



You've Got Mail:

The impacts of increased access to mail-in voting on
overall voter turnout

Master's thesis by

Alyse Conn-Powers

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Supervised by Prof. Simon Munzert, Ph.D.

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Executive Summary¹

In the wake of the COVID-19 pandemic, government officials from the local to the federal level worked to conduct safe presidential elections in 2020 while maintaining voter access and participation. This research looks at two of the most widespread policy changes enacted in 2020: The automatic mailing of ballots to all registered voters in a county and the automatic mailing of applications to vote by mail to all registered voters, both occurring in tandem to the traditional in-person offerings of their local election board.

Using nearest-neighbor matching at the county level, counties that mailed ballots or applications were paired with counties that did not in order to analyze if there was a significant change in voter turnout when compared to the 2016 election. In both the calculation of the average treatment effect on the treated and the confirmatory OLS regression, counties mailing ballots to all registered voters appears to have a statistically significant positive effect resulting in between a 1.4-1.6% greater change in voter turnout than counties that did not mail ballots. In the case of mailing applications, the average treatment effect and subsequent OLS regression indicated a near-zero positive effect, with mixed significance, indicating that mailing applications is likely not a relevant means of increasing voter turnout.

¹ All data and code used in this thesis research is available at <https://github.com/aconnpowers/youvegotmail>. For the purposes of this research, the use of “county” as a municipal descriptor is inclusive of states who use alternative descriptors, such as Alaskan boroughs or Louisianan parishes. Similarly, the use of “state” will be inclusive of Washington, D.C., for clarity, even though it is a federal district without all recognized powers and abilities awarded to states.

Introduction

Government officials, non-partisan organizations, and political campaigns have been trying to address the issue of the United States' low voter turnout for years. Compared to similar countries, the U.S. has one of the lowest rates of voter turnout compared to the voting-age population in the world (Desilver, 2020). This low rate of voter engagement has puzzled stakeholders for years, and countless initiatives at the policy level and at the grassroots level have been implemented in hopes of engaging more voters and potential voters to participate in the electoral process. These initiatives range from targeting civic engagement and education, voter registration efforts, and numerous policies and programs to get registered voters to the polls. In the recent 2016 and 2020 presidential elections, the U.S. saw record turnout rates nationwide, but they still were not at the level of other highly developed democracies. The youngest voter cohorts consistently perform at the bottom, voting at lower rates than other generations, which could potentially lead to decreased turnout over the long-term, as consistent voting as a young adult is a major predictor of future civic and political engagement (Berinsky, 2004).

The COVID-19 pandemic provided government officials an opportunity to make policy and procedural changes to expand offerings to voters and prevent the election from becoming a vector of contagion amid an ever-increasing death toll. Due to the constitutional assignment of powers to the states and federal government, state and local governments were largely able to independently make changes suited to their citizens. As such, not all states chose to make modifications and conducted the 2020 election in the same way they conducted the 2016 elections.

Since these changes were made at the state and county level, this has provided researchers the opportunity to test the efficacy of new and non-traditional voting procedures that are generally not utilized by comparing the groups of those who did not make procedural changes and those who were 'treated.' This research aims to do exactly that, by comparing counties that elected to mail ballots to all registered voters or elected to mail applications to vote absentee to all registered voters with counties that conducted their

election in the same way that they did in 2016 to see if there is a meaningful impact on voter turnout.

First, I will provide an overview of the state of federal and statewide voting and election laws in the U.S., followed by how these changed in anticipation of the 2020 presidential election. Next, I will provide an overview of associated past research focused on voter turnout initiatives, including vote by mail and in-person early voting. I will conduct two experiments using nearest-neighbor matching to identify potential treatment effects and their significance on the two treatment groups, then provide an analysis of my findings. Finally, I will review the implications of these findings as well as additional factors related to mail-in voting and overall voter turnout in the U.S.

Voting Laws

Voting and election procedure is largely decided at the state level due to the separation of powers outlined in the Constitution, and thus the availability of each is dependent on the state in which one is voting, as well as the group of voters to whom these options are available. While states determine much of the routine and procedure, the federal government also maintains a strong role in election provision. The federal government has acted to protect voter access and elections, such as in the case of the constitutional amendments granting the right to vote to Black Americans and women, eliminating the poll taxes that prevented many Black Americans from exercising their right to vote, and setting the legal voting age to 18 years or older on Election Day, as well as groundbreaking legislation such as the Voting Rights Act of 1965.

The Judicial branch – both at the state level and up to the Supreme Court – has also weighed in on the topic of elections and voting laws when constitutionally appropriate, such as *Shelby County v. Holder*, which invalidated aspects of the aforementioned Voting Rights Act – namely, the requirement of federal oversight for any changes in voting law or practices by states with a history of voter suppression or discrimination (*Shelby County v. Holder*, 2013). In the unforgettable case of the 2000 Presidential election

between George W. Bush and Al Gore, the Supreme Court functionally decided the winner of the election through its ruling in *Bush v. Gore*.

In-Person Voting

When one thinks of voting, they generally think of casting their ballot on Election Day at their local polling place. While this historically has been the most common method of voting for a majority of Americans (*Voting by Mail and Absentee Voting*, 2021), it is not the only means of casting a ballot in many states, or even the only means of casting a ballot in person. In 43 states and Washington, D.C., voters are able to vote in person in advance of Election day, for a span of time ranging from the day before Election day to 45 days prior (*State Laws Governing Early Voting*, 2021).

This method of early in-person voting can provide voters additional flexibility in casting their ballots, with the intention being to make voting more convenient and thus increase turnout. This can reduce wait times and lines associated with elections conducted entirely on Election Day while maintaining any requirements for voting, such as checking identification or casting a provisional ballot in the case of incorrect registration or a lack of identification. Early in-person voting is generally conducted with fewer polling places than traditional Election Day polling, and many times gives voters flexibility on where they cast their vote rather than requiring them to vote on Election Day at their designated location.

