Political Behavior
https://doi.org/10.1007/s11109-020-09666-7

ORIGINAL PAPER

Decreasing Hurdles and Increasing Registration Rates for College Students: An Online Voter Registration Systems Field Experiment

Elizabeth A. Bennion[1] · **David W. Nickerson**[2]

Accepted: 24 November 2020

Abstract

States have adopted online voter registration in the past few years to save on data entry costs and increase voter turnout. In 2010 when online voter registration was newly introduced in eight states, we conducted a field experiment with 25 colleges involving more than 130,000 unregistered students designed to increase awareness of the new registration tool. Students were randomly assigned to receive an email linking to the new registration portal, receive an email linking to the older downloadable registration form, or a control group that received no email about voter registration. Student registry data was then checked against voter files to look at relative rates of registration and voter turnout across treatment conditions. We estimate that linking to the downloadable form increased registration rates by 0.6 percentage points and did not affect turnout rates at all. In contrast, emails linking to the online registration portal increased registration rates by 1.2 percentage points and turnout rates by 0.5 percentage points, which are large effects relative to other mobilization techniques.

Keywords Online voter registration · Voter registration · Voter turnout · Voter mobilization · Field experiment · College students · Email

Voter registration is a prerequisite for electoral participation in the 30 states where voters are required to register before Election Day in order to be eligible to cast a

✉ David W. Nickerson
david.nickerson@temple.edu

Elizabeth A. Bennion
ebennion@iu.edu

[1] Department of Political Science, Indiana University South Bend, 1700 Mishawaka Avenue, South Bend, IN 46634, USA

[2] Department of Political Science, Temple University, 440 Gladfelter Hall, Philadelphia, PA 19122, USA

Published online: 02 January 2021

vote.[1] Among all eligible citizens, only 60 percent vote in Presidential elections, but voter turnout is roughly 90 percent vote in presidential elections among registered voters.[2] The pattern is similar in midterm elections where 75 percent of registered voters but only 40 percent of eligible voters cast ballots. Over 60% of the eligible citizens who do not vote are also unregistered. Many of these unregistered persons would not vote if given the opportunity, but the bureaucratic burden prevents a subset from voting (Verba et al. 2004), perhaps as much as eight percent of the population (Hanmer 2009). Thus, processes that can make registration easier will have the normatively desirable outcome of increasing participation rates. This manuscript reports the results of an experiment demonstrating that linking college students to online voter registration sites increases registration rates.

The Internet has made a wide range of activities easier for voters. Information on candidates, ballot propositions, election dates, and polling places are readily available online. The Internet also facilitates participation by reducing the logistical hassles of donating to and volunteering with campaigns. Can the Internet be used to increase rates of voter registration? Extant research offers mixed conclusions. The positive correlation between political engagement online and offline behavior (Tolbert and McNeal 2003) led some scholars to believe that once the "digital divide" narrowed, the Internet would bring new people into politics (Krueger 2002, 2006). However, more recent research suggests that the Internet simply reinforces existing patterns of participation (Smith et al. 2009) where people with a high propensity to participate simply replace offline activities with online activities (Quintelier and Vissers 2008; Bochsler 2009). Specifically with regards to voter registration, Gregorowicz and Hall (2016) find that states with online voter registration have slightly smaller education gaps for registration and turnout, but that there is no measurable increase in overall participation rates. This finding is broadly consistent with two large field experiments that found emailing eligible citizens links to on-line voter registration tools, did not increase rates of voter registration (Nickerson 2007a, b; Bennion and Nickerson 2011). Thus, online tools appear to be unpromising means of increasing participation.

States have rapidly adopted online voter registration in the past few years. Arizona was the first state to explicitly legalize online voter registration in 2002, but Maricopa County was the only county to adopt the practice for many years. By 2010 only 8 states had adopted the practice but, starting in 2014, the pace of adoption accelerated and 39 states allow residents to register to vote online in 2020. The primary justification for the adoption of online voter registration (OVR) is financial rather than participatory. Jurisdictions adopting OVR can see savings of more than 90% per registration application processed (Barreto et al. 2009) and the initial costs

[1] Twenty states and the District of Columba currently allow some form of Election Day voter registration (EDR): CA, CO, CT, DC, HI, ID, IL, IA, ME, MD, MI, MN, MT, NV, NH, UT, VT, WA, WI, and WY. NC allows same-day registration during early voting only and NM has passed EDR legislation that will take effect Jan. 1, 2021. Only North Dakota has no registration requirement (having abolished this requirement in 1951).

[2] Michael McDonald, United States Elections Project, http://elections.gmu.edu/index.html.

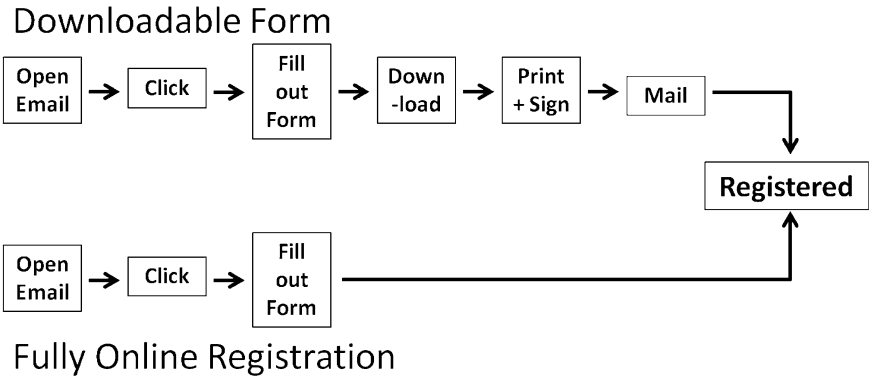

Fig. 1 Comparison of voter registration process for downloadable forms and online registration

of setting up the system are not prohibitive (Pew Charitable Trusts 2015). Given that electoral reforms made for reasons other than increasing participation rates rarely increase turnout (Hanmer 2009), we should not expect to observe large gains from the adoption of OVR.

