figure 1 Voter turnout by income and health.

Source: Table 1, model 2. Predicted probability of validated voting by income and health. All other variables fixed at median values.

more or less likely to vote than a high-income individual in good or even excellent health, as seen by the flat line estimate across the range of health. On the other hand, health is an important determinant of whether or not a low income individual votes. The predicted probability that an otherwise median low-income individual in poor health votes is 0.57 (95% CI 0.56, 0.58), whereas the estimate for a low-income individual in excellent health increases significantly to 0.64 (0.62, 0.66)—a difference of seven points.⁴

Table 2 presents the results from the 2012 ANES data in the same format as table 1 with the CCES data. The results in table 2 are consistent with the results in table 1. Health status is significant and positive in model 1—the full sample model without the interaction between health and income.

However, the interaction term included in model 2 is again negative and significant ($p < .05$) which, like the results from table 1 with the CCES data, indicate that the positive effects are felt at the lower end of the income scale. Models 3, 4, and 5 subset the data by respondents' income and estimate the model for low-, middle-, and high-income respondents. Again, despite a much smaller sample size, among low-income respondents (model 3), health is significant ($p < .001$) and positive while the effect of health dissipates as income increases and is indistinguishable from zero for middle- or high-income respondents.

The results are consistent across two different surveys, but so far only examine a single election. Table 3 reports the results in the same format using the 2016 ANES data. The results in table 3 are similar to those from tables 1 and 2. The main effect in model 1 indicates health is again significant and positively related to voter turnout. However, the results differ in that the interaction between health and income in model 2 is not significant. Models 3 through 5 test for nonlinearity, and, as in the results above, among low-income respondents health is positive and significant (although slightly above conventional levels, $p = .06$) and indistinguishable from zero for middle- and high-income respondents.

Taken together, the results offer consistent support across different surveys and different election years that the effects of health are conditional on one's underlying resources: health weighs heavily on the likelihood that

4. It is important to note that income may be counted differently by different individuals (e.g., older individuals, whose health is often worse than average, may or may not count pensions or retirement as income). Other variables in the model that tap wealth—such as homeownership and education—appear to have the largest effect among low-income individuals, which suggests a different set of resources may help offset turnout among those with low incomes. This appears to be fertile ground for future research. However, as robustness checks, additional models found in the SI exclude the youngest and oldest respondents (those younger than 23 years or older than 65 years). The results are substantively unchanged from those reported here.

Table 2 Health and Voter Turnout, 2012 ANES

	(1) Full	(2) Full with interaction	(3) Low Income	(4) Middle Income	(5) High Income
Income	0.38*** (0.09)	1.03*** (0.30)			
Health status	0.18** (0.06)	0.12 [†] (0.06)	0.32*** (0.09)	0.09 (0.10)	0.11 (0.11)
Health status × income		−0.19* (0.08)			
College degree	0.39** (0.14)	0.38** (0.14)	0.49 [†] (0.26)	0.60** (0.22)	0.64** (0.21)
Age	0.04* (0.02)	0.04* (0.02)	0.02 (0.03)	0.04 (0.03)	0.09* (0.03)
Age squared	−0.00 (0.00)	−0.00 (0.00)	−0.00 (0.00)	−0.00 (0.00)	−0.00* (0.00)
Union member	−0.23 (0.19)	−0.25 (0.19)	0.15 (0.39)	−0.46 [†] (0.27)	1.13* (0.47)
Female	−0.01 (0.12)	−0.02 (0.12)	−0.07 (0.18)	−0.20 (0.20)	0.65** (0.20)
Black	0.31 (0.20)	0.31 (0.20)	0.10 (0.25)	0.81* (0.34)	1.40 (0.87)
Hispanic	−0.31 [†] (0.19)	−0.29 (0.19)	−0.34 (0.27)	−0.27 (0.30)	−0.38 (0.30)
Asian	−0.28 (0.81)	−0.33 (0.81)	−0.35 (0.96)	0.26 (1.74)	−0.70 (0.44)
Strong ideology	0.25 (0.28)	0.27 (0.28)	0.40 (0.37)	−0.14 (0.52)	−0.32 (0.34)
Strong partisan	0.88*** (0.14)	0.88*** (0.14)	0.73*** (0.20)	1.13*** (0.24)	0.44* (0.21)
Married	0.12 (0.13)	0.11 (0.13)	−0.28 (0.21)	0.53** (0.20)	−0.08 (0.21)
Homeowner	0.58*** (0.15)	0.59*** (0.15)	0.68*** (0.20)	0.43 [†] (0.24)	0.38 (0.24)
Length at current residence	0.31*** (0.09)	0.31*** (0.09)	0.05 (0.14)	0.51*** (0.15)	0.76*** (0.21)
Have child <18 years	−0.14 (0.13)	−0.14 (0.13)	−0.18 (0.22)	0.03 (0.21)	−0.31 (0.21)
Religious attendance	0.10 (0.15)	0.09 (0.15)	0.26 (0.23)	−0.15 (0.23)	0.40 (0.29)
Unemployed	−0.25 (0.30)	−0.25 (0.30)	−0.48 (0.41)	−0.33 (0.48)	1.87* (0.79)
Intercept	−2.03*** (0.52)	−1.88*** (0.53)	−2.00** (0.75)	−2.39** (0.83)	−3.11*** (0.89)

