Unraveling the Effects of the Internet on Political Participation?

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While a long tradition of research documents the demographic and psychological determinants of political participation, there is also evidence to suggest that changes in communication technology may play an important role in influencing electoral behavior. We suggest traditional models of voter turnout may be under-specified with respect to changes in the media, especially use of new information technologies. The Internet may enhance voter information about candidates and elections, and in turn stimulate increased participation. Using NES survey data and multivariate analysis we find respondents with access to the Internet and online election news were significantly more likely to report voting in the 1996 and 2000 presidential elections. This was true even after controlling for socioeconomic status, partisanship, attitudes, traditional media use, and state environmental factors. Simulations suggest access to Internet and online election news significantly increased the probability of voting by an average of 12 percent and 7.5 percent, respectively, in the 2000 election. The mobilizing potential of the Internet in 2000 was also associated with increased participation beyond voting. The findings help us understand how technology can impact voting and American political participation.

Leading behavioral theories of political participation have shown that socioeconomic characteristics of voters—education and income—are the most important variables in explaining whether one votes in the United States. Voter turnout is also affected by race, ethnicity, age, gender and attitudinal factors such as partisanship, political efficacy and political interest (Abramson 1983; Campbell et al.. 1960; Conway 1991; Wolfinger and Rosenstone 1980; Rosenstone and Hansen 1993; Piven and Cloward 1983; Verba and Nie 1972; Verba, Schlozman, and Brady 1995). While a long tradition of research documents the demographic and psychological determinants of political participation, there is also evidence to suggest that changes in communication technology may play an important role in influencing electoral behavior. Research has found that those who read about politics in newspapers learn more than those who watch television (Smith 1989). We suggest traditional models of voter turnout may be under-specified with respect to changes in the media, especially use of new information technologies. In the past decade new communications technology has changed the way many people gather news and participate in politics. The most important of these new technologies is the Internet, which is becoming the mass medium for the twenty-first century. The Internet combines the audiovisual components of traditional forms of media such as newspaper and television with the interactivity and speed of telephone and mail. It facilitates communication flexibility, allowing individuals to choose what information to access and when to access. It also permits users to exchange large amounts of information quickly regardless of geographical distance.

Political scientists who ponder the question believe that the Internet should not be expected to boost turnout and indeed an early empirical study on the subject provided supported for this conclusion (Bimber 2001). If the Internet does have an effect on turnout, the finding would not only run counter to the empirical literature, but would require scholars who study participation to account for and accommodate a turnout effect of the Internet, including factors such as Internet use in theoretical and empirical models of voting behavior.

It is difficult to predict which communication technology will be widely adopted by the public and even more difficult to anticipate the impact it may have on areas such as the economy and politics. It was speculated that Videotext and two-way cable television would be adopted quickly in the United States but they have not lived up to their promise. On the other hand, radio and television spread more rapidly than could have been anticipated. Media system dependency theory suggests that the difference between those forms of media that have a direct impact on the public and those that do not is based on needs and resources (DeFleur and Ball-Rokeach 1989: 248-51). Individuals need more information than they can themselves obtain due to costs (money and time). One of the media's greatest resources is information and the public relies on media to subsidize them—provide them with the information they need. A medium that provides the public with the information it needs quicker, cheaper, or in a more convenient form is more likely to be adopted and change patterns of behavior. Drawing on media system dependency theory, we hypothesize that the variety of information sources on the Internet (about candidates and elections), combined with the speed and flexibility in obtaining information online, may stimulate increased participation.

The next section draws on mass communications theory to further explore how telecommunication technology may increase participation through increasing the availability of political information. Section 2 discusses the relationship

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between Internet access and varying forms of citizen participation. The methodology and data used in this analysis are discussed in section 3 and the findings in section 4. Section 5 concludes.

1. MEDIA AND POLITICAL INFORMATION

Events of the 1960's and 1970's illustrate how historical changes in communications can profoundly alter the role of the media in elections. Prior to the 1960s, political parties acted as the dominant means of information exchange between the public and political candidates, usually involving interpersonal communication via party conventions, caucuses, etc. As is well understood, political party reforms at the end of the 1960s shifted control over presidential nominations away from party leaders, making the media (television and newspapers) the most important link between candidates and the public. In a mass media dominated political arena, presidential candidates needed to appeal to rank-and-file voters, requiring greater access to the general public, and could no longer simply appeal to party leaders to gain the party nomination. In addition, campaign finance reform forced candidates to raise funds in smaller amounts from more sources. Both of these reforms increased candidate reliance on the mass media and decreased the importance of party leaders. Advances in technology also aided the transition in power from party bosses to candidate-centered elections. Widespread television ownership in the United States allowed voters to see and hear the candidates from the comfort of their living rooms; individuals had greater access to information to help them decide how to vote, and candidates no longer had to depend on the party for access to the voters (Kerbel 1995: 67-71).

Scholars and pundits alike have expressed concern about the transfer of power from the parties to the media in the political process. Previous research in this area is relatively consistent in terms of the negative impacts on political participation (Davis 1994; Graber 1989; Kerbel 1998; Cappella and Jamieson 1997; Crotty and Jacobson 1980). The television media has been found to focus on the "horserace" aspect of election races—who is winning, how close the race is, and what strategies are being used to increase a candidate's chances of winning—instead of candidate qualifications and substantive political information. This type of election coverage, along with an increase use of negative campaign ads, has led to concerns that media coverage of elections has decreased voter turnout (McChesney 1999; Fallows 1996). The press has been blamed for the disengagement of citizens in the political process; interested individuals cannot find substantive information on which to base their votes and are turning away from the political process (Crotty and Jacobson 1980; Entman 1989).

