Distance, Turnout, and the Convenience of Voting*

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Objectives. This research examines how distance factors into the costs associated with political participation. We hypothesize that the political geography of a voter's residence affects not only the likelihood that he or she will vote, but whether the voter will choose between traditional Election Day voting or nontraditional means, such as casting an absentee ballot by mail, or going to an early-voting site. *Methods.* Using a geographic information system (GIS), we calculate Manhattan-block distances between voter residences and their respective precinct and nearest early-voting sites in Clark County, NV for the 2002 mid-term election. We then use these calculated distances to predict, with multinomial logistic regression, the likelihood of nonvoting, precinct voting, and nontraditional voting. *Results.* Our evidence suggests that the cost of traveling to reach a traditional voting site is associated with nonvoting to a point, but the relationship between distance and participation is nonlinear. Distance to traditional voting sites is also highly associated with choosing to vote by mail. Would-be nonvoters are more inclined to use proximate election-day sites than proximate early-voting sites, probably because they decide to vote so late in the campaign. *Conclusions.* Our findings have important implications for democratic theory, ongoing efforts to reform the electoral process, and the practice of voter mobilization.

Understanding the sources of political participation and, perhaps more importantly, the character of abstention, is an ongoing concern of political scientists, journalists, pundits, nonprofit advocacy groups, and others bent on electoral reform. It is fair to say that political participation research remains one of the most widely studied topics in American political science today.[1] The explanations for political participation, however, vary considerably in their implications for how proactive policymakers, intent on increasing turnout, might reform the system to increase participation. Although attitudinal and social-psychological explanations have proven to be the most fruitful in explaining nonvoting generally (Rosenstone and

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[1]A count in the JSTOR archive suggested 45 articles were published with turnout, political participation, and/or voting in the title just from 1990 to 2002.

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Hansen, 1993), changing the public's level of efficacy or trust in government is not something that is easily done by legislative or executive initiative.

With an eye toward the practical, we investigate the extent to which current electoral reforms aimed at decreasing the burden on individuals—absentee voting by mail and in-person early voting—minimize the costs associated with voting, thereby stimulating participation. Just who is likely to be affected by liberalized absentee voting and early on-site voting is a difficult question to address. We are especially interested in the extent to which costs associated with getting to the precinct site on Election Day have stimulated both regular and infrequent voters to turn to nontraditional methods of casting their ballot, once those methods became available.

The tendency for regular, reliable voters to cast early and absentee ballots has important implications for both democratic theory and campaign strategy. It is clearly possible that easy voting simply conveniences those who would have voted at the precinct site on Election Day but does not mobilize previous nonvoters. The hopes of institutional reformers would be dashed if this was the case, but it is surely possible that the main source of abstention has nothing to do with inconvenience (Berinsky, 2005). Highton makes a similar point about the costs associated with voter registration: "To the extent that people do not register because they are not particularly interested in voting, merely removing the obstacle of registration will have little impact on turnout" (1997:566). If these costs are not a significant source of abstention, we may still want to make voting easier, but we should take an entirely different approach to the challenge of elevating participation.

From the perspective of campaign politics, the larger the number of voters casting absentee (or early) ballots, the smaller the potential electoral playing field in the final days before the election. Candidates may be campaigning before a far different electorate in the waning days of an election than they are a month in advance (Leighley, Stein, and Owens, 2004). Moreover, if absentee or early-ballot participants are not randomly dispersed across a geographic area (state or metropolitan area), but are instead concentrated in specific neighborhoods, towns, or regions, then these locations can be effectively scratched off the Get Out the Vote (GOTV) List in 11th-hour voter-canvassing efforts. At the same time, campaigns are under pressure to reach early and absentee voters well ahead of the usual last-minute push.

If absentee and early voting is effective in bringing new voters to the polls, perhaps this indicates that at least some voters do view the traditional election-day voting process as burdensome. Using a loosely Downsian understanding of the choice to vote as a baseline (Downs, 1957; Aldrich, 1993)—that some voters clearly perceive an opportunity cost associated with voting—we hypothesize that the political geography of a voter's microcosm affects not only the likelihood that he or she will vote, but also how the voter will choose between traditional (precinct) and nontraditional (vote by mail and early voting) alternatives when casting his or her ballot. Voting is a low-cost, low-benefit decision, such that altering the costs associated with voting

only slightly will result in some increase in turnout, and even more drastically stimulate a departure away from the restrictiveness of election-day voting. Our evidence suggests that this cost, measured as distance a voter must traverse to reach traditional and/or early-voting sites, strongly affects the choices people make in choosing to vote and how to vote. Although we are cautious about overstating the implications of these findings, given the nascent stages of this research, our results clearly suggest that reducing the travel costs associated with voting can mobilize more voters, and the effects of distance tradeoffs between precinct and early-voting sites on choice of vote method are surprisingly large.

