Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Communicating safety precautions can help maintain in-person voter turnout during a pandemic

Eric Merkley a,*, Thomas Bergeron a, b, Peter John Loewen a, b, Angelo Elias c, Miriam Lapp c

a Department of Political Science, University of Toronto, SS 3018, 100 St. George Street, Toronto, ON, M5S 3G3, Canada
b Munk School of Global Affairs and Public Policy, University of Toronto, 1 Devonshire Place, Toronto, ON, M5S 3K7, Canada
c Elections Canada, 30 Victoria Street, Gatineau, QC, K1A 0M6, Canada

ARTICLE INFO

Keywords:
Electoral safety
Cost of voting
Voter turnout
Election administration
COVID-19

ABSTRACT

Scholars have linked cost and life stress to lower voter turnout with clear implications for voting during the COVID-19 pandemic. We ask whether COVID-19 reduces turnout intention and how election agencies can mitigate this effect. We use a series of six survey and conjoint experiments implemented in samples totalling over 28,000 Canadian respondents collected between July and November of 2020 to show that: 1) priming people to think about COVID-19 reduces turnout intention, especially among those who feel most threatened by the disease; 2) safety measures for in-person voting, such as mandatory masks and physical distancing, can improve safety perceptions and willingness to vote in-person; and 3) providing people information about safety precautions for in-person voting mitigates the negative effect of priming COVID-19. These studies illustrate the importance of both the implementation and communication of measures by election agencies designed to make people safe and feel safe while voting in-person.

The emergence of the novel coronavirus SARS-CoV-2 (and the disease it causes, COVID-19) has dramatically influenced formal political activities such as the meeting of parliaments and committees and the conduct of general elections. It has also changed the nature of political campaigns. Scholars and commentators have closely followed elections taking place during the pandemic in the United States, Canada, and France, among other countries, to study the potential impacts of in-person voting on public health (e.g., Berry et al., 2020; Cotti et al., 2021; Zeitoun et al., 2020). Some research has found that in-person voting increases the risk of being infected by COVID-19, ultimately leading to more cases and deaths (Bertoli et al., 2020; Cotti et al., 2021; Cassan and Sangnier 2020; Flanders et al., 2020, but see Berry et al., 2020; Zeitoun et al., 2020).

Irrespective of whether in-person voting facilitates the spread of the virus in practice, people are surely concerned about the risk of lining up to cast a ballot in an enclosed space proximate to others. Consequently, the pandemic has clear implications for voter turnout. The rational choice model of turnout (Downs, 1957; Riker and Ordeshook, 1968) posits that citizens base their decision to vote on its perceived costs (direct and decisional) and benefits. The cost of voting is typically acknowledged by scholars as being low (Blais 2000; Blais et al., 2019). However, public policies that increase the cost of voting at the margins—like voter registration or identification laws, or situational factors such as longer wait times and greater distance to polling stations—have been found to reduce turnout. Moreover, life stressors have been linked to lower turnout in observational (see Pacheco and Fletcher 2015, for example), and experimental settings (Hassell and Settle 2017). The COVID-19 pandemic offers a unique, if deeply tragic, opportunity to observe how voter turnout adapts in the face of the very real risks posed by a disease.

In this paper, we argue that the health risks posed by COVID-19 increase both the perceived cost of voting and stress, thereby decreasing turnout. We first ask whether priming people to consider COVID-19 reduces turnout intention. We use large-scale survey data from nine waves of the Media Ecosystem Observatory (MEO) fielded from June 15–August 31, 2020 to answer this question. We conducted both a within-subjects experiment (Study 1; N = 12,660) and a between-subjects experiment (Study 2, N = 7,023) and find that priming respondents to think about COVID-19 reduces their self-reported intention to vote if an election were held tomorrow, especially among those who feel most threatened by COVID-19.

These findings highlight the importance of identifying interventions that could help mitigate the threat of COVID-19 to voter turnout. Accordingly, we ask two further research questions: 1) Are safety...
precautions that can be taken by election administration agencies that will make citizens feel safer at the polls and more likely to vote in-person? 2) How do the effects of such measures compare to other socio-political factors known to influence voter turnout?