(continued)

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Table 2 Health and Voter Turnout, 2012 ANES (*continued*)

	(1) Full	(2) Full with interaction	(3) Low Income	(4) Middle Income	(5) High Income
AIC	1730.70	1726.09	706.13	716.77	779.62
BIC	1833.52	1834.32	790.74	797.18	867.65
Log likelihood	-846.35	-843.05	-335.07	-340.38	-371.81
Deviance	1812.86	1807.54	755.09	720.04	701.17
Number of observations	1655	1655	813	644	841

***p < 0.001, **p < 0.01, *p < 0.05, †p < 0.1

low-income individuals turn out to vote while high-income respondents will make it to the ballot boxes regardless of their health.

Health and Reasons for Not Voting

The analyses above suggest there is a relationship between health and voting. To establish the validity of the mechanism as well as expand on the empirical support for the theory that health is a more valuable electoral resource for lower-income individuals than higher-income individuals, this section presents additional analyses using the 2012 CCES data. Specifically, this section adds two additional tests of the above theory: (1) I examine whether those whose health was poor were more likely to indicate their reason for not voting was, in fact, due to their health; (2) whether low-income individuals were more likely to cite health as an impediment to voting than high-income individuals with the same level of health.

This analysis draws on a question in the 2012 CCES that asked respondents, What was the main reason you did not vote? It is important to note that this question was asked in the postelection survey. Of the CCES respondents who took part in the preelection study, 83% completed the postelection questions as well. Attrition and nonvoting may well be related and the results of the analysis below should be interpreted with this in mind. In addition, the question was only asked of respondents who indicated that they did not vote.

With these caveats in mind, the data on reasons for nonvoting are unique and nonetheless offer an important opportunity to examine the mechanisms and assumptions embedded in the theory and results above. Many individuals do not vote, but this item allows us to examine *why* they did not vote and whether nonvoting individuals actually cite health as an impediment.

