THE GERONTOLOGICAL SOCIETY OF AMERICA®

Journals of Gerontology: Social Sciences
cite as: *J Gerontol B Psychol Sci Soc Sci*, 2022, Vol. 77, No. 4, 827–837
https://doi.org/10.1093/geronb/gbab191
Advance Access publication October 15, 2021

OXFORD

Research Article

Health, Wealth, and Voting Trajectories in Later Life

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Received: February 17, 2021; Editorial Decision Date: October 8, 2021

Decision Editor: Jessica Kelley, PhD, FGSA

Abstract

Objectives: Much of what we know about voting behaviors is based on cross-sectional comparisons of voters at different ages. This study draws on a unique linkage between the Wisconsin Longitudinal Study and state voter files to characterize voting trajectories in later life and explore their determinants.

Methods: Using sequence analysis, we identify 5 voting typologies based on turnout and voting methods over 8 biennial elections. Using multinomial logistic and Poisson regressions, we examine the role of physical, cognitive, and mental health and wealth in shaping enfranchisement and civic participation at older ages.

Results: Health and wealth are both positively associated with voter turnout, but the negative impact of poor health on voting declines with increasing wealth. Voting at the polls and early voting are more common among healthier older adults, whereas absentee voting is more common among older voters who are more affluent, less healthy, or both. Among those less wealthy, absentee methods mitigate the impact of poor health for previously active voters, but do not compensate for a lower turnout rate. In addition to physical and cognitive limitations, emotional difficulties and depression reduce turnout, particularly among the least wealthy.

Discussion: In this sample of older, largely White, primarily Midwestern committed voters, civic participation at older ages is shaped by individual experiences with wealth and health across the life course as well as political structures that facilitate or restrict the ability of individuals to consistently participate in elections.

Keywords: Life course analysis, Longitudinal methods, Political participation, Socioeconomic status

Generational differences in voting behaviors and political opinions are the subject of wide-ranging popular and academic discourses (Gonyea & Hudson, 2020). However, much of what we know about voting patterns across the life course is based on comparisons of voters at different ages (Leighley & Nagler, 2014; Wolfinger & Rosenstone, 1980), as few empirical analyses consider whether and how individual voting behaviors change as people grow old (Glenn & Grimes, 1968; Plutzer, 2002; Sigelman et al., 1985). Consequently, key questions about the voting behaviors in later life and their determinants remain unanswered.

Public interest in the relationship between voting, health, and wealth became especially keen during the 2020 American election, which took place in the context of the coronavirus disease 2019 pandemic, and growing unrest about social and economic inequality. Questions about the role of various voting methods in enabling, promoting, or

potentially challenging civic participation among different segments of the population also took on new salience.

We leverage a unique linkage between the rich social, economic, and health data available in the Wisconsin Longitudinal Study (WLS) and State Voter Files to understand how adults in the prime of their voting activity shift to different modes of voting or out of voting altogether as they age. The data follow a cohort of older, largely White adults who grew up in Wisconsin, a perennial battleground state in presidential elections. By considering both electoral participation and voting methods over eight biennial elections, we characterize distinct voting patterns among members of this cohort and show how the interaction of health and wealth jointly shapes civic engagement in later life.

Voting Patterns in Later Life

Voting has long been thought to follow a curvilinear age pattern, with relatively low voting rates in early adulthood, a steady increase into middle age, and a decline at older ages (Wolfinger & Rosenstone, 1980). The increase in voting in the years after eligibility is understood to coincide with rising political knowledge through education, as well as growing interest in economic and social policies due to experiences associated with employment, partnership and family formation, and household management and homeownership (Strate et al., 1989). Early research argued that voting in later life may follow an opposite pattern: After reaching a peak of civic engagement in their 50s and 60s, people's stake in public affairs may decline following retirement, and declines in physical and psychological functioning may pose more challenges to voting (Milbrath & Goel, 1977). This argument reflected the application to voting of a then-prevalent "disengagement theory of aging," which posited that growing older involved a "natural" decrease in activities and attachment between older adults and society (Cumming & Henry, 1961).

Subsequent challenges to disengagement theory and empirical research on civic participation (Johnson & Mutchler, 2014) suggest that the life course of voting is more complicated. While studies in the United States and European countries have provided evidence for the curvilinear age pattern of voting (Bhatti & Hansen, 2012; Burr et al., 2002; Goerres, 2007; Strate et al., 1989), the interpretation of these results has been controversial. The main challenge is differentiating aging effects from generational differences: Most studies are based on cross-sectional data sets, where the age differences in voting patterns may be largely attributable to structural changes in education and sex ratio (Glenn & Grimes, 1968; Jennings & Markus, 1988; Milbrath & Goel, 1977). In contrast, the few studies based on longitudinal data sets in the United States found a continual increase or stability of civic participation in later life (Jennings & Markus, 1988; Sigelman et al., 1985). Decreased civic participation was mainly observed in demanding activities such as meeting attendance or picketing, whereas political knowledge and voting did not significantly drop with age (Glenn & Grimes, 1968; Jennings & Markus, 1988; Prior, 2010). More recently, a pooled cross-sectional study using the Current Population Study showed high voting rates among Americans in their 70s (Leighley & Nagler, 2014), suggesting that political "disengagement" at older ages is not the norm in the United States. Still, much remains to be learned about voting and voting transitions in later life.