That said, the ability to register using OVR rather than relying on downloadable forms offers an opportunity for organizations that engage potential voters online. Entirely online voter registration creates fewer logistical hurdles and make it easier for interested citizens to register themselves after receiving an electronic prompt. Figure 1 compares OVR to the older downloadable form technology to give a sense of the extent to which the process is streamlined. If higher transaction costs reduce electoral participation (McNulty et al. 2009), OVR should create some new voters for whom the online portal is easier.[3]

Our experiment explicitly tests this hypothesis by targeting over 130,000 subjects in the states where fully online voter registration was an option in 2010 and randomly assigning them to three conditions: (a) Receive an email linking to the online registration system; (b) Receive an email linking to the more common "downloadable form"; (c) Receive no contact from the researchers (control group). Subjects in all three conditions were then matched against a national voter file. Random assignment assured any systematic differences in rates of voter registration and turnout among the subjects are attributable to the email.

We find evidence that emails linking to traditional downloadable forms boost registration by 0.6 percentage points but have no effect on turnout (i.e., 0 percentage points). Emails with links to fully online systems increased rates of voter registration by 1.2 percentage point. This boost in registration translated into a statistically significant 0.5 percentage point increase in voter turnout. The magnitude of this effect is comparable to many traditional forms of voter engagement and extraordinarily

[3] An important caveat to this point is that eligible citizens need to have a signature on file with the state to register to vote online. In practice, this typically means that the person requires a state issued ID—most often a license to drive.

cost effective given the ease of the medium. These results suggest that digital mobilization can be effective when the encouraged activities are online. The fact that email boosted turnout suggests that fully online registration systems can increase turnout on the margins and bureaucratic hurdles will decrease participation for some people.

Experimental Design

To gain insight on the causal effect of adopting a fully online voter registration system, the ideal study would assign OVR to randomly selected states and compare changes in subsequent rates of voter registration among key populations. For obvious logistical and ethical reasons, this type of experiment can only be performed as a thought exercise and not implemented. The next best form of data would be an experiment where randomly selected eligible citizens within a state are allowed to register online and the remainder of the populace is forced to rely on traditional forms of registration. Again, ethical and practical challenges make this experiment impossible to conduct. However, an experiment randomly varying people's awareness of online registration as an option and their ease of access to the online registration system is both ethical and feasible. If subjects with increased awareness and access to online tools are more likely to participate, the experiment would provide evidence that OVR can increase rates of voter registration.

Our experiment took place in 2010 when OVR was newly adopted in the states studied[4] and very few government services were offered online. The experiment used email communication as a means of increasing awareness and access to OVR. Subjects were randomly assigned to one of three experimental conditions. First, subjects could be assigned to a control group that received no communication as part of the experiment. The inclusion of this control condition allows the experiment to estimate the baseline propensity to register and vote in the absence of any outside intervention by the researchers. In the second condition, subjects were sent email encouraging registration and providing a link to the Secretary of State OVR site. In the final experimental condition, subjects were sent an email encouraging registration and providing a link to a downloadable form (DF) from the Secretary of State. The downloadable form condition was included because it was the most common practice among digital mobilization groups and to demonstrate that the added steps of printing and mailing a registration form hindered the completion of the registration process.

The two treatment conditions were identical in every regard except the link provided in the email. Subjects were sent two emails encouraging participation in the weeks leading up to the registration deadline.[5] The text of the email encouraged

[4] In fact, there was some question whether the Indiana system would be operational in time for the experiment to be conducted.

[5] One school sent the first email sufficiently close to the registration deadline that a second email was not sent.

subjects to click on the link and register to vote immediately. The emails were sent from the same account (generally an academic officer of the local university) on exactly the same schedule for both the OVR and DF treatments. The only difference between the two treatments was the link embedded in the email, which was not directly visible to subjects. Thus, a subject's propensity to open the email and click on the link should be identical across the two treatments.

For the purposes of studying online voter registration, email is the perfect medium to apply the treatment. Email may be less effective than phone calls (Nickerson 2006, 2007c; Michelson et al. 2009), direct mail (Davenport et al. 2010), or door knocks (Gerber and Green 2000; Green et al. 2003; Michelson 2003) at increasing voter turnout (Nickerson 2007a; Malhotra et al. 2012), but it is the most convenient way of getting subjects to a website. Using either a phone call or a door knock, the subject would have to receive the treatment, walk to a computer, and type in the URL to get to the website. These logistical steps make compliance with the treatment much less likely. In contrast, subjects opening the email can simply click on the link provided and be instantly sent to the website. Thus, while email is often thought of as a weak treatment, it is one of the strongest possible treatments for making subjects aware of OVR. Furthermore, because email has demonstrated little ability to increase either registration or turnout, we can be reasonably certain that the email is operating primarily through increased awareness of the portal and not by generating social pressure or creating a lasting memory.

Subject Population

Rigorous randomized experiments require a well-defined subject population where the treatments can be randomly assigned and correctly administered, and the outcome can be measured for all subjects regardless of treatment assignment. Voter mobilization experiments use lists of registered voters to create this subject population (e.g., Gerber and Green 2000), but voter registration is a challenge to study because a definitive list of unregistered persons does not exist (Nickerson 2015).[6] Our experiment creates this well-defined list of subjects to be targeted for registration by using student registries at universities. Student enrollment files have both logistical and substantive advantages.

Logistically, student directories are excellent for the purposes of studying registration because it has nearly all the data needed to conduct the study. Directory information usually includes full name including middle initial, date of birth, and often both a local and a permanent mailing address. This information creates a unique profile and allows for more accurate matching against voter files to collect the dependent variable (i.e., registration status). The fact that students returned to classes roughly a month prior to the voter registration deadline also means that the information is extremely accurate since most schools require students to confirm contact information at the start of the school year. Furthermore, every enrolled

[6] Even the list of unregistered persons used in Mann and Bryant (2020) contains only people with state IDs.

student has an email address, so student directories facilitate the delivery of the treatment. Thus, student directories provide an excellent source of subjects for voter registration experiments.[7]