Vote by Mail

In recent years, more states have made efforts to transition to elections held primarily through vote by mail, whether for all elections or for a portion of them such as local and special elections that generally have lower turnout (Kousser & Mullin, 2007). Currently, five states use exclusively universal mail-in elections, including Colorado, Oregon, Utah, and Washington, with Hawaii being the most recent state to adopt the practice in 2020 (*Voting by Mail and Absentee Voting*, 2021). Universal mail-in voting has proven to be a successful way of increasing voter turnout when implemented statewide (Southwell, 2004; The Pew Charitable Trust, 2016), and has been shown to increase participation in elections that generally have lower turnout, such as special or local elections (Kousser & Mullin, 2007).

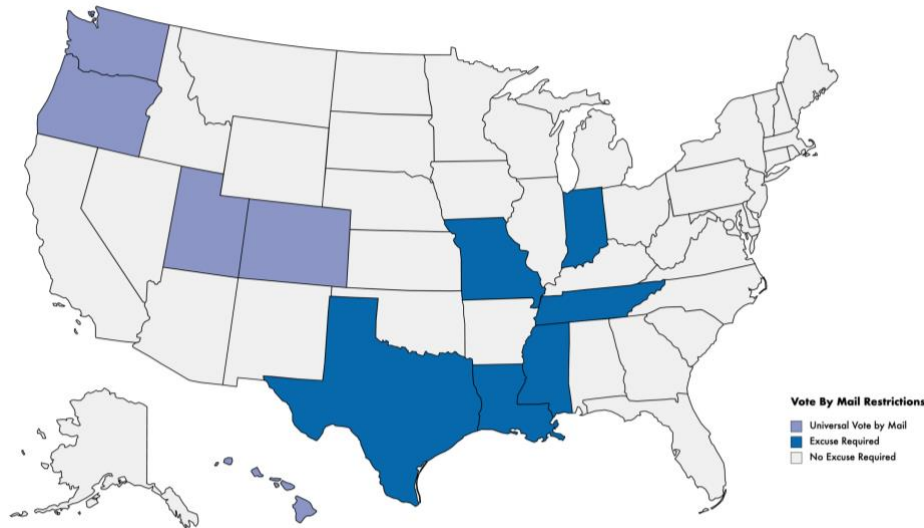
Universal mail-in voting is also being used at the micro-level as a tool to increase voter turnout and accessibility in rural precincts and counties. Some states, such as North Dakota and California, grant counties and local precincts the ability to host elections solely through mail or use mail-in voting to dramatically reduce in-person options on Election Day (Beam, 2020). This micro-approach to mail-in elections aids in achieving two goals. First, it lowers the burden on voters to cast their ballot, whether that burden be the time required to participate or the distance driven to their polling place. Secondly, the rurality of many states and regions of the U.S. can make conducting in-person elections extremely costly. The more spread out a voting population is, the smaller the number of people each polling place will serve, increasing the per capita cost for each voter served from the beginning of the election to final vote being counted. It also increases the burden on election officials to find enough poll workers to staff the precincts, who oftentimes are unpaid volunteers or are paid very little (The Pew Charitable Trust, 2016).

Mail voting can be used in tandem with other voting methods. Specific precincts in Nebraska with low populations mail ballots to every registered voter to encourage a shift to early voting, while providing one centrally located polling place on Election Day for anyone who did not receive a ballot or did not mail theirs in time to either drop their completed mail-in ballot off (Simpson, 2020). Other states may provide ballot drop off locations or provide boxes for longer than just Election Day for voter convenience. In some cases, these additional drop-off locations increase the ease of voters to return their ballots, while simultaneously reducing the costs associated with returning a vote in states where voters must provide their own postage to return their ballot.

Vote by mail is most commonly used in absentee voting, for when voters are unable to or choose not to vote in person. Depending on the state, this type of absentee voting may or may not require an excuse approved by the state for a voter to vote by mail. These excuses also vary by state, but include serving in the military or living overseas, a disability or illness preventing you from getting to the polling place, and religious holidays or observations preventing participation. Twenty-two states require a voter to have a valid excuse to vote absentee, while the remaining states and Washington, D.C.

either allow any voter to utilize absentee voting or conduct their elections fully with vote by mail (*Voting by Mail and Absentee Voting*, 2021).

Figure 1: Vote by Mail Regulations in 2020



Election Security

Many rules and restrictions surrounding an individual casting their ballot must be balanced between reducing the risk of fraudulent or incorrect voting with not creating an undue burden on voters. This dichotomy is frequently a topic of debate at every level of government, with proponents of restrictions or laws to increase the burden of proof on voters arguing that it is an aid to reduce fraudulent voting, reduce costs on local governments and campaigns, or allow voters access to complete information, whereas critics of these laws and regulations argue that it is a voter suppression tactic.

The most common restriction is voter registration. Every state requires voter registration with the exception of North Dakota, which allows all citizens to cast a ballot if they show proof of residence without registration in advance or on the day of. For presidential elections, 20 states and Washington, D.C., allow same-day registration (SDR) for all or part of their early voting window, of which 18 states and D.C. allow for Election Day registration (EDR). Of the remaining states and districts, there is often a deadline which a voter must register by in order to vote in the next election, which in some states is a full 30 days before Election Day (Canon & Mayer, 2013).

Beyond registering, a person's ability to vote in 35 states is dependent on if they possess a state-issued identification card to verify their identity matches the information on the voter rolls (Underhill, 2020). Many times, this identification must have a photograph on it to visually confirm the person voting is who they say they are. Voter identification laws disproportionately impact people of color and low-income individuals, as they face larger barriers in obtaining state-issued identification due to cost, access to government offices and services, as well as difficulties obtaining required documents such as proof of residence, birth certificates, or social security cards (Bentele & O'Brien, 2013; Waldman, 2012).