While many researchers attribute lower voter turnout to media coverage, others (McLeod and McDonald 1985) find that media use (television and newspapers) is instrumental in increasing political knowledge, efficacy and even voter turnout. One possible explanation for inconsistencies in findings is that most research treats the electorate as passive receptors of the media. McLeod and McDonald (1985) argued that the public actively makes decisions about how much media they use and how they use it to form political opinions.

The media (both traditional and the Internet) can help increase voter participation by not only providing citizens with information to make informed voting decisions, but by stimulating interest in elections. While critics argue that media coverage is increasing superficial, there is a substantial body of literature that suggests voters learn from a variety of media sources including newspaper, television, and televised debates (Weaver 1996). Scholars who have studied the media over time generally conclude that the media reinforces political interest and voting intentions, because political interest, voting and learning from the media reinforce each other (see Weaver 1996 for a review). The agenda setting literature (McCombs and Shaw 1972; Iyenger and Kinder 1987; Weaver et al. 1981) has shown that voters use the media to learn what issues are important. There is also evidence that voters acquire information with regard to candidate traits (Weaver et al. 1981) and candidate issue positions (Chaffee and Kanihan 1997; Weaver and Drew 1993). This literature suggests that the media can increase voter turnout by providing the electorate with sufficient information to feel that it can make an informed decision.

At the dawn of the twenty-first century, we are again in a transition in terms of how political information is transmitted to voters, as advances in communication technology have altered the conduct of political campaigns and elections. Yet the impact of the Internet on political participation is largely unexplored, as social scientists are just beginning to try to answer a myriad of questions about its potential positive and negative implications (Bimber 2001; Gibson 2002; Mossberger, Tolbert and Stansbury 2003; Norris 2001; Shah, Kwak, and Holbert 2001).

Previous empirical research on the role of Internet access in shaping citizen participation, is mixed, but can be attributed in part to limited datasets. There have been a number of large-scale datasets obtained from online surveys, but respondents have generally been self-selected and non-random and therefore the studies are limited in terms of making population generalizations (Nie and Erbring 2000). There have also been a number of carefully conducted smaller phone samples that are restricted by a small time frame (Bimber 2001). Most previous research on the relationship between Internet access and political participation has relied on the 1998 midterm elections, making it difficult to generalize the results of these studies to presidential elections.

The fact that the Internet is a fairly recent phenomenon also has meant that the population of online user is rapidly changing both in number and characteristics. When PEW conducted an Internet survey in 1996, respondents with access to the Internet were predominately from high-income families and college educated (Marlin 1999: 11). The most recent findings from the Department of Commerce show that Internet use is growing and including a wider representation of the U.S. population. Findings indicate

that use is rising among minority and low-income groups including a 26 percent annual increase among Hispanics, and a 25 percent increase among households with an annual income below $15,000 (Benner 2002: 1).

Not only has the population of Internet users expanded to include a wider demographic population, but also political websites have become more sophisticated.[1] Candidate websites during the 2000 presidential election included position papers, rebuttals against opponent's statement and well-scripted appeals for money. Major news organizations, such as C-SPAN and CNN, used the latest technological innovations to feature audio-streamed speeches and web cam images to bring convention coverage to cyberspace (Solop 2000). American Online reported that seven of the all-time top ten live "online chats" were political, suggesting an increase in interest and involvement in the political process (Marlin 1999: 12). While almost no grass-root sites existed during the 1996 campaign, there were close to 6,700 during the 2000 election (Wayne 2000: 30).

2. How Does the Internet impact Citizen Participation?

How does empirical research inform this largely normative debate? Early studies on the effects of the Internet on political participation have been mixed. Using a national representative sample (1998 American National Election Surveys), Bimber (2001) found that access to the Internet had no impact on voter participation. With the exception of giving campaign donations, the political behavior of those with access to the Internet and online political information did not differ from those who did not use the Internet to seek political information. Access to the Internet and online political information did statistically increase the probability that a respondent would contribute money to political campaigns, suggesting a mobilizing potential. The research, however, is limited to one midterm election.

In addition to voter turnout, another potentially important consequence of the Internet is the effect it might have on civic engagement and trust in government. A positive impact of the Internet on participation patterns is supported by recent research based on a national representative survey (1999 DDB Life Style Study) which found Internet use for information exchange (but not social recreation, product consumption of financial management) was positively related to individual differences in interpersonal trust, civic engagement, and contentment (Shah, Kwak, and Holbert 2001). Across age cohorts (generation X and baby boomers) individuals who used the Internet for information exchange reported higher levels of interpersonal trust and civic engagement, after controlling for demographic, contextual and traditional media use variables.

Political participation is also defined by activities such as contacting political officials, attending a rally, or signing a petition. Weber and Bergman (2001) found that those individuals who engaged in Internet activities such as using e-mail and chat-rooms were more likely to be engaged in a variety of political activities. Weber and Bergman, however, used *Survey 2000,* an on-line survey conducted as a joint effort by academic researchers and National Geographic Interactive. The survey was self-selected and non-random and therefore subject to selection bias, unlike the studies reported above.