Students are also an interesting population to study with regards to voter mobilization. College students are generally young and less likely than older citizens to have developed a habit of voting (Plutzer 2002; Bendor et al. 2003; Fowler 2006), so gains in participation may translate into greater participation in the future. College students are geographically mobile with a high likelihood of having moved in the recent past, necessitating re-registration much more frequently than most citizens (Squire et al. 1987; Ansolabehere et al. 2012). College students also fall into many of the demographic categories associated with low levels of electoral participation: young (Wolfinger and Rosenstone 1980), disinterested in politics (Verba et al. 1995), and unlikely to watch or read much political news (Wattenberg 2007). Pragmatically, the federal government has mandated that colleges and universities make an effort to register students.[8] To make this policy effective, government officials and universities must distinguish between useless gestures and effective methods for registering student voters. Thus, student directories provide not only a logistically convenient population, but also an interesting one.[9]

A total of 25 campuses participated in the online registration experiment (see Table 1). The universities in our sample are generally public four-year institutions located in Indiana and Kansas, but also include a few community colleges, private institutions, and other states. While the subjects in the experiment are generally of higher socio-economic status than non-college youth in the area, they represent a broad cross-section of youth in the states studied.[10]

The school registrar provided directory data and excluded students known to be non-citizens or too young to vote (N = 201,678 students). Random assignment into the three treatment groups was performed separately for each university, so the experiment is effectively blocked on school and all pooled analysis contains fixed effects for school. Voter registration and turnout was ascertained by matching

[7] Consumer databases of email addresses are very incomplete, often out of date and very expensive. Thus, consumer files are unlikely to be a feasible way of conducting an experiment driving traffic to secretary of state web sites.

[8] A 1998 amendment to the Higher Education Act requires all campuses receiving federal funding to provide registration forms to all enrolled students.

[9] College students are also an interesting population to study with regard to e-mail and online registration tactics because they are more reliant on and frequent users of e-mail and the Internet relative to other age cohorts (Tedesco 2006). Many U.S. colleges and universities have also made email the university's "official" mode of communication with students. For example, Indiana University's policy states: "Email shall be considered an appropriate mechanism for official communication by Indiana University with IU students unless otherwise prohibited by law. The University reserves the right to send official communications to students by email with the full expectation that students will receive email and read these emails in a timely fashion." If e-mail messages encouraging registration and driving traffic to Web-based registration tools will work for any population, it would be college students.

[10] To make use of OVR systems, residents are required to have an electronic signature on file with the state, which normally means being licensed to drive in the state. For this reason, the treatment should be more effective for "in-state" students. However, "out-of-state" students are permitted to register to vote at their local school address, so we have decided to leave students from other states in the analytic sample.

Table 1 Experimental design and counts

School (State)	Eligible students	Unregistered	Percent registered (%)	Control	Online	Download
Total	200,665	135,631	32	45,108	37,569	52,954
Arizona Western	8466	7004	17	2331	2345	2328
Butler CC (KS)	7866	5888	25	1964	1980	1944
Depauw (IN)	2110	1613	24	541	549	523
Emporia	5708	3397	40	1139	1105	1153
FHSU	7915	5223	34	1740	1752	1731
Flint Hills	538	442	18	147	153	142
Green River CC	5560	3997	28	1349	1326	1322
IPFW	11,146	6019	46	2003	2000	2016
IUB	30,315	23,078	24	7639	0	15,439
IUE	2934	1850	37	608	622	620
IUS	6237	3362	46	1112	1121	1129
IUSB	7366	4379	41	1488	1431	1460
Independence	938	777	17	261	255	261
Indiana State	10,821	7292	33	2445	2420	2427
KCKCC	15,816	10,021	37	3317	3382	3322
NSU	8882	5908	33	1961	1952	1995
PNC	4182	2299	45	751	781	767
PU Calumet	8660	4528	48	1489	1521	1518
Pitt State	6554	4373	33	1494	1447	1432
Saint Joseph Col	960	631	34	205	206	220
Salt Lake CC	26,293	18,853	28	6234	6329	6290
Seattle Pacific	3121	2129	32	689	726	714
Vincennes	5695	4189	26	1393	1394	1402
Washburn	7041	4506	36	1495	1492	1519
Western Oregon	5541	3873	30	1313	1280	1280

student directories to voter files maintained by Catalist[11] Matches were made to both school and home addresses, but relied primarily on name and date of birth, when available (see Table 1). The 32% of students found to be registered at either their local or permanent address prior to the start of the semester are not included in the analysis because the treatment could not improve their registration status. The number of subjects in the analytic sample is 135,631.

The person recruited on each campus to send the treatment emails, generally an administrator, consulted the local Information Technology office to guarantee successful delivery and avoid internal spam filters. Researchers tracked the email

[11] Catalist collects official state voter files, performs maintenance on the files (e.g., resolving duplicates), and cross-checks the information with available consumer databases. The matching was conducted by Catalist using their proprietary matching algorithm.

messages sent on campus by placing a PI email address at the end of each treatment group. All deviations from protocol were recorded and accounted for in the data analysis (see Appendix B, Table 4). Several schools also provided preferred (non-university) email addresses. In those cases, both students' university and personal email addresses were used to deliver the "treatment" emails (see Appendix B, Table 4). Privacy concerns prevented us from embedding code in emails to track open and "click-through" rates. Thus, the analysis will rely on the assignment to treatment conditions and evaluate the overall effectiveness of the campaign to raise registration rates.

Statistical Power

This experiment is powerful enough to reliably detect shifts in registration rates from the treatments as small as 0.8 percentage points for registration and 0.5 percentage points for turnout. As a point of reference, voter registration rates have been found to increase by 1.8 percentage points from letters informing residents of cash lotteries for registering to vote (John et al. 2015), 2 percentage points from postcards sent from Secretaries of State (Mann and Bryant 2020), 3 percentage points from early door knocks (Braconnier et al. 2017), and 6 percentage points for classroom presentations (Bennion and Nickerson 2016). This experiment can establish informative bounds on where emails directing students to OVR portals falls in this spectrum.

Results

Since randomization assures comparability across treatment conditions, unbiased estimates of the effect of the two treatment emails on voter registration rates can be derived by simply comparing the mean rates of voter registration across treatment conditions with no need for control variables. Table 2 presents the results of the treatments on voter registration. The column labelled "Baseline" reports the rate of new voter registrations among the previously unregistered students assigned to the control group (23% across the entire sample). The columns labelled OVR and DF report the observed change in voter registration over the control group for the OVR and DF treatments respectively. Numbers in parentheses represent standard errors. The uncertainty associated with the experiment in each specific school (averaging 5425 subjects) makes each individual campus inconclusive, however, when pooled together (N = 135,631) the estimates paint a compelling picture.