Voting by mail, whether universal or through absentee, often carries its own additional burdens in the name of identity verification and election security. Most commonly, voters are required to sign their ballot's envelope so that election officials can compare that signature with the signature they have on file for the voter to ensure that the person voting is the actual registered voter. States with stronger identity controls for mail voting, such as Mississippi, who historically has had some of the most restrictive voting laws in the nation, require a licensed Notary to notarize a voter's absentee application and their subsequent ballot for it to be accepted as valid, with exceptions in place only for voters who are permanently physically disabled (Miss. Code Ann. §23-15-715(b)). To comply with voter identification laws, some states also require voters to submit copies of their valid identification with their application to vote by mail or with their absentee ballots.

Procedural Changes in Response to COVID-19

As a result of the COVID-19 pandemic that began in late 2019 and spread to the United States in early 2020, officials at the state and local levels were faced with the challenge of how to conduct a safe and accessible election while minimizing risks of large numbers of people gathering to vote becoming a vector for disease transmission. In some instances, this included learning from mistakes made during the primary elections that occurred after the severity of the pandemic was apparent, and in some locations, it meant pre-empting potential issues faced in the primary elections.

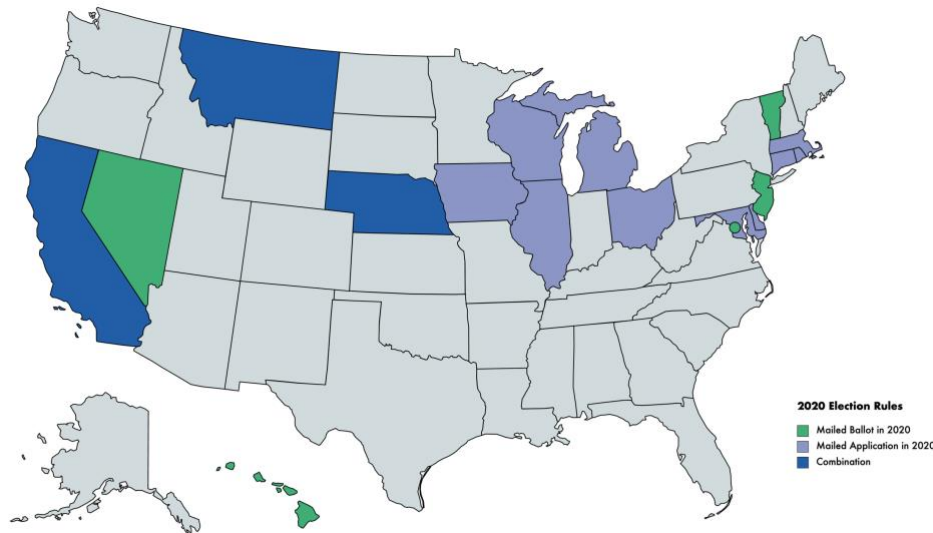
Election officials in different states and counties made a slew of changes to how they would normally conduct an election to try to maintain voter turnout without risking the health and wellbeing of their communities. This included small changes, such as basic hygiene protocols for voting, to larger changes directly impacting how individuals could cast their ballots. A key component of reducing the risk of COVID-19 spreading as a result of holding an election, administrators focused on ways to minimize and reduce the time voters spend around each other and poll workers. States and counties used a variety of measure in hopes of accomplishing this goal, by modifying the in-person voting experience through measures such as drive-in voting, additional polling locations and hours, and expanding the days of early in-person voting, to increasing the accessibility of absentee voting so that voters would not need to come in person in the first place.

Methods to reduce the barrier for voters to cast their ballots via mail are diverse and can be divided into reducing restrictions for voting or actively encouraging vote by mail as a viable alternative to in-person voting. For the former, states such as Delaware increased the pool of voters able to participate in absentee voting by removing the need for voters to have a state-approved excuse to vote absentee. Similarly, some states increased what excuses were acceptable justifications for absentee voting to include being in or caring for an individual in a high-risk group for severe COVID-19 complications, while some states such as Connecticut and Kentucky expanded the excuse even broader to include a general concern about the health risks of voting in person. Some states that previously required mail-in ballots to be officially notarized or required ballots to bear the signature of a qualifying witness (generally, a U.S. citizen over the age of 18), lessened or removed these requirements entirely to reduce person-to-person contact (*Absentee and Mail Voting Policies in Effect for the 2020 Election*, 2020).

Two of the most direct attempts at increasing mail-in voting instead of in-person are the focus of this research, namely the counties that automatically mailed ballots to all registered voters and the counties that automatically mailed applications to vote by mail to all registered voters. All counties in Hawaii, Nevada, New Jersey, Vermont, and Washington, D.C mailed ballots to registered voters, whereas California, Montana, and Nebraska had at least

one county, but not all counties, mail ballots. Ten full states and the remaining Nebraska counties mailed applications to their registered voters.

Figure 2: Changes to Vote by Mail Procedures in the 2020 Presidential Elections



The 2020 election saw a substantial increase in the percentage of voters who elected not to cast their ballot in person, with 46% of all voters voting via mail (*The 2020 Voting Experience*, 2020). However, little research has been done into this unique situation’s impact on voter turnout overall. By comparing these two distinct groups of counties to counties that mailed neither ballots nor applications, this research seeks to test two hypotheses:

- 1) Did a shift to automatically mailing ballots to registered voters while maintaining in person voting options increase overall turnout at the county level in the 2020 Presidential election?
- 2) Did sending applications to vote by mail to all registered voters increase overall turnout at the county level in the 2020 Presidential election?

Previous Research

Historically, the United States has consistently ranked toward the bottom of the list of Organization for Economic Cooperation and Development (OECD) countries for percent of total voting-age population that vote. Conversely, the country as a whole ranks on the higher side of OECD

countries when comparing the percent of registered voters who cast a ballot, coming in 2nd place among OECD nations without compulsory voting (Desilver, 2020). This begs the question, does increasing access to voting through expansion of opportunities to early in-person and mail voting increase voter turnout, or rather provide people who were already going to vote the opportunity to do so with a different method?