A small but growing body of research indicates that easing the accessibility burden on voters can increase participation in modest, but substantively important amounts, particularly in a polarized partisan world (Gimpel and Schuknecht, 2003; McNulty and Brady, 2004). Stein and Garcia-Monet (1997) found that the placement of early-voting sites at "nontraditional" locations such as supermarkets and shopping malls marginally increased participation in Texas (see also Stein, 1998). Research on Oregon's move to all-mail ballots also suggests that the reform has increased turnout by decreasing the burden of going to the polls (Southwell and Burchett, 2000a, 2000b; Berinsky, Burns, and Traugott, 2001).

Here, we use a unique data set from a large, diverse, and fast-growing county to explicitly test theories of distance for each of three voting methods at the individual level. The data set is the 2002 voter list from Clark County, NV. Using a geographic information system, we are able to pinpoint the location of individual voters' residences, precinct, and early-voting sites onto a map and compute the distances between individuals and polling places. Clark County is of particular interest because the local government has legislated and implemented what is perhaps the most aggressive early- and absentee-voting program in the country; approximately equal numbers of voters for the past two election cycles have voted early, and at their precinct, with a smaller but still significant number voting by mail. This location is well suited for research because unlike many other places, the requisite observations are present to permit careful analysis.

Voting as a Cost-Benefit Calculation

Any serious study of nonvoting must begin with the caveat that there exists an important, unsettled debate about the nature of nonvoting. The simple and elegant explanation comes from rational choice theory. The rational voter model, as advanced by Downs (1957), argues that the choice to vote is a simple cost-benefit calculation for voters. A voter calculates his or her benefit by multiplying the perceived benefit that the voter will receive from his or her desired outcome by the probability that the voter will cast the marginally important vote. From this value, the voter subtracts his or her

cost. If the value is positive, the voter votes; if it is negative, he or she does not. The problem that Downsian theory presents is that if there is any opportunity cost to voting, then the theory predicts nonvoting, because the probability of casting the tie-breaking vote is infinitesimal, and therefore the benefit coefficient is for all intents and purposes equal to zero.

The mere fact that recent U.S. presidential election turnout has hovered around 50 percent indicates that the theory is empirically falsified. Relaxing the assumptions to allow the benefit to encapsulate something beyond material self-interest, like duty or altruism, forces the theory into tautology, explaining everything and therefore nothing (Aldrich, 1993:275). Furthermore, the attitudinal evidence suggests that nonvoting is caused largely by social-psychological factors such as low efficacy, high levels of cynicism, and lack of motivation (Rosenstone and Hansen, 1993).

This leaves a theory of nonparticipation based on the inconvenience posed by distance with a significant theoretical challenge. With roots in rational choice theory, an increasing body of evidence suggests that voting theories founded on rational action are problematic. To resolve this theoretical problem, we proceed cautiously and skeptically about the extent to which distance to election-day and early-voting sites can affect the decision to vote at all.

Certainly, there are individuals who could not be induced to vote even if the action was made completely costless. Yet, if there are just some voters who weigh costs in the voting process, then there are some people potentially mobilized by easing those costs. Although decreasing the burden will probably not induce massive increases in turnout, resolving the issue of cost seems to be much easier from a policy standpoint than resolving the issue of low efficacy and motivation. Institutions are easier to "fix" than attitudes.

We now undertake the task of evaluating to what extent cost, as measured in distance, affects voting and choice-of-vote method.

Contingent Valuations and Travel Costs

Going to vote is not like going to purchase a gallon of gas or some other market good. The value of market goods is determined through the price mechanism in organized markets. Voting can be viewed as a nonmarket or public good in that its value is not captured by any price mechanism. In spite of this fact, the value of voting, and of alternative voting methods, will vary and so will the cost of doing so. Choices to vote or abstain, and especially of which method of voting to use, may be sensitive to the effort required to go to the polling place. So voting will be valued differently by citizens, depending on how much people are willing to give up in terms of time and travel effort to exercise their franchise.

In the field of environmental economics, travel cost has often been used for estimating the demand for a particular public good, such as use of a park or beach. In some studies, the cost of travel to a site is taken as a proxy for

the price of the site. As travel costs increase, visitation to the site drops. The price of the public good is contingent on how it is valued—hence, we come by the notion of "contingent valuation" of unpriced goods (Kahneman and Knetsch, 1992; Clawson and Knetsch, 1966; O'Doherty, 1998).

When a voter goes to a precinct site to vote, he or she is faced by the dual constraint of distance and time. Voters living further away will have higher travel costs and take more time in route than those living closer. Those dual costs result in lower turnout among those who are living more distant from the traditional election-day location. Travel time to the precinct site imposes an opportunity cost because it takes away from work or leisure time that could be spent on other activities.

In related research borrowing the contingent valuation approach to study turnout, Gimpel and Schuknecht (2003) found that travel costs were not especially high in the densest urban areas and were not the prime determinant of low turnout. Travel cost appeared to exercise a depressive impact on turnout in the middling or suburban reaches of metropolitan areas where voters were burdened by a mix of distance and impedance—or congestion between home and work. With the exception of this study and one other (McNulty and Brady, 2004), there has been virtually no analysis of the nonmarket valuation of voting characterized in terms of travel cost.