Focusing on the downloadable forms first (see Table 2, column "Download"), in only 15 of the 25 schools did the group receiving the downloadable forms register to vote at higher rates than the control group. The likelihood of seeing 15 "successes" out of 25 trials due to chance is 22%. When the specific point estimates are pooled together, the estimated treatment effect of being directed to the downloadable form is 0.6 percentage points (s.e. = 0.0025), which is statistically significant ($p < 0.03$). That is, for every 1000 students emailed the downloadable form, 6 students registered who would have otherwise not completed the bureaucratic

Table 2 Effect of OVR and DF treatments on voter registration

Schools	Online	Download	Baseline	N
Pooled	0.012	0.006	0.233	135,631
	(0.003)	(0.003)	(0.005)	
AZ Western	0.005	0.020	0.140	7004
	(0.010)	(0.010)	(0.007)	
Butler CC	0.011	0.003	0.265	5888
	(0.014)	(0.014)	(0.010)	
Depauw	0.054	0.018	0.140	1613
	(0.022)	(0.023)	(0.016)	
Emporia	0.022	−0.005	0.324	3397
	(0.020)	(0.020)	(0.014)	
FHSU	0.018	0.002	0.282	5223
	(0.015)	(0.015)	(0.011)	
Flint Hills	−0.042	−0.062	0.245	442
	(0.047)	(0.048)	(0.034)	
Green River CC	0.025	−0.003	0.268	3997
	(0.017)	(0.017)	(0.012)	
IPFW	0.010	0.004	0.239	6019
	(0.014)	(0.014)	(0.010)	
IUB		0.013	0.187	23,078
		(0.006)	(0.005)	
IUE	0.031	−0.005	0.278	1850
	(0.026)	(0.026)	(0.018)	
UIS	0.013	0.000	0.363	3362
	(0.020)	(0.020)	(0.014)	
IUSB	−0.008	−0.050	0.313	4379
	(0.017)	(0.017)	(0.012)	
Independence	0.067	−0.004	0.199	777
	(0.036)	(0.036)	(0.026)	
Indiana State	−0.018	0.002	0.259	7292
	(0.012)	(0.012)	(0.009)	
KCKCC	−0.001	0.001	0.189	10,021
	(0.010)	(0.010)	(0.007)	
NSU	0.013	0.006	0.230	5908
	(0.014)	(0.014)	(0.010)	
PNC	−0.006	−0.021	0.245	2299
	(0.022)	(0.022)	(0.016)	
PU Calumet	−0.029	−0.026	0.306	4528
	(0.016)	(0.016)	(0.012)	
Pitt State	0.015	0.020	0.261	4373
	(0.016)	(0.016)	(0.012)	
Saint Joseph Col	0.057	0.079	0.249	631
	(0.045)	(0.044)	(0.032)	

Table 2 (continued)

Schools	Online	Download	Baseline	N
Salt Lake CC	0.032	0.020	0.181	18,853
	(0.007)	(0.007)	(0.005)	
Seattle Pacific	−0.023	0.002	0.254	2129
	(0.023)	(0.023)	(0.016)	
Vincennes	0.021	0.018	0.296	4189
	(0.018)	(0.017)	(0.012)	
Washburn	0.023	0.011	0.276	4506
	(0.017)	(0.016)	(0.012)	
Western Oregon	0.002	−0.001	0.305	3873
	(0.018)	(0.018)	(0.013)	

process. This estimate differs from prior email registration experiments and could reflect the advantage of focusing on students who were unregistered at the start of the experiment.

The picture is much more clear-cut for the treatment emails linking directly to the online registration sites (see Table 2, column "Online"). In 17 of the 24 schools, the treatment group receiving the link to the online registration tool exhibited higher registration rates than the control group. The probability of seeing this pattern due to random chance is only 3%, so the treatment probably increased registration rates. Pooling the specific estimates together it is estimated that registration increased by 1.2 percentage points (s.e. = 0.3). In other words, for every 1000 students emailed a link to the Secretary of State's online voter registration portal, 12 students registered who would have otherwise remained unregistered. Not only is the estimated treatment effect statistically different from zero ($p < 0.001$), but it is also different from the downloadable form treatment ($p < 0.03$). Thus, we can conclude that email driving traffic to online voter registration sites increases rates of voter registration and the increased bureaucratic requirements of the downloadable form decreases this effect by 50%.

The natural follow up question is whether this increase in registration leads to an increase in voter turnout. Past voter registration experiments have found that only 24% of the people registered because of door-to-door canvassing voted (Nickerson 2015) compared to 77–91% turnout among those registered by letters from the Secretary of State (Mann and Bryant 2020) with a 43% turnout yield as a result of classroom registration programs (Bennion and Nickerson 2016) falling in between those two estimates. With no mobilization component of this experiment, any systematic differences in voter turnout rates across the experimental conditions can be attributed to the treatment assignments and we can see where these emails from administrators fall on the spectrum.

These turnout results are presented in Table 3 where "Baseline" once again represents the voter turnout rate among subjects in the control group and the "Online" and "Download" columns represent differences in turnout from the OVR and DF treatments respectively. While sending the email linking to the downloadable form