Vote by Mail

Historically, research on the relationship between turnout and vote by mail has focused on two main topics: first, shifting elections to entirely vote by mail where voters have no individual choice of how to cast their ballot, and second, opt-in mail-in voting through absentee. Research on these effects return varied results and are oftentimes highly geographically dependent, with large amounts of research naturally being done on states or localities using exclusively mail-in voting.

At the precinct level in California, Kousser and Mullin (2007) found that, contrary to popular belief, universal vote by mail in presidential and statewide elections actually reduces turnout. Special and local elections, however, saw a statistically significant boost in turnout, likely as a result of the reduced burden of casting a ballot in these often lower-interest races (Kousser & Mullin, 2007). This stands in stark contrast to an Oregon survey conducted after five years of statewide universal vote by mail, in which voters reported to overwhelmingly prefer vote by mail (80.9% of the entire sample) and similarly reported that 66.6% vote about the same and 29.3% reporting that they vote less often (Southwell, 2004). While these results are self-reported in a survey, research on Oregon's transition to exclusive vote by mail in 1998 specifically shows positive and significant effects on overall turnout in presidential elections over time, granted they have leveled out at a lower level than the initial elections following the transition to vote by mail (Gronke et al., 2007; Richey, 2008). Colorado has seen similarly large and significant impacts on voter turnout after implementing universal vote by mail; Turnout has increased an estimated 8% since the switch (The Pew Charitable Trust, 2016). The difference in results between these three states may lie in the fact that California does not use statewide universal mail-in voting and therefore

may not have the consistent and stronger impacts both in messaging and information on vote by mail that a state like Oregon or Colorado has.

In Switzerland, research indicates that the effect of optional vote by mail as an alternative to in-person voting has varying effects depending on the community size of the voter. Voter turnout in the canton with the largest number of small communities suffered from the introduction of vote by mail to the tune of roughly 7%, while voter turnout in the canton with the smallest number of small communities increased by nearly the same amount (Funk, 2010). While the cases of Switzerland and the U.S. vary greatly, with Swiss initiatives such as automatic voter registration and, in some cantons, small but symbolic fines being levied on non-voters leading the way, this research provides an interesting glimpse into the potential impacts of social incentives and pressure on a person's likelihood to vote.

Early Voting Options

Early voting – both in-person and by mail – may also be received and used differently based on voter demographics. A key talking point throughout the research on all types of early voting is that it ultimately seems to provide likely voters an alternative method of voting rather than increasing the accessibility of the ballot box to non-voters or likely non-voters. In analyzing studies of the three main types of non-Election Day voting, Berinsky (2005) states that many of these reforms and initiatives may have “exacerbated the socioeconomic biases of the electorate.” These reforms, rather than empowering non-voters or infrequent voters, instead empower those who generally have the easiest time voting or are the most likely voters to utilize them (Berinsky, 2005). Burden, et al. (2014) agree, highlighting that the demographics of voters who reported voting early align strongly with the demographics of most-likely voters.

While theoretically increasing in-person voting options for citizens should positively impact turnout, the opposite is shown to be the case in much of the research. When implemented alone, early in-person voting consistently shows a statistically significant negative effect on overall turnout (Burden et al., 2014). Conversely, people falling within the demographics that mirror “most-likely” voters – that is, older, well-educated individuals who identify as

“strongly partisan” – are split by party in how they utilize early in-person voting; Self-identified liberal voters have the highest early voting turnout rates, with the same demographics but self-identification as independent or conservative having higher in-person Election day voting rates (Alvarez et al., 2012). Interestingly, when political affiliation is removed from the analysis, these results are mirrored internationally; In Sweden, these same demographics are the same ones utilizing early voting options (Högström, 2020).

That is not to say that these are the only voters using early in-person voting as their main means of casting their ballot, or that changes to early in-person voting options affect all groups equally. Following the 2011 signing and implementation of state legislation reducing the number of early voting days from 14 to eight, research in Florida indicates that this impacted voters of different races in substantially different ways, and that this effectively targeted Democratic groups. When comparing voter file data between the 2008 and 2012 election, the two presidential elections preceding and following this new Florida law, Herron and Smith (2014) found that “the voting rights of racial and ethnic minorities appear to have been disproportionately hampered by the reduction in the number of early voting days”. These groups, who are generally Democratic voters, were said to be specifically targeted by this legislation by its opponents. (Herron & Smith, 2014)

Modifying the in-person early voting experience does not seem to have a significant positive impact on turnout either. While initiatives such as centralized voting centers throughout early voting and on Election Day, as well as openness to voters to choose the location they cast their ballot rather than require them to vote in their assigned precinct location increase voter satisfaction and experience, there is no significant change on overall voter turnout as a result (Stein & Vonnahme, 2012).

What Reforms Positively Affect Voter Turnout?

The use of voter registration and subsequent restrictions on registration also play a major role in voter turnout at every level of election as that is the first method of narrowing the population of potential voters to the pool of actual voters. Using Google web search data paired with historical voter

registration data, Street et al. (2015) estimated that by simply extending registration deadlines through Election Day in states where required registration must be made in advance, an estimated 3-4 million more voters would have registered to vote in the 2012 Presidential election. Furthermore, of these web searches focused on registration, more than a quarter of these searches occurred in the last two days before the election in states where the deadline had already passed, further indicating that, similar to the research in early voting, turnout efforts and voter interest in an election are strongly concentrated in the immediate lead up to Election Day (Street et al., 2015). While early voting by itself is shown to decrease overall turnout, when implemented in tandem with Election Day registration and same-day registration, the effects of the latter two appear to minimize the negative impacts of the former (Burden et al., 2014).

Accounting for full turnout of Election Day registrants and high turnout for late registrants, Street et al. (2015) estimate 80% of the total potential late registrants would have voted in 2012 had they been able, raising overall turnout by 3%. This boost with same-day registration and Election Day registration seems to apply largely to counties where the registration occurs at the actual polling place rather than at a centralized location. Positive impacts of centralized registration locations are seen in the long-term resident cohort of the county, whereas polling-place registration, that allows potential voters to only make one trip to register and vote, has consistent positive effects across all cohorts, with the strongest effects being seen in residents that are new to the area (Larocca & Klemanski, 2017).