Case Selection

In this study, we are seeking to evaluate the extent to which voting reforms often rationalized on a cost-benefit understanding of the decision to vote have been effective in mobilizing voters and otherwise altering their method of voting. To understand this, we turn to a unique data set from a fascinating location: the Clark County, NV, voter file. Clark County contains the major city of Las Vegas, along with some prominent suburbs. Nevada has proven to be an intense battleground state in recent presidential elections, and 70 percent of the state's population lives in the greater Las Vegas area.

The selection of Clark County as the area of study for this project is primarily related to its convenience-voting programs and the fact that the use of alternative-voting methods has become just as prevalent as traditional precinct voting. Since 2000, residents of Clark County have had three ways they can cast ballots: traditional precinct voting on Election Day, voting by mail, and in-person early voting.[2]

[2]Some might suggest that Clark County is an unrepresentative case because it is such a large county, but its admittedly vast land area is misleading. Most of the county's 7,800 square miles are barren desert. The actual part of the county that is inhabited is much smaller, confined primarily to the City of Las Vegas and its suburbs, perhaps 250–300 square miles total. Many major cities of similar population size are spread across a more expansive land area, including Kansas City, Indianapolis, Jacksonville, Phoenix, Nashville, Austin, El Paso, and Virginia Beach. The case is not as unusual as it might seem at first glance.

The Clark County early-voting program, in particular, stands out as a significant attempt to ease the costs of time and distance associated with precinct voting. For 14 days before an election, voters have the option of casting a ballot at any of the early-voting sites in the county, which are located at supermarkets, libraries, shopping malls, and community centers. In 2002, there were seven permanent sites, open for the entire 14-day early voting period, and seven mobile teams, which moved from neighborhood to neighborhood throughout the period, staying an average of two days at each location and covering 55 different locations during the 14-day period.

A map of the permanent and temporary early-voting sites showed them to be evenly dispersed throughout the county, with the notable exclusion of the small town of Sandy Valley, located approximately 50 miles southwest of Las Vegas. As for how the sites are chosen, the Clark County Department of Elections states that early-voting locations are chosen by an advisory board that includes representatives from "senior citizens' groups, minority interest groups, political parties and other community organizations."[3]

Early voting caught on quickly in Clark County. In its first year as a voting option, a plurality of voters chose to vote at their neighborhood supermarket or community center rather than at a traditional precinct location. In 2000, 43.6 percent of voters cast their ballots at an early-voting site, while 13 percent cast their ballots by mail and 43.4 percent voted at their election-day polling site. In 2002, 47.3 percent of voters cast their ballot at the precinct on Election Day, while 9 percent voted by mail and 43.6 percent voted early.

Measures of Distance and Hypotheses

We began by using a geographic information system (GIS) to map individual voters onto a street map for Clark County. We were able to accurately place more than 96 percent of the total voter list at the correct street range. Using part of the toolset from the GIS, we were further able to place voters within their respective precincts using a spatial join command and precinct site data from the Clark County GIS Management Office.[4]

Following Gimpel and Schuknecht (2003), we use the city-block method for calculating the distance between each geocoded voter's residence and that voter's designated precinct site.[5] In addition, we calculated the same distance between each voter's residence and the nearest early-voting site. Since voters may choose to vote at their precinct site or at an early-voting site, including

[3] ⟨http://www.accessclarkcounty.com/election/earlyvot.htm⟩, accessed in April/May 2004.

[4] ⟨http://www.co.clark.nv.us/ceit/gismo/gismo.htm⟩, accessed in April/May 2004.

[5] City-block distance or Manhattan-block distance is defined as: $d_i = |(x_1 - x_2) + (y_1 - y_2)|$ where x, y are the longitude and latitude coordinates for the origin (1) and the destination (2). This measure is particularly useful when it is unreasonable to assume that travelers can move directly from point *a* to point *b* (as the "crow flies") but must instead travel a more angular path from *a* to *b*.

the distance to each location provides us with a measure of the alternative travel costs associated with voting. Our hypotheses are as follows.

> H_1: *As distance to the election-day polling place (or early-voting site) increases, voting at the polling place (or early-voting site) will be less likely.*
> H_2: *As distance to the election-day polling place (early-voting site) increases, voting at an early-voting site (the election-day polling place) will be more likely.*
> H_3: *As distance to the polling place (early-voting site) increases, abstention will be more likely.*
> H_4: *As distance to the polling place (early-voting site) increases, absentee voting by mail will be more likely.*

Hypotheses 3 and 4 suggest that as travel distance increases we are likely to see (1) voters choosing not to vote, and (2) voters choosing to vote by mail, over the other two options: voting at the precinct site or voting at an early-voting site.