The Determinants of Voting at Older Ages

Voting behaviors may be a function of anticipated benefits from the election of a preferred candidate, the sense of accomplishment associated with performing a civic duty, and the costs (in money, time, or energy) of voting (Aldrich, 1993; Feddersen, 2004). While specific political circumstances may influence motivation to vote in a given election, civic morals and political partisanship also influence voting predispositions (Milbrath & Goel, 1977; Sigelman & Jewell, 1986). Because political dispositions are developed through long-term exposure to sociocultural contexts, past political experiences and voting decisions are significant predictors of whether one becomes a "habitual" voter (Plutzer, 2002). Cross-sectional comparison among individuals at various ages and time points may detect periodic changes in political stimulation but are less effective at capturing the longitudinal development of voting behaviors. Indeed, voting behaviors are better conceptualized as sequential rather than independent decisions at each time point. This study considers voting trajectories across multiple elections as the unit of analysis and adopts a sequence clustering method to fully reflect the path-dependent nature of voting.

Voting is usually considered a low-cost activity, when compared with political engagements requiring economic contributions (i.e., campaign donations) or considerable time commitments (e.g., volunteering for campaigns). In later life, however, the transition of voters into nonvoting status may be a response to rising voting costs, particularly as related to health declines. Individuals in poorer health are less likely to vote in a given election (Mattila et al., 2013; Pacheco & Fletcher, 2015). Functional limitation and cognitive impairment directly increase the cost of voting by constraining attendance at the polls (e.g., by rendering travel or physical activities more difficult, or requiring more time and external supports) or hindering the processing of election-related information (Burden et al., 2017; Sund et al., 2017). Mental illnesses (e.g., psychotic disorders and depression) can affect turnout by reducing the motivation to vote, for example, by lowering one's sense of political efficacy or trust in government (Ojeda, 2015; Ojeda & Pacheco, 2019; Sund et al., 2017). The recent stability of voting among older adults in the United States suggests that many are successfully addressing potential health constraints on their civic participation, though more

remains to be learned about the impact of health on voting patterns and inequalities.

If the costs associated with voting are higher for persons with poorer health, the political consequences of health problems may differ depending on the *resources* individuals have available for dealing with the increased costs. While previous studies analyzed socioeconomic disparities in resources—e.g., money, time, civic skills—and their direct implication on voter turnout (Verba et al., 1995), here we also consider their indirect contribution through health in later life. Higher socioeconomic status has been linked with a lower incidence of chronic health conditions and a greater likelihood of successfully coping with and recovering from health problems, likely due both to increased material resources and access to knowledge, power, and social connections that facilitate health-promoting behaviors and better medical treatment (Link & Phelan, 1995; Phelan et al., 2004). Specifically, older adults with poorer health may need to invest more time and effort to engage in everyday tasks as well as in voting (e.g., going to polling places, obtaining election information) and to cope with unexpected challenges (e.g., bad weather, unavailable caregiver). In this situation, resources—especially money—may help sustain voting by increasing access to supports (e.g., transportation, housekeeping services). While previous studies show that higher levels of parental education among young adults (Ojeda & Pacheco, 2019) and higher income in the general population (Lyon, 2021) buffer the negative impact of worse health on voting, evidence about the impact of socioeconomic status on voting at older ages is still limited. We hypothesize that voting would be less constrained by health among older adults with higher socioeconomic status—especially those equipped with more economic resources for mobilizing immediate assistance for health disruptions—and focus on the role of *wealth*, a more salient measure for economic status than income in older populations where many are retired.

Notably, in addition to personal characteristics, voting is also a function of political structures and policies that facilitate or challenge the ability of individuals with varied characteristics to consistently participate in elections. One key dimension of this structure is the availability and accessibility of *alternative voting methods*. Examples of alternative voting methods include filling out and mailing an absentee ballot; casting a ballot early at a local elections office or at a satellite location; phoning into a special system; or logging into a secure website and casting a ballot on the web. Frequently dubbed "convenience" methods, these alternatives to voting at the polls have been both promoted as ways to potentially expand the electorate and criticized for their complexity and increased potential for errors (Gronke et al., 2008). Empirical research suggests that the adoption of alternative voting options increases with age, especially among those with higher education and greater economic resources, possibly due to abundant social resources for overcoming bureaucratic barriers to the use of absentee methods (Barreto et al., 2006; Berinsky, 2005; Karp & Banducci, 2001). A recent study found that voters with a disability are more likely to use alternative methods, especially mail voting (Miller & Powell, 2016). However, the extent to which utilization of these methods may change over voters' life course—particularly in response to changes in health—is not yet known.

This study leverages novel longitudinal data to provide new insight into patterns and shifts in later-life voting activities. Members of the study sample were born during World War II, graduated from high school in the Midwest, and spent their prime working and family-building years in the latter half of the twentieth century. Frequently characterized as less racially diverse and, on average, more politically conservative than their younger counterparts (Gonyea & Hudson 2020), this American cohort is nonetheless heterogeneous in socioeconomic status and life experience. Our study thus offers a unique opportunity for understanding how health and wealth influence civic engagement for those currently entering the oldest-old ages.

