

# EXHIBIT 1

# Overcoming Voting Obstacles: The Use of Convenience Voting by Voters With Disabilities

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## Abstract

We examine the extent to which Americans with disabilities vote at the polls or take advantage of convenience voting reforms relative to voters without disabilities. The Help America Vote Act (2002) sought, in part, to increase polling place accessibility for the voters with disabilities, with a particular focus on those with vision disabilities. We construct two operationalizations of disability from the November Voting and Registration Supplement of the Current Population Survey over eight elections. A multinomial logistic model shows voters with a disability are significantly less likely to vote but are more likely to vote by mail ballot. Early in-person voting reforms have a marginal effect on the voting behavior of voters with disabilities. A matching model reveals adopting no-excuse absentee voting, permanent absentee voting, or both reforms increases the likelihood of voters with a disability casting a mail ballot.

## Keywords

convenience voting, elections, disability, Current Population Survey

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Voting is a costly activity, but these costs are not equal for all voters. A voter must both negotiate a bureaucratic process and process information accumulated in the course of a campaign to cast her ballot. This article focuses on how people with disabilities navigate the voting process with an eye toward assessing the mode by which people with disabilities cast a ballot. The increasing use of convenience voting reforms since the late 1990s provides a context for assessing how attempts to reduce the opportunity costs of voting affect voting by people with disabilities.

Institutional factors, such as voter registration and polling place location, add to the costs that citizens consider when deciding whether to participate in elections (Dyck & Gimpel, 2005; Wolfinger & Rosenstone, 1980). These factors contribute to the opportunity cost of voting and may, as a consequence, serve to disenfranchise citizens with disabilities. Enhancing access to voting for people with disabilities has been a common theme in the voting literature about people with disabilities (Bundy, 2003; McEldowney & Teaster, 2009; Schriener & Batavia, 2001). This article focuses on how people with disabilities navigate the voting process with an eye toward assessing the mode by which people with disabilities cast a ballot. The increasing use of convenience voting reforms since the late 1990s provides a context for assessing how attempts to reduce the opportunity costs of voting affect voting by people with disabilities.

Convenience voting reforms act to sidestep the accessibility (or lack thereof) of the polling place. These reforms are intended to increase turnout by decreasing the opportunity costs of voting (Aldrich, 1993; Downs, 1957; Haspel & Knotts, 2005; Riker & Ordeshook, 1968). Although these reforms are often discussed in relation to the importance of the expressive aspects of voting, including coming together as a community on Election Day to cast ballots (Burden, Canon, Mayer, & Moynihan, 2011, 2014; Thompson, 2004), they are more often discussed in the context of making voting convenient in a literal sense. We move beyond an examination of these voting reforms solely on a convenience basis by focusing on people with disabilities. Previous literature finds voters with disabilities vote at a significantly lower rate than those without disabilities (Hall & Alvarez, 2012; Schur & Adya, 2013; Schur & Kruse, 2000; Schur, Shields, Kruse, & Schriener, 2002; Schur, Shields, & Schriener, 2003, 2005). We expect convenience voting reforms to change whether—and how—voters with disabilities cast a ballot.

We have assembled a large set of survey data over eight election cycles to quantify the relationship between disability and voting behavior. We present two methods to identify voters with disabilities and three statistical models estimating the effect of disability on voting behavior. We find people with disabilities are significantly more likely to abstain from voting, but also

significantly more likely to vote by a mail ballot, than the general population. We use a matching model to estimate the average treatment effect for four mail voting reforms: no-excuse absentee voting, permanent absentee voting, the union of no-excuse and permanent absentee voting, and voting by mail (VBM). We find people with disabilities are more likely to use a mail ballot compared with similar voters with disabilities in states without any of these reforms.

We first establish that people with disabilities participate in elections at a significantly lower rate than the people without a disability and then address two policy areas that may increase voting among voters with disabilities: polling place accessibility and convenience voting. From this discussion, we derive hypotheses related to the voting behavior of citizens with disabilities. We then describe the Current Population Survey (CPS), present our findings, and provide a few concluding observations.

## **Disability and Political Participation**

According to the American Community Survey (ACS), about 12% of the American population has some kind of disability.<sup>1</sup> Having a disability is associated with a lower turnout rate. According to the CPS, 64.12% of voters with a vision impairment cast a ballot in the 2008 election, compared with 73.85% for all voters (a difference of about 9.73 percentage points). This difference remains in lower-salience midterm elections, however, at a reduced rate. The CPS estimates 45.03% of vision impaired voters cast a ballot in the 2010 election, compared with 54.28% among all voters (a difference of about 9.25 percentage points).<sup>2</sup> The essence of democracy is to involve members of a society in the workings of the system that governs them (Dahl, 1971, 1956). Democracy fails to reach its potential, then, if certain members of the society are excluded from participatory processes like elections. The lower rate of turnout associated with a disability is one indicator that the interests of the citizens with disabilities in America are not given equal voice.

Political participation is often seen as a product of three related elements: available resources (e.g., time, money, civic skills, etc.), political psychological dispositions (such as feelings of efficacy or partisan affiliation), and recruitment, which typically diffuses through networks (Verba, Scholzman, & Brady, 1995). Scholars have examined these drivers of political participation and have concluded people with disabilities experience deficits with regard to each element (see Schur & Kruse, 2014, pp. 190-193 for a review). Our study is designed to assess whether innovations in public policy and election administration can improve turnout among voters with disabilities.

Scholarship in the areas of social movements, public policy, and legal studies has considered the equal inclusion of people with disabilities. The social movements literature highlights how people with disabilities have lobbied for public policies, with particular reference to the Americans With Disabilities Act (ADA; Barnartt & Scotch, 2001; Erkulwater, 2006; Fleischer & Zames, 2001; Shapiro, 1993). A second perspective emphasizes how the citizens with disabilities frame their policy agendas, considering how agendas of cause, care, cure, and anti-subordination differ (Baker, 2011; Colker, 2009). Third, a large legal literature considers the complexities of implementing “reasonable accommodation” requirements of the ADA (Blanck, Hill, Siegal, & Waterstone, 2004; Shakespeare, 2006).

A growing literature finds disability is associated with lower rates of a variety of participatory activities. Schur and Kruse (2000) find a 14 percentage point gap in turnout—but a 15 percentage point gap in favor of the voters with disabilities when looking only at use of absentee ballots—in the 1992 general election in New Jersey between registrants with spinal cord injuries and all voters. Shields, Fletcher, and Fletcher (1998) find the citizens with disabilities are less likely to be registered and less likely to vote, but more likely to cast an absentee ballot than voters without disabilities in the 1994 elections. Barreto, Streb, Marks, and Guerra (2006) found 15% of absentee voters cited mobility impairment as their reason to vote absentee in the 2003 California gubernatorial recall election. In 2008, voters with disabilities were more likely to cast a mail ballot than non-disabled voters (Alvarez, Levin, & Sinclair, 2012). The turnout gap between voters with disabilities and all voters is found in subsequent studies (Schur & Adya, 2013; Schur et al., 2002; Schur et al., 2003, 2005). Citizens with disabilities are also less likely to be active in a range of participatory activities (Schur & Adya, 2013). Using data from 2008 and 2010, Hall and Alvarez (2012) show the citizens with disabilities are less likely to vote at all but more likely to vote by a mail ballot than those without disabilities.

A recently published study of voting by citizens with disabilities is directly relevant to our project. Schur and Kruse (2014) use the CPS from 2008 and 2010 and the Survey of the Performance of the American Electorate from 2012 to assess the effect of a variety of election policies and practices on voting by citizens with disabilities. These survey data also reveal a gap in turnout among voters with disabilities, though this gap is reduced in the 2010 mid-terms and is largely nonexistent for voters with a hearing impairment. Schur and Kruse (2014) measure the effect of three mail voting reforms we describe further below and find “all three of these vote-by-mail systems were linked to higher turnout in 2010 but not 2008” while other practices such as Election Day registration or early in-person voting “do not appear to be consistently

related to voter turnout” (p. 213). With regard to findings that mail voting reforms increase turnout among voters with disabilities, Schur and Kruse (2014) also find “the positive effects of these alternatives to the excuse-required system appear to be broadly spread across the disability population” (p. 214). The present study elaborates on the relationship between disability and voting behavior by, first, using CPS data to construct a second operationalization of disability to compare with the six questions in the survey asking about a variety of types of disability. We also draw upon a larger set of elections for our analyses, expanding the set of elections under consideration forward in time to include the 2012 CPS and back to the 1998 elections. Finally, we are able to assess if the provision of early in-person voting itself has any effect on the voting behavior of registrants with disabilities.