Another area of participation that has been singled out by researchers for study is citizen-initiated contact of public officials. Earlier research found that age, gender, education, political connectedness and proximity to government institutions are important factors in determining if a citizen will initiate communication. Older, educated, white citizens have been found to be more likely to contact government officials (Rosenstone and Hansen 1993; Verba et al. 1995), while women were less likely to instigate contact (Rosenstone and Hansen 1993; Verba et al. 1995). Utilizing a self-selected, nonrandom on-line survey conducted in 1996 and 1997 and two phone surveys Bimber (1999) examined whether or not the Internet altered the pattern of citizen communication. He found that when comparing traditional means of communication to the Internet, many of the same relations still existed. The Internet, however, magnified the gender gap in communication, but narrowed the difference based on political connectedness.

The survey of literature has found that researchers have looked at a number of aspects related to Internet use and political participation. The findings have been mixed, drawing on limited datasets and restricted time frame. In an attempt to address some of the weaknesses of previous research, we explore how the Internet impacts voter turnout and political participation over time using the 1996, 1998, and 2000 American Nation Election Surveys (NES). By examining Internet use for political news over time with appropriate multivariate methods our data overcomes many of the limitations of previous research.

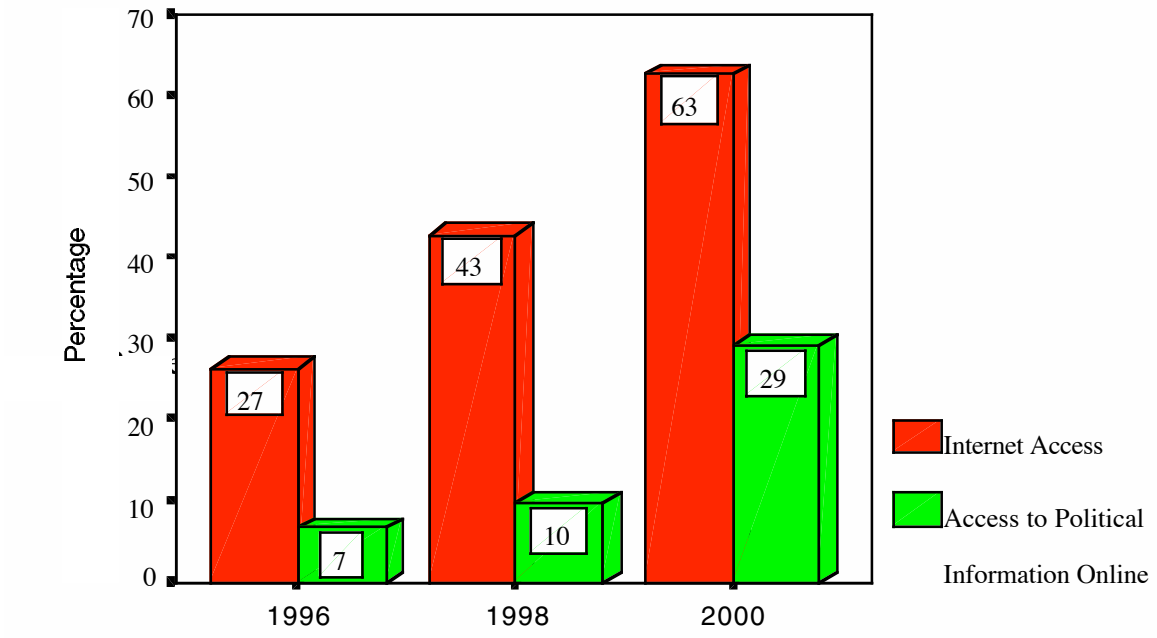
Because the literature on political participation focuses attention on voting, we began by examining the relationship between voting and using the Internet for political information with a simple logistic regression model. In order to use the Internet to obtain political information, one must have Internet access. Since individuals who are more likely to have Internet access (higher income and education) are also more likely to vote, simultaneity may occur resulting in incorrect coefficients. Therefore the relationship between voting and Internet use for political information will further be examined using a two-stage model. Because political participation encompasses more than just voting, we conclude with a two-stage model where the dependent variable consists of an index made up of eight political activities.

3. Data, Measurement and Overview of the Analysis

To examine the impact of the Internet on voter turnout and observe changes over time, we use data from the 1996, 1998, and 2000 American National Election Studies (NES);

[1] The 1998 PEW survey reported that a majority of individuals seeking political information on the Internet felt candidate sites were poorly designed in terms of providing useful information (Marlin 1999: 12).

FIGURE 1
INCREASE IN INTERNET ACCESS AND USAGE FOR POLITICAL REFERENCE, 1996-2000



Source: 1996, 1998, 2000 NES Post-election Study. Inter-University Consortium for Social and Political Research.

nationwide large-scale randomly conducted in-person and telephone surveys.[2] Beginning in 1996, the NES began collecting data on two questions regarding Internet usage. The first asked whether the respondent had Internet access and the second asked if he/she had seen information about the election on the Internet. These two questions allow us to examine the Internet and its impact on political participation.

Figure 1 suggests a dramatic growth in Internet access and use of online political information in the five years of our study. In the 1996 survey, only 27 percent of respondents had access to the Internet, while an even lower proportion (7 percent) used the Internet for political information. By 1998 the percentage of respondents reported having Internet access had almost doubled (43 percent), but still only 10 percent reported seeing online election information. In 2000, 63 percent of respondents reported having Internet access and a substantial, 29 percent, reported obtaining election information on the web. The data suggests a substantial growth in Internet access and its role as a political linkage institution from 1996 to 2000, hinting at its potential mobilizing impact.