Table 3 Effect of OVR and DF on voter turnout

Schools	Online	Download	Baseline	N
Pooled	0.005	0.000	0.066	135,606
	(0.002)	(0.002)	(0.001)	
AZ Western	0.006	0.007	0.051	7004
	(0.007)	(0.007)	(0.005)	
Butler CC	− 0.006	0.007	0.087	5888
	(0.009)	(0.009)	(0.006)	
Depauw	0.007	0.005	0.028	1613
	(0.011)	(0.011)	(0.008)	
Emporia	0.017	0.022	0.094	3395
	(0.013)	(0.013)	(0.009)	
FHSU	0.002	− 0.009	0.094	5215
	(0.010)	(0.010)	(0.007)	
Flint Hills	0.010	− 0.040	0.075	442
	(0.029)	(0.029)	(0.020)	
Green River CC	0.006	0.007	0.142	3997
	(0.014)	(0.014)	(0.010)	
IPFW	0.002	− 0.013	0.068	6017
	(0.008)	(0.008)	(0.005)	
IUB		0.000	0.011	23,073
		(0.001)	(0.001)	
IUE	0.006	− 0.015	0.102	1849
	(0.017)	(0.017)	(0.012)	
UIS	− 0.002	0.013	0.154	3362
	(0.015)	(0.015)	(0.011)	
IUSB	− 0.021	− 0.034	0.095	4379
	(0.010)	(0.010)	(0.007)	
Independence	0.017	− 0.008	0.061	777
	(0.022)	(0.022)	(0.015)	
Indiana State	− 0.008	− 0.009	0.054	7292
	(0.006)	(0.006)	(0.004)	
KCKCC	− 0.003	− 0.001	0.049	10,019
	(0.005)	(0.005)	(0.004)	
NSU	− 0.004	− 0.002	0.073	5905
	(0.008)	(0.008)	(0.006)	
PNC	− 0.009	− 0.026	0.059	2299
	(0.011)	(0.011)	(0.008)	
PU Calumet	0.006	− 0.011	0.077	4528
	(0.010)	(0.010)	(0.007)	
Pitt State	0.008	0.017	0.063	4372
	(0.009)	(0.010)	(0.007)	
Saint Joseph Col	− 0.010	0.007	0.034	631
	(0.018)	(0.017)	(0.013)	

Table 3 (continued)

Schools	Online	Download	Baseline	N
Salt Lake CC	0.023	0.004	0.070	18,852
	(0.005)	(0.005)	(0.003)	
Seattle Pacific	0.009	0.013	0.120	2129
	(0.018)	(0.018)	(0.013)	
Vincennes	0.001	0.011	0.053	4189
	(0.009)	(0.009)	(0.006)	
Washburn	0.006	0.010	0.104	4506
	(0.011)	(0.011)	(0.008)	
Western Oregon	0.016	0.014	0.122	3873
	(0.013)	(0.013)	(0.009)	

showed a surprising capacity to increase registration, there is little evidence of increased voter turnout. In only 14 of the 25 schools did students in the DF condition vote at a higher rate than the control group, which would occur 35% of the time due to random chance. When pooling the results across all the colleges, we estimate that emailing the downloadable form did not affect voter turnout perceptibly (0.0 pp, s.e. = 0.2, $p < 0.79$). The result makes it clear that the people registered as a result of being assigned to the DF condition did not vote at higher rates. It is strange that someone moved to take the trouble to download, fill out, print, and mail a registration form would then not vote, which raises the possibility that the registration effect ($p < 0.03$) was an artifact of variance.

In contrast, there is very little ambiguity about the efficacy of linking to the SOS online registration portals for increasing voter turnout. In 16 out of the 24 experiments, subjects assigned to the OVR treatment voted at higher rates than the control group, which would occur only 8% of the time due to chance. When the results across the 24 schools are pooled together, we estimate that sending the OVR email increased voter turnout by 0.5 percentage points. That is, for every 1,000 previously unregistered students targeted by the OVR email, 5 voted who would have otherwise abstained. The result is statistically significant (s.e. = 0.2; $p < 0.01$) and shows that 41% of the subjects registering as a result of the nudge translated that action into voting.[12]

While increases of 1.2 percentage point in voter registration and 0.5 percentage point in turnout would not dramatically change the character of the electorate, the magnitude of this treatment effect compares favorably to other forms of voter mobilization. First, the only prior experiments demonstrating a mobilization effect from emails came from local election officials and not school administrators (Malhotra et al. 2012), so this finding is highly unusual for email and reinforces the view that

[12] Given that email has demonstrated no ability to mobilize the vote, we feel confident that our emails sent more than 30 days before Election Day had no direct effect on turnout among unregistered students in the experiment.

the ease of OVR relative to the DF is the key mechanism at play. Second, the point estimates are intent-to-treat effects, so should not be directly compared to the complier average causal effect (CACE) estimates generally reported in the literature. According to Gerber and Green (2015), paid phone calls increase turnout by 0.4 percentage points, but most calling campaigns can only reach one-third of targets, so the intent-to-treat (ITT) mobilization effect is closer to 0.1 percentage point. The 0.5 percentage point mobilization effect of linking to OVR sites compares favorably to even volunteer phone calls (1.4 percentage point CACE with a 33% contact rate), door-to-door canvassing (3 percentage point CACE with a 20% contact rate), and "conventional" non-partisan mail (0.2 percentage points according to Green et al. 2012).

The effectiveness of the emails linking to OVR is even more impressive when costs are considered. The marginal cost of sending an email is trivial compared to the expense of mailing voter registration forms or sending canvassers into the field. However, the primary mechanism for the increase in registration was not the email itself but rather than nature of the website linked to in the email. From the perspective of the Board of Elections, the fully online voter registration system is markedly cheaper than traditional paper forms. In Arizona, processing each paper registration form costs $0.83 in staff time, whereas each registration submitted online costs only $0.03 (Barreto et al. 2009). Thus, increasing rates of registration by implementing OVR actually saves money as opposed to costing money.[13]

Discussion

While the mobilization of college students is normatively and legally important, the population was analyzed largely because of the need for an unregistered population that could be targeted and tracked. College students are not representative of the overall unregistered population and how these results would generalize to other segments of the population is an open question. On the one hand, college students tend to be more affluent, educated, and attentive to politics than most citizens who are not registered to vote.[14] They also tend to be more comfortable with digital media and sharing information online (Garnett 2019). These traits may make college students more receptive to mobilization efforts than the average unregistered person. On the other hand, college campuses are environments where there is considerable mobilization activity already and students operate in social circles where registration and voting are expected. This social milieu may create an environment where college students have already been "treated" through other means and so the marginal treatment effect of experiments like ours may be smaller than the broader population

[13] With an estimated start up cost of $100,000, Barreto et al. (2009) estimate the OVR system in Arizona paid for itself in a year. Recouping this initial start-up cost would obviously take longer for smaller states that process fewer voter registration applications.