## **Disability and Election Administration**

Ensuring the integrity of the voting process took on renewed relevance when policymakers considered action to address voting concerns highlighted during the 2000 election (see Hasen, 2013, for a description of the administrative crisis in Florida). Increasing the accessibility of polling places for voters with disabilities became one goal of the proposed legislation, and people with disabilities were invited to testify about their concerns (Weis, 2005). The Help America Vote Act (HAVA, Public Law 107-252) was passed in 2002 to correct the administrative and technological flaws exposed in Florida and elsewhere. The Act allocated federal funding for states to update voting technology, including the famous punch-card style voting machines, noted for high rates of “residual votes” (Ansolabehere & Stewart, 2005).

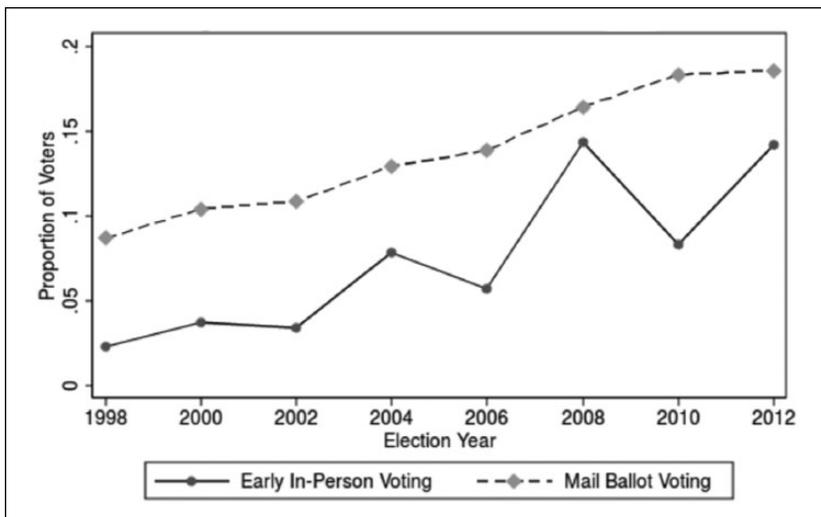
To assist people with disabilities, HAVA includes provisions to alleviate some of the problems people with disabilities, specifically people with a vision disability, encounter while trying to vote. For example, one important provision requires “at least one direct recording electronic voting system or other voting system equipped for individuals with disabilities at each polling place” (HAVA Title III Part B). Scholars question why HAVA narrowly attempted to address issues affecting those with vision impairments. The Act includes only one system requirement and fails to address many problems people with other kinds of disabilities experience (Jones & Simons, 2012, p. 223). As Waterstone (2003) notes, HAVA only applies to federal elections, leaving unresolved whether voting will be accessible to registrants with disabilities during state and local elections. Ward, Baker, and Moon (2009) note the success of federal legislation relevant to the enfranchisement of people with disabilities relies on the “practice and the attitudes” of local election officials. Tokaji (2005) echoes a similar sentiment, noting it is unclear whether

Ohio will comply with requirements set out in HAVA. One barrier to the success of HAVA, as Weis explains, is that state officials “reflect a lack of awareness or acknowledgment . . . that many potential disabled voters are not making a choice—they literally *cannot* vote due to various physical obstacles” (Weis, 2005, p. 436, emphasis in original).

An obvious obstacle to voting is accessibility of the polling place itself. After the 2000 election, in 2001, the U.S. Government Accountability Office (USGAO) presented a report to members of Congress about access to polling places and alternative voting methods for voters with disabilities. The report found states to vary widely in how they addressed and assessed polling place accessibility, with nine states without “specific accessibility standards” (USGAO, 2001). The greatest impediments to accessibility documented in the 2001 report are the route from the parking area to the building entrance and the building entrance itself. A comparable report was produced in 2009 by the USGAO. In 2009, the report indicates polling place accessibility had improved from 2000 to 2008, with 27.3% of polling places with no potential impediments in 2008 as compared with 16% in 2000 (USGAO, 2009). These results demonstrate that physical accessibility to polling places around the United States, while improving, is still low. Nonetheless, election officials have limited resources to make accommodations, and these changes are, at times, at odds with the preferences of disability activists (Bundy, 2003). Citizens with disabilities often face insurmountable obstacles to get to the polling place and cast a ballot.

## Convenience Voting

A second set of policy reforms aims to increase ballot access by increasing the availability of ballots either before Election Day or away from the polling place. All states provide for some form of mail voting for voters who may be unable to travel to the polling place on Election Day. The amendments added to the 1970 reauthorization of the Voting Rights Act of 1965 include a provision that any voter who had moved less than 30 days before an election could vote by means of an absentee ballot from their previous state of residence (Keyssar, 2000, p. 275). Voters who have not moved may—under some limitations—still request to vote by means of an absentee ballot. As of 2014, 14 states require a voter to state a reason to vote absentee.<sup>3</sup> However, voters with a disability in each of these states are specifically exempted from this requirement. Pennsylvania state law, for one illustrative example, establishes that “A registered elector who is unable to attend the polling place on the day of any primary or election because of illness or physical disability” may submit an application to be mailed an absentee ballot.<sup>4</sup> This statutory framework allows



**Figure 1.** National convenience voting rate.

Note. Percentages are calculated using weighted CPS data.

voters with a disability to vote absentee in any election they choose, provided the voter discloses a disability. Yet, a voter wishing to vote absentee in one of these “excuse required” states must resubmit an application to do so for each election.

There are two types of convenience voting above and beyond excuse-required absentee voting in the United States (Gronke, Galanes-Rosenbaum, Miller, & Toffey, 2008). First, the voter may be permitted to cast their ballot at the polling place or some other designated site for a period of time before Election Day. *Early in-person voting* requires the voter to present herself (and, in some states, confirm her identity) and cast a ballot at a staffed polling place. Early in-person voting constituted 14.21% of the ballots in the 2012 election, a more than sixfold increase since the 1998 elections (see Figure 1).

Mail balloting is the second class of convenience voting reform. This general category actually describes three related reforms (Mann, 2014).<sup>5</sup> The first of these is *no-excuse absentee voting*. An absentee voter is required to complete an application stating her intention to vote absentee and return that application to the election officials before an absentee ballot is sent to the voter. This request for an absentee ballot must be completed for each election in which the voter intends to vote absentee. *Permanent absentee voting* is an extension of no-excuse absentee voting. Permanent absentee voting eliminates the requirement that a voter reapply to vote absentee. The request to

vote absentee remains in place as long as the voter remains on the registration roll. The third reform is VBM. Under this system, polling places are entirely eliminated, and each registered voter is automatically mailed a ballot in advance of an election.<sup>6</sup> Oregon was the first state to adopt VBM in 2000, and Washington State gradually transitioned to VBM through the 1990s and 2000s before mandating VBM in 2011. Colorado adopted VBM in 2013. The three types of mail balloting together constituted 18.57% of ballots cast in 2012, a steady increase since 1998 (see Figure 1).

Research into the effects on turnout of these reforms is mixed. Early in-person voting increased turnout in Tennessee in 1994 (Richardson & Neeley, 1996), but subsequent research either finds no significant effect (Fitzgerald, 2005) or finds a *negative* turnout effect (Burden et al., 2014; Richey, 2008). In contrast, Leighley and Nagler (2013) examine turnout in presidential elections between 1972 and 2008 using a cross-sectional time-series model and find no-excuse absentee voting increases turnout by about three percentage points, an effect they describe as “one of—if not the—single most important of the changes made to election laws since the Civil Rights Act . . .” (p. 115).