The Pew Research Center (2000, June 11) has been tracking media use in presidential elections over time and the findings indicate that the public is moving away from traditional news sources (network television and newspapers) and is placing a greater reliance on media such as the Internet. In 1992, 55 percent of those surveyed indicated that television was one their main source for presidential news coverage and 57 percent used newspapers as a primary source. By the 2000 election, the numbers fell to 22 percent for network television and 39 percent for newspapers. The Internet (on the other hand) rose from a negligible amount in 1992 to 11 percent in 2000. In addition, the PEW surveys found that even for those who do not consider it their main source of election news, the Internet is becoming a tool for gathering election information. In 1996, surveys found that only 4 percent of the general public went online seeking election news. This figure increased to 18 percent in 2000. For individuals who regularly use the Internet these figures rose from 22 percent in 1996 to 33 percent in 2000. The data suggests the Internet is related to declines in television and newspaper use for election news.

The dependent variable in our primary statistical model is voting measured by a dummy variable where 1 indicates that the individual voted in the election and 0 otherwise. The main explanatory variables are Internet access and observing online election information. Both are dummy variables, with Internet access and political information coded 1 and 0 otherwise. The models are analyzed separately for the three years but are not pooled because of changes in NES survey coding in 2000.[3] If the Internet affects voting behavior, we

[2] The NES is conducted every two years and provides one of the most comprehensive sources of data regarding participation in American politics.

[3] The income categories were substantially altered in 2000, making it nearly impossible to recode or otherwise make adjustments so that the three years were compatible. For the 1996 and 1998 surveys, income is

would expect access and use of election news to account for some variation in an individual's decision to vote.

A number of variables were used to control for individual level attitudinal and demographic factors. Previous research (Lewis-Beck and Rice 1992; Wolfinger and Rosenstone 1980) found that socioeconomic factors, particularly income and education, influence individual decisions whether or not to vote. Graphs (not shown) of the participation score versus income categories for each election year indicated a nonlinear relationship between income and the percent of individuals in an income category who were likely to vote. Given this nonlinear (quadratic) relationship, squared income plus income was found to best model the relationship between income and citizen participation.[4] The NES contains a 7-point scale measures partisanship with possible responses ranging from 1 = strong Democrat to 7 = strong Republican. We used this scale to create a series of three dummy variables is used to account for political attitudes, including strong Democrat, strong Republican and pure independents, with weak partisans as the reference group. Education was measured on a 7-point scale and a dummy variable for female respondent was made. To control for race and ethnicity, African Americans, Asian Americans, and Latinos were coded 1 and 0 otherwise, with non-Hispanic whites as the reference group. Graphs suggest voting increases steadily from 18 to 65 years of age and then levels off. A logarithmic relationship was the most efficient way to measure the relationship between age and voter turnout, and was calculated by taking the log of age in years.[5]

We also control for general media consumption, including the number of days the previous week that the respondent read the newspaper and watched the national nightly news. Since political interest is an important predictor of voting, we use a scale ranging from very much interested in the campaign to not much interested. We control for external efficacy by combining the scores from two questions "People don't have say in government" and "Public officials don't care about people like me" into a 5-point scale ranging from strongly disagree to strongly agree. Higher scores measure increased external efficacy or confidence in government responsiveness.

In addition to individual level factors, previous research suggests the importance of state institutional and social context in shaping voter turnout. By merging the survey data with state level data, we are able to explore the environments in which individuals make choices about participating in elections. Previous research suggests state electorates with frequent exposure to direct democracy (ballot initiatives) have higher voter turnout over the past thirty years than states without this process (Smith 2001; Tolbert, Grummel, and Smith 2001), as well as higher levels of political efficacy (Bowler and Donovan 2002). The number of initiatives appearing on state election ballots for 1996, 1998, and 2000 was used to measure variation in state institutional environments (Initiative and Referenda Institute, Washington, D.C.). Based on previous studies, we anticipate respondents living in states with frequent exposure to ballot initiatives to report an increased probability of voting.

Research also shows that state social context is important in shaping voter turnout in the American states. States with higher racial diversity are associated with lower levels of voter mobilization, weaker mobilizing institutions and higher barriers to voter participation. Research shows states with higher racial diversity have significantly lower turnout rates, after controlling for other factors (Hill and Leighley 1999). For 1996 and 1998 we measure state racial context by an index of racial and ethnic percentages, created for the fifty states using 1996 demographic data on the size of the black, Latino, Asian American and non-Hispanic white populations from Current Population Surveys (Hero and Tolbert 1996; Hero 1998). State racial and ethnic percentages from the 2000 census were used to create the minority diversity index for 2000. We expect citizens living in states with higher racial and ethnic diversity to be less likely to vote.

Findings

For each year, the dependent variable is coded so that higher scores are associated with increased voter turnout. Since the dependent variable is binary, we first estimate a simple logistic regression model in Table 1. The data suggests in presidential elections the Internet may increase voter turnout by giving individuals greater access to political information, and in turn stimulating increased turnout. In recent presidential elections (1996 and 2000), respondents who reported viewing online election information were more likely to report voting, after controlling for socioeconomic conditions, partisanship, race, ethnicity, gender, age, traditional media use, political interest, political efficacy, and state environmental factors. Similarly, individuals with access to the Internet were significantly more likely to vote, after controlling for other factors (data not shown due to space constraints). In the 2000 elections, the coefficients for both viewing Internet news and Internet access are positive and statistically significant, and almost twice that of 1996, likely underscoring the growing size of the population with Internet access. The findings provide strong and consistent evidence that the Internet is affecting the political landscape in presidential elections. The relationship between online political news and voting did not

measured on a 24-point scale where 1 indicates family income ranging from $0 to $2,999 and 24 indicates that family income is $105,000 per year and over. For the 2000 survey, income was measured on a 22-point scale where 1 indicates family income ranging from $0 to $4,999 and 22 indicates that family income is $200,000 per year and over.