Efforts have also been made to determine if mailing informational content to voters may positively impact voter turnout; In Pennsylvania's 2020 primary election, Philadelphia voters were randomly assigned the treatment of receiving informational postcards on how to vote by mail in the hopes of encouraging more voters to take advantage of the state's new no-excuse mail voting legislation to minimize COVID-19-related voting risks. While this did increase the number of votes cast through mail, it did not have a discernible or significant impact on overall voter turnout (Hopkins et al., 2021).

Methodology

Data

This research focuses on data from states and districts in the United States that vote in the Presidential election and award electoral votes; This excludes numerous American territories, including Puerto Rico, Guam, and American Samoa, but includes the nation's capital, Washington, D.C., due to its three electoral votes. All raw data is broken down to a county or county equivalent level, using the Federal Information Processing Standard codes (FIPS) for the state and county as the unique identifier.

Demographic and population level data was obtained from the U.S. Census Bureau. These data include population estimates by state and county, broken down by racial demographics, including white, Black, Asian, and Hispanic; by self-identified gender; and by age range, including the estimated citizen voting age population size (CVAP). The average age of the county population was also included, as research indicates that the older a citizen is, the higher their average interest in politics and the higher the likelihood they vote (Glenn & Grimes, 1968). Average income at the county level was obtained by the Bureau of Economic Analysis, and included due to the correlation between higher income and higher rates of civic and political participation (Huijsmans et al., 2020).

While research is largely supportive of the notion that the relationship between higher education and higher voter turnout is a causal one (Dee, 2003; Sondheimer & Green, 2010), some research analysis provides a more skeptical viewpoint (Tenn, 2007). I chose to include education as a potential influencing variable. Data breaking down the percentage of a county's citizens over the age of 25 years who had not received a high school diploma or equivalent was obtained from the U.S. Department of Agriculture. High school completion or diploma equivalent was chosen rather than higher degrees such as Associate's or Bachelor's due to the stronger correlation with high school graduation and an increase in the likelihood of voting (Sondheimer & Green, 2010).

COVID-19 case and death data were sourced from the U.S. Center for Disease Control and the relevant state and local authorities and health departments. The case and death numbers were originally broken down by

week, then aggregated to only include cases that occurred between the beginning of the pandemic and the 2020 election cycle. Infection and death rates per capita were then calculated using the census population data already acquired.

Data regarding political control at the state level were obtained from the National Conference of State Legislatures and represents the party or parties in control as of January 2020. Control of the state legislative bodies and of the governorship plays a significant role in each state's election process, as categorical variables were included to indicate the political control of the legislature and governor's office, with the variables accounting for political party control where Republican control is indicated by 0 and Democratic control is indicated by 1. In the case of non-partisan legislatures, such as Nebraska, only the variable representing the party of the governor was included. For Washington, D.C., as it does not have a governor, only the majority party of the legislature was coded.

Final vote counts and registration data were obtained from respective Secretary of State offices, the New York Times, and MIT Data Lab. The raw vote totals per party and overall tally for both 2016 and 2020 Presidential elections were used to calculate the percentage of the vote won by each party, and the change in percent won by each party in 2020. These calculations were done at the county and at the state level. Additional variables for 2020 were added to record the winning presidential candidate's margin of victory as a measure of perceived closeness and investment in the lead up to the election. This variable was calculated at the state level due to the overwhelming majority using a "winner takes all" approach toward awarding their electoral votes, and thus more closely reflects the approach in investing by campaigns and organizations – For example, a competitive county in a state which is wholly not viewed as competitive will not have the type of resource investment as a county in a swing state. Data from the 2018 mid-term elections was not included in any calculations due to the significant differences in turnout and participation between Presidential elections and mid-term Congressional, Senatorial, and Gubernatorial elections. Alaska is excluded from these county-level vote totals and thus this research, as it is the

only state in the country that does not release exact vote counts at the borough level, and thus all tallies are estimates based on precinct-level data.

For voter registration data, additional variables were calculated to determine the percentage of turnout for each election using the raw number of votes cast and the number of registered voters at the county level. In the case of North Dakota, which does not require citizens to register to vote, CVAP data was used in place of the registration numbers. County voter turnout was calculated using overall vote counts and registration data including active and inactive registrations but excluding any registrants that had been purged from the voter rolls.

Coded Variables

Counties were assigned to either the treatment groups or the control group based on a coded set of variables representing state election rules and if specific changes were made in the 2020 Presidential election. These treatment variables indicate if the state mailed ballots to all registered voters in 2020 (1 if yes, 0 if no) or if the state mailed applications to vote by mail to all registered voters in 2020 (1 if yes, 0 if no). Additional binary variables were created to indicate if the state regularly conducts elections predominately through mail-in voting (1 if yes, 0 if no) and if the state required an excuse to vote by mail in 2020 (1 if yes, 0 if no).

Of the 49 states and Washington, D.C., four conducted elections through universal mail-in voting for both 2016 and 2020 elections, five full states and counties from three additional states that did not have universal mail-in voting in 2016 mailed ballots to registered voters in 2020, and 10 full states and selected counties from Nebraska mailed applications to vote by mail to all registered voters. Of the remaining states, six required an excuse to vote by mail. Of the states that mailed ballots or applications to voters, none required an excuse to vote by mail for the 2020 election (*Absentee and Mail Voting Policies in Effect for the 2020 Election*, 2020). For the purposes of this coding, Hawaii, which switched to all mail-in voting in 2020, was coded as a state that mailed ballots in 2020 as it is better suited to reflect that in 2016, ballots were not universally mailed. In the case of California, Montana, and Nebraska, individual counties were given the ability to decide if their local

election boards would mail ballots to all registered voters; 55 of 58 counties in California, 45 of 56 counties in Montana, and 11 of 93 counties in Nebraska chose to mail ballots to all registered voters. In the case of California, the remaining three counties are universal mail-in voting counties and were thus coded as such. For a full list of the states and coded variables, see Appendix 1.