The inclusion of control variables is important to rule out some of the principal alternative explanations for our observed outcomes. Among the controls, we use party registration (Republican, Democrat, or independent/"unaffiliated") to account for the fact that partisans are more likely to vote, and choose alternative vote methods than are independent and unaffiliated voters (Oliver, 1996). Partisans are also more likely than independents or the unaffiliated to be contacted by a political party or politically-related organization (Rosenstone and Hansen, 1993). Age is included because it is well known that older voters participate more, and are more likely to use convenience-voting methods than are younger voters (Rosenstone and Hansen, 1993). Finally, among individual-level covariates, we control for the years the voter has been registered at his or her present location. Although this is likely to vary directly with age, it is also an important indicator of residential stability. If we take two voters both age 50, but one has been enrolled as a registrant for 26 years, and the other for only one year, we might expect the longer-term registrant to vote more, and make more frequent use of the local availability of convenience-voting methods.

In the absence of detailed individual information about socioeconomic status, education level, migration status, and workday commuting, we substitute information capturing the characteristics of neighborhoods in which voters reside. These ecological variables may also pick up neighborhood effects on individual behavior. We might reasonably hypothesize, for instance, that neighborhoods with more college-educated residents will promote greater participation through alternative methods because individuals learn more about politics and participation from living in these locales than they would living in areas with less education and information exchange (Huckfeldt and Sprague, 1995; Huckfeldt, 1979; Rolfe, 2004). To test for the effects of time sensitivity, we include a variable for the percentage of the voter's neighborhood that commutes more than 60 minutes to work. We then compute an interaction term by multiplying the education and

commuting variables to directly test the hypothesis that the combination of knowledge and inconvenience generates a demand for alternative-voting methods. The interaction of education and commuting might be especially likely to promote convenience voting because these settings mix greater information exchange with time pressures that generate a demand for easier methods of getting to the polls. Finally, while we cannot include a specific measure of individual socioeconomic status, we do control for the socioeconomic status of the neighborhood—as measured by the percentage of the local population in poverty. Here, we simply hypothesize that voters living in settings with large shares of low-income residents are not only more likely to be low-resource voters themselves, but also to pick up fewer cues from their neighborhood that might encourage participation or convenience methods of voting.

Model Estimation

The dependent variable in our initial multivariate analysis takes on four values: nonvoters, precinct voters, early voters, and absentee-vote-by-mail voters. We model these four outcomes using multinomial logistic regression, typically used for cases in which the dependent variable takes on more than two values but where there is no ordinality to those outcomes. We also contemplated the use of nested logit, with the first choice being the decision to vote, and the second choice the method of vote. In the end, we developed both substantive and technical reasons to reject the nested logit framework. First, it is not clear that voters do decide to vote first, then choose their method, in sequential fashion. If the contention of electoral reformers is correct, the availability of easier methods should make would-be nonvoters reconsider their decision to abstain. Although there are certainly some voters who will choose their method after they first decide to vote, there are others who can be mobilized by easy voting—those registered voters who may not know where their polling site is, but stumble on an early-voting site on a trip to the supermarket. Citizens who might choose to abstain in locations where only precinct voting is available might not choose to abstain if early on-site voting is an option. This means that the correct estimation involves comparing the odds of voting by each vote method to the odds of nonvoting. On the technical side, our data are unbalanced and therefore did not meet the requirements of nested logit estimation techniques in standard statistical software.

To identify the model, we set nonvoters as the baseline group to which the other three outcomes are compared. At the foundation of this model is an important assumption called the ''independence of irrelevant alternatives,'' or IIA. This assumption implies that the outcome categories must be distinct and considered independently in the eyes of each voter. Because the alternatives here—nonvoting, early voting, vote by mail, and election-day voting—are sufficiently dissimilar, the MNL model should work well (Long, 1997:182–84). And, in fact, our diagnostic tests for the IIA assumption

were either inconclusive or favored the null hypothesis that each outcome was independent of other alternatives, suggesting that the MNL is an acceptable estimation technique.[6]

The key independent variables are distance expressed as the number of miles from each voter's residential address to his or her designated election-day voting site and the number of miles from each voter's residence to the nearest early-voting site.

We estimate the model for all voters, and we present the predicted probabilities from the MNL models in Table 1.[7] These probabilities were calculated at the minimum (0) and maximum (1) value of each independent variable that is measured as a 0,1 dichotomy while the other explanatory variables are held constant at their sample means. These probability values are presented as proportions, but can easily be translated into percentages. For the independent variables indicating distance, poverty, education, commute time, and the interaction term, we also calculate the difference in the probability of voting across the entire range of the variable.

Results

Results from our estimation are presented in Table 1 expressed as changes in the probability of observing each outcome resulting from moving the value of each independent variable from its minimum to various other values of interest, with the values of other explanatory variables held constant at their sample means.

First, our results for the distance to either a precinct or an early-voting site show that as this quantity rises, early voting and precinct voting drop significantly (see Figure 1). Nonvoting eventually drops with greater distance, but not at the shorter ranges of distance affecting most voters—more on this below.