[4] Other nonlinear transformations, including log income and squared income produced similar findings.

[5] Graphs of the percentage participation versus age for the different years indicated a nonlinear relationship between age and the percentage of individuals in an age group who were likely to vote. The graphs exhibited a gradually increasing curve that leveled off after age 65. This pattern suggested a logarithmic relationship. When age, rather than the log of age, is used in the statistical models, the substantive interpretation of the models is unchanged.

TABLE 1
THE INTERNET AND VOTING

	2000		1998		1996	
Variables	β (se)	p > |z|	β (se)	p > |z|	β (se)	p > |z|
Media						
Internet News	**.558(.199)**	**.005**	–.232(.236)	.326	**.928(.372)**	**.013**
Newspaper	.039(.028)	.160	.010(.026)	.697	.034(.026)	.197
Television (National)	.002(.030)	.930	–.015(.026)	.565	–.024(.028)	.398
Environmental Var.						
Number of Initiatives	–.013(.022)	.558	**.050(.020)**	**.017**	.019(.015)	.202
Minority Diversity Index	.785(.529)	.138	**–1.04(.475)**	**.027**	**–1.141(.518)**	**.028**
Individual Level Var.						
Strong Democrat	**.461(.227)**	**.042**	**.947(.192)**	**.000**	.060(.198)	.760
Strong GOP	**.586(.308)**	**.058**	**1.685(.275)**	**.000**	–.038(.222)	.861
Pure Independent	**–.661(.224)**	**.003**	.037(.225)	.869	–.219(.255)	.389
Log Age	**2.438(.524)**	**.000**	**2.342(.202)**	**.000**	**.394(.216)**	**.068**
Female	.135(.155)	.382	–.219(.139)	.115	.204(.142)	.151
Latino	–.400(.291)	.169	.268(.250)	.284	.395(.272)	.147
Black	.312(.261)	.232	–.006(.222)	.978	.094(.238)	.691
Asian	.556(.674)	.410	.240(.733)	.743	–.390(.570)	.494
Education	**.279(.059)**	**.000**	**.409(.044)**	**.000**	.025(.048)	.605
Square Income	**–.009(.003)**	**.010**	–.000(.001)	.878	**.004(.001)**	**.006**
Income	**.243(.067)**	**.000**	.005(.038)	.896	–.046(.046)	.309
Efficacy	**.129(.035)**	**.000**	.110(.034)	.747	.007(.035)	.826
Interest	**.437(.059)**	**.000**	.070(.052)	.173	.152(.110)	.167
Constant	**–5.646(.984)**	**.000**	**–10.317(.892)**	**.000**	–1.190(.907)	.189
Pseudo R-Square	.2489		.2190		.0657	
LR Chi-Square (18)	367.50	.000	359.79	.000	88.47	.000
N	1329		1191		1215	

Source: 1996, 1998 and 2000 NES Post-election study. Logit maximum likelihood estimates, standard errors in parentheses. Reported probabilities based on two-tailed test. For 1996, blacks constituted 12.1 percent, Asians 1.4 percent and Latinos 8.7 percent of the original sample. For 1998, blacks constituted 11.9 percent, Asians 1.2 percent and Latinos 10.7 percent. For 2000, blacks constituted 11.6 percent, Asians 1.8 percent and Latinos 7.6 percent. Analysis not shown indicates that Internet access alone is a statistically significant predictor of increased voter turnout for all three election years, after controlling for other factors.

hold for the 1998 midterm election, consistent with previous research (Bimber 2001). This suggests that the Internet may not be sufficient to overcome low public interest associated with low profile contests such as those associated with midterm elections.

An Internet effect in presidential elections is supported by recent survey data showing an increased reliance on the Internet for election information during presidential elections (1996 and 2000) compared to midterm elections (1998). In 1996 and 2000, 34 and 35 percent respectively, of respondents who went online to get information about the elections registered their opinions by participating in an electronic poll, compared to 26 percent in the 1998 midterm election (Pew Research Center for the People and the Press 2000).

Two-Stage Regression Model

Because individuals who are more likely to have Internet access (higher income and education) are also more likely to vote, simultaneity in the binary choice models reported in the previous analysis may result in biased coefficients, and therefore incorrect inferences. We thus estimate a two-stage binary logit model for viewing online political news. In Table 2 voter turnout is a function of a set of control variables, as well as the predicted probability of Internet election news from a first-stage binary logistic model (see footnote in Table 2 for details). The primary instrument is Internet access.

Table 2 suggests simultaneity did not lead to biased estimates of the effects of Internet use for election news on voter turnout. After controlling for endogeniety using a two-stage logit model, we find that Internet news is a strong predictor of increased political participation in the 1996 and 2000 presidential elections, but not in the 1998 midterm election. The size of the second stage coefficients for online political news in 1996 and 2000 are strong and statistically significant. Even after using a more rigorous model, we find that online political information has a positive impact on voting behavior.