Method

Data

This study is based on data from the WLS and matched voting histories from state voter registries. The WLS has followed a randomly selected third of all 1,957 high school graduates in Wisconsin (N = 10,317) and their siblings (N = 8,729) for over 60 years. Due to the study's original design, findings cannot be generalized to non-White adults or those without a high school degree (Herd et al., 2014), and they represent the experience of a particular cohort aging in a specific time period. Nonetheless, the WLS is unique in providing a rich repository of prospective information about the socioeconomic and health status of survey participants across the life course, allowing analyses that consider the implications of health and wealth on subsequent voting trajectories.

Key predictors of voting behaviors between 2004 and 2018 came from the 2004 wave of the WLS, when most of the original participants were aged 65. Wealth is measured by the rank of total assets. Health is assessed by the Health Utilities Index (HUI) Mark III, a multiattribute health score based on self-ratings of eight health domains (Feeny et al., 1995). One weakness of the HUI measure is its high mean and low variance, especially when considering health domain scores separately (the sample mean is 0.84 for the summary score and 0.88–0.996 for health domain scores in the 2004 WLS; Supplementary Table 1), which is similarly observed in the studies of general population samples (Feeny et al., 2009; Fryback et al., 2007; Van Doorslaer & Jones, 2003). At age 65, most WLS respondents scored relatively highly on the HUI, and the association of poorer health with early mortality and attrition from longitudinal studies further suggests that those who remain in the sample appear

particularly robust (Jackson et al., 2019). Both measures of wealth and health are standardized with zero mean and unit variance when included in regression models.

To complement the global measure of health, we incorporated three objective measures of cognitive function, walking speed, and depressive symptoms from the 2011 wave and considered the association with 2012–2018 voting behaviors. Cognitive function is measured by the average standardized test scores for letter and category fluency, explaining similarities among concepts, digit ordering, and word recall. Walking speed is assessed by time spent for walking 2.5 m, where outliers with more than 10 s (N = 14) are top coded at 10. Depressive symptoms are from the 20-item Center for Epidemiologic Studies—Depression scale. In regression models, all three measures are standardized with zero mean and unit variance, while walking speed and depressive symptoms are reverse-coded so that higher scores represent better health. We additionally control for age, age squared, gender, state of residence (i.e., Wisconsin and five states with more than 200 respondents in the baseline sample—Arizona, California, Florida, Illinois, and Minnesota), IQ, father's and respondent's years of education, and self-reported political partisanship.

Voting records are provided by Catalist, a political data firm that produces nationwide voter files from multiple publicly available state records. Catalist data include information about *whether respondents voted* and *which voting method they used* (e.g., voting in polling places, early voting, mail voting, absentee voting) in eight presidential (2004, 2008, 2012, and 2016) and midterm (2006, 2010, 2014, and 2018) elections. Using a set of unique identifiers, we matched 12,615 individual voting histories with WLS participants and their siblings (see Supplementary Material for more information about the matching process).

The linked data files offer multiple advantages over other potential data sources. No other American cohort study provides comparably detailed health, wealth, and voting data. In particular, the detailed socioeconomic and health measures in the WLS survey allow us to examine the independent and joint effects of wealth and health on voting trajectories in greater detail relative to other studies of voting. Likewise, the public voting records include information about voting methods, yielding more detailed and reliable data than the self-reports common in surveys. Finally, the substantial duration of the WLS Catalist match and our analytic approach allow us to go beyond considering the determinants of voting at a single time point (see, e.g., Burden et al., 2017) to more richly characterize long-term trajectories of voting in later life and their determinants.

In this study, we combine absentee and mail voting into a single category (hereafter, absentee voting) and compare this with the other two categories of voting at polls and early voting. Because the definition of voting methods varies by state, our classification may not strictly differentiate in-person voting on election day, early in-person voting, and absentee voting through other alternative methods (e.g., absentee voting in some states may include both in-person and mail ballots). Thus, our strategy is to examine how health and wealth are associated with the use of alternative voting methods that offer few time constraints (i.e., early voting) or are designed to be flexible with both time and space (i.e., absentee voting).

While WLS participants lived in Wisconsin in 1957, they live across multiple states in adulthood. Catalist voter files from certain states omitted voting methods for those who voted in the 2014 (N = 516), 2016 (N = 428), and 2018 (N = 389) general elections. The total number of missing values constitutes less than 5% in each election, yet missing information may influence the results, especially in the analysis of voting sequences, where several clusters are identified with relatively small samples sizes (i.e., $N \approx 1{,}000$). To address this issue, we imputed 100 data sets through multinomial logistic regression of voting methods over the past two general elections, allowing for both past behaviors and randomness to influence subsequent voting methods.

Voting Sequences and Multinomial Regressions

Sequence analysis is a nonparametric approach for describing continuity and disruption in temporal trajectories (Abbott, 1995; Engelman & Jackson, 2019). This novel approach offers two key advantages over prior analyses of voting at a single point in time (Burden et al., 2017) as well as more traditional longitudinal methods. First, by considering individual voting trajectories as the unit of analysis, it allows us to characterize detailed patterns of *transition* defined by both voting status and voting method (e.g., voting to no voting, polling-place voting to alternative voting). Second, in combination with clustering analysis, sequence analysis allows for effective summary and visualization of complex, heterogeneous voting trajectories in later life and an exploration of the factors that sort individuals into subsequent voting patterns.