[14] That said, AASCU campuses serve a wide range of students and contain many more first-generation college students than most R1 institutions. Thus, our findings may be more generalizable than most studies conducted in elite research universities.

of unregistered persons, who receive less pressure to register and may therefore be easier to mobilize. Which dynamic plays a larger role is impossible to know without replication. The bigger issue with regards to the generalizability of these findings is that the students are receiving the email from a trusted source (i.e., academic officer). In the broader population there are few trusted sources for whom email will not be dismissed as spam, but the Maholtra et al. finding (2012) suggests that government officials can play this role effectively.

Our findings have three immediate policy implications. First, colleges and universities should make a policy of directing students to online voter registration portals and encourage registration. Only one-third of students at the campuses studied were registered to vote prior to our experiments, which demonstrates the need for organizations to take proactive steps to shepherd students through the registration process. While emailing links to online registration portals did not have the same size effect as classroom presentations (Bennion and Nickerson 2016), increasing registration and turnout measurably with a few minutes of one person's time makes the practice of sending similar registration emails an easy policy to adopt.

Second, the experiment provides a clear demonstration that removing bureaucratic hurdles from the registration process can improve participation rates but will not transform the overall electorate. Faced with identical emails, directing subjects to the fully online voter registration portal was more than twice as effective at registering people than directing them to downloadable forms. The added steps of downloading, printing, signing, and mailing the application hindered a set of people from registering to vote. Applying this lesson to the registration process generally suggests that points of friction where potential voters could decide to end the process will lead to lower rates of voter registration. The reforms across seventeen states making voter registration automatic when getting a driver's license will increase registration and subsequent participation rates on the margins. That said, this experiment suggests that the differences in participation may not so be large as to transform the electorate.

The final policy implication of our experiment is that election reform advocates must proactively communicate with residents if they want people to take advantage of changes in election administration. The use of OVR was limited in our sample of college students, but an email alerting students to the opportunity to register measurably increased uptake. This proves that awareness campaigns can improve adoption rates. Over the long term, information about new programs like OVR will disseminate, so the registration and turnout deficit detected in the control group are unlikely remain after several cycles. However, information campaigns should be planned and budgeted for improved short-term results.

These experiments also contain a methodological template for studying changes to state laws. In cases where policy interventions have modest effects on ingrained civic behaviors, most studies looking at state-level changes will not have the power to detect the effects of legal changes. Our interventions were relatively large compared to most experiments in political science, but only had the power to reliably detect changes in voter registration of 0.8 percentage points. Suppose the marginal effect of our email treatment (1.2 percentage points) is roughly one-fourth the magnitude of the overall effect of introducing OVR on voter registration. Once a

researcher focuses on the portion of the population that is not already registered to vote (20%), the expected increase in registration rates will be less than 1 percentage point. With only 50 states to compare across, cross-sectional time series approaches to measuring the effect of state policy changes will only be able to measure very large changes in the electorate—and such large effects are unrealistic for most reforms.

Our paper offers an example of an alternative model for studying the effects of newly adopted policies. While policy implementation cannot be randomized, outreach surrounding the new policy can be randomized, which could, in turn, increase uptake of the new benefits allowed by the policy. To be very clear, experiments designed to increase the awareness of new government policies cannot measure the overall effect of the policy. However, when the policy is little known, differential uptake rates can help establish bounds on whether people taking advantage of the policy actually benefit. For the subset of the nudged who change their behavior, the experiment can measure the effect of policy adoption. The extent to which the results of such experiments generalize to other populations will depend on the specific context and intervention. However, such experimental approaches are a useful brush to have in the box when painting the picture of the consequences of a new policy.

Funding Funding was provided by Research and Development Committee, Indiana University South Bend.

Data availability Replication data for this study can be found on dataverse: https://doi.org/10.7910/DVN/WXE9CU.

Appendix A

Text from treatment emails

MESSAGE #1

Subject line: REGISTER TO VOTE NOW. Online link provided.

Politicians ignore issues college students care about because too many college students do not vote. I urge you to vote in the upcoming national election. To vote you need to first be registered.

It's easy to register to vote. Just click on this link and you can register in [STATE] right now!

[LINKED WEB ADDRESS]

Remember, the DEADLINE to register to vote in [STATE] is [DATE].
If you don't register, you won't be able to vote this year.

Let the politicians hear your voice. Please vote. Register today.

MESSAGE #2

Subject line: Time is running out to register to vote! Click URL to register.

Politicians pay attention to citizens who vote. They are not likely to care much about the issues of college students who do not vote.

Our democracy depends on voters. Our democracy depends on you voting. Are you registered to vote? You can register in [STATE] right now. Just click on this link and you can register to vote.

[LINKED WEB ADDRESS]

If you don't register by [DATE], you can't vote this year.

Get engaged, get registered to vote and then make your voice heard by voting in the national election.

Appendix B

See Table 4.

Table 4 Schools participating in experiment

School	State	Private	2 year	YOB only	Date #1	Date #2
Arizona Western College	AZ		Y		28-Sep	30-Sep
Butler Community College	KS		Y		6-Oct	13-Oct
DePauw University	IN	Y			22-Sep	27-Sep
Emporia State University	KS				30-Sep	6-Oct
Fort Hays State University	KS				22-Sep	28-Sep
Flint Hills Technical College	KS		Y		13-Oct	15-Oct
Green River Community College	WA		Y		22-Sep	27-Sep
Indiana University Purdue University Fort Wayne	IN			Y	22-Sep	27-Sep
Indiana University Southeast	IN			Y	22-Sep	27-Sep
Indiana University Bloomington	IN			Y	27-Sep	
Indiana University East	IN				22-Sep	27-Sep
Indiana University South Bend	IN			Y	24-Sep	29-Sep
Independence Community College	KS		Y		14-Oct	15-Oct
Indiana State University	IN				27-Sep	4-Oct
Kansas City Kansas Community College	KS		Y	Y	29-Sep	4-Oct
Northwestern State University of Louisiana	LA				1-Oct	1-Oct
Purdue University North Central	IN				29-Sep	1-Oct
Purdue University Calumet	IN			Y	30-Sep	1-Oct
Pittsburgh State University	KS				22-Sep	27-Sep
Saint Joseph College	IN	Y			22-Sep	27-Sep
Salt Lake City Community College	UT		Y		22-Sep	27-Sep
Seattle Pacific University	WA	Y			22-Sep	27-Sep
Vincennes University	IN				28-Sep	30-Sep
Washburn University	KS			Y	22-Sep	27-Sep
Western Oregon University	OR				24-Sep	27-Sep

D only mailed link to downloadable form, *E* second download email went to the online portal

Appendix C

See Table 5.