TABLE 2
TWO-STAGE ESTIMATES OF INTERNET USE AND VOTING

	2000		1998		1996	
Variables	β (se)	p > |z|	β (se)	p > |z|	β (se)	p > |z|
Media						
Predicted probability of Internet News[a]	**1.560(.419)**	**.000**	1.601(4.269)	.708	**1.714 (.631)**	**.007**
Newspaper	.038(.028)	.179	.009(.026)	.716	.033(.026)	.215
Television (National)	.001(.030)	.961	–.014(.026)	.589	–.029(.028)	.315
Environmental Var.						
Number of Initiatives	–.018(.022)	.412	**.049(.020)**	**.019**	.020(.015)	.186
Minority Diversity Index	–.831(.531)	.118	**–1.064(.475)**	**.025**	**–1.105(.518)**	**.033**
Individual Level Var.						
Strong Democrat	**.506(.229)**	**.027**	**.954(.193)**	**.000**	.047(.198)	.810
Strong GOP	**.558(.308)**	**.070**	**1.660(.279)**	**.000**	–.037(.222)	.866
Pure Independent	**–.596(.225)**	**.008**	–.028(.272)	.917	–.228(.256)	.374
Log Age	**3.143(.583)**	**.000**	**2.343(.202)**	**.000**	**.467(.220)**	**.034**
Female	.191(.156)	.221	–.228(.140)	.105	.206(.142)	.148
Latino	–.396(.292)	.175	.245(.257)	.340	.422(.273)	.122
Black	.373(.264)	.157	–.038(.233)	.868	.087(.239)	.715
Asian	.449(.676)	.507	.377(.801)	.638	–.092(.625)	.882
Education	**.230(.061)**	**.000**	**.404(.044)**	**.000**	.022(.048)	.649
Square Income	**–.009(.003)**	**.009**	–.001(.003)	.651	**.004(.001)**	**.016**
Income	**.234(.067)**	**.000**	.029(.068)	.667	–.036 (.046)	.431
Efficacy	**.124(.035)**	**.001**	.022(.043)	.605	.008(.035)	.805
Political Interest	**.400(.060)**	**.000**	.041(.087)	.636	.152(.110)	.166
Constant	**–6.719(1.057)**	**.000**	**–10.335(.859)**	**.000**	**–1.524(.926)**	**.100**
Pseudo R-Square	.2527		.2185		.0660	
LR Chi-Square (18)	373.09	.000	358.97	.000	88.85	.000
N	1329		1191		1215	

Source: 1996, 1998, 2000 NES Post-election study. Logit maximum likelihood estimates, standard errors in parentheses. Reported probabilities based on two-tailed test. In these models, blacks constituted 11.6 percent, Asians 1.8 percent and Latinos 7.6 percent. To control for possible interdependence between the Internet variables and voting, we estimated a 2-stage binary logit model.

[a] Predicted probabilities from first stage binary logit regression where the dependent variable is exposure to Internet election news, and independent variables are income, squared income, education, Latino, female, black, Asian, strong Democrat, strong GOP, independent, log age, efficacy, political interest and Internet access. Internet access is the instrumental variable.

Logistic regression coefficients for individual demographic variables are in the expected directions and relatively consistent over time.[6] Across election years, older individuals were more likely to participate in elections than the young. Consistent with earlier studies the participation models show that strong partisans (Republican or Democratic) are more likely to vote in both 1998 and 2000, than independents or individuals with weak partisanship. Consistent with a long tradition of previous research, individuals with higher education, income and efficacy were more likely to vote, as well as those with more political interest (2000 election only). After controlling for Internet access and use, consumption of traditional media, such as newsprint or television had no measurable impact on voting behavior.

Enhancing recent aggregate state level analyses (Smith 2001; Tolbert, Grummel, Smith 2001), respondents living in states with frequent exposure to direct democracy were more likely to vote in the 1998 midterm, but not in the presidential elections of 1996 or 2000. This suggests that ballot initiatives may be particularly important in stimulating increased interest in off-year elections, when issue campaigns do not compete with presidential races. Confirming previous research based on aggregate state level data (Hill and Leighley 1999), individuals residing in states with higher racial diversity were significantly less likely to vote, after controlling for other factors in two of the three election years.

[6] Many of the traditional demographic and attitudinal control variables are not statistically significant in 1996. While the data has been double and tripled checked for coding errors, the findings likely stem from the fact that the election was a low-turnout, non-competitive presidential election.