We identified clusters of voting sequences in two steps. First, we quantified the multiyear voting sequences of five states (voting at polls, early voting, absentee voting, no voting, deceased) based on two different algorithms: *optimal matching distance* and *dynamic Hamming distance*. Results from the two methods do not qualitatively differ, suggesting our classification of individual trajectories is robust. Next, we identified the optimal number (5 in the WLS sample) of voting trajectory clusters to minimize within-group heterogeneity. The identified sequence clusters serve as outcomes for multinomial regression models that examine the factors that sort individuals into specific later-life voting trajectories.

All sequence analyses were processed with the R packages TraMineR (Gabadinho et al., 2011) and fastcluster (Müllner, 2013). See Supplementary Material and Supplementary Figures 2 and 3 for further details about the sequence, clustering, and optimization procedures.

Poisson Regressions

Next, we counted the number of times respondents voted at polling places, early, or through absentee ballots counts over the course of eight elections. Although the counts do not capture transitions among voting states like the sequences do, they are useful in quantifying the overall frequency of each type of voting behavior. To examine transitions in more detail, we also counted (a) the total number of transitions between voting and nonvoting status and (b) transitions from voting at polls to early voting, absentee voting, or no voting. These variables consider voting trajectories when the respondents were alive, and thus the transitions to nonvoting status do not include a halt in voting due to deaths.

Poisson regressions of these voting counts include the logged number of elections over the respondent's adult life as an offset variable (i.e., a coefficient constrained to 1), allowing the resulting coefficient to be interpreted as the change in the voting count relative to the number of elections. Regressions of voting methods and transitions between voting statuses exclude those without voting histories and employ the logged number of general election votes as an offset. Here, too, the coefficient is interpreted as a change in voting methods or transitions, given the number of votes cast. Similarly, the analyses of transitions from polling-place votes adopt the logged number of polling-place votes as an offset.

Poisson regressions are directly comparable to the sequence analysis and easily incorporate econometric methods for dealing with the potential endogeneity of health and wealth. Specifically, our Poisson models also employed sibling fixed effects to account for the impact of shared familial factors (e.g., parental resources or household characteristics in childhood) that may confound the relationship between voting, wealth, and health (Burden et al., 2017). We also included lagged voting, wealth, and health measures for addressing confounding bias that may arise from omitted variables via past outcomes and predictors. Considering regularities in voting patterns, controlling for lagged voting histories is expected to eliminate bias from unobserved individual-specific predispositions. Given our data structure, models with lagged variables predict 2012–2018 voting counts based on 2011 health and wealth measures, controlling for voting in 2004–2010 and indicators of health and wealth in 2004. Due to the short study period, we do not consider measures for transitions in voting status in analyses of 2012–2018 voting.

Results

Voting Sequences

Respondents in the WLS actively participated in eight biennial general elections between 2004 and 2018. Overall, voter turnout was 85% in 2004 and 80% of survivors in 2018. Despite a decrease in voting at polling places from 79% to 45%, there was little change in overall voter turnout among survivors between 2004 and 2018 due to an increase in early or absentee voting from 6% to 35%. Through the combination of voting at polling places and alternative voting methods, 47% of the sample participated in all eight general elections and 22% missed only one or two elections, even when including those who were deceased during the study period (see Supplementary Figure 1 and Supplementary Table 1 for more descriptive statistics).

We identified five longitudinal sequences of voting based on voting status and method. These are displayed in Figure 1 and named after their major characteristics (see Supplementary Table 2 for more details). Older adults in three clusters actively participated in voting and rarely died throughout the study period, but differed in their voting methods. *Consistently voting at polls* (N = 6,328) is the largest cluster, comprising older adults who voted mostly at polls (6.7 out of 7.4 votes). This group increasingly depended on absentee voting in the last two general elections, but the share of polling-place votes still accounted for more than 60% during this period. *Increase in early voting* (N = 757) and *Increase in absentee voting* (N = 2,539) are groups that experienced a steep increase in the use of alternative voting (almost replacing polling-place votes by the end of the study period), which enabled them to maintain similar levels of voter turnout to *Consistently voting at polls*. Two other clusters are characterized by low levels of voter turnout. *Seldom voting* (N = 1,570) comprises individuals who survived almost all eight elections but had the second-lowest level of voting (2.3 times) and the largest number of transitions in voting trajectories (1.8 times). Finally, the *Dying early* (N = 1,511) cluster included older adults with the lowest level of voter turnout (2.3 times). These individuals were alive and able to cast ballots for the smallest number of elections (3.8). These patterns do not qualitatively differ across imputed data sets and sequence distance measures (Supplementary Figures 4, 5, and 6),

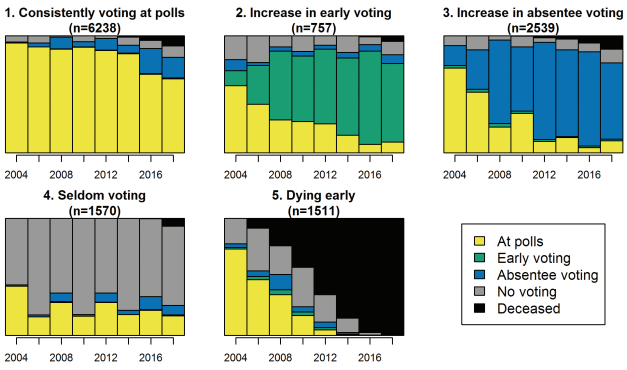

Figure 1. Five clusters of voting sequences (N = 12,615). Sequence clusters of 2004–2018 voting behaviors are identified based on the optimal matching distance and Ward clustering algorithm. Sequence clusters are from one randomly selected data set among 100 imputed ones. Descriptive statistics are given in Supplementary Table 2. Full color version is available within the online issue.

suggesting that voting trajectories in later life do not significantly differ by presidential and midterm elections.