Table 5 Balance across treatment conditions

School	Total unregistered	N			Age			From state		
		Control	Online	Download	Control	Online	Download	Control (%)	Online	Download (%)
Pooled	135,631	45,108	52,954	37,569	24.4	24.4	24.4	88	91%	86
AZ Western	7004	2331	2345	2328	25.3	25.4	25.3	98	97%	98
Butler CC	5888	1964	1980	1944	23.8	23.5	23.5	98	98%	98
Depauw	1613	541	549	523	19.5	19.5	19.4	33	34%	33
Emporia	3397	1139	1105	1153	24.5	24.3	24.5	87	87%	87
FHSU	5223	1740	1752	1731	25.9	25.7	25.5	76	76%	76
Flint Hills	442	147	153	142	23.3	25.1	23.7	99	100%	100
Green River CC	3997	1349	1326	1322	25.0	24.9	25.0	99	99%	99
IPFW	6019	2003	2000	2016	.	.	.	97	97%	97
IUB	23,078	7639	0	15,439	.	.	.	75	.	75
IUE	1850	608	622	620	24.9	25.5	25.5	86	86%	86
IUS	3362	1112	1121	1129	.	.	.	71	72%	72
IUSB	4379	1488	1431	1460	.	.	.	97	98%	98
Independence	777	261	255	261	23.1	23.5	23.8	83	83%	84
Indiana State	7292	2445	2420	2427	23.0	23.0	22.9	90	89%	91
KCKCC	10,021	3317	3382	3322	27.8	27.9	27.6	94	94%	94
NSU	5908	1961	1952	1995	25.0	24.9	25.2	91	91%	90
PNC	2299	751	781	767	23.8	23.9	24.1	98	98%	98
PU Calumet	4528	1489	1521	1518	.	.	.	91	90%	92
Pitt State	4373	1494	1447	1432	22.8	22.8	22.6	75	75%	77
Saint Joseph Col	631	205	206	220	20.9	21.0	21.3	73	72%	73
Salt Lake CC	18,853	6234	6329	6290	25.1	25.1	25.1	99	99%	99
Seattle Pacific	2129	689	726	714	20.1	20.3	20.2	61	61%	62
Vincennes	4189	1393	1394	1402	21.6	21.7	21.6	94	94%	94

Table 5 (continued)

School	Total unregistered	N			Age			From state		
		Control	Online	Download	Control	Online	Download	Control (%)	Online	Download (%)
Washburn	4506	1495	1492	1519	.	.	.	93	94%	94
Western Oregon	3873	1313	1280	1280	22.2	22.2	22.3	89	89%	89

Appendix D: Recruiting and Working with Campuses

Campuses were recruited by the American Association of State Colleges and Universities (AASCU), AASCU's American Democracy Project (ADP), and the American Association of Colleges and Universities (AAC&U). Each organization sent e-mail solicitations to the chief academic officer of member campuses in the eight eligible states. Most campuses were eager to test the effectiveness of e-mail for boosting voter registration because it complies with federal requirements and is inexpensive to implement. The most commonly stated reason for declining to participate in the study was "survey fatigue" among students. Despite the fact that the script was short, was not a survey, and required no response from students, a couple of campuses authorized only one message, rather than two, because they are trying to minimize the total number of email messages sent to students with a goal of increasing response rates for campus surveys. Thus, it is clear that email is not perceived as cost-free on some campuses.

Directory data was provided by the Registrar on each participating campus, upon approval of the Institutional Review Board and completion of required (campus-specific) forms. Matches were made to both school and home addresses, but relied primarily on name and date of birth, when available. Name, address, and date of birth are considered directory information and are not considered "private" data under FERPA. However, some institutions have elected to designate date of birth as "private" data which cannot be shared with anybody off campus (or people on campus who do not need this information for specific, legitimate purposes related to their assigned duties).

We worked closely with schools to ensure that the treatment emails were delivered and not caught in spam filters. The person recruited on each campus to send the treatment emails, generally an administrator, consulted the local Information Technology office to guarantee successful delivery and avoid internal spam filters. Researchers tracked the email messages sent on campus by placing a PI email address at the end of each treatment group. All deviations from protocol were recorded and accounted for in the data analysis (see Appendix B, Table 4). Several schools also provided preferred (non-university) email addresses. In those cases, both students' university and personal email addresses were used to deliver the "treatment" emails (see Appendix B, Table 4). Privacy concerns prevented us from embedding code in emails to track open and "click-through" rates.

References

Ansolabehere, S., Hersh, E., & Shepsle, K. (2012). Movers, stayers, and registration: Why age is correlated with registration in the U.S. *Quarterly Journal of Political Science, 7*(4), 333–363.

Barreto, M. A., Glaser, B., MacDonald, K., Collingwood, L., Pedraza, F., & Pump, B. (2009). *Online voter registration (OVR) systems in Arizona and Washington: Evaluating usage, public confidence and implementation processes*. Report for the Pew Internet and American Life Project.

Bendor, J., Diermeier, D., & Ting, M. (2003). A behavioral model of turnout. *American Political Science Review, 97*(2), 261–280.

Bennion, E. A., & Nickerson, D. W. (2011). The cost of convenience: An experiment showing email outreach decreases voter registration. *Political Research Quarterly, 64*(4), 858–869.

Bennion, E. A., & Nickerson, D. W. (2016). I will register and vote, if you teach me how: A field experiment testing voter registration in college classrooms. *PS: Political Science and Politics, 49*(4), 867–871.

Bochsler, D. (2009). *Can the internet increase political participation? An analysis of remote electronic voting's effect on turnout*." Paper presented at the APSA 2009 Annual Meeting in Toronto, 3–6 September 2009.