Table 3 Health and Voter Turnout, 2016 ANES

	(1) Full	(2) Full with interaction	(3) Low Income	(4) Middle Income	(5) High Income
Income	0.03** (0.01)	0.07† (0.04)			
Health status	0.12** (0.04)	0.12** (0.04)	0.11† (0.06)	0.04 (0.08)	0.11 (0.11)
Health status × income		−0.01 (0.01)			
College degree	0.84*** (0.10)	0.84*** (0.10)	0.62** (0.20)	0.78*** (0.17)	0.64** (0.21)
Age	0.03* (0.01)	0.03* (0.01)	0.01 (0.02)	0.01 (0.02)	0.09* (0.03)
Age squared	−0.00 (0.00)	−0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	−0.00* (0.00)
Union member	0.31† (0.17)	0.31† (0.17)	−0.31 (0.30)	0.29 (0.27)	1.13* (0.47)
Female	0.29*** (0.08)	0.29*** (0.08)	0.18 (0.13)	0.29* (0.14)	0.65** (0.20)
Black	−0.24† (0.13)	−0.24† (0.13)	0.11 (0.17)	−0.71** (0.24)	1.40 (0.87)
Hispanic	−0.12 (0.12)	−0.11 (0.12)	0.13 (0.19)	−0.27 (0.20)	−0.38 (0.30)
Asian	−0.13 (0.25)	−0.13 (0.25)	0.54 (0.45)	−0.46 (0.43)	−0.70 (0.44)
Strong ideology	0.30† (0.18)	0.30† (0.18)	0.28 (0.28)	0.72* (0.35)	−0.32 (0.34)
Strong partisan	0.45*** (0.09)	0.45*** (0.09)	0.39** (0.14)	0.62*** (0.16)	0.44* (0.21)
Married	0.03 (0.10)	0.03 (0.10)	0.04 (0.18)	0.06 (0.18)	−0.08 (0.21)
Homeowner	0.47*** (0.10)	0.47*** (0.10)	0.49** (0.16)	0.12 (0.17)	0.38 (0.24)
Length at current residence	0.68*** (0.09)	0.68*** (0.09)	0.66*** (0.15)	0.55*** (0.16)	0.76*** (0.21)
Have child <18 years	−0.18* (0.09)	−0.18* (0.09)	−0.25† (0.14)	−0.17 (0.16)	−0.31 (0.21)
Religious attendance	0.24* (0.11)	0.23* (0.11)	−0.05 (0.17)	0.68** (0.21)	0.40 (0.29)
Unemployed	−0.00 (0.16)	0.00 (0.16)	−0.03 (0.20)	−0.20 (0.35)	1.87* (0.79)
Intercept	−2.24*** (0.36)	−2.26*** (0.36)	−1.84*** (0.53)	−1.09 (0.69)	−3.11*** (0.89)

(continued)

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Table 3 Health and Voter Turnout, 2016 ANES (*continued*)

	(1) Full	(2) Full with interaction	(3) Low Income	(4) Middle Income	(5) High Income
AIC	3729.50	3730.01	1520.75	1262.70	779.62
BIC	3849.31	3856.12	1615.99	1357.35	867.65
Log likelihood	-1845.75	-1845.01	-742.38	-613.35	-371.81
Deviance	3676.20	3674.86	1517.19	1224.89	701.17
Number of observations	3477	3477	1255	1225	841

***p < 0.001, **p < 0.01, *p < 0.05, †p < 0.1

In the analysis below, the outcome is the respondents' self-identified reason for not voting. The respondents were offered 16 reasons. However, to construct the dependent variable, I have collapsed the response options to eight categories by combining options chosen by fewer than 200 respondents and creating a category called "Other or DK." In addition to this category, the other seven categories are disliked candidates; lacked information on choices; not interested; not registered; out of town; sick or disabled; or too busy. I have shortened the names of the categories to facilitate presentation. The data are weighted and modeled with the same set of controls as the analyses above and conducted with a multinomial logit model.

In the interest of space, the full table of results can be found in the online appendix. To ease interpretation of the results, the model results are used to estimate the predicted probability that an otherwise median respondent offers each reason conditional on health status and income level. These results can be seen in figure 2. Each panel represents one of the response options. The horizontal axis of each panel ranges from poor health on the left to excellent health on the right. The solid lines represent the estimates for high-income respondents and the dotted lines represent the estimates for low-income respondents. All other variables are held constant at their median values.