VBM was thought to increase turnout in Oregon elections (Richey, 2008; Southwell & Burchett, 2000), but that finding was not replicated in subsequent analyses (Gronke & Miller, 2012). VBM has a small but significant effect—on the order of two to four percentage points—on turnout in Washington State (Gerber, Huber, & Hill, 2013). In California, by contrast, VBM—mandated in precincts with a small number of registered voters—is associated with a *lower* turnout rate (Bergman & Yates, 2011; Kousser & Mullin, 2007). Furthermore, any positive effect on turnout dissipates quickly, usually within two to three electoral cycles (Giammo & Brox, 2010). VBM appears to increase turnout in off-cycle, special elections (Gronke & Miller, 2012; Karp & Banducci, 2000; Kousser & Mullin, 2007).

One explanation for the lack of a consistent and significant boost to turnout from these voting reforms may be due to the differential mobilizing effect of the reforms. Evidence from Oregon shows VBM advantages resource-rich voters, converting otherwise marginal voters into frequent voters without mobilizing voting activity among resource-poor voters (Berinsky, 2005; Berinsky, Burns, & Traugott, 2001; Karp & Banducci, 2001, 2000). One nationwide study found early in-person voting—in contrast to the varieties of mail voting or voting at the polling place on Election Day—tends to exacerbate existing stratification in the electorate (Rigby & Springer, 2011). Monroe and Sylvester (2011) use an experiment to show VBM also increases the likelihood of voting for those voters predisposed to vote anyway.

This study moves beyond the discourse of convenience voting reforms as a policy meant to appeal to time-pressured voters who would vote on Election

Day even if the reform was not in place. Instead, we test whether voters with disabilities are more responsive to a decrease in the costs of voting than people without a disability.

## Hypotheses

This article analyzes two research questions.

**Research Question 1:** Do people with one or more disabilities participate in elections at the same rate as the people who do not have a disability?

**Research Question 2:** Do voters with disabilities use convenience voting reforms?

Existing literature consistently finds citizens with disabilities vote at a lower rate than other voters. Thus, we expect the data we have collected to show that the likelihood of voting is lower for respondents with a disability. Convenience voting reforms are designed, in part, to increase turnout. These reforms operate according to two separate mechanisms depending on whether a ballot is cast early in-person or by one of the three mail voting methods identified above. On one hand, early in-person voting bears a close resemblance to voting at the polls on Election Day. Therefore, we expect voters with a disability are *less likely* to cast a ballot early in-person. On the other hand, one way to avoid the problem of polling place accessibility is to deliver the ballot directly to the voter. We expect voters with a disability are *more likely* to cast a mail ballot, whether by means of absentee, permanent absentee, or Oregon-style VBM reforms.

**Hypothesis 1 (H1):** Having a disability has a negative effect on one's likelihood of voting.

**Hypothesis 2 (H2):** Having a disability has a negative effect on one's likelihood of voting early in-person.

**Hypothesis 3 (H3):** Having a disability has a positive effect on one's likelihood of using a mail ballot.

## Data and Method

The CPS is a monthly survey administered by the U.S. Census Bureau and the Bureau of Labor Statistics. The CPS is the primary survey of the American labor force. Notably, it is the source of the national unemployment rate.<sup>7</sup> The survey itself includes a probability sample of about 60,000 households on a nationwide basis.<sup>8</sup> The November supplement to the CPS includes a series of

questions about voting behavior (i.e., whether the respondent voted and, if so, the mode by which a ballot was cast) that we use in our analyses below (see Leighley & Nagler, 2013; Wolfinger & Rosenstone, 1980 for studies using CPS data to examine voting behavior). These data include a mix of presidential and midterm elections between 1998 and 2012. We exclude respondents who are younger than 18 or are not American citizens, and thus not able to vote, and reweight these turnout data by aggregate state-level voting rates to correct for non-response bias in the survey itself (Hur & Achen, 2013). We are left with a large sample of respondents for each election cycle (ranging between about 83,000 and 99,000 per year).

The ADA defines disability as “a physical or mental impairment that substantially limits one or more major life activities of such individual.”<sup>9</sup> The CPS includes two operationalizations of disability: A set of 6 questions asking respondents whether they have a specific disability, which we refer to as the “pan-disability measure,” and a set of 12 questions that include a response option indicating disability, which we use to identify respondents with a “labor-precluding disability.”<sup>10</sup> The set of questions related to the labor-precluding disability measure is present in each CPS survey; the set of questions we use to create the pan-disability measure is present in the 2008, 2010, and 2012 surveys. We briefly describe these measures of disability.

Wolfe’s (1980) study of the labor force participants with disabilities was one of the first to use the CPS to identify people with disabilities and compare them with the non-disabled population. Wolfe used a three-step process to identify the workers with a disability using the CPS, in part relying on respondents’ answers to questions about limitations to the work a person can do. This approach, similar in aim to our labor-precluding disability measure but using a different set of questions in the 1977 CPS, was criticized on the grounds that the CPS cannot identify “people who are able to work full time, full year despite their physical or mental handicaps” (Rones, 1981, p. 38). Subsequent commentary on the question of identifying the survey respondents with disabilities argued the CPS cannot measure disability among those not in the labor force (Hale, 2001). These objections, while pertinent to discussions of the economic well-being of laborers with disabilities, are less relevant to analyses of their political behavior. Our measure of labor-precluding disability includes only those respondents with “work limiting health conditions,” which precludes employment (Wolfe, 1981, p. 39). Hale (2001) makes clear that the survey is administered in such a way that a respondent cannot be coded as having a disability if she is in the labor force (i.e., employed or unemployed and looking for work). Thus, our measure of labor-precluding disability identifies those respondents who report a disability of some kind and are unable to work in the course of the year. It may be the case that other

respondents with a disability are not captured by this measure, but it is highly unlikely that the measure includes non-disabled respondents.

The labor-precluding disability operationalization is based on self-reports of disability in response to questions about current employment or the active searching for future employment. As such, it is a reasonable assumption that self-reports of disability will be underreported, due to the social stigma of admitting a disability or other reasons. Studies that examine the accuracy of self-reports of disability come to a variety of conclusions. Benítez-Silva, Buchinsky, Chan, Cheidvasser, and Rust (2004) compare self-reported disability in the Health and Retirement Study against the Social Security Administration's determination of the respondent's disability. They conclude that while there is

a considerable part of the population that seems to inflate somewhat their evaluation of their disability, there is just as large a part of the population that does exactly the opposite. Overall, the individuals' evaluation of their disability is on average the same as the [Social Security Administration] evaluation of that disability. (Benítez-Silva et al., 2004, p. 668)

Merrill, Seeman, Kasl, and Berkman (1997) report findings from the 1988 Established Populations for the Epidemiologic Study of the Elderly in New Haven, Connecticut, to measure the gender differences in self-reported disability compared with performance. They found,

While most self-reports of functional problems are quite accurate when compared to performance (defined as the standard), there are genuine gender differences among those who inaccurately reported their functional status. Among the discrepancies, both men and women over- and underreported functional problems. However, more women over-reported and more men under-reported these problems. (M23)

These two studies demonstrate self-reports of disability are generally accurate, though an individual may vary from the average taken from all participants in a given study.

More recent analyses of data from the Health and Retirement Study and the Survey of Income and Program Participation have found "evidence that some types of respondents systematically over-report disability" (Kreider & Pepper, 2007, p. 439). It remains unknown, however, if the same biases are present in the CPS. Further research into the measurement error of associated with determining disability by means of large surveys is warranted.

Development of the questions we use to construct a second measure of disability—what we refer to as the pan-disability measure—began in February

1998 when President Clinton ordered the Bureau of Labor Statistics—in concert with 17 other federal agencies—to create a method to measure the employment rate of the laborers with disabilities pursuant to Executive Order 13078 (McMenamin & Hipple, 2014). New questions related to disability were first included in the February 2006 CPS. However, after internal validity testing raised some concerns with these new questions, the CPS ultimately adopted the format of disability questions used in the American Community Survey. The revised battery of disability-related questions were first used in the June 2008 CPS. The CPS asks about the following types of disability: hearing, vision, memory and concentration, physical and mobility, dressing or bathing, or difficulty doing errands outside the home. We include a respondent who reports one or more of these disabilities in the pan-disability operationalization.