Here, we focus on safety measures that can be implemented at in-person polling stations by election administration agencies, such as mandatory masks, physical distancing, and numerical limits. Using three conjoint experiments contained in the MEO surveys, we show that these safety measures all significantly improve people’s perception of the safety of in-person voting and their likelihood of casting an in-person ballot (Studies 3 and 4). We illustrate further that these effects exceed those of other socio-political context-level factors expected to influence turnout intention, like weather, polling station distance, and electoral competitiveness (Study 5).

Finally, we explore whether exposure to information about the in-person safety measures we used in Studies 3–5 mitigates the damping effect of priming COVID-19 on turnout intention that we found in Studies 1 and 2. We find some evidence that this is the case with a series of pre-post experiments contained in three further waves of the MEO (Study 6).

Taken together these studies illustrate the challenge the COVID-19 pandemic poses to democratic participation and the importance of both the communication and implementation of measures by election administration agencies designed to make people safe, and feel safe, while voting in-person. Our findings also provide more general evidence of how the costs of voting matter for voters’ turnout decisions.

1. Cost of voting and COVID-19

Following the canonical rational choice framework, citizens will choose to vote if the benefits outweigh the costs (Downs, 1957; Riker and Ordeshook, 1968). There are two components to these costs. First, there are decision costs that are related to the time needed to gather sufficient information to make a choice. Second, there are direct costs related to losses incurred on election day. For example, citizens must travel to the polls and then return home, which takes time that could have been otherwise dedicated to other tasks (Blais, 2000; Downs, 1957). Most scholars agree that the cost of voting is small, while direct costs matter more to citizens than decision costs (Blais 2000; Blais et al., 2019).

Although the claim that the prevalence of voting should be responsive to its cost seems rather obvious, it has extremely important implications: public policy or features of the socio-economic environment that reduce (increase) the cost of voting should improve (reduce) turnout on the margin. Scholars have identified a number of such factors. Implementing election day registration or pre-registration modestly increases turnout by reducing the number of administrative steps needed to cast a ballot (Braconnier et al., 2017; Holbein and Hillygus 2016). Internet voting may also improve turnout by making it easier to vote (Goodman and Stokes, 2020), though other policies, like early voting and longer polling hours, do not appear to have this effect (Burden et al., 2014; Quinlan, 2015).

The reverse is also important: increasing the cost of voting reduces turnout at the margin. Reducing the number of polling stations available, thereby increasing the distance to polling stations, has been found to decrease turnout (Hapel and Knotts 2005; McNulty et al., 2009). For example, Brady and McNulty (2011) show that the consolidation during California’s 2003 gubernatorial recall election in Los Angeles County was associated with a decrease in turnout. Similarly, longer wait times have been linked to lower turnout (Petitgrew, 2017; Stewart, 2012), as have stricter voter identification laws, albeit with modest effect sizes (see Highton, 2017 for a review). Cost matters to turnout.

There are a variety of mechanisms through which the COVID-19 pandemic may affect the cost of voting. For example, some governments have consolidated polling stations as a safety precaution: fewer polling stations mean fewer workers are placed at risk of infection. The Wisconsin Elections Commission (WEC) allowed the County and Municipal Clerks the power to consolidate polling places for the Wisconsin presidential primaries in early April 2020. Indeed, some estimates suggest that this consolidation reduced turnout by 8.5 points, primarily in urban areas (Morris and Miller 2021).

Second, COVID-19 may heighten the cost of voting by exposing people to possible infection as they gather to vote indoors with others. Studies have found that in-person voting is associated with an increase in COVID-19 cases (Bertoli et al., 2020; Cassan and Sangnier 2020; Flanders et al., 2020). For instance, the Wisconsin Department of Health Services, using a contact-tracing analysis, identified 71 new cases of COVID-19 due to in-person voting in April 2020. Cotti et al. (2021) estimate that the primary caused approximately 700 new cases in the three following weeks. Even more importantly for our purposes, scholars have observed a link between COVID-19 caseload and lower turnout (Brouard and McAyav 2020; Noury et al., 2021; Giommoni and Loumeau, 2020; Picchio and Santolini, 2021; Vazquez-Carrero et al., 2020; but see Frank et al., 2020; Santana et al., 2020). For instance, Fernandez-Navia et al. (2021) find in the 2020 Spanish regional elections that municipalities that reported COVID-19 cases the day before the election recorded turnout between 2.6 and 5.1 percentage points lower than those that did not.