Notably, the majority of older adults in the WLS voted consistently—mostly at polls—throughout the study period. The transitions in voting status, if any, occur from polling-place votes to alternative voting or early deaths, whereas a gradual transition from voting to not voting was not identified as a typical trajectory. These findings suggest that older habitual voters rarely stop voting before their deaths and actively adopt flexible voting methods for continuing their voting habits.

Determinants of Voting Sequences

Next, we examined predictors of cluster membership via multinomial logistic regression (Table 1). Model 1 shows that the reference group, *Consistently voting at polls*, and *Increase in early voting* have the best health status, followed by *Increase in absentee voting*, *Seldom voting*, and *Dying early*. The wealthiest group is *Increase in absentee voting*: Older adults with a 1 *SD* higher level of wealth are 1.2 times more likely to be in this group than in *Consistently voting at polls*. *Increase in early voting* has a similar level of wealth to the reference group, whereas the two inactive voter clusters are significantly less wealthy than active polling-place voters. Overall, voting at polls and early voting are more common among healthier older adults, whereas the use of absentee voting is more common among older voters who are more affluent or less healthy.

Model 2 explores the extent to which health and wealth jointly influence long-term voting patterns. The results show that the health gap between *Consistently voting at polls* and those who follow other voting sequences—especially *Increase in absentee voting* and *Seldom voting*—is wider among those less wealthy. Among wealthy older adults, health is not a significant determinant of voting trajectories, except for a strong association between poor health and *Dying early*, regardless of wealth. Health problems do not appear to constrain the choice of voting methods among wealthier older adults, but health problems do influence the use of absentee methods among those with low wealth.

Determinants of Voting Counts

Poisson regressions of the count of votes allow us to rigorously test the relationship between voting behaviors, specific alternative voting methods, and the interaction of wealth and health (Table 2). The baseline results for 2004–2018 voting behaviors (Panel A) are consistent with those from the sequence analysis and multinomial regressions. Health and wealth are both positively associated with the number of votes cast, and the negative impact of poor health on voting is more apparent among those with less wealth. Absentee ballots are more likely to come from older adults with more wealth or poorer health, whereas the impact of health is weaker with increasing wealth. Early voting

Table 1. Multinomial Logistic Regression of Sequence Clusters on Health and Wealth (N = 8,882)

Model	(1)				(2)			
Sequence cluster	2. Increase in early voting	3. Increase in absentee voting	4. Seldom voting	5. Dying early	2. Increase in early voting	3. Increase in absentee voting	4. Seldom voting	5. Dying early
A. Optimal matching distance								
Health	1.036 (0.073)	0.873** (0.041)	0.821*** (0.041)	0.682*** (0.028)	1.046 (0.074)	0.879** (0.041)	0.850** (0.043)	0.686*** (0.028)
Wealth	1.109 (0.073)	1.174** (0.059)	0.798*** (0.043)	0.846*** (0.041)	1.114 (0.075)	1.171** (0.060)	0.799*** (0.042)	0.844*** (0.041)
Health × Wealth					0.988 (0.062)	1.073+ (0.040)	1.088+ (0.050)	1.031 (0.040)
B. Dynamic Hamming distance								
Health	1.015 (0.077)	0.891** (0.039)	0.831** (0.048)	0.674*** (0.027)	1.023 (0.079)	0.897* (0.040)	0.859** (0.047)	0.678*** (0.027)
Wealth	1.033 (0.074)	1.143** (0.049)	0.807*** (0.043)	0.832*** (0.041)	1.044 (0.074)	1.140** (0.049)	0.808*** (0.042)	0.831*** (0.040)
Health × Wealth					0.942 (0.064)	1.069+ (0.040)	1.081+ (0.050)	1.027 (0.040)

Notes: Relative risk ratios are reported. Standard errors clustered at the level of sibling are in parentheses. The reference group is *Consistently voting at polls*. Sequence clusters of 2004–2018 voting behaviors are identified based on the Ward clustering algorithm. Individual characteristics are from the 2004 Wisconsin Longitudinal Study. Health and wealth are assessed by the Health Utilities Index and the rank of total assets, both standardized with zero mean and unit variance. All models are adjusted for the variability across 100 imputed data sets and covariates including age, age squared, gender, state of residence, IQ, father's education, education, and political partisanship. Full results are given in Supplementary Tables 3 and 4.

+$p < 0.1$, *$p < .05$, **$p < .01$, ***$p < .001$.