Matching

To test the two hypotheses, the counties that mailed ballots or applications to vote by mail to all voters were assigned to the two distinct treatment groups, to determine if either of these treatments had a significant effect on overall voter turnout. For the control groups, counties that used universal mail-in voting in the 2016 and 2020 election were excluded, as well as counties that required an excuse to vote by mail, as none of the counties in either treatment group required an excuse and therefore would be unmatched. Counties in one treatment group were excluded from the other treatment's control group, so that a county that mailed a ballot to registered voters would not be matched with a county that mailed an application, and vice versa.

To mimic a true experiment, treatment counties in each respective group were matched using nearest-neighbor matching in order to assume as-if random assignment to treatment or control groups. Treatment counties were matched with at most three control counties in each group. This matching is done by matching control and treatment counties on an observable set of covariates' means to make the respective groups as similar as possible to then identify the treatment effect on the treatment groups. Once counties have been matched, any remaining counties without a match are removed from the control or treatment group, as appropriate. I used propensity score matching with a logit model for each treatment and control group pairing to identify which covariates to match on.

Results

Mailed Ballots

Based on the results of the pre-match propensity score balance tables, the mailed ballot treatment group was matched on population density, racial

demographic makeup, majority political party in the state legislature, the governor's political party, the percentage of the population with a confirmed case of COVID-19 before the election, and the margin of victory of the 2020 election as an indicator of closeness and investment. This resulted in a treatment group of 199 counties and a control group of 157 counties, in total representing counties from 21 states.

Table 1: Mailed ballots to registered voters

	Prematch control mean	Postmatch control mean	Treatment mean
Average income	42866.067	47622.176	52643.618
COVID-19 cases per capita	0.030	0.024	0.022
COVID-19 deaths per capita	0.001	0.000	0.001
Democratic vote share	0.333	0.338	0.452
Republican vote share	0.651	0.643	0.520
Population density	128.280	143.128	229.747
Percent Asian	0.013	0.018	0.054
Percent Black	0.116	0.036	0.037
Percent Hispanic	0.077	0.097	0.173
Percent white	0.756	0.820	0.671
Average age	42.020	42.005	42.231
Margin of victory	0.162	0.161	0.214
Voter turnout 2020	0.712	0.742	0.776
Control of Legislature	0.287	0.719	0.713
Governor political party	0.493	0.889	0.911
Percent with no high school diploma	0.135	0.109	0.115

Table 2: Effect of Mailed Ballots in 2020 Presidential Election

ATT	Counties	States
0.016202	356	21

Due to the relatively small sample size of matched counties, discrepancies still exist between the treatment and control groups with regards to the mean of the variables representing the percent of the population that racially identifies as Hispanic, Asian, or Black, as well as the population density of each county. Using the after-matching control and treatment groups, I calculated the average treatment effect on the treated (ATT), then tested for significance using a t-test with 95% confidence intervals. When comparing treatment and control groups for the counties that sent an automatic ballot in 2020, the estimated ATT is .0162 and statistically significant, signifying that by mailing ballots automatically to all registered voters, counties in the treatment group experienced a 1.62% boost in the percentage change of overall voter turnout from 2016 to 2020.

Table 3: OLS results for mailed ballots

	<i>Dependent variable:</i>
	Change in Turnout
Ballot mailed	0.014*** (0.004)
Percent Asian	0.068* (0.037)
Percent Black	-0.091** (0.038)
Percent Hispanic	-0.022* (0.012)
Population density	-0.00001* (0.00000)
Control of legislature	-0.006* (0.003)
Governor political party	0.027*** (0.008)
Margin of victory	0.031 (0.025)
COVID-19 cases per capita	-0.157 (0.118)
Constant	0.024** (0.011)
Observations	356
R ²	0.141
Adjusted R ²	0.119
<i>Note:</i>	* p<0.1; ** p<0.05; *** p<0.01

To test the robustness of this model, I performed an OLS regression on the same matched sample controlling for the same covariates to identify the estimated coefficient and its potential significance. This found a similar effect – 1.4% as compared to 1.62% – on the change of overall voter turnout as compared to the previous presidential election and was even statistically significant at a lower p-value – $p < .01$ rather than $p < .05$.

Mailed Absentee Voting Applications

Based on the results of the pre-match propensity score balance tables, the mailed application treatment group was matched on racial demographic makeup, specifically the percentage of the population that identifies as Asian and the percent that identifies as Black; the margin of victory of the 2020 election as an indicator of closeness and investment; and the percent of the above 25 population without a high school diploma or equivalent. This resulted in a treatment group of 498 counties and a control group of 1490 counties, in total with results from 33 states.

Similar to the first experiment, county demographics discrepancies still exist between the treatment and control groups with regards to the mean of the variables representing the percent of the population that racially identifies as Black, as well as the political party that has majority control of the state legislature. Using the after-matching control and treatment groups, I calculated the ATT then tested for significance using a t-test with 95% confidence intervals. When comparing treatment and control groups for the counties that sent all registered voters an application to vote by mail in 2020, the estimated ATT is .0078, signifying that by mailing applications automatically to all registered voters, counties in the treatment group may have experienced a .78% boost in overall voter turnout.