Although research is not unanimous on this point, in-person voting may well increase the risk of contracting the virus, raising the potential cost of voting for citizens (Berry et al., 2020; Cassan and Sangnier 2020; Flanders et al., 2020; Zeitoun et al., 2020). And, at a minimum, citizens may perceive there to be a risk associated with in-person voting that otherwise would not exist outside of a pandemic. This is important, because as Blais et al. (2019) argue, perceptions of voting costs may matter as much, if not more, than objective indicators of these costs. The spread of disease is likely to dissuade some voters from going to the polls.

2. Risk, psychological stressors, and turnout

The COVID-19 pandemic not only increases the cost of voting by posing a health risk to citizens, but it can also trigger psychological and physical responses among citizens – very real costs in of themselves – that also have effects on voter turnout. Scholars have shown that indicators of personal health and wellness are associated with people’s propensity to vote in elections. People who are in poor health are less likely to vote than those who are healthy (Gagné et al., 2020; Mattila et al., 2013; Pacheco and Fletcher, 2015; Papageorgiou et al., 2019). This might be particularly true for people with poor mental health. For instance, Ojeda and Pacheco (2017) demonstrate that depression is associated with decreased turnout over time, though physical health factors appear to matter less.

Health is not the only life stressor posited to affect voter turnout. Scholars have shown a number of other factors reduce voter turnout like widowhood (Hobbs et al., 2014), broken family environments (Pacheco and Plutzer, 2007), early parenthood (Pacheco and Plutzer, 2007), widowhood (Hobbs et al., 2014), broken family environments (Pacheco and Plutzer, 2007), and economic hardship (Pacheco and Plutzer, 2007, 2008). There are some caveats to this research: some of these effects vary across demographic groups (Pacheco and Plutzer, 2007) or are substantively small in size. Part of this may be because life stressors are mostly demobilizing for non-habitual voters. Hassell and Settle (2017), for instance, find that triggering people to think about life stressors reduces vote intention, but primarily among people who are less disposed to voting at the baseline.

COVID-19 has imposed a cascade of life stressors on all citizens everywhere. It has brought on death, economic collapse, and an erosion in social and family life as individuals maintain distance to keep others safe from exposure. Scholars studying the psychological impacts of the COVID-19 pandemic have found that it has indeed increased stress, anxiety, and distress (Brooks et al., 2020; Petzold et al., 2020; Shanahan et al., 2020). Most importantly for our purposes here, people are more
likely to have situational anxiety related to voting in-person than in normal times because they perceive added risk to indoor, in-person activities involving large numbers of people.

The COVID-19 pandemic, therefore, offers a unique opportunity for scholars to study the cost of voting in extreme situations. The real or perceived costs associated with casting a ballot in-person during a pandemic—such as contracting or transmitting the virus to others—are much higher than what we usually study in this body of work, like the inconvenience caused by large distances to polling stations, long wait times, or stricter voter identification laws. And even though caseloads have fallen in some countries at the time of writing, the unfortunate times, or stricter voter identification laws. And even though caseloads much higher than what we usually study in this body of work, like the perception costs associated with casting a ballot in-person during a large-scale survey of Canadians during the COVID-19 pandemic. These studies found that heightens risks associated with in-person voting moving forward. Irrespective of whether there are observed risks to in-person voting because democracy cannot be put on pause during a health crisis.

Are there policies or procedures that can help address this issue? To help identify possible solutions to this problem, we ask and answer several research questions. Our principal goal here is not to adjudicate between the exact mechanisms causing turnout declines, but to understand what interventions might reduce turnout declines. We begin with the description and results of Studies 1 and 2 that test whether priming COVID-19 reduces turnout intention among survey respondents. We then describe the design and results of our three conjoint experiments (Studies 3–5), and finally we test whether information related to these safety precautions can dampen the effects of COVID-19 priming on turnout intention.

3. Data

Our data come from the Media Ecosystem Observatory (MEO), a large-scale survey of Canadians during the COVID-19 pandemic. These data were collected between July and November 2020 by the online panel provider Dynata, which provides opt-in, non-probability samples. Each wave of the survey has a sample size between 1,500 and 2,500 adult Canadian citizens with quotas set on age (i.e., 18/34, 35/54, 55+), gender (i.e., male, female), language (i.e., English and French), and region (i.e., Atlantic, Quebec, Ontario, West) to match population characteristics found in the 2016 Canadian census. The sample characteristics of each wave can be found in Table A1 of the Appendix as well as a comparison to population benchmarks.