Absentee voting rises significantly with distance from a precinct site, but not with distance from an early-voting site. Specifically, as we move from the shortest total distance (0.10 miles) to the longest distance (65 miles), absentee-by-mail voting increases by about 94 percent. Granted, there are very few voters who live in these most remote desert reaches of Clark County where the distance to an election-day polling place is this far away, but for those who do, the stunning costs of distance outweigh many other considerations when it comes to voting and choice of method. Even so, it is more instructive to examine the probabilities for those who live at one standard deviation beyond the mean distance from a precinct site, or around 1.75 miles. Our calculations suggest that this more typical distance faced by the Clark County voter increases absentee voting by 0.9 percent and drops precinct voting by 2.3 percent. What is more, this typical distance also

[6]We used the Hausman test of IIA that is described and referenced in J. Scott Long (1997:184). We also used the alternative Small-Hsiao test.

[7]The results, expressed in terms of logistic regression coefficients, appear in the Appendix.

TABLE 1

Changes in Predicted Probabilities for Each Vote Method Given Minimum and Maximum and Other Selected Values of Independent Variables, Including Nonvoters

Variables	Precinct	Absentee	Early	Nonvoting
Distance to precinct min-max	−0.251	0.948	−0.197	−0.500
Distance to precinct 0 to 2 miles	−0.027	0.010	0.002	0.014
Distance to precinct 0 to 4 miles	−0.052	0.023	0.002	0.026
Distance to precinct 0 to 6 miles	−0.075	0.038	0.001	0.036
Distance to precinct 0 to 10 miles	−0.116	0.075	−0.005	0.045
Distance to early voting min-max	0.314	−0.019	−0.134	−0.161
Distance to early voting 0 to 2 miles	0.012	−0.001	−0.008	−0.003
Distance to early voting 0 to 4 miles	0.025	−0.004	−0.016	−0.006
Distance to early voting 0 to 6 miles	0.037	−0.004	−0.024	−0.010
Distance to early voting 0 to 10 miles	0.065	−0.010	−0.040	−0.020
Republican	0.050	0.033	0.061	−0.144
Democrat	0.033	0.014	0.028	−0.076
Women	0.001	0.011	0.009	−0.021
Age 18–29	−0.073	−0.029	−0.163	0.266
Age 30–39	−0.003	−0.028	−0.135	0.167
Age 40–49	0.023	−0.022	−0.083	0.083
Age 50–59	0.004	−0.011	−0.026	0.032
Age 65 and up	−0.034	0.042	−0.024	0.016
Years registered	0.207	0.016	0.251	−0.474
% from different state	−0.047	0.001	0.031	0.016
% college	0.051	0.005	0.079	−0.136
% commuting > 1 hour	−0.082	−0.012	−0.215	0.309
% in poverty	−0.147	−0.012	−0.166	0.325
% college × % commuting > 1 hour	0.026	0.036	0.369	−0.431

NOTE: Probability calculations are derived from multinomial logistic regression estimates in the Appendix.

SOURCE: Clark County Voter File, 2002 and Census tract data from U.S. Census.

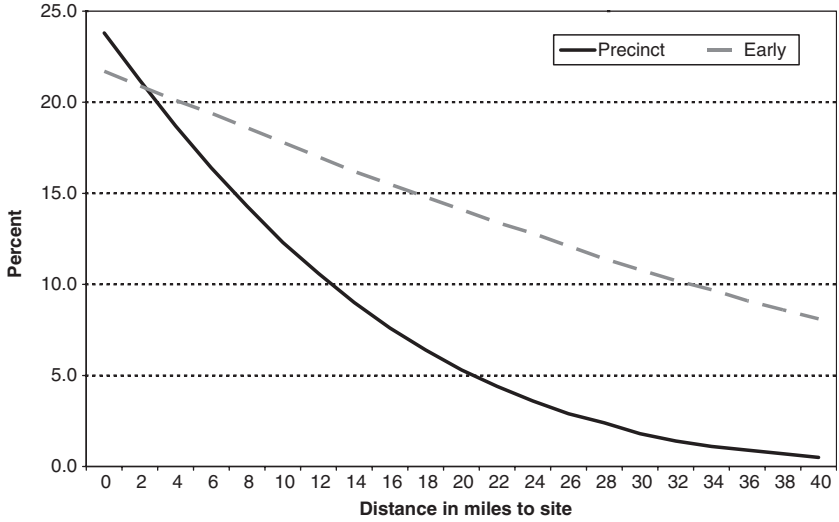
increases nonvoting by 1.3 percent. For those living 5 miles from a precinct site, nonvoting increases by 3.1 percent, and at 12 miles of distance, by 4.5 percent. Distance does place a tax on turnout.

We had also hypothesized that the distance to early-voting sites would play an important role in whether voters went to their traditional polling place on Election Day, or decided to drop in to an early-voting site, perhaps at a supermarket or community center. Distance undoubtedly does play a role here, as those nearest to their early site were 13 percent more likely to vote at one of these sites than those who were furthest from the nearest early-voting site. However, distance from an early-voting site did not discourage voting but rather converted would-be early voters into precinct voters.

Taken as a whole, the effects of distance shown in Table 1, while mixed, are not negligible. Clearly, proximity to a precinct site has a greater positive impact on use of this method than proximity to an early-voting site has on

FIGURE 1

Impact of Distance to Precinct and Early-Voting Sites on Turnout by Each Method



casting an early ballot. Also, proximity to a traditional precinct site has a more pronounced impact on reducing nonvoting than does proximity to an early-voting site.