Table 2. Poisson Regression of Voting Count on Health and Wealth

Model	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outcome	Voting[a]	Voting[a]	At polls[b]	At polls[b]	Early[b]	Early[b]	Absentee[b]	Absentee[b]
A. 2004–2018 voting[c]								
Health	1.026*** (0.004)	1.023*** (0.004)	1.023*** (0.005)	1.021*** (0.006)	1.076+(0.044)	1.077+(0.044)	0.923*** (0.012)	0.925*** (0.013)
Wealth	1.034*** (0.004)	1.035*** (0.004)	0.974*** (0.005)	0.975*** (0.005)	1.005 (0.034)	1.013 (0.035)	1.074*** (0.016)	1.073*** (0.016)
Health × Wealth		0.985*** (0.004)		0.989* (0.005)		0.957 (0.035)		1.040** (0.014)
N	8,882	8,882	8,519	8,519	8,519	8,519	8,519	8,519
B. 2004–2018 voting, sibling fixed effects[c,d]								
Health	1.028*** (0.008)	1.026*** (0.008)	1.011 (0.011)	1.010 (0.011)	1.260 (0.212)	1.259 (0.207)	0.954 (0.028)	0.956 (0.028)
Wealth	1.024** (0.008)	1.025** (0.008)	0.981 (0.012)	0.982 (0.012)	1.236+ (0.148)	1.235+ (0.158)	1.050 (0.033)	1.046 (0.033)
Health × Wealth		0.986+ (0.008)		0.989 (0.010)		1.003 (0.160)		1.037 (0.028)
N	4,144	4,144	3,800	3,800	724	724	2,966	2,966
C. 2012–2018 voting, lagged health/wealth[e]								
Health	1.047*** (0.006)	1.048*** (0.006)	1.015 (0.010)	1.014 (0.010)	1.139** (0.056)	1.144** (0.057)	0.951** (0.017)	0.948** (0.017)
Wealth	1.017** (0.005)	1.019*** (0.005)	0.996 (0.011)	0.999 (0.011)	0.966 (0.048)	0.951 (0.048)	1.005 (0.019)	1.002 (0.019)
Health × Wealth		0.987** (0.005)		0.982+ (0.009)		1.072+ (0.044)		1.032* (0.014)
N	6,340	6,340	5,881	5,881	5,881	5,881	5,881	5,881
D. 2012–2018 voting, lagged health/wealth and sibling fixed effects[d,e]								
Health	1.046** (0.016)	1.048** (0.016)	1.011 (0.028)	1.009 (0.028)	1.272 (0.322)	1.117 (0.275)	0.889* (0.043)	0.889* (0.043)
Wealth	1.021 (0.016)	1.025 (0.016)	0.991 (0.031)	0.987 (0.031)	0.677 (0.181)	0.785 (0.198)	1.003 (0.055)	1.004 (0.055)
Health × Wealth		0.970* (0.012)		1.022 (0.025)		0.572* (0.125)		0.996 (0.035)
N	2,256	2,256	1,824	1,824	342	342	1,444	1,444

Notes: Incidence rate ratios are reported. Standard errors clustered at the level of sibling are in parentheses. Health and wealth are assessed by the Health Utilities Index and the rank of total assets, both standardized with zero mean and unit variance. All models are adjusted for the variability across 100 imputed data sets and covariates including age, age squared, gender, state of residence, IQ, father's education, education, and political partisanship. Coefficients in *Panel A* are used to calculate marginal effects at the means and displayed in Figure 2 in the main text. Full results are given in Supplementary Tables 5–8.

[a]The logged count of general elections over the respondent's adult life is included as an offset variable.

[b]The logged count of general election votes is included as an offset variable. Those who did not vote during the study period are excluded.

[c]Voting counts are from the 2004–2018 Catalist voter files. Individual characteristics are from the 2004 Wisconsin Longitudinal Study.

[d]Sibling fixed effects models exclude father's education from the list of covariates.

[e]Voting counts are from the 2012–2018 Catalist voter files. Individual characteristics are from the 2011 Wisconsin Longitudinal Study. Models additionally control for lagged counts of voting at polls, early voting, and absentee voting in 2004–2010, and health and wealth in 2004.

+$p < .1$, *$p < .05$, **$p < .01$, ***$p < .001$.

is slightly more common among healthier participants, but less dependent on health and wealth than other voting methods. Figure 2 presents the marginal effects of health and wealth with other covariates at means: 1 *SD* increase in health leads to 0.26 more votes with any method, 0.16 more polling-place votes, and 0.18 less absentee votes at the 10th wealth percentile; at the 90th wealth percentile, however, the impact of health is near zero for all dimensions. The patterns persisted in presidential and midterm elections alike (Supplementary Table 9).

Both health and wealth are negatively associated with transitions in voting. The impact of their interaction is most notable in models for the transition from polling-place to alternative methods (Models 9–16 in Supplementary Table 5). Wealthier older adults are more likely to transition from polling-place voting to early or absentee voting, while poorer health renders transition to absentee voting more likely among those less wealthy. Transitions away from voting are more common among those with lower levels of health or wealth. Thus, wealthy older adults continue to vote by increasing the use of alternative voting regardless of their health status, whereas less wealthy polling-place voters experience more transitions to absentee voting or no voting due to health problems.