4. Study 1 and study 2: priming experiments

Irrespective of whether there are observed risks to in-person voting owing to COVID-19, people are likely to perceive the existence of such risks. Inducing people to think about COVID-19 should then reduce their turnout intention to vote by bringing those potential costs to the forefront. We conduct two experiments to test our first hypothesis:

**H1.** (Study 1 and 2): Priming people to think about COVID-19 reduces turnout intention.

4.1. Study 1 and 2 design

First, we implemented a within-subjects experiment, Study 1, in waves 9 through 13 of the MEO (N = 12,660). At the beginning of a 25 min survey focusing primarily on COVID-19 attitudes and behaviours (i.e., immediately after the consent form and quota-based demographics such as province, age, and gender), we asked respondents to report their likelihood of voting if an election were held tomorrow (response categories: certain, likely, unlikely, and certain not to, rescaled from 0 to 1 where 1 represents those that are certain to vote). Towards the end of the survey, we asked respondents their likelihood of voting tomorrow “considering the current situation with COVID-19.” Respondents were thus primed to consider COVID-19 both by the extensive content of the survey and the explicit priming text. We expect respondents to significantly reduce their vote turnout intention between the first and second iteration of those questions.

The within-subject experiment gives respondents a strong prime for COVID-19. We felt this was necessary because the high salience of the topic would leave a lot of respondents pre-treated, even at the start of the survey. The downside is that there might be other elements of the survey that are eliciting a change in turnout intention, while being unrelated to COVID-19. Consequently, we also conducted a second study (Study 2) with a between-subjects design in waves 16 to 19 of the MEO (N = 7,023). At the very beginning of the survey, immediately after the consent form and quota-based demographics, respondents were asked to report their likelihood of voting if an election were held tomorrow (again rescaled from 0 to 1). One group received a prime asking them to consider “the current situation with COVID-19.” The other group received no such prime. We expect individuals in the treatment condition (with a prime) to have lower turnout intention than those in the control group.

We conduct tests for heterogeneous treatment effects. We should see stronger effects among those who feel most threatened by COVID-19:

**H2.** (Study 1 and 2): The negative effect of COVID-19 priming on turnout intention should be larger among respondents who perceive COVID-19 to be a serious threat to their health.

For our within-subject experiment, we regress changes in election turnout intention on COVID-19 threat perceptions\(^1\) and demographic characteristics that may be associated with changes in turnout intention and threat perceptions, like age, education, income, urban/rural residence, gender, and region of residence.

For our between-subjects experiment, we estimate the same model, but with election turnout intention on the left-hand side and interactions of our covariates with the treatment condition on the right-hand side.

We expect small effect sizes from these experiments for three reasons. First, some respondents might expect precautions to be taken by election administrators to protect people while voting in-person, though, even still, 54% of respondents in Study 1 reported they were of the opinion voting in-person is either very or somewhat unsafe and only 9% reported that in-person voting is very safe. Second, the availability of mail-in voting might lead to small effects because this alternative is accessible, available, and safe for Canadians who want to vote. We do not have expectations of large effect sizes and what we do observe may be conservative owing to the simplicity of the treatment and the fact that many respondents are likely to be pre-treated to consider COVID-19 by the social and political context before entering our survey.

4.2. Study 1 and 2 results

The results of our within-subjects experiment (Study 1) are shown in the left panel of Fig. 1. We provide the wave-specific estimates as well as a pooled estimate. Across all waves featuring the within-subjects experiment, respondents reduced their turnout intention by an average of 0.04 points (on a 0–1 scale) between the pre- and post-test (p < 0.001, one-tailed), which is approximately 0.22 standard deviations on our election turnout measure. This effect is remarkably stable across

\(^{1}\) “How serious of a threat do you think the coronavirus (COVID-19) is to yourself?” (Response categories: Very serious, somewhat serious, not very serious, not at all serious). Covariate descriptions can be found in Table A2 of the Appendix.
all five waves of this experiment and is consistently significant at the p < 0.001 level (one-tailed), providing strong support for H1.