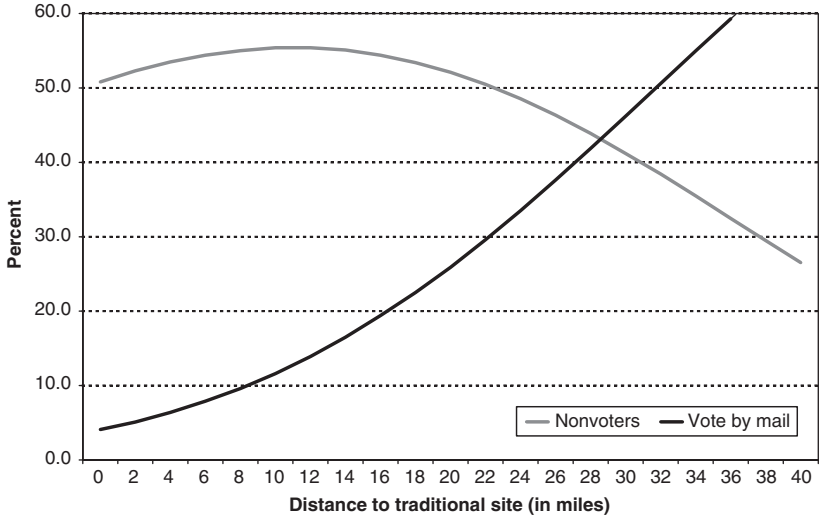
Perhaps the most noteworthy results are those for the effect of distance on abstention and vote by mail. Proximity to the election-day precinct site makes a big difference to both. These fascinating results are depicted in Figure 2, which graphs the probability of abstaining and voting by mail (on y axis) for each increment of total distance (on the x axis). What we see is that *nonvoting* increases with distance to about 10 miles, whereupon it levels off and then begins to drop. Tens of thousands of Clark County voters, certainly the vast majority, live within this short distance range from their precinct site—the range where this negative impact on turnout is being observed. Although nonvoting does eventually drop off at extraordinarily long distances, rather few voters live this far away from an election-day site, and those who do apparently use absentee ballots (see Figure 2).

Figure 2 shows that absentee voting through the mail increases steadily as distance to an election-day site increases, to the point where at 24 miles of distance, 30 percent of voters are mailing in their ballots. Less than 1 percent of residents live this far out in the county, but it still amounts to several hundred registered voters (not to mention an unknown number of citizens who are eligible but not registered).

Undoubtedly, what the high degree of nonvoting at very short ranges of distance signifies is that many voters in the inner-city neighborhoods of Las Vegas fail to vote even if the total distance to a precinct or early-voting site is

FIGURE 2

Impact of Distance to Election-Day Site on Nonvoting and Use of Absentee-by-Mail Ballots



negligible. No question, this is a majority of nonvoters. Their nonparticipation is not due to the costs associated with getting to and from the polling place, but instead attributable to other sources of low participation, including motivation and interest levels, and a lack of mobilization by parties and candidates (Berinsky, 2005; Rosenstone and Hansen, 1993). Still, our results show that distance to and from a traditional precinct site has a nonlinear impact on the act of participation itself, and seems to have a noticeable impact on voting for a small but significant proportion of the total Clark County electorate, perhaps 20,000–40,000 voters. Distance has a much greater impact, however, on the method used to cast a ballot—particularly by increasing the vote by mail.

What of the effects of other variables in the model? First, we see that Republicans avail themselves of absentee ballots far more than Democrats or independent voters, consistent with previous research (Oliver, 1996). Women are slightly more likely to number among nonvoters than men, but there are no substantively strong differences in vote method. The findings for age cohort are predictable, with younger voters numbering heavily among nonvoters and among the least likely to vote either at the precinct or at an early-voting site. The number of years a voter is registered is most positively associated with precinct and early voting, but also increases the use of absentee ballots.

The ecological variables capturing aspects of the voters' neighborhood socioeconomic and informational environments indicate that the proportion of migrants from other states is associated with a drop of 5 percent in

precinct voting across that variable's range of values, but this loss is not entirely offset by early or absentee voting.

The proportion of residents who are college educated increases the probability that a registered voter of that neighborhood will vote at the precinct by 5 percent, and will cast an early vote by 8 percent. Nonvoting in these neighborhoods is reduced by nearly 14 percent. Commuting appears to place a heavy tax on voter turnout in Clark County. Voters residing in areas with the lengthiest commutes see a drop in participation at the precinct by 8 percent, and early voting by 22 percent, over those neighborhoods with lesser commutes. All tolled, voting is 31 percent lower in the neighborhoods where the largest percentage of residents face hour-long commutes compared to those living in neighborhoods with the smallest percentage of long-distance commutes. Apparently, though, the interaction of education and commuting has a modest positive impact on the use of early and absentee votes. We had hypothesized that in these neighborhoods we would see a demand for convenience coupled with knowledge of how to use these methods. There is some support for this, as absentee and early voting are significantly higher in those locations with the highest interactive value of commuting and education than in those neighborhoods with the lowest combination.