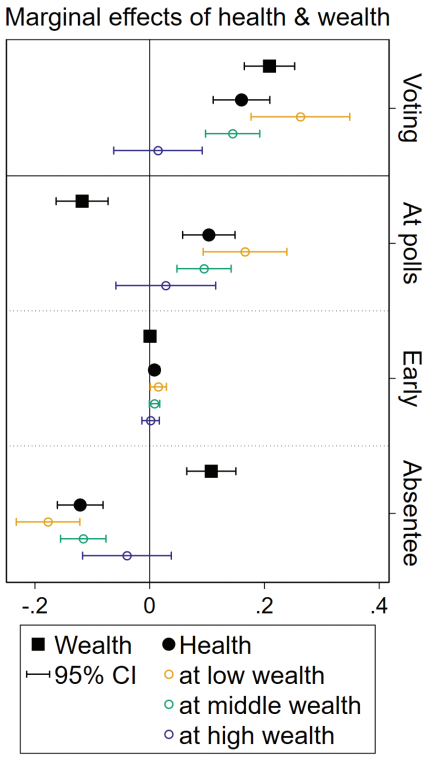

Figure 2. Effects of health and wealth on 2004–2018 voting count. Marginal effects at means are calculated based on Poisson regression of 2004–2018 voting count on wealth, health, and other individual covariates in 2004 (see *Panel A* in Table 2 or Supplementary Table 5). Health and wealth are assessed by the Health Utilities Index and the rank of total assets, both standardized with zero mean and unit variance. Low, middle, and high wealth indicate the 10th, 50th, and 90th wealth percentiles. The interaction of health and wealth is statistically significant at the level of 0.05 for overall voting, voting at polls, and absentee voting. Full color version is available within the online issue.

While the voting records do not specify for whom respondents voted, we indirectly considered the role of partisanship using self-reported political partisanship. We found that self-identified Democrats were more likely to vote absentee and to change methods from polling-place to absentee voting (Supplementary Table 5). Change in political partisanship was not meaningfully associated with long-term voting trajectories, though those whose party affiliation (whether Democrats or Republicans) had a higher voting rate (Supplementary Tables 14 and 15), consistent with the frequently observed increase in political polarization.

Robustness checks via sibling fixed effects models yield similar findings for total votes cast. Sample size limitations render results for specific voting methods less consistent. (Table 2, Panel B). Regression of 2012–2018 voting counts with lagged variables also supports the robustness of wealth and health effects on total votes and voting methods (Panel C). In models with both lagged variables and sibling fixed effects, the interaction of wealth and health remains a robust predictor of total voting count (Panel D).

Finally, we tested the association of eight self-rated health domains as well as validated measures of cognitive function, walking speed, and depressive symptoms with subsequent voting behaviors. We found that overall voting was predicted by four out of eight components of self-rated health (cognition, ambulation, emotion, and pain), while only ambulation was associated with particular voting methods (Supplementary Table 10). As shown in Figure 3 (Supplementary Table 11), objective health measures were associated with overall voting after controlling for lagged voting histories, wealth, and health, with the effects primarily driven by those with the least wealth. Beyond confirming prior findings about the impact of physical and cognitive limitations on voting, our results highlight the role of psychological health, demonstrating that the impact of emotional difficulties and depression on voting is particularly salient among the least wealthy. Voting methods were less sensitive to health, though slower walking speed is associated with more frequent absentee voting only among the less wealthy.

Overall poor health on its own does not appear to drive individuals to adopt absentee methods. Rather, the growing use of absentee methods among WLS respondents appears to be driven by a combination of ambulatory limitations, life course circumstances, and a secular increase in absentee voting in the population overall.

Discussion

An emerging body of research suggests that voting in a given election is influenced by physical and mental health (Burden et al., 2017; Ojeda, 2015; Ojeda & Pacheco, 2019; Sund et al., 2017). Our study expands the prior understanding

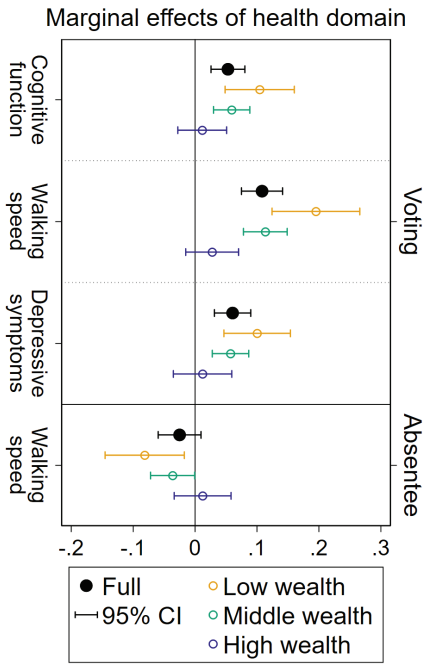

Figure 3. Effects of health domain on 2012–2018 voting count. Marginal effects at means are calculated based on Poisson regression of 2012–2018 voting count on wealth, health, and other individual covariates in 2011, with additional control for lagged voting counts in 2004–2010 and health domains and wealth in 2004 (Supplementary Table 11). Cognitive function is measured by the average standardized test scores for letter and category fluency, explaining similarities among concepts, digit ordering, and word recall. Walking speed is measured by time spent for walking 2.5 m. Depressive symptoms are from the 20-item Center for Epidemiologic Studies—Depression scale. All three measures are standardized with zero mean and unit variance and recoded so that higher scores represent better health. Low, middle, and high wealth indicate the 10th, 50th, and 90th wealth percentiles. The interaction of health and wealth is statistically significant at the level of 0.05 in all models. Full color version is available within the online issue.

of voting behaviors by robustly characterizing longitudinal trajectories of voting status and method for members of the WLS cohort and showing that the impact of health—globally and specifically in the domains of ambulation, cognition, and, most notably, emotional well-being—on voting patterns at older ages is dependent on wealth. Further research into how wealth and its absence shape the impact of poor physical, cognitive, and emotional health on civic participation is particularly warranted, given growing health and wealth disparities in the United States.