Of the eight reasons for not voting, the only one with a clear and strong relationship to self-reported health is sickness. In fact, among respondents in poor health, sick or disabled was the most likely answer respondents offered for not voting. Overall, some of the most common reasons were disliking the candidates, not being registered, or other/don't know. The steady downward slope in the probability of stating sickness or disability was the reason for not voting from poor to excellent health provides support for the mechanism suggested: health does, in fact, depress electoral

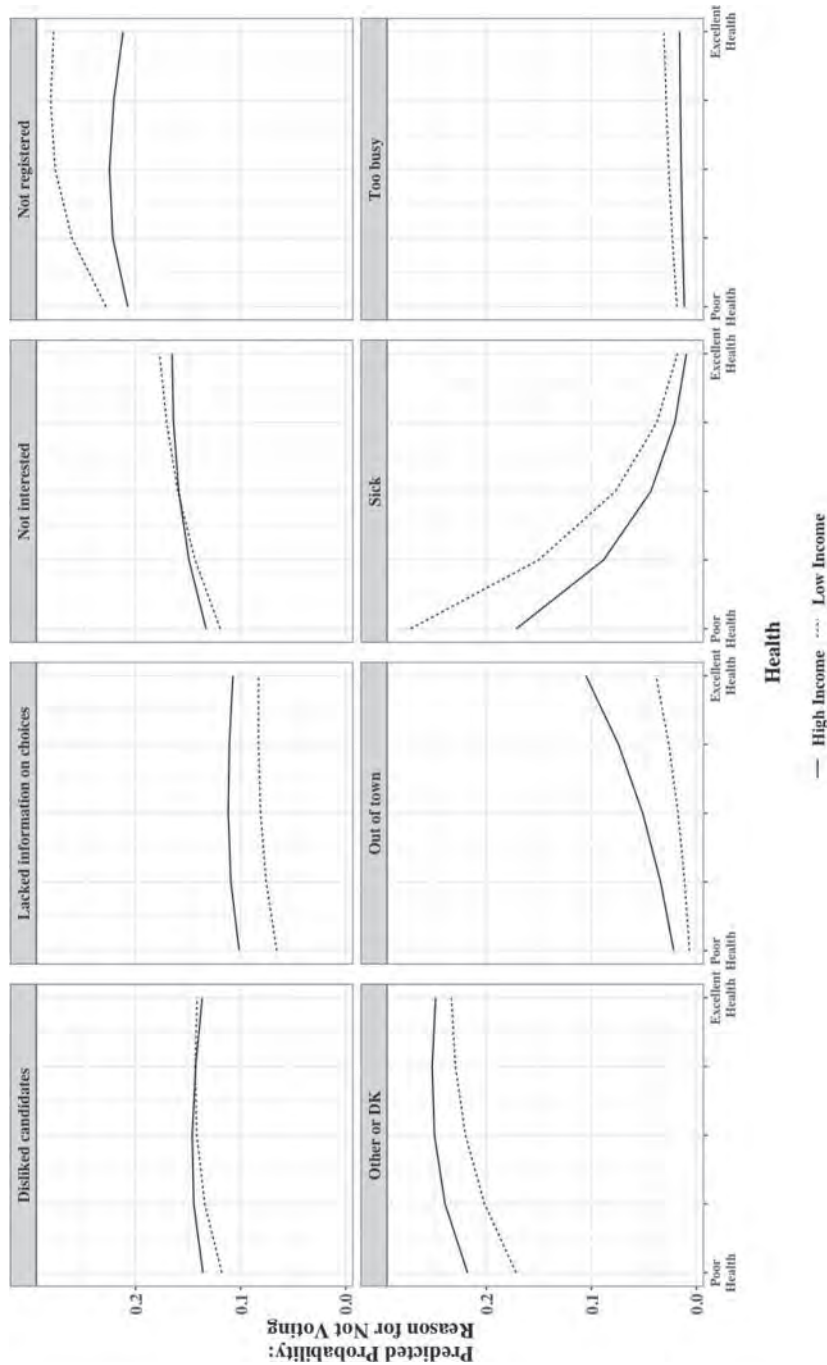


Figure 2 Reasons for not voting (by health and income).