Table 4: Mailed applications to registered voters

	Prematch control mean	Postmatch control mean	Treatment mean
Average income	42866.067	46416.651	47322.313
COVID-19 cases per capita	0.030	0.026	0.027
COVID-19 deaths per capita	0.001	0.000	0.000
Democratic vote share	0.333	0.330	0.377
Republican vote share	0.651	0.652	0.606
Population density	128.280	113.004	105.352
Percent Asian	0.013	0.016	0.016
Percent Black	0.116	0.071	0.048
Percent Hispanic	0.077	0.061	0.048
Percent white	0.756	0.820	0.866
Average age	42.020	42.452	42.703
Margin of victory	0.162	0.132	0.103
Voter turnout 2020	0.712	0.743	0.749
Control of Legislature	0.287	0.408	0.313
Governor political party	0.493	0.636	0.548
Percent with no high school diploma	0.135	0.107	0.094

Table 5: Effect of Mailed Applications in 2020 Presidential Election

ATT	Counties	States
0.0077867	1140	33

When conducting an OLS regression on the same matched samples, the estimated effect is roughly the same, a positive and partial percent impact on overall voter turnout, however the results in the OLS analysis are not significant as seen in Table 6. Paired with the near-zero coefficient in both calculations, I reject the original hypothesis that mailing applications to vote by mail will aid in increasing overall turnout in presidential elections.

Table 6: OLS results for mailed applications

	<i>Dependent variable:</i>
	Change in Turnout
Application mailed	0.002 (0.002)
Percent Black	-0.107*** (0.012)
Percent Hispanic	-0.046** (0.020)
Margin of victory	-0.058*** (0.010)
Percent without high school diploma	-0.069*** (0.026)
Constant	0.061*** (0.003)
Observations	1,140
R ²	0.125
Adjusted R ²	0.121
<i>Note:</i>	* p<0.1; ** p<0.05; *** p<0.01

These results fall in between research done on voter conversion to permanent mail voters and research on the impacts of distribution of information and materials regarding absentee voting. In the case of the former, research focused on the impacts of randomized treatment of registered voters receiving a completed application to convert to permanent vote by mail status. In the 2020 primary election, voters in Philadelphia were randomly assigned the treatment of receiving postcards that provided encouragement and information about mail-in voting (Monroe & Sylvester, 2011). While the total number of ballots cast through mail-in voting increased, Hopkins, et al. (2021) found no significant impact on overall turnout as a result of the increased information campaign.

Discussion

The results indicate that automatically mailing ballots to all registered voters provides a marginal but statistically significant increase in overall voter turnout at the county level, while mailing applications to vote does not have a meaningful or significant impact on turnout. While implementing a more

robust or accessible mail-in voting process may increase voter turnout in the short term, there is also the potential for this added increase to gradually reduce due to the novelty wearing off as has been seen in Oregon's transition to universal vote by mail (Richey, 2008).

These results, while partially significant, ultimately do not address the reasons that election officials may be hesitant with regards to encouraging or adopting more widespread mail-in voting options for citizens. First and foremost, the 2020 presidential election occurred during an unprecedented global pandemic, and these election procedural changes were a direct result. For many precincts and counties, the added influx of early and absentee voting, both as a result of receiving the mailed ballot or application encouragement and freely electing to vote early or absentee, 2020 functioned largely as two separate elections occurring in parallel. Many locations were not equipped for the significant influx in mailed ballots, from the boards of elections to the local post offices (Huseman et al., 2020). However, the benefit of minimizing the risk of COVID-19-related illness and death among the population outweighed the short-term investments and compromises ultimately. This type of permanent shift would likely require more large-scale and strategic investments upfront, however could ultimately result in long-term cost savings as has been seen in Oregon and Colorado's shift to universal vote by mail (Richey, 2008; The Pew Charitable Trust, 2016)

Voter Fraud

One of the most common arguments against the adoption of more flexible and widespread alternatives to in-person voting is the risk of compromised election integrity. In the lead up to and in the aftermath of the 2020 election, a widely discussed topic surrounding the unique change in voting procedures was voter fraud and election security, with unsubstantiated claims from Former President Donald Trump and supporters within his party that an expansion in the volume of voters using mail-in ballots could lead to massive and widespread election fraud. Then-Attorney General Bill Barr stated that, "Elections that have been held with mail have found substantial fraud and coercion," whereas Trump repeatedly took to Twitter both before and after the election to weigh in (Dale et al., 2020).

Claims of widespread voter fraud or compromised elections have routinely been proven incorrect, with an exceptionally small number of legitimate voter fraud being conducted ever being discovered and subsequently prosecuted (Levitt, 2007). This holds true for both voting in person and by mail, and holds true regardless of the severity of the election procedures, such as routine purging of ‘inactive’ voters, or requiring valid voter identification to cast a ballot (Levitt, 2014).

Instead of preventing fraud, opponents to these types of restrictions claim that these serve as a metaphorical wolf in sheep’s clothing: On the surface, these laws and restrictions are enforced to protect election integrity, but underneath the surface are instead being passed and implemented as a “new Jim Crow” of sorts (Bentele & O’Brien, 2013).

Disenfranchisement and Suppression

There are still significant barriers in place for many in their journey to cast a ballot – in person or by mail – specifically for groups that have historically experienced voter disenfranchisement. The intent to disenfranchise is difficult to address, let alone identify and research, however the effects of these laws have been shown to disproportionately impact minority groups in the U.S., such as the aforementioned early voting restrictions in Florida (Herron & Smith, 2014). This has further been indicated and supported throughout multiple government publications as well as multiple court rulings, both surrounding the 2020 election and those preceding it. In Georgia, a lawsuit against an exact match requirement on absentee ballot signatures ended the practice once revealed that 80% of the people affected were Black (Bentele & O’Brien, 2013).

Despite its positive attributes, vote by mail is not a one size fits all means of improving access to the ballot box. In Arizona, a state with a large population of Native Americans, an investigation by non-profit organization Four Directions discovered that mail to Native reservations had to travel hundreds of miles further than mail off of the reservation, potentially adding longer times to both receive and return a mail-in ballot or application as well as increasing the risk of ballots and applications being lost. Similarly, the number of post offices are significantly fewer per capita and per square mile,

adding additional difficulties to potential voters (Murtaugh, 2020). Similarly, vote by mail – especially universal vote by mail – generally relies on voters having a stable and consistent address to receive their ballots. The impact this has on homeless people and families is clear, but for many low-income individuals and families, housing insecurity may require them to move frequently, which can serve as one more burden to overcome in their path to participating in elections. These issues in place to vote by mail do not stop there; Many people experience the same problems when applying for valid identification and registering to vote, all which then directly impacts their ability to cast a ballot.