TABLE 3
TWO-STAGE ESTIMATES OF INTERNET USE AND INDEX OF POLITICAL PARTICIPATION

	2000		1998		1996	
Variables	β (se)	p > |z|	β (se)	p > |z|	β (se)	p > |z|
Media						
Predicted probability of Internet News[a]	**.267(.128)**	**.037**	**3.010(1.499)**	**.045**	.289(.196)	.140
Newspaper	**.017(.008)**	**.040**	**.028(.011)**	**.011**	**.016(.009)**	**.079**
Television (National)	.005(.008)	.571	.008(.011)	.448	–.009(.010)	.356
Environmental Var.						
Number of Initiatives	–.003(.006)	.596	**.014(.008)**	**.062**	**.010(.004)**	**.043**
Minority Diversity Index	**–.444(.151)**	**.003**	**–.362(.199)**	**.069**	**–.365(.178)**	**.041**
Individual Level Var.						
Strong Democrat	**.153(.059)**	**.010**	**.218(.078)**	**.005**	.080(.066)	.229
Strong GOP	**.139(.064)**	**.031**	**.184(.093)**	**.047**	**.263(.066)**	**.000**
Pure Independent	**–.287(.099)**	**.004**	–.059(.119)	.621	–.054(.107)	.609
Log Age	**.530(.202)**	**.009**	**.461(.081)**	**.000**	**.158(.078)**	**.044**
Female	–.027(.046)	.558	–.066(.059)	.268	–.047(.049)	.339
Latino	–.056(.101)	.581	.154(.105)	.143	–.018(.100)	.852
Black	.015(.084)	.851	–.099(.101)	.327	–.111(.092)	.230
Asian	–.084(.184)	.647	.260(.353)	.461	–.176(.254)	.488
Education	**.031(.018)**	**.085**	**.064(.017)**	**.000**	**.054(.016)**	**.000**
Square Income	**–.002(.001)**	**.004**	–.000(.001)	.590	.000(.000)	.324
Income	**.078(.020)**	**.000**	.022(.028)	.427	–.007(.017)	.664
Efficacy	**.030(.010)**	**.005**	.007(.017)	.654	.017(.012)	.146
Political Interest	**.183(.021)**	**.000**	**.134(.035)**	**.000**	**.284(.039)**	**.000**
Constant	**–1.523(.357)**	**.000**	**–2.928(.358)**	**.000**	**–1.218(.335)**	**.000**
Pseudo R-Square	.0988		.0813		.0560	
LR Chi-Square (18)	397.59	.000	250.37	.000	196.69	.000
N	1327		1188		1212	

Source: 1996, 1998 and 2000 NES Post-election study. Poisson regression maximum likelihood estimates, standard errors in parentheses. Reported probabilities based on two-tailed test. In these models, blacks constituted 11.6 percent, Asians 1.8 percent and Latinos 7.6 percent. To control for possible interdependence between the Internet variables and voting, a 2-stage least squares regression was estimated.

[a] Predicted probabilities from first stage binary logit regression where the dependent variable is exposure to Internet election news, and independent variables are income, income squared, education, Latino, female, black, Asian, strong Democrat, strong GOP, independent, log age, political interest, political efficacy and Internet access. Internet access is the instrumental variable.

Internet Use and Political Participation

Voting only represents one facet of political participation. We also recognize that problems of over-reporting voter turnout in survey data may influence the results. To check the findings of the previous analysis and avoid some of the problems with over-reporting in survey data, we estimate additional two-stage models for the 1996, 1998, and 2000 NES survey data where the dependent variable is an index of responses to eight political participation questions about the elections—did the respondent vote, talk to others about candidates or parties, display buttons or signs, work for a party or candidate, attend rallies, give money to candidates, give money to parties, and give money to interest groups—and the primary explanatory variable is the predicted probability of exposure to Internet news from a first stage model. In addition to allowing us to look at the impact of political information on a full range of activities, using an index helps us to have a more complete understanding of the relationship between online political news and citizen participation. Since the dependent variable in the second stage model is a count of eight forms of political participation Poisson regression is used. Control variables are the same as those used in Tables 1 and 2.

Estimates reported in Table 3 confirm that use of the Internet for election news in 2000 and 1998 has a positive influence on political participation. That is, individuals who use the Internet for political news are more likely to participate in politics. Use of the Internet for political information was not statistically significant in 1996. This makes sense because the number of individuals using the Internet was very limited in 1996. The analysis lends additional support to the results reported in Table 1 when voting alone is used as the dependent variable.[7] The results suggest it took time

[7] The benefits of the Internet may not be limited to just voting and participation, but might stimulate increased political interest, political

TABLE 4
EXPECTED PROBABILITY OF VOTING VARYING INTERNET ACCESS

Year	No Internet Election News	Internet Election News	Difference Column 2 – Column 1
1996	76.50% (.022)	83.46% (.026)	6.96%
1998	40.50% (.032)	47.33% (.038)	6.83%
2000	72.83% (.034)	85.34% (.018)	12.51%

before the Internet began having a major impact in shaping participation in American elections.

Estimating the Magnitude of the Internet on the Probability of Participation

To facilitate interpretation of the statistical findings, the coefficients reported in Table 1 were converted to expected values (probabilities) of voting in the 1996, 1998, and 2000 general elections using a Monte Carlo simulation technique (King et al. 2000). The estimates provide an interesting comparison of voting behavior between individuals with and without access to the Internet and online political information. Probability simulations were calculated holding frequency of exposure to state ballot contests, state racial and ethnic diversity, efficacy, political interest, newspaper and television consumption, log age, education and income constant, at their mean values. Gender was set at female and strong Democrat, strong Republican and pure Independents were set at 0, restricting voters to those without strong partisanship. Given that race/ethnicity is not statistically significant in the models of political participation, probabilities are only reported for white voters (ie. the behavior of whites can be used to estimate the effects of the Internet on participation levels for African Americans, Asian Americans and Latino voters as well).

Table 4 provides estimates of the expected probability of voting in the three elections for respondents with and without Internet access. Across racial and ethnic groups, access to the Internet significantly increased the probability of voting. After holding other factors constant, Internet access increased the probability of voting by 7 percent in the 1996 presidential election and the 1998 midterm election and 12.5 percent in the 2000 presidential election. In 2000, white females without Internet access had a 73 percent probability of voting in the election, compared to white females with Internet access, which had an 85 percent probability of voting.