Source: Multinomial logit model in SI. Predicted probability of reasons for not voting by income and health. All other variables fixed at median values.

participation and respondents' readily acknowledge that their health is an impediment to going to the polls and voting.

However, the impact of poor health weighs much more heavily on low-income individuals than on high-income individuals. In figure 2, in the panel titled "Sick," the predicted probability that a low-income individual in poor health claims sickness or disability as the reason he or she did not vote is 0.27 while for a high-income individual in poor health, that estimate is 0.17. That is, a low-income individual in poor health is 10 points more likely to cite sickness as the main reason they did not vote than a high-income individual who is similarly in poor health. This is consistent with the results above: low-income individuals are more likely to be knocked out of the electoral arena by poor health than high-income individuals who can compensate for poor health by drawing on their resources. The other response with a slight relationship to health is being out of town. High-income individuals in excellent health are likely to state that they did not vote because they were out of town while low income individuals, who may be less likely to afford travel, are less than half as likely to cite travel as a reason for not voting.

It should be noted that the analysis of reasons for nonvoting is an item that is asked after respondents admit that they did not vote. The results therefore should be considered accordingly as those who admit to not voting and then answer the question about why they did not vote may differ from others who do not readily admit not voting or choose not to offer a reason for their abstention. Nonetheless, the analyses here lend additional support to the results above.

Discussion

Poor health can diminish individuals' livelihood and well-being in numerous ways, causing pain and suffering from a range of ailments. Recent research has also underscored the ways in which poor health can depress electoral participation.

The results of this study—which used validated voter turnout from two different surveys and two different election years—indicate that poor health is associated with a lower likelihood of voting and therefore undermines the central principles of democracy. Yet the effects are conditional on individuals' access to resources. Richer individuals in poor health are no less likely to turn out and cast their vote than richer individuals in excellent health. Health plays no role in the likelihood that high-income individuals vote and therefore poor health is not an impediment that affects their electoral participation.

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In contrast, low-income individuals cannot compensate for the debilitating effects of health as easily. A low-income individual in poor health is seven points less likely to vote than an otherwise similar low-income individual in excellent health. A low-income individual in poor health is 10 points more likely to cite sickness as an electoral impediment than an otherwise similar high-income individual who is also in poor health. This suggests that health is important primarily for low-income individuals who may be less likely to vote when they are in poor health than for high-income individuals who will show up at the ballot box regardless of their health status.

The results in this study speak to three streams of research. First, research on health and political behavior has shown that poor health can diminish electoral engagement (Mattila et al. 2013; Pacheco and Fletcher 2015). However, most research has drawn on self-reported measures of voter turnout. This study employs objective validated measures of voter turnout from two different surveys and two different election years and finds consistent results: poor health depresses voter turnout among low-income individuals while health has no effect on the likelihood that high-income individuals turn out to vote.

Relatedly, recent work has also begun to examine the ways in which the impact of health may be conditional on other underlying characteristics such as race, gender, and socioeconomic status (Gollust and Rahn 2015; Ojeda and Slaughter 2019). The results here build on past work by drawing on validated measures of voter turnout and extend our understanding of how health drives political inequality in the electoral sphere by examining the conditional impact of income and self-reported health status on one's likelihood of voting.

Second, the US is noteworthy for the extraordinarily large proportion of individuals who lack health insurance. For instance, in the 2012 CCES, 29% of low-income respondents stated they had no health insurance while only 4% of high-income respondents said they were uninsured. Recent research has shown that healthier individuals are better represented (Pacheco and Ojeda 2019) while other work has found that, at the aggregate level, the contraction of Medicaid depresses political participation (Haselswerdt and Michener 2019). The results here point to a pernicious cyclical process in which low-income individuals in poor health are least likely to turn out to vote, least likely to receive political representation, and therefore least able to counter retrenchment efforts that further compound health-related problems.