These two measures of disability are moderately related to each other. The correlation between “labor-precluding disability” and “pan-disability” is .41 ( $N = 282,182$ ). An average of 5.8% of the survey respondents in a given year report a labor-precluding disability (from a low of 5.07% in 1998 to 6.58% in 2012). An average of 13% of the survey respondents report one of the descriptive disabilities included in the CPS since 2008 (from a low of 12.75% in 2010 to 13.15% in 2012).<sup>11</sup> About 2.4% (5,891 observations) of respondents reporting none of the six disability types added to the CPS in 2008 are counted as having a disability using the labor-precluding disability survey questions. The overlap between the two measures increases as respondents report additional descriptive disabilities.<sup>12</sup>

Alvarez, Bailey, and Katz (2011) have described the “canonical turnout model” using CPS data to include age, education (and the squared terms of each), household income, residence in a Southern state, and non-White race. Burden et al. (2014) also incorporate a number of other items from the survey in their analysis of the effect of voting laws. In our analyses, we include the two operationalizations of disability, these canonical survey items, and add controls for respondents’ gender, marital status, race or ethnicity (whether White, Black, or Latino), and a dummy variable for each survey year. Household income is originally coded on a scale between 1 and 16. We divide this 16-point scale into quintiles to test for significant and nonlinear effects of income on voting behavior.<sup>13</sup> We describe each variable in our models in Table A1 of the online appendix (available at <http://apr.sagepub.com/supplemental>).

Table 1 displays summary statistics of key variables in our models across the two disability operationalizations in reference to the respondents without a disability in the survey. The samples of respondents with disabilities are significantly different from the non-disabled respondents in numerous ways. The income distribution shows respondents with either a labor-precluding or

**Table 1.** Summary Statistics by Disability Status.

	All voters	Labor-precluding disability only	Pan-disability measure only
% in bottom income quintile	23.11	61.66	39.29
% in second income quintile	20.16	18.98	25.9
% in third income quintile	22.61	11.3	19.07
% in fourth income quintile	21.46	6.17	6.9
% in top income quintile	12.66	1.89	8.83
Mean age	46.29	51.37*	64.48*
Mean educational attainment	3.13	2.18*	2.74*
% male	47.84	47.29	45.32*
% married	55.89	39.46*	46.56*
% White	83.17	73.21*	86*
% Black	11.86	22.49*	9.06*
% Latino	8.39	9.44*	6.6*
% living in south	35.64	43.72*	35.22

Note. Cells report weighted mean values from the 1998-2012 pooled Current Population Survey data set. See the online appendix for a description of each variable.

\*Indicates a significant difference from the mean of the no disability category (two-tailed test,  $p < .01$ ) for variables other than income.

one of the pan-disability types are more often among the lower income quintiles than the aggregate electorate and less often among the middle or high income quintiles. People with disabilities are significantly older<sup>14</sup> than people without a disability, less educated, and less likely to be married. Respondents with a labor-precluding disability are more likely to be Black (but not Latino) and reside in the South; respondents with one of the pan-disability types are less likely to be Latino and more likely to be female.<sup>15</sup>

We estimate a multinomial logistic and a matching model to identify significant relationships between disability, convenience voting reforms, and voting behavior. We discussed above the range of options available to voters in terms of how (or whether) to cast a ballot. This set of options transcends a dichotomous choice model, as voters can choose among a set of vote modes, but without some order imposed on that choice. At the same time, a voter is constrained to make use of only one of these voting methods; a voter cannot both vote at the polling place and by mail ballot. A multinomial logistic model is useful when distinguishing between a set of nominal categories, such as the range of voting methods available to voters (Borooah, 2002). The dependent variable is coded according to the respondent's voting behavior:

**Table 2.** Turnout and Convenience Voting Rate.

Survey year	All voters			Labor-precluding disabilities only			Pan-disability measure only		
	Turnout	Early in-person voting	Mail ballots	Turnout	Early in-person voting	Mail ballots	Turnout	Early in-person voting	Mail ballots
1998	49.58	2.28	8.7	34*	2.39	11.98*			
2000	66.47	3.74	10.41	47.78*	4.01	14.67*			
2002	51.71	3.39	10.85	33.2*	4.09	13.55*			
2004	71.64	7.81	12.95	51*	8.48	15.58*			
2006	54.58	5.71	13.87	36.11*	6.72	16.45*			
2008	73.85	14.31	16.44	57.81*	13.24	14.73	71.23*	15.23	26.54*
2010	54.28	8.3	18.32	37.46*	7.61	16.14	55.63	9.86*	29.06*
2012	71	14.21	18.57	56.51*	13.69	19.14	69.9	15.06	29.66*

Note. Cells report weighted Current Population Survey data.

\*Indicates result is significantly different from the percentage for all voters in the same year (two-tailed test,  $p < .01$ ).

whether she abstained, voted at the polls on Election Day, voted early in-person, or voted by a mail ballot. We report relative risk ratios in the table; results greater than 1 indicate a positive effect, and results less than 1 indicate a negative effect, and the reported coefficients are interpreted in reference to the excluded category: voting at the polls on Election Day.

Before turning to our results, we show the baseline turnout and early voting use for all respondents and for each operationalization of disability in the CPS in Table 2. We observe a gap in turnout for respondents with a labor-precluding disability; the turnout gap for respondents with one of the pan-disability types is only significant in 2008. Rates of early in-person voting are roughly comparable across the three pools of respondents, though marginally higher for respondents with one of the pan-disability types in 2010. Respondents with a labor-precluding disability are more likely to cast a mail ballot, except for the latter elections; respondents with one of the pan-disability types are markedly more likely to cast a mail ballot.<sup>16</sup>

## Results

According to Jones and Simons (2012), HAVA intended to make polling places more accessible to voters with vision difficulties. We test this expectation, first, for voters with any of the descriptive disabilities included in the latter three rounds of the CPS and present the results in Table 3. We then

**Table 3.** Disability and Voting Method.

	Abstain	Vote early in-person	Mail vote
Hearing impairment	1.050 (0.046)	1.023 (0.058)	0.990 (0.056)
Vision impairment	1.244*** (0.063)	1.257* (0.154)	1.168* (0.094)
Cognitive impairment	1.338*** (0.061)	0.939 (0.083)	1.005 (0.043)
Mobility impairment	1.206*** (0.042)	1.180** (0.091)	1.375*** (0.071)
Difficulty with self-care	1.483*** (0.094)	0.924 (0.134)	1.415*** (0.113)
Difficulty going outside alone	1.989*** (0.113)	0.936 (0.084)	1.416*** (0.094)
Second income quintile	0.820*** (0.024)	1.161*** (0.057)	0.989 (0.052)
Third income quintile	0.656*** (0.024)	1.190*** (0.074)	0.987 (0.054)
Fourth income quintile	0.536*** (0.024)	1.159 (0.111)	0.995 (0.093)
Fifth income quintile	0.523*** (0.030)	1.230 (0.190)	1.198 (0.166)
Age	0.959*** (0.004)	1.004 (0.007)	0.965*** (0.010)
Age <sup>2</sup>	1.000*** (0.000)	1.000 (0.000)	1.001*** (0.000)
Education	0.443*** (0.017)	1.336*** (0.078)	1.357*** (0.086)
Education <sup>2</sup>	1.069*** (0.005)	0.976*** (0.009)	0.969*** (0.009)
Male	1.106*** (0.019)	0.940** (0.023)	0.925*** (0.018)
Married	0.706*** (0.015)	0.950 (0.051)	0.906** (0.035)
White	0.511*** (0.044)	0.885 (0.134)	0.687*** (0.096)
African American	0.257*** (0.022)	1.236 (0.246)	0.374*** (0.062)
Latino	1.336** (0.176)	1.282 (0.249)	1.182 (0.184)
Residence in a Southern state	1.241 (0.170)	4.960*** (2.095)	0.328** (0.151)
2010	2.770*** (0.089)	0.496*** (0.037)	0.990 (0.069)
2012	1.255*** (0.039)	0.951 (0.043)	1.129*** (0.050)
Constant	37.503*** (4.044)	0.029*** (0.011)	0.347*** (0.068)
Log Pseudolikelihood		-2.64E + 12	
Pseudo R <sup>2</sup>		.14	
Observations		230,641	