What About Party Contacting?

Some may find fault with our estimates for not taking into account the effects of party contacting or party influence on absentee and early voting. In response, we did manage to secure data on Republican Party contacting efforts in Clark County for the 2002 election. This information was in the form of the number of phone calls made to each registered voter on the Clark County voter file. Republican registrants received up to four phone calls in late September and October designed specifically to stimulate early and absentee voting.

What impact did party contacting have on the use of alternative methods and on nonvoting? Our results indicate that the impact was positive on all forms of participation. Specifically, GOP voters who received four phone calls were 8 percent more likely to vote on Election Day at their traditional site, 2 percent more likely to cast an absentee ballot, and 7 percent more likely to vote early than those who received no phone contacts. The probability of nonvoting was reduced by 17 percent among those who received four phone calls, compared to those who received none. Although these estimates are undoubtedly inflated due to the fact that parties tend to contact people who have reliable voting histories (in other words, party contacting is itself endogenous to vote history), party contacting does seem to be of some importance—at least for Republican voters in this very large county.

The question for present purposes, though, is whether the inclusion of the party contacting information altered the results for distance—the focus of our research in this particular work. The answer is no, and the results of our

estimates are reported in Table 2. These figures, and associated calculations, show that the detrimental effects of distance on turnout are not overcome by the stimulus of a mobilization-related phone call. Election-day voting at the precinct site still drops with distance. And distance from precinct sites still increases absentee voting dramatically, regardless of how many phone calls voters received. Various interaction terms of the distance measures by party contacting (not reported in Table 2) were statistically insignificant, with the important exception that those who were contacted and who lived the greatest distance from early-voting sites were significantly more likely to use absentee ballots than other voters, controlling for the direct effects of contacting and distance. We conclude from this that party contacting is helpful to the effort to encourage voters to use alternative methods, and particularly absentee ballots, if those voters face the challenges associated with distance. Perhaps contacting would be even more successful if voters were more carefully targeted based on the costs and obstacles they face.

Conclusions

One issue worth addressing is the generalizability of our research. Might greater Las Vegas yield different results than if we were to focus on locations from other states, or even other locations within Nevada? First, we should note that it makes no sense to conduct such studies in the many areas where there is little or no choice of vote method—one must study a phenomenon where it can be observed. Few other locations provide the opportunity that Clark County does. From our perspective, the issue of within-state variation is more troubling since convenience-voting dynamics could be distinct in less urban, more rural settings. Interestingly, though, our preliminary analyses of Washoe County, NV (Reno), do not show appreciable within-state differences. This would likely change in wholly rural locations, but this must be left for future research to determine.

The broader implications of our research are fairly clear: registration is not the only significant cost imposed on voting, though it may be the biggest one. Even those who are registered can face significant travel costs. These travel costs are taken into account in both the decision to participate and just how one should cast one's vote. And these voters for whom travel costs reduce participation and alter vote method have a particular geography, located, as they are, on the fringes of metropolitan areas, but not in the most rural locations.

Campaigns and political parties care greatly about mobilizing voters in close contests (Aldrich, 1993). To this end, the implications of our work are informative for refining the art of voter contacting. Greater distances from home to one's precinct or nearest early-voting site dramatically increase the probability of casting an absentee vote. In this sense, distance has an undeniable impact on choice-of-vote method. This is useful information for those who are seeking to target specific voters on a voter list for absentee-

TABLE 2

Multinomial Logistic Regression Estimates of Republican Precinct, Absentee, and Early Voters Relative to Nonvoters with Party Contacting Information

Independent Variables	Precinct Voters	Absentee Voters	Early Voters
Distance to precinct	0.938**	1.090**	0.991*
	(0.006)	(0.005)	(0.004)
Distance to early voting	1.030**	1.004**	0.989*
	(0.003)	(0.005)	(0.004)
Women	1.055**	1.286**	1.069**
	(0.012)	(0.026)	(0.013)
Age 18–29	0.481**	0.162**	0.209**
	(0.013)	(0.009)	(0.006)
Age 30–39	0.807**	0.219**	0.331**
	(0.020)	(0.010)	(0.008)
Age 40–49	1.027**	0.338**	0.558**
	(0.026)	(0.015)	(0.013)
Age 50–59	0.988**	0.674**	0.851**
	(0.026)	(0.028)	(0.020)
Age 65 and up	0.830**	2.340**	0.852**
	(0.022)	(0.086)	(0.021)
Years registered	1.076**	1.058**	1.087**
	(0.002)	(0.003)	(0.002)
% from different state	0.997**	1.001	1.001*
	(0.001)	(0.001)	(0.001)
% college educated	1.007**	1.007**	1.009**
	(0.001)	(0.002)	(0.001)
% commuting > 1 hour	0.982**	0.971**	0.930**
	(0.004)	(0.006)	(0.004)
% poverty	0.954**	0.958**	0.960**
	(0.004)	(0.008)	(0.005)
% college × % commuting	1.002**	1.003**	1.003**
	(0.000)	(0.000)	(0.000)
Contacted by party	1.185**	1.193**	1.185**
	(0.005)	(0.008)	(0.005)

$^{**}p < 0.01$; $^{*}p < 0.05$.