Braconnier, C., Dormagen, J., & Pons, V. (2017). Voter registration costs and disenfranchisement: Experimental evidence from France. *American Political Science Review, 111*(3), 584–604.

Davenport, T. C., Gerber, A. S., Green, D. P., Larimer, C. W., Mann, C. B., & Panagopoulos, C. (2010). The enduring effects of social pressure: Tracking campaign experiments over a series of elections. *Political Behavior, 32*(3), 423–430.

Fowler, J. H. (2006). Habitual voting and behavioral turnout. *Journal of Politics, 68*(2), 335–344.

Garnett, H. A. (2019). Evaluating online registration: The Canadian case. *Election Law Journal, 18*(1), 78–92.

Gerber, A. S., & Green, D. P. (2000). The effects of canvassing, direct mail, and telephone contact on voter turnout: A field experiment. *American Political Science Review, 9*(3), 653–663.

Gerber, A. S., & Green, D. P. (2015). *Get out the vote: How to increase voter turnout*. Washington, DC: Brookings Institute.

Green, D. P., Gerber, A. S., & Nickerson, D. W. (2003). Getting out the vote in local elections: Results from six door-to-door canvassing experiments. *Journal of Politics, 65*(4), 1083–1096.

Green, D. P., McGrath, M. C., & Aronow, P. M. (2012). Field Experiments and the Study of Voter Turnout. *Journal of Elections, Public Opinion and Parties*, *23*(1), 27–48. https://doi.org/10.1080/17457289.2012.728223

Gregorowicz, K., & Hall, T. H. (2016). Digitizing democracy: Online voter registration. In B. A. King & K. Hale (Eds.), *Why don't Americans vote? Causes and consequences*. ABC-CLIO: Santa Barbara, CA.

Hanmer, M. J. (2009). *Discount voting: Registration reforms and their effects*. Cambridge: Cambridge University Press.

John, P., MacDonald, E., & Sanders, M. (2015). Targeting voter registration with incentives: A randomized controlled trial of a lottery in a London borough. *Electoral Studies, 40,* 170–175.

Krueger, B. S. (2002). Assessing the potential of internet political participation in the united states: A resource approach. *American Politics Research, 30*(5), 476–498.

Krueger, B. S. (2006). A comparison of conventional and internet political mobilization. *American Politics Research, 34*(6), 759–776.

Malhotra, N., Michelson, M. R., & Valenzuela, A. A. (2012). Emails from official sources can increase turnout. *Quarterly Journal of Political Science, 7*(3), 321–332.

Mann, C. B., & Bryant, L. A. (2020). If you ask, they will come to register and vote: Field experiments with state election agencies on encouraging voter registration. *Electoral Studies, 63,* 102021. https://doi.org/10.1016/j.electstud.2019.02.012.

McNulty, J. E., Dowling, C. M., & Ariotti, M. H. (2009). Driving saints to sin: How increasing the difficulty of voting dissuades even the most motivated voters. *Political Analysis, 17*(4), 435–455.

Michelson, M. (2003). Getting out the Latino vote: How door-to-door canvassing influences voter turnout in rural Central California. *Political Behavior, 25*(3), 247–263.

Michelson, M. R., Bedolla, L. G., & McConnell, M. A. (2009). Heeding the call: The effect of targeted two-round phonebanks on voter turnout. *Journal of Politics, 71*(4), 1549–1563.

Nickerson, D. W. (2006). Volunteer phone calls can increase turnout: Evidence from eight field experiments. *American Politics Research, 34,* 271–292.

Nickerson, D. W. (2007a). Does e-mail boost turnout? *Quarterly Journal of Political Science, 2*(4), 369–379.

Nickerson, D. W. (2007b). The ineffectiveness of E-vites to democracy: Field experiments testing the role of e-mail on voter turnout. *Social Science Computer Review, 25*(4), 494–503.
Nickerson, D. W. (2007c). Quality is job one: Professional and volunteer voter mobilization calls. *American Journal of Political Science, 51*(2), 269–282.
Nickerson, D. W. (2015). Do voter registration drives increase participation? For whom and when? *Journal of Politics, 77*(1), 88–101.
Pew Charitable Trusts. (2015). Online voter registration: Trends in development and implementation. White paper. Retrieved February 21, 2018 from http://www.pewtrusts.org/-/media/assets/2015/05/ovr_2015_brief.pdf.
Plutzer, E. (2002). Becoming a habitual voter: Inertia, resources, and growth in young adulthood. *American Political Science Review, 96*(1), 41–56.
Quintelier, E., & Vissers, S. (2008). The effect of internet use on political participation: An analysis of survey results for 16-year-olds in Belgium. *Social Science Computer Review, 26*(4), 411–427.
Smith, A., Schlozman, K.L., Verba, S., & Brady, H., (2009). *The internet and civic engagement*. Report for the pew internet and american life project. Retrieved from http://www.pewinternet.org/Reports/2009/15--The-Internet-and-Civic-Engagement.aspx.
Squire, P., Wolfinger, R. E., & Glass, D. P. (1987). Residential mobility and voter turnout. *American Political Science Review, 81*(1), 45–65.
Tedesco, J. C. (2006). Web interactivity and young adult political efficacy. In A. P. Williams & J. C. Tedesco (Eds.), *The internet election: Perspectives on the webin campaign 2004* (pp. 187–202). Lanham, MD: Rowman & Littlefield.
Tolbert, C. J., & Mcnneal, R. S. (2003). Unraveling the effects of the internet on political participation? *Political Research Quarterly, 56*(2), 175–185.
Verba, S., Schlozman, K., & Brady, H. E. (1995). *Voice and equality: Civic voluntarism and American politics*. Cambridge, MA: Harvard University Press.
Verba, S., Schlozman, K. L., & Brady, H. E. (2004). Political equality: What do we know about it? In K. M. Neckerman (Ed.), *Social inequality* (pp. 635–666). New York: Russell Sage Foundation.
Wattenberg, M. P. (2007). *Is voting for young people? With a postscript on citizen engagement*. New York: Pearson Longman.
Wolfinger, R. E., & Rosenstone, S. J. (1980). *Who votes?* New Haven, CT: Yale University Press.