Third, given the significant differences in turnout between low-income individuals in poor health and low-income individuals in excellent health, this study raises questions about the determinants of health among low-income individuals. An emergent area of research along these lines suggests that while education and health policy both play a role, the workplace generally, and labor policy in particular, is an important and often overlooked piece of the puzzle. For instance, public health research has shown that workers with paid sick leave are 28% less likely to experience a workplace injury than workers without paid sick leave (Asfaw, Pana-Cryan, and Rosa 2012). Yet in the US, low-income workers are least likely of all income groups to have access paid sick leave (Thelen 2019). Low-income workers are least likely to have access to remote work, retirement savings, and health insurance, and are most likely to face considerable workplace inequality and poor working conditions (Gautié and Schmitt 2010).

Other research on low-wage workers has found that erratic scheduling practices, which are common in the retail and fast-food industries, have significant negative consequences for low-income workers' health, leading to significantly higher levels of psychological stress, sleep deprivation, and depression (Schneider and Harknett 2019). These findings are part of a broader trend that has focused on how the growth of insecure work, decentralized employment relations, and diminished working conditions has coincided with, and has been partially caused by, declining unionization (Case and Deaton 2020; Doussard 2013; Thelen 2019; Weil 2014).

Moreover, in the analysis with the CCES data above, union membership was associated with significantly higher voter turnout among low-income individuals who were union members (see table 1), but had no measurable effect on middle- and high-income individuals. Labor policy—and labor law reform in particular—may be an important policy domain for those interested in mitigating political inequality and boosting turnout among low-income individuals.

Relatedly, if labor unions—institutions that not only increase political participation (Kerrissey and Schofer 2013; Leighley and Nagler 2007; Lyon and Schaffner 2020) but also improve working conditions (Hagedorn et al. 2016; LaBriola and Schneider 2019)—continue to decline, the US is likely to face not only steadily rising economic and political inequality (Bucci 2018; Flavin 2018; Western and Rosenfeld 2011) but also the persistent erosion of working conditions with significant health consequences for low-income workers.

The current study is not without limitations. The analyses drew on self-reported health status as an indicator of health. Although research has

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shown self-reported health status is a strong predictor of objective health indicators, such as mortality rates (Schnittker and Bacak 2014), it nonetheless remains a challenge to distinguish the impact of actual health from health “optimism” on electoral participation (Pacheco 2019). Moreover, although the voter turnout data in this study used validated vote measures, the results for why individuals did not vote used self-reported reasons.

Additionally, how health affects middle-income citizens’ electoral engagement deserves greater attention in future work. In this study, the larger model using the CCES data showed that poor health depressed turnout among both low- and middle-income citizens whereas the same analysis using the ANES data indicated it is only low-income citizens who are demobilized by poor health. This may be partly due to the CCES’s much larger sample size. However, future research should explore this in greater detail and examine whether poor health is also a threat to middle-income voters.

This study also can only speculate as to why, exactly, high-income individuals are able to overcome the costs of poor health and turn out to vote in any condition while low-income individuals are sidelined. It is likely a combination of a number of factors such as flexible work, availability of paid time off, and the capacity to free up personal time by more easily purchasing the labor of others to provide services such as child care or transportation. However, given that education has similar moderating effects as income—high-education voters turnout regardless of their health while those with less formal education are less likely to turnout if they are in poor health—the range of mechanisms may be broader and more encompassing than those identified here. Future research may build on this work and draw on multimethod approaches to further refine how and why high-income and high-education individuals are able to overcome poor health and clarify the mechanisms underlying the findings in this study.

The findings here suggest the health of democracy may be more deeply intertwined with health policy and the health of its low- and middle-income citizens rather than that of the citizenry as a whole.

The deteriorating health status of low- and middle-income individuals may be leaving US democracy and its policy makers increasingly at the behest of richer individuals—voters who may have little interest passing policies that are capable of improving the health of all citizens and reversing an array of democratically troubling trends the country faces.

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