These situations and research indicate that, while initiatives such as automatically mailing voters ballots may improve turnout, there are larger systemic issues lowering voter turnout that vote by mail cannot address. The data on mail-in voting, whether absentee or universal, are promising, however expansion and implementation of a larger vote by mail election system will likely require parallel initiatives to improve registration and access to all potential voters.

Limitations

As with any research, these experiments are not without limitations. Conducting this research in the aggregate at the county level likely leads to less precision and accuracy in modeling and resulting estimates. Due to the relatively small number of county units in the U.S. (just above 3,000), and wide variances in election laws and procedures, exact matching is not possible as it would dramatically restrict the number of counties to be analyzed, which is why I chose to conduct nearest-neighbor matching to maintain as large and balanced sample size as possible.

Similarly, this research done at the aggregate is not capable of predicting or analyzing behavior at the individual level, including if certain demographic groups are disproportionately impacted, either positively or negatively, by these election process changes. Given more resources, an area for further research could be mirroring this study using precinct-level data or individual-level data to test the robustness of the results and to identify other regional or demographic trends.

There is a risk of intangible confounding variables. It is reasonable to assume that states that increased mail-in ballot and application accessibility are likely to generally have more accessible voter procedures, and those that chose not to increase accessibility generally have a history of highly restrictive voting procedures that can influence voters at the individual level and at the aggregate. While not a perfect indicator, the coded variables representing the governor's party and the legislature's majority party accounts for some of the potential confounding, as the majority of election procedure changes are down along party lines, with the Democratic party generally being the driving force for initiatives aimed at expanding ballot access and the Republican party generally being the driving force for initiatives aimed at minimizing the risk of voter fraud (*State Voter Suppression Effort Is Highly Partisan*, 2021).

This, paired with an individual state or county's history with voter suppression tactics, is likely to permeate both modern electoral procedure as well as the mindset and thought processes of potential voters, such as the long-term impacts of if voter suppression prevented a voter's parents or grandparents from voting compared to those with a long history of being able to vote. This 'hereditary' influence on a person's likelihood to vote is strong, and can be seen in research from across the world (Bhatti & Hansen, 2012; Kudrnáč & Lyons, 2017).

Conclusion

The COVID-19 pandemic provided a unique problem for election officials to solve: How to encourage voters to participate in the presidential election while introducing additional measures and guidelines to promote and protect public health and safety. This was a difficult problem for a multitude of reasons, the two main issues being a fear of contracting COVID-19 coupled with a history of generally low turnout nationwide. Election officials responded with a slew of changes at the local and state levels, from small changes to implementing hygiene protocols to statewide changes as expansive as mailing ballots and applications to vote by mail to every registered voter. By comparing the counties that implemented one of these two treatments to

counties that did not, this research attempted to isolate the potential impacts these initiatives had on overall voter turnout at the county level.

While increasing citizens' access to vote by mail through automatically mailing ballots to registered voters appears to have a positive impact on overall voter turnout, it is likely that other initiatives, either independently or in conjunction with increased vote by mail opportunities, may improve voter turnout more substantially while using fewer resources, both human and financial. While the threat of the pandemic provides an added cost to measure expenditures against, an average election year has relatively lower cost for election officials and thus may be a hard sell for the added infrastructure necessary to continue mailing ballots to all voters while simultaneously maintaining in-person voting options.

Mirroring past research on informational mailings aimed at increasing voter turnout, automatically mailing applications to vote by mail does not appear to be an effective means of increasing overall voter turnout, however it does appear to increase utilization of mail-in voting as a resource.

Further research

As stated in the limitations section, additional research at a more micro-level could identify more precise estimates of the impact of mailed ballots to all registered voters, as well as could help identify any potential trends in who is over- or under-utilizing this method of voting and confirming the previous research on early and absentee voting merely provides an alternative method of voting to already likely voters. Furthermore, additional research could build on the counterpoint to this research, that is to say, how the addition of more restrictive electoral procedures decreases turnout at the county and individual level. This type of research, as with all research and policy making, must be conducted with an intersectional lens to ensure that all potential issues and initiatives are being measured or implemented in an equitable way. Low rates of voter turnout and engagement is a significant and serious problem facing the U.S. and its democracy, and action must be taken to improve both through thorough and inclusive research and political action.

Appendix

Appendix 1: State Election Procedures in 2020

State	Universal Mail-in	Ballot Mailed	Application Mailed	Excuse Required
Alabama				
Alaska				
Arizona				
Arkansas				
California	Partial	Partial		
Colorado	Yes			
Connecticut			Yes	
Delaware			Yes	
Florida				
Georgia				
Hawaii		Yes		
Idaho				
Illinois			Yes	
Indiana				Yes
Iowa			Yes	
Kansas				
Kentucky				
Louisiana				Yes
Maine				
Maryland			Yes	
Massachusetts			Yes	
Michigan			Yes	
Minnesota				
Mississippi				Yes
Missouri				Yes
Montana		Partial		
Nebraska		Partial	Partial	
Nevada		Yes		
New Hampshire				
New Jersey		Yes		
New Mexico				
New York				
North Carolina				
North Dakota				

Ohio	Yes
Oklahoma	
Oregon	Yes
Pennsylvania	
Rhode Island	Yes
South Carolina	
South Dakota	
Tennessee	Yes
Texas	Yes
Utah	Yes
Vermont	Yes
Virginia	
Washington	Yes
Washington, D.C.	Yes
West Virginia	
Wisconsin	Yes
Wyoming	

Statement of Authorship

I hereby confirm and certify that this master thesis is my own work. All ideas and language of others are acknowledged in the text. All references and verbatim extracts are properly quoted, and all other sources of information are specifically and clearly designated.

DATE: June 14, 2021

NAME: Alyse Conn-Powers

SIGNATURE:

A handwritten signature in black ink, appearing to read 'Alyse Conn-Powers', written in a cursive style.

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