Note. All coefficients are estimated in a single multinomial logit model. Relative risk ratios are reported and are in reference to voting in person at the polls on Election Day. Robust standard errors clustered by state are reported in parentheses. Year estimates are in reference to the excluded 2008 category. Income estimates are in reference to the excluded first (bottom) quintile. \* $p < .1$ . \*\* $p < .05$ . \*\*\* $p < .01$ .

present results estimating the effect on voting behavior associated with either of our measures of disability in Table 4. In general, these results support our first and third hypotheses. Results in these tables are taken from all available observations in the CPS. One could claim that the appropriate basis for

**Table 4.** Disability and Voting Method.

	Abstain	Vote early in-person	Mail vote	Abstain	Vote early in-person	Mail vote
Labor-precluding disability	1.784*** (0.044)	0.996 (0.068)	1.680*** (0.104)			
Pan-disability measure				1.690*** (0.056)	1.120** (0.057)	1.508*** (0.061)
Second income quintile	0.784*** (0.015)	1.081** (0.038)	0.971 (0.029)	0.816*** (0.023)	1.162*** (0.057)	0.986 (0.051)
Third income quintile	0.651*** (0.013)	1.082 (0.060)	0.976 (0.039)	0.656*** (0.024)	1.189*** (0.075)	0.986 (0.054)
Fourth income quintile	0.547*** (0.016)	1.125 (0.096)	1.055 (0.090)	0.537*** (0.023)	1.160 (0.111)	0.997 (0.092)
Fifth income quintile	0.507*** (0.021)	1.120 (0.142)	1.196 (0.169)	0.525*** (0.030)	1.230 (0.192)	1.201 (0.166)
Age	0.942*** (0.003)	1.008* (0.005)	0.947*** (0.012)	0.957*** (0.004)	1.005 (0.007)	0.964*** (0.010)
Age <sup>2</sup>	1.000*** (0.000)	1.000 (0.000)	1.001*** (0.000)	1.000*** (0.000)	1.000 (0.000)	1.001*** (0.000)
Education	0.446*** (0.016)	1.292*** (0.092)	1.406*** (0.078)	0.438*** (0.017)	1.337*** (0.079)	1.353*** (0.085)
Education <sup>2</sup>	1.067*** (0.005)	0.980** (0.010)	0.965*** (0.008)	1.071*** (0.005)	0.976*** (0.009)	0.970*** (0.009)
Male	1.100*** (0.011)	0.970* (0.017)	0.935*** (0.015)	1.095*** (0.019)	0.939*** (0.023)	0.916*** (0.018)
Married	0.708*** (0.011)	0.976 (0.038)	0.894*** (0.037)	0.697*** (0.015)	0.952 (0.051)	0.902*** (0.035)
White	0.479*** (0.036)	0.913 (0.110)	0.688*** (0.080)	0.508*** (0.044)	0.885 (0.134)	0.686*** (0.095)
African American	0.269*** (0.020)	0.961 (0.168)	0.348*** (0.050)	0.258*** (0.022)	1.237 (0.246)	0.378*** (0.063)
Latino	1.336*** (0.111)	1.463* (0.294)	1.131 (0.181)	1.343** (0.176)	1.282 (0.248)	1.187 (0.185)
Residence in a Southern state	1.195 (0.129)	5.412*** (2.390)	0.338*** (0.139)	1.243 (0.170)	4.960*** (2.095)	0.329*** (0.152)
2000	0.448*** (0.020)	1.774*** (0.166)	1.311*** (0.106)			
2002	0.966 (0.051)	1.482*** (0.177)	1.383*** (0.128)			
2004	0.373*** (0.020)	3.853*** (0.729)	1.755*** (0.143)			
2006	0.925 (0.050)	2.718*** (0.537)	1.758*** (0.131)			
2008	0.384*** (0.022)	8.165*** (2.341)	2.486*** (0.260)			
2010	1.062 (0.042)	4.047*** (1.023)	2.434*** (0.231)	2.755*** (0.089)	0.497*** (0.037)	0.988 (0.069)

(continued)

**Table 4. (continued)**

	Abstain	Vote early in-person	Mail vote	Abstain	Vote early in-person	Mail vote
2012	0.478*** (0.033)	7.706*** (2.167)	2.769*** (0.314)	1.256*** (0.038)	0.950 (0.043)	1.129*** (0.050)
Constant	158.336*** (19.032)	0.003*** (0.001)	0.194*** (0.036)	40.116*** (4.437)	0.028*** (0.011)	0.353*** (0.068)
Log Pseudo-likelihood	-6.81E + 012			-2.65E + 012		
Pseudo R <sup>2</sup>	.144			.139		
Observations	586,964			230,641		

Note. Coefficients are estimated in two multinomial logit models, one for each operationalization of disability. Relative risk ratios are reported and are in reference to voting in person at the polls on Election Day. Robust standard errors clustered by state are reported in parentheses. Year estimates are in reference to the excluded 1998 category (for labor-precluding disability models) or the excluded 2008 category (for models using the broad disability measure). Income estimates are in reference to the excluded first (bottom) quintile.

\* $p < .1$ . \*\* $p < .05$ . \*\*\* $p < .01$ .

comparison is to limit our analyses to labor force non-participants. Tables A2 and A3 in the online appendix present the same models as in Tables 3 and 4 but only include respondents who are labor force non-participants. The patterns we describe are generally robust to this alternate specification, and we therefore limit our discussion to models without this restriction, so we may be able to generalize our findings to all voters.

In Table 3, we observe that any disability other than a hearing impairment is associated with an increased likelihood of abstaining from voting. These results support prior research and our expectation in H1. The results for early in-person voting, however, do not support our expectation in H2. Having a cognitive impairment or experiencing difficulty with either self-care or tasks outside the home is associated with a lower likelihood of voting early in-person, but that effect is not statistically significant. A vision or mobility impairment is actually associated with a *higher* likelihood of voting early. We find some support for H3 with regard to respondents with a mobility impairment or difficulties related to either self-care or tasks outside the home. A cognitive impairment is associated with a higher rate of abstention but is not significantly related to either early in-person or mail voting. Voters with a hearing impairment, by contrast, do not significantly differ from voters without a disability.

This analysis is unable to measure the voting behavior of people with any of the pan-disability types prior to the addition of questions about physical and mental disabilities to the CPS in 2008. To assess the behavior of voters

with a disability—without reference to a specific disability—prior to 2008, we include the labor-precluding and pan-disability measures in the same multinomial logistic model. Table 4 shows the results of a model that expands on Table 3 to include both measures of disability in all available years.

We expected disability to have a negative effect on voting (H1), and—also else being equal—we find strong support for this hypothesis. Both measures of disability significantly increase the likelihood a voter will abstain from voting. Choosing not to vote is also significantly related to other variables in our model. Abstaining is less likely among wealthier and older survey respondents. Higher levels of educational attainment reduce the likelihood of abstaining, though this relationship is curvilinear. Men and Latino respondents are less likely to vote, while married respondents, Whites, and Blacks are more likely to vote. Unsurprisingly, these data show that voting is more likely in presidential election years (A. Campbell, 1960; J. E. Campbell, 1987).

There is no clear relationship between disability and voting early in-person (H2). The change in the likelihood of voting early in-person for respondents with a labor-precluding disability is in the anticipated direction, but the effect is indiscernible from zero. Respondents with one of the pan-disability types are slightly more likely to cast a ballot early in-person, though this result may be reflective of the results of the vision and mobility impaired respondents in Table 3. Being female, less affluent, moderately educated, and residing in the South increases the likelihood that a respondent will vote early in-person. The likelihood of voting early in-person is trending upward over time, though the effect is lower in midterm elections than presidential years.