Our analysis reveals that alternative voting methods—for example, voting absentee early or via mail—are more common among wealthier individuals, while the choice of voting method among wealthy individuals (unlike their less wealthy counterparts) is not constrained by their health status. High levels of civic participation among wealthy older adults with health limitations are thus due both to their continued voting at the polls—potentially facilitated by better access to convenient locations, effective transportation options, and the availability of physical supports—and their higher utilization of absentee methods. In contrast, among those less wealthy, better health is associated with voting primarily at the polls. Nonwealthy older adults who experience worse health do turn to alternative methods, but their uptake of absentee methods does not fully compensate for their overall lower voting participation.

Our findings suggest that popular and academic claims suggesting that later-life voting trajectories are mainly rooted in nonpolitical social contexts of aging (Goerres, 2007) should be revised: Voting in later life is shaped by both life course circumstances and political contexts (e.g., state laws and policies that facilitate or restrict access to particular voting methods) that mediate access to voting. In terms of policy and practice, our findings support the argument that greater access to alternative voting may bolster more consistent turnout among older adults with limited resources for dealing with health problems.

A limitation of this study is the relative homogeneity of the WLS—a largely White and midwestern cohort—that reduces the generalizability of our findings. The WLS sample is mostly from the silent generation, and younger cohorts differ in historical exposures (e.g., to the likelihood of growing up in rural areas or serving in the military, and particular educational and employment opportunities), racial/ethnic composition, political attitudes, comfort with technology, and numerous other factors that differentiate both their voting and overall aging experiences. While the interaction of health and educational attainment is not significant in this group of high school graduates (Supplementary Tables 12 and 13), in more educationally diverse populations, education may be a more important determinant of voting due to its strong correlation with economic resources and civic skills. Given well-documented differences in voting, health, and wealth across populations (Fraga, 2018), the finding that socioeconomic differences exert a considerable influence on voting even in this cohort is suggestive of the need to pay more attention to the interaction of health and wealth in future research, exploring long-term voting patterns across a diverse set of racial, ethnic, geographic, and educational groups.

In Wisconsin, where most of our respondents reside, there has been no major voting policy change because no-excuse absentee voting became optional for all voters in 2000, so we were not able to directly test the impact of voting policy interventions. Prior within-state comparisons showed that the implementation of all-mail voting had inconsistent effects on voting rates (Gronke & Miller, 2012; Keele & Titiunik, 2018; Southwell & Burchett, 2000). Nationwide studies show that states with universal mail voting had higher voting rates especially among voters aged 65 or older (Larocca & Klemanski, 2011), but such policies have not narrowed the income gap between voters and nonvoters (Rigby & Springer, 2011). Voting trends in the United States show that the Black–White gap has narrowed substantially, yet Hispanic Americans and other populations of color remain underrepresented among voters (Leighley & Nagler, 2014). Interest in the issue of voting methods grew during the contentious 2020 U.S. presidential election. While much

of the national and state-level debate focuses on the implications of different policies for suppressing or promoting votes by populations of color, our analysis also points to the relevance of considering markers of socioeconomic status, and particularly wealth. Even at older ages, when voting rates are high and thought to be influenced more by health than economic factors, the extent to which efforts to expand absentee methods lead to higher voter turnout or more equal political representation may depend substantially on the extent to which such interventions address the barriers to voting faced by less wealthy Americans.

A major strength of our study is the linkage between the WLS and administrative voting records, which provide more reliable results than self-reports of voting and allow us to consider health and wealth as determinants of long-term turnout and voting method. Only two WLS waves (2004 and 2012) correspond to contemporaneous voting records, so our power to assess the temporal dynamics of voting and health over a longer period via individual fixed effects was limited (See Supplementary Table 16). Nonetheless, the sequence analysis and transition counts allowed us to assess the impact of health at a given point in time on subsequent trajectories, and future data collection in the WLS will provide opportunities for extending our understanding of the contemporaneous dynamics of health, wealth, and voting.

In 2020, approximately 23% of the U.S. electorate was aged 65 and older, the highest share since at least 1970 (Super, 2020). Similar population aging trends are underway globally, underscoring the importance of understanding social, economic, and health-based stratification in voting behaviors among older adults. The distribution of voters—at all ages including the oldest—is highly biased toward healthy people with longer life expectancy (Campbell, 2003; Pacheco, 2021; Pacheco & Ojeda, 2020), outcomes that vary systematically across racial/ethnic groups and levels of education, income, and wealth. The consequences of unequal access to voting are not limited to the unequal representation in elections; they extend to the formulation of policies that reproduce disadvantages for underrepresented subpopulations. Our findings suggest that absentee voting methods can mitigate some health-based gaps in voting, yet broader efforts to address social and economic barriers to political participation may be needed to render the electorate more fully representative of the population at all ages.

Supplementary Material

Supplementary data are available at *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences* online.

Funding

The work was supported by the National Institute on Aging (grant number: P30 AG017266, R01 AG009775, and R01 AG033285).

Conflict of Interest

None declared.

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