$N = 189{,}893$.

Pseudo $R^2 = 0.0665$.

$\chi^2 = 26609.08$.

Significance $\chi^2 < 0.000$.

NOTE: Multinomial logistic regression estimates; diagnostic tests are for the entire MNL model.

SOURCE: Clark County Voter File, 2002 and Census tract data from U.S. Census.

vote mailings and follow-up phone contacts. Perhaps party contacts aimed at stimulating absentee and early voting should be directed principally toward those whose political lives are adversely impacted by distance. Party contacting could overcome the negative impact of distance if the appropriate voters were targeted.

Greater distance to election-day precinct sites also increases nonvoting, at least to a point, but the effect is nonlinear. Voters in the very outermost reaches of the metro area use absentee votes in very high proportions. At extremes of distance, voters are sufficiently conditioned to its effects on so much of their daily routine that it plays less of a role in their calculations about voting. These citizens have often already taken steps to cast absentee ballots through the mail as our findings suggest the vast majority of them do so.

Without question, it appears that nonvoting drops more when voters find themselves living nearer to traditional precinct sites than when they live closer to early-voting sites. This may have to do with the fact that would-be nonvoters do not know much about early voting and have not decided who to vote for early enough to cast an early vote even if a site is close by. Put another way, giving typical nonvoters an early-voting site near their homes, when they are far away from a traditional precinct site, does not do much to stimulate their participation. They would seem to benefit most from living close to a traditional election-day site. This may reflect the late timing of their vote decision, although we do not have the survey data to directly test that here.

One means for overcoming the detrimental effects of distance on turnout is to increase the slope of the line for absentee voting shown in Figure 2, first through better targeting of registered voters whose lives are adversely impacted by the awkward location of precinct and early-voting sites relative to their homes. Another solution would be to increase the number of early sites and precinct sites, providing that suitable locations are available. In transportation engineering and geography, a sophisticated set of location-allocation models has been developed precisely for these applications. A next step in our research is to apply these models to optimize the siting of polling places.

We acknowledge that these solutions addressing the impact of distance on participation do not reach the large proportion of nonvoters who live in the metro's most compact and densely populated precincts and for whom the accessibility of the polling site is not the determining factor. But we are not simply tinkering at the margins, either. This is among the first set of research findings to demonstrate that distance has an important impact on participation and participation methods. We would agree with electoral reformers that the questions of participation and method are not entirely separable, as if the decision to participate is independent of the method used. Outreach efforts, whether partisan or nonpartisan, desperately need refinement. This will involve reaching the right nonvoters with the right information about the right voting method.

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Appendix: Multinomial Logistic Regression Estimates of Precinct, Absentee, and Early Voters Relative to Nonvoters

Independent Variables	Precinct Voters	Absentee Voters	Early Voters
Distance to precinct	0.927**	1.111**	0.990**
	(0.004)	(0.004)	(0.003)
Distance to early voting	1.030**	0.986**	0.984**
	(0.002)	(0.005)	(0.003)
Republican	1.635**	3.462**	1.783**
	(0.018)	(0.097)	(0.021)
Democrat	1.325**	1.833**	1.328**
	(0.014)	(0.052)	(0.016)
Women	1.021**	1.248**	1.042**
	(0.007)	(0.018)	(0.008)
Age 18–29	0.451**	0.141**	0.201**
	(0.008)	(0.006)	(0.004)
Age 30–39	0.738**	0.194**	0.317**
	(0.011)	(0.007)	(0.005)
Age 40–49	0.944**	0.329**	0.537**
	(0.014)	(0.010)	(0.008)
Age 50–59	0.960**	0.623**	0.826**
	(0.015)	(0.018)	(0.012)
Age 65 and up	0.837**	2.579**	0.859**
	(0.014)	(0.066)	(0.013)
Years registered	1.084**	1.073**	1.094**
	(0.001)	(0.002)	(0.001)
% from different state	0.997**	1.000	1.002**
	(0.000)	(0.001)	(0.000)
% college educated	1.008**	1.008**	1.011**
	(0.001)	(0.001)	(0.001)
% commuting > 1 hour	0.971**	0.968**	0.927**
	(0.002)	(0.004)	(0.002)
% poverty	0.968**	0.977**	0.956**
	(0.002)	(0.004)	(0.003)
% college × % commuting	1.002**	1.002**	1.003**
	(0.000)	(0.000)	(0.000)

**$p < 0.01$.

$N = 497{,}578$.

Pseudo $R^2 = 0.0734$.

$\chi^2 = 69536.82$.

Significance $\chi^2 < 0.000$.

NOTE: Multinomial logistic regression estimates; diagnostic tests are for the entire MNL model.

SOURCE: Clark County Voter File, 2002 and Census tract data from U.S. Census.