Table 4 supports our hypothesis that having a disability and mail voting are positively related (H3). This finding is consistent with earlier research (Schur & Kruse, 2000). The decrease in the likelihood of voting for each operationalization of disability is almost offset by an increase in the likelihood of voting by a mail ballot. On average, having a labor-precluding disability increases the likelihood of abstaining by about 78%, while the same status increases the likelihood of voting by a mail ballot by about 68%. Similarly, one of the pan-disability types not only increases the likelihood of abstaining by about 69% but also increases the likelihood of casting a mail ballot by about 51%. Mail voting is most likely among younger and older respondents (in a curvilinear fashion). Men, married respondents, Whites, and Blacks are significantly less likely to use a mail ballot. Consistent with the data presented in Figure 1 above, the likelihood of voting by a mail ballot has steadily increased over time.

Tables 3 and 4 indicate voters with a disability are significantly more likely to cast a mail ballot relative to voters without a disability. Recall that

mail voting encompasses three separate reforms: no-excuse absentee voting, permanent absentee voting, and VBM. What is the effect—in terms of likelihood of casting a mail ballot—of each reform?

We estimate the average treatment effect on the likelihood of casting a mail ballot using a nearest-neighbor matching model. Matching models compare the observed outcome of a given “treated” observation with the observed outcome of an “untreated” observation most similar to the “treated” observation. In this manner, matching models balance between the treatment and control groups and improve causal inference (Kousser & Mullin, 2007, p. 435; see also Abadie & Imbens, 2006; Ho, Imai, King, & Stuart, 2007; Imbens, 2004; Rosenbaum & Rubin, 1983). We estimate the effect of four treatment conditions relative to the excuse-required control group: the provision of no-excuse absentee voting, permanent absentee voting, the union of both no-excuse absentee and permanent absentee voting, and VBM. We match a treated observation with between 5 and 35 most similar untreated observations using the explanatory variables in Table 4.

We require a data set of state voting laws to estimate the average treatment effect of the three mail voting reforms. As noted above, Leighley and Nagler (2013) examine the effect of convenience voting reforms on presidential elections between 1972 and 2008. We began with this data set and fill in and cross-reference state laws in the midterm elections between 1998 and 2010 as well as the 2012 elections through our own archival work and in consultation with staff at the National Conference of State Legislatures and the Early Voting Information Center. We were unable to definitively establish the first election in the District of Columbia in which permanent absentee voting was available to elderly or voters with a physical disability. In the matching results, therefore, we exclude all respondents from Washington, D.C. Our results are included in Table 5.

First, we observe that any of these reforms increase the likelihood of mail voting across the electorate. Voters with a disability in a state that provides for any of these reforms are more likely to cast a mail ballot than similar voters with a disability in a state requiring a voter to satisfy some criteria for access to an absentee ballot and that the voter reapply for an absentee ballot in each election. To wit, a no-excuse absentee voting law increases the likelihood a voter will cast an absentee ballot by about 13%. Voters with a disability are significantly more likely to use an absentee ballot than the general population (the treatment effect of this convenience voting reform is additionally significantly different—on the basis of a two-tailed difference of means test—from the treatment effect of the reform on all voters). Permanent absentee voting also increases the likelihood of using a mail ballot, though this effect is marginally *lower* for voters with a labor-precluding disability

**Table 5.** The Effects of Mail Voting Reforms on Casting a Mail Ballot.

	All voters	Voters with a labor- precluding disability	Pan-disability measure
No-excuse absentee voting	0.134*** (0.001) 357,020	0.147*** (0.007) 14,443	<b>0.166***</b> (0.007) 17,678
Permanent absentee voting	0.13*** (0.002) 252,224	0.119*** (0.009) 10,411	<b>0.178***</b> (0.009) 11,694
No-excuse absentee and permanent absentee voting	0.237*** (0.002) 252,224	<b>0.270***</b> (0.011) 10,411	<b>0.323***</b> (0.010) 11,694
Voting by mail	0.903*** (0.002) 194,940	<b>0.844***</b> (0.014) 8,458	<b>0.796***</b> (0.011) 8,540

Note. Cells report the average treatment effect on treated individuals of a change in mail voting regime from excuse-required absentee voting with regard to the likelihood of casting a mail ballot. Average treatment effects are estimated by matching treated individuals with most similar, but untreated, individuals based on explanatory variables from Table 4. Robust standard errors are reported to the right of the estimate, and the number of observations is reported below. Bold coefficients indicate average treatment effects that are significantly different from the treatment effect of the same reform on all voters (two-tailed test,  $p < .01$ ). \*\*\* $p < 0.01$ .

compared with all voters. Similarly, states that adopt both no-excuse absentee and permanent absentee voting observe an increase in the likelihood of using a mail ballot for all voters. This effect is more pronounced among either group of voters with disabilities. VBM, by contrast, appears to have a lower treatment effect on the likelihood of using a mail ballot for either classification of disability. One explanation for this trend—that is consistent with the results we presented above in Tables 3 and 4—is that voters with a disability are already more likely to use a mail ballot to vote, and requiring all voters to do so may not substantially alter the voting behavior of voters with a disability.<sup>17</sup>

## Conclusion

Convenience reforms are intended to reduce the opportunity costs of voting and, thereby, increase turnout among populations for whom voting is prohibitively costly. Few studies of these reforms find positive turnout effects. Furthermore, research about who these reforms actually mobilize suggests already disenfranchised populations remain unincorporated into the political process.

We estimate the turnout effects of convenience voting reforms on voters with disabilities. The CPS has included questions specifically about disability

since 2008, but we take advantage of a series of questions that include disability as a response option to extend our analysis back in time over eight electoral cycles.

We find that people with disabilities are significantly less likely to vote than people without a disability. Voters with disabilities, nonetheless, are significantly more likely to cast a mail ballot. These findings are consistent when looking at voters who have a labor-precluding disability or one of the pan-disability types (other than a hearing or cognitive impairment).

These data suggest reforms designed to increase the accessibility of the polling place for voters with disabilities (e.g., HAVA) will have a minimal effect on turnout among people with disabilities. There is little evidence to suggest voters with a disability cast their ballots at the polling place on Election Day. Instead, these data show voters with a disability in large part cast mail ballots.

We recognize that the findings presented here are interpreted within the limitations of the CPS. The survey does not ask about partisan identification, a well-known predictor of voting behavior, and is unable to address when a disability is manifested in a respondent's life. Furthermore, the survey does not allow us to examine how the voting behavior of the same respondents changes over time, given the sample frame of the CPS. A panel study of the voting behavior of respondents with disabilities may shed additional light on the effect of convenience voting reforms on voting over time. We hope future research in this area would expand on these findings to consider the role of political parties and interest groups in working with people with disabilities to take advantage of convenience voting reforms while striving to maintain ballot secrecy for people with disabilities who opt to use a mail ballot (Tokaji & Colker, 2007).

Democratic politics requires a space in which citizens can contribute to the policymaking process by engaging with their peers and representatives. Voting in elections is the preeminent example of such engagement. As other scholars have noted—and we also find—Americans with disabilities are significantly less likely to participate in elections, an essential act of democratic life. These data show, however, that having a disability does not always lead to disenfranchisement. Instead, there are ways to reform voting systems to make the franchise more accessible for Americans with disabilities.