Table 5 parallels Table 4 with estimates of the expected probability of voting varying online news consumption. The effect of viewing online election information translates into an 11.7 percent increase in the probability of voting in 1996 and a 7.7 percent boost in the probability of participating in

discussion, contacting elected representatives, political efficacy. Future research should examine these questions.

TABLE 5
EXPECTED PROBABILITY OF VOTING VARYING INTERNET ELECTION NEWS

Year	No Internet Access	Internet Access	Difference Column 2 – Column 1
1996	77.76% (.020)	89.49% (.037)	11.73%
1998	52.99% (.025)	47.38% (.057)	–5.61%
2000	79.35% (.022)	87.05% (.021)	7.70%

Note: Standard deviations are in parentheses. To simulate different levels of Internet exposure, access was set at yes and no, and seeing election information was set at yes and no. Values for age, education, square income, income, political efficacy, newspaper use, television use, political interest, state initiative use and state minority diversity set at their mean. Gender was set at female, race at white and strong Democrat, strong Republican and pure independents were set at 0, restricting voters to those without strong partisanship. Estimations were produced using Clarify: Software for the Interpreting and Presenting Statistical Results. By Michael Tomz, Jason Wittenberg, and Gary King.

2000. Internet access and online political information have the smallest impact on the probability of voting in the 1998 off-year election, consistent with previous research.

Two important findings are immediately apparent. First, the Internet and online election news appear to provide an important source of information, potentially mobilizing new voters to participate in elections. In 1996, when only 27 percent of survey respondents had access to the Internet, there remains a significant Internet effect on political participation, but less dramatic than in the 2000 elections. The findings are consistent with Crigler et al. (2000), who found that the Internet proved most useful for enhancing voter information, regardless of race, in case studies of voters in California, Baltimore, and Philadelphia. Secondly, the findings suggest that online election information facilitates voter participation in the highest visibility, presidential elections, rather than lower stimulus elections.

CONCLUSION

To most political analysts, it is clear we are at a crossroads in terms of understanding the impact of the new information technology on American democracy. Bridging the previous literature on mass communications and voting behavior, we find the Internet may serve to fill a void in the coverage of political elections vacated to some degree by the main-stream media. Rather than interrupt pre-season football, for example, ABC squeezed convention coverage for the 2000 elections during football halftime programming. Overall, there was significantly reduced coverage of the Democratic and Republican national conventions by the big three broadcast networks in 2000 increasing the migration of coverage to cable and the Internet (Hall 2000). The rising importance of the Internet in politics and elections may be due to shifts in coverage by television and newspaper media, or it may be a response to citizen need. Citizens report using the Internet for political news because they are

dissatisfied with traditional media.[8] Our findings suggest the Internet meets citizen demand for political information in a more convenient form and at a lower cost (price and time) than traditional media, consistent with media systems dependency theory (DeFleur and Ball-Rokeach 1989).

In contrast to the previous research based on single-state case studies or the 1998 midterm election, we explore whether the Internet has an impact on individual political participation over time. We find individuals with access to the Internet and online election news was significantly more likely to vote in the 1996 and 2000 presidential elections. The same relationship at two points in time, despite changing Internet user populations, provides additional confidence in the findings. Internet access and use for election news also was associated with increased participation beyond voting in the 1998 and 2000 elections, overcoming concerns about over-reporting voting in survey data. Simulations indicate that individuals with Internet access were on average 12.5 percent more likely to vote, and those that viewed online political information were 7.5 percent more likely to vote, all else equal in the 2000 elections. Unlike traditional mass media, such as television and newspaper, the data suggests the mobilizing potential of the Internet during elections.

Over the past century voter turnout had declined from nearly 85 percent of eligible voters to 50.7 percent in presidential elections (2000). The Internet (either as a means for election news, political communication, or even conducting elections) may provide a means of updating American political institutions for a new information-based, economy, thereby improving citizens' perceptions and trust in government. While it appears that the Internet should increase participation, there is also the possibility that the Internet may in the long run have a negative impact on political activities. Scholars and policymakers have long recognized differential turnout rates by socioeconomic status in American elections; individuals with higher income and education are significantly more likely to vote (Campbell et al.. 1960; Wolfinger and Rosenstone 1980). Because of unequal access to technology, use of information technology for political participation may expand turnout rates among those who are already predisposed to vote in elections, magnifying existing demographic disparities in the composition of the electorate (Norris 2001; Mossberger, Tolbert, and Stansbury 2003).

While not a panacea for the disenfranchised, the Internet may nevertheless represent an important new venue for political information and communication, and counter declining civic engagement in America. It also raises broader questions about democratic participation. The research may provide support for contextual effects, suggesting the creation of virtual communities is important in stimulating civic participation (Huckfeldt 1979; Huckfeldt and Sprague 1988). However, new communication technologies may narrow the focus of attention, reducing citizen exposure to conflicting views and political tolerance (Sunstein 2001; Putnam 2000). Thus the Internet may foster more "bonding" among individuals with similar perspectives and interests, but less "bridging" or tolerance (Putnam 2000).

[8] Recent survey data found 29 percent of respondents who went online to get news and information about the 2000 elections did so because "you don't get all the news and information you want from traditional new sources such as the daily news paper or the network TV news." A majority, 56 percent, said "getting information online is more convenient" (Pew Research Center for the People and the Press 2000, general population, N = 3,234).

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