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## Notes

1. This proportion is calculated from the civilian non-institutionalized population. See the 1-year ACS estimates for 2008, 2010, and 2012. ACS data are available online at <http://factfinder.census.gov/>.
2. We mention turnout rates for voters with a vision disability for illustrative purposes. The same pattern obtains for other types of disability with the exception of a hearing impairment. The gap in turnout for hearing impaired voters is about 2.5 percentage points in 2008 and 2012, and the turnout gap is reversed in the 2010 midterms (56.69% for hearing impaired voters compared with 54.28% for all voters).
3. The National Conference on State Legislatures list the states that provide for each voting reform and the states that have not adopted any of the reforms (<http://www.ncsl.org/research/elections-and-campaigns/absentee-and-early-voting.aspx>).
4. See Title 25, Chapter 33 § 3302(1) of the Pennsylvania Consolidated Statutes.
5. To avoid confusion, we use the terms *mail voting* and *a mail ballot* to indicate when we are referring generally to this family of convenience voting reforms, and the particular reform when we are addressing a feature of a specific reform.
6. Gronke and Miller (2012, p. 992, note 1) observe that between 15% and 25% of ballots in Oregon are returned on Election Day. Voters in California—where some precincts have eliminated polling places—and Washington are permitted to return their ballots in-person at an elections office or to deposit their ballots at a designated drop site.
7. The Current Population Survey (CPS) data used in this article are available for download from the Inter-university Consortium for Political and Social Research (ICPSR) archives (<http://www.icpsr.umich.edu/icpsrweb/ICPSR/series/24>). The November 2012 CPS data can be downloaded from the U.S. Census using the DataFerrett tool (<http://dataferrett.census.gov/>).
8. A single member of a selected household reports survey responses for the all members of the household. Households are included in the CPS for a period of

4 months, then not surveyed for 8 months, and then included in the survey for 4 final months. As a result, we cannot assess whether these voting reforms have an effect on the likelihood of voting for the same individual in sequential elections. Relying on a proxy to report voting behavior is somewhat problematic. Highton (2005) found a small overestimate of voting, but otherwise, the correlation with other variables is not affected by proxy-reported turnout.

9. The Americans With Disabilities Act (ADA) further observes that an individual has a disability if she has a record of such an impairment or is regarded by others as having such an impairment. With reference to major life activities, the ADA stipulates them to include, but are not limited only to, caring for oneself, performing manual tasks, seeing, hearing, eating, sleeping, walking, standing, lifting, bending, speaking, breathing, learning, reading, concentrating, thinking, communicating, and working. Major life activities are further stipulated to include major bodily functions, including functions of the immune system, normal cell growth, and digestive, bowel, bladder, neurological, brain, respiratory, circulatory, endocrine, and reproductive functions.
10. One of these questions, asking the respondents to explain why they did not vote, is omitted from the labor-precluding disability measure to avoid bias in the models of voting behavior we present below.
11. Cross-tabulation of these two operationalizations of disability show about half (47.73%) of the survey respondents who report a physical disability also report a labor-precluding disability. About a third of respondents who report either difficulty going outside alone (31.83%) or difficulty remembering or concentrating (28.20%), about one sixth of respondents who report difficulties with self-care (16.62%), and less than one tenth of respondents with either a hearing disability (9.15%) or a vision disability (8.87%) also report a labor-precluding disability.
12. About 23% (4,645 observations) of respondents reporting one disability, 40% (3,316 observations) of respondents reporting two types, 47% (2,172 observations) of respondents reporting three types, and 49% (1,173) of respondents reporting four types of disabilities also fall under the labor-precluding disability operationalization. There are a trivial number of observations in the data set with five or six of the types of disability included in the pan-disability measure.
13. We use the *xtile* command in Stata to sort observations into income quintiles for each survey. The top quintile is underrepresented relative to other categories, comprising 12.52% of all observations.
14. The correlation between age and a labor-precluding disability in the pooled CPS data set is .074; the correlation is .30 for the pan-disability measure.
15. These data are consistent with an earlier study of disability and employment (Wolfe, 1980) with regard to age, marital status, education, and income.
16. We drop respondents covered by both operationalizations of disability to avoid double counting respondents with a disability and report turnout and convenience voting use for respondents only covered by either the labor-precluding or pan-disability operationalization.

17. We ran an alternate matching model limited to labor force non-participants. The results of this specification are nearly identical to the results we report in Table 5, and thus, we do not report those findings. The results are available upon request.

## References

- Abadie, A., & Imbens, G. (2006). Large sample properties of matching estimators for average treatment effects. *Econometrica*, *74*, 235-267.
- Aldrich, J. (1993). Rational choice and turnout. *American Journal of Political Science*, *37*, 246-278.
- Alvarez, R. M., Bailey, D., & Katz, J. (2011). An empirical Bayes approach to estimating ordinal treatment effects. *Political Analysis*, *19*, 20-31.
- Alvarez, R. M., Levin, I., & Sinclair, J. A. (2012). Making voting easier: Convenience voting in the 2008 presidential election. *Political Research Quarterly*, *65*, 248-262.
- Ansolabehere, S., & Stewart, C., III. (2005). Residual votes attributable to technology. *Journal of Politics*, *67*, 365-389.
- Baker, D. L. (2011). *The politics of neurodiversity: Why public policy matters*. Boulder, CO: Lynne Rienner.
- Barnartt, S., & Scotch, R. (2001). *Disability protests: Contentious politics, 1970-1999*. Washington, DC: Gallaudet University Press.
- Barreto, M. A., Streb, M. J., Marks, M., & Guerra, F. (2006). Do absentee voters differ from polling place voters? New evidence from California. *Public Opinion Quarterly*, *70*, 224-234.
- Benítez-Silva, H., Buchinsky, M., Chan, H. M., Cheidvasser, S., & Rust, J. (2004). How large is the bias in self-reported disability? *Journal of Applied Econometrics*, *19*, 649-670.
- Bergman, E., & Yates, P. (2011). Changing election methods: How does mandated vote-by-mail affect individual registrants? *Election Law Journal*, *10*, 115-127.
- Berinsky, A. J. (2005). The perverse consequences of electoral reform in the United States. *American Politics Research*, *33*, 471-491.
- Berinsky, A. J., Burns, N., & Traugott, M. W. (2001). Who votes by mail? A dynamic model of the individual-level consequences of voting-by-mail systems. *Public Opinion Quarterly*, *65*, 178-197.
- Blanck, P., Hill, E., Siegal, C., & Waterstone, M. (2004). *Disability civil rights law and policy*. St. Paul, MN: Thomson/West.
- Borooah, V. (2002). *Logit and probit: Ordered and multinomial models*. Thousand Oaks, CA: Sage.
- Bundy, H. (2003). Election reform, polling place accessibility, and the voting rights of the disabled. *Election Law Journal*, *2*, 217-240.
- Burden, B., Canon, D., Mayer, K., & Moynihan, D. (2011). Early voting and Election Day registration in the trenches: Local officials' perceptions of election reform. *Election Law Journal*, *10*, 89-102.
- Burden, B., Canon, D., Mayer, K., & Moynihan, D. (2014). Election laws, mobilization and turnout: The unanticipated consequences of election reform. *American Journal of Political Science*, *58*, 95-109.

- Campbell, A. (1960). Surge and decline: A study of electoral change. *Public Opinion Quarterly*, 24, 397-418.
- Campbell, J. E. (1987). The revised theory of surge and decline. *American Journal of Political Science*, 31, 965-979.
- Colker, R. (2009). *When is separate unequal? A disability perspective*. New York, NY: Cambridge University Press.
- Dahl, R. (1956). *A preface to democratic theory*. Chicago, IL: University of Chicago Press.
- Dahl, R. (1971). *Polyarchy: Participation and opposition*. New Haven, CT: Yale University Press.
- Downs, A. (1957). *An economic theory of democracy*. New York, NY: Harper.
- Dyck, J. J., & Gimpel, J. G. (2005). Distance, turnout, and the convenience of voting. *Social Science Quarterly*, 86, 531-548.
- Erkulwater, J. L. (2006). *Disability rights and the American social safety net*. Ithaca, NY: Cornell University Press.
- Fitzgerald, M. (2005). Greater convenience but not greater turnout: The impact of alternative voting methods on electoral participation in the United States. *American Politics Research*, 33, 842-867.
- Fleischer, D. Z., & Zames, F. (2001). *The disability rights movement: From charity to confrontation*. Philadelphia, PA: Temple University Press.
- Gerber, A., Huber, G., & Hill, S. (2013). Identifying the effect of all-mail elections on turnout: Staggered reform in the evergreen state. *Political Science Research and Methods*, 1, 91-116.
- Giammo, J., & Brox, B. (2010). Reducing the costs of participation: Are states getting a return on early voting? *Political Research Quarterly*, 63, 295-303.
- Gronke, P., Galanes-Rosenbaum, E., Miller, P. A., & Toffey, D. (2008). Convenience voting. *Annual Review of Political Science*, 11, 437-455.
- Gronke, P., & Miller, P. (2012). Voting by mail and turnout in Oregon: Revisiting Southwell and Burchett. *American Politics Research*, 40, 976-997.
- Hale, T. (2001). The lack of a disability measure in today's Current Population Survey. *Monthly Labor Review*, 124, 38-40.
- Hall, T., & Alvarez, M. R. (2012). *Defining the barriers to political participation for individuals with disabilities* (The Information Technology and Innovation Foundation Accessible Voting Technology Initiative, Working Paper No. 1). Retrieved from <http://elections.itif.org/reports/AVTI-001-Hall-Alvarez-2012.pdf>
- Hasen, R. (2013). *The voting wars: From Florida 2000 to the next election meltdown*. New Haven, CT: Yale University Press.
- Haspel, M., & Knotts, H. (2005). Location, location, location: Precinct placement and the costs of voting. *Journal of Politics*, 67, 560-573.
- Highton, B. (2005). Self-reported versus proxy-reported voter turnout in the Current Population Survey. *Public Opinion Quarterly*, 69, 113-123.
- Ho, D., Imai, K., King, G., & Stuart, E. (2007). Matching as nonparametric preprocessing for reducing model dependence in parametric causal inference. *Political Analysis*, 15, 199-236.

- Hur, A., & Achen, C. (2013). Coding voter turnout responses in the Current Population Survey. *Public Opinion Quarterly*, 77, 985-993.
- Imbens, G. (2004). Nonparametric estimation of average treatment effects under exogeneity: A review. *Review of Economics and Statistics*, 86, 4-29.
- Jones, D., & Simons, B. (2012). *Broken ballots: Will your vote count?* Stanford, CA: Center for the Study of Language and Information.
- Karp, J., & Banducci, S. (2000). Going postal: How all-mail elections influence turnout. *Political Behavior*, 22, 223-239.
- Karp, J., & Banducci, S. (2001). Absentee voting, mobilization, and participation. *American Politics Research*, 29, 183-195.
- Keyssar, A. (2000). *The right to vote: The contested history of democracy in the United States*. New York, NY: Basic Books.
- Kousser, T., & Mullin, M. (2007). Does voting by mail increase participation? Using matching to analyze a natural experiment. *Political Analysis*, 15, 428-445.
- Kreider, B., & Pepper, J. (2007). Disability and employment: Reevaluating the evidence in light of reporting errors. *Journal of the American Statistical Association*, 102, 432-441.
- Leighley, J., & Nagler, J. (2013). *Who votes now? Demographics, issues, inequality, and turnout in the United States*. Princeton, NJ: Princeton University Press.
- Mann, C. (2014). Mail ballots in the United States: Policy choice and administrative challenges. In B. Burden & C. Stewart III (Eds.), *The measure of American elections* (pp. 113-140). New York, NY: Cambridge University Press.
- McEldowney, R., & Teaster, P. B. (2009). Land of the free, home of the brave: Voting accommodations for older adults. *Journal of Aging & Social Policy*, 21, 159-171.
- McMenamin, T., & Hipple, S. (2014). The development of questions on disability for the Current Population Survey. *Monthly Labor Review*, 137, 1-8.
- Merrill, S., Seeman, T., Kasl, S., & Berkman, L. (1997). Gender differences in the comparison of self-reported disability and performance measures. *Journal of Gerontology*, 52, 19-26. Retrieved from <http://biomedgerontology.oxfordjournals.org/content/52A/1/M19.short>
- Monroe, N. W., & Sylvester, D. E. (2011). Who converts to vote-by-mail? Evidence from a field experiment. *Election Law Journal*, 10, 15-35.
- Richardson, L., & Neeley, G. (1996). The impact of early voting on turnout: The 1994 elections in Tennessee. *State and Local Government Review*, 28, 173-179.
- Richey, S. (2008). Voting by mail: Turnout and institutional reform in Oregon. *Social Science Quarterly*, 89, 902-915.
- Rigby, E., & Springer, M. (2011). Does electoral reform increase (or decrease) political equality? *Political Research Quarterly*, 64, 420-434.
- Riker, W. H., & Ordeshook, P. C. (1968). A theory of the calculus of voting. *American Political Science Review*, 62, 25-42.
- Rones, P. (1981). Can the current population survey be used to identify the disabled? *Monthly Labor Review*, 104, 37-38.
- Rosenbaum, P., & Rubin, D. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70, 41-55.

- Schriner, K., & Batavia, A. (2001). The Americans With Disabilities Act: Does it secure the fundamental right to vote? *Policy Studies Journal*, 29, 663-673.
- Schur, L., & Adya, M. (2013). Sidelined or mainstreamed? Political participation and attitudes of people with disabilities in the United States. *Social Science Quarterly*, 94, 811-839.
- Schur, L., & Kruse, D. (2000). What determines voter turnout? Lessons from citizens with disabilities. *Social Science Quarterly*, 81, 571-587.
- Schur, L., & Kruse, D. (2014). Disability and election policies and practices. In B. Burden & C. Stewart III (Eds.), *The measure of American elections* (pp. 188-222). New York, NY: Cambridge University Press.
- Schur, L., Shields, T., Kruse, D., & Schriner, K. (2002). Enabling democracy: Disability and voter turnout. *Political Research Quarterly*, 55, 167-190.
- Schur, L., Shields, T., & Schriner, K. (2003). Can I make a difference? Efficacy, employment, and disability. *Political Psychology*, 24, 119-149.
- Schur, L., Shields, T., & Schriner, K. (2005). Generational cohorts, group membership, and political participation by people with disabilities. *Political Research Quarterly*, 58, 487-496.
- Shakespeare, T. (2006). *Disability rights and wrongs*. New York, NY: Routledge.
- Shapiro, J. P. (1993). *No pity: People with disabilities forging a new civil rights movement*. New York, NY: Times Books.
- Shields, T., Fletcher, K. F., & Fletcher, K. (1998). The disability voice in American politics: Political participation of people with disabilities in the 1994 election. *Journal of Disability Policy Studies*, 9, 33-52.
- Southwell, P., & Burchett, J. (2000). The effect of all-mail elections on turnout. *American Politics Research*, 28, 72-79.
- Thompson, D. (2004). Election time: Normative implications of temporal properties of the electoral process in the United States. *American Political Science Review*, 98, 51-64.
- Tokaji, D. (2005). Early returns on election reform: Discretion, disenfranchisement, and the Help America Vote Act. *George Washington Law Review*, 73, 1206-1253.
- Tokaji, D., & Colker, R. (2007). Absentee voting by people with disabilities: Promoting access and integrity. *McGeorge Law Review*, 38, 1015-1064.
- U.S. Government Accountability Office. (2001). *Voters with disabilities: Access to polling places and alternative voting methods* (Report to Congressional Requesters). Washington, DC: Author.
- U.S. Government Accountability Office. (2009). *Voters with disabilities: Access to polling places and alternative voting methods* (Report to Congressional Requesters). Washington, DC: Author.
- Verba, S., Schlozman, K. L., & Brady, H. E. (1995). *Voice and equality: Civic voluntarism in American politics*. Cambridge, MA: Harvard University Press.
- Ward, A., Baker, P. M. A., & Moon, N. W. (2009). Ensuring the enfranchisement of people with disabilities. *Journal of Disability Policy Studies*, 20, 79-92.
- Waterstone, M. (2003). Constitutional and statutory voting rights for people with disabilities. *Stanford Law & Policy Review*, 14, 353-387.

- Weis, C. J. (2005). Why the Help America Vote Act fails to help disabled Americans vote. *New York University Journal of Legislation and Public Policy*, 8, 421-456.
- Wolfe, B. (1980). How the disabled fare in the labor market. *Monthly Labor Review*, 103, 48-52.
- Wolfe, B. (1981). The CPS, work, and disability: A reply. *Monthly Labor Review*, 104, 38-39.
- Wolfinger, R. E., & Rosenstone, S. J. (1980). *Who votes?* New Haven, CT: Yale University Press.

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