We also see a priming effect with our more conservative between-subjects design (Study 2), shown in the right panel of Fig. 1. Again, we provide the wave-specific estimates as well as a pooled estimate. On average, across the waves with our between-subjects experiment, turnout intention was 0.02 points lower in the treatment condition compared to the control (p = 0.002, one-tailed), which is approximately 0.07 standard deviations in our outcome. The point estimate is relatively consistent across all waves, though it misses conventional levels of statistical significance in wave 16 (p = 0.09, one-tailed) and is non-significant in wave 18. Priming people to consider COVID-19 reduces their intention to vote in the next election, providing some support for H1. These effects are small to modest, but this should not be surprising since the current environment already strongly primes COVID-19 when respondents answer our survey.

COVID-19 threat perception appears to moderate the priming treatment in both studies. The full estimates are provided in Table A3 for the within-subjects experiment, and Table A4 for the between-subjects experiment. The left panel of Fig. 2 displays the predicted change in turnout intention across COVID-19 threat perception after controlling for education, income, age, urban/rural residence, gender, and region. COVID-19 threat perception is significantly associated with changes in turnout intention in support for H2 (p = 0.01, two-tailed). The treatment effect increases 48% from those that see the COVID-19 threat as “not at all serious” (0.031, p < 0.001, two-tailed) to those that perceive COVID-19 to be a “very serious” threat to their personal health (0.046, p < 0.001, two-tailed). It is also worth noting that we observe stronger treatment effects among less educated and younger voters, suggesting that these effects are strongest among those who are less...
inclined to vote.

The moderation effect is even stronger for an item that assesses people’s perceptions of the safety of in-person voting. We ask respondents in these waves whether such voting was very safe, somewhat safe, somewhat unsafe, or very unsafe. Figure A1 of the Appendix displays the marginal effects plot of this covariate, and the estimates can be found in Table A3.

The right panel of Fig. 2 shows the same for the between-subjects experiment. The marginal effect of the treatment condition is insignificant for those who think the personal threat of COVID-19 is “not at all” or “not very” serious, and drops 0.03 points for those who think it is a “very serious” threat, in support of H4 (p < 0.001, two-tailed). The interaction term is significant (p < 0.05, two-tailed) supporting our expectation. Priming COVID-19 reduces election turnout intention especially among those who perceive a high level of personal threat from COVID-19.

Using the survey itself to prime COVID-19 or including an explicit prime at the beginning of the survey ensures our moderating variables are measured post-treatment, which could lead to biased estimates of treatment heterogeneity (Montgomery et al., 2018). We repeat our within-subjects experiment in two waves of respondent re-contacts from waves 9 through 12 (N = 5,000). Within-subject treatment effects for these respondents are moderated by perceived threat (and election safety perceptions) measured in prior waves. These results are provided in Figure A2 of the Appendix.2

We also leverage our panel data in two further ways. First, we estimate a fixed effects specification where we examine whether within respondent change in in-person safety perceptions is associated with within-respondent change in pre-post treatment effects. We find this to be the case, further mitigating the threat of unobserved heterogeneity in our heterogeneous effects analysis. Second, we estimate a lagged dependent variable model where we regress past values of in-person election safety perceptions on current turnout intention, controlling for covariates, and, crucially, past values of turnout intention. We find a strong link between in-person safety perceptions and turnout intention even with this design, helping us mitigate the threat of endogeneity in an observational context. These results can be found in Table S1 of the supplementary materials.

5. Study 3–5: election safety conjoints

If COVID-19 has the potential to reduce voter turnout among those who feel threatened by the disease, it is imperative to know if there are public safety measures that may assuage these concerns. Operating in a Canadian context, we worked with Elections Canada to identify a number of different measures actively under consideration to be implemented in the next federal election, such as: 1) controls on the numbers of people allowed into a polling station; 2) social distancing measures to keep people at least 2 m apart; 3) requiring everyone to wear a mask; and the provision of 4) single-use pencils; and 5) hand sanitizer.

5.1. Study 3–5 design

Conjoint experiments are particularly useful in these circumstances, as they allow for a more fine-grained understanding of people’s preferences when the choice situation is complex and multidimensional, such as in-person voting when multiple different packages of safety measures are possible. We implement Study 3 in wave 16 of the MEO (N = 2,499), fielded from August 10–12, 2020.

We began by informing respondents that they will be provided with several possible scenarios related to the administration of in-person voting:

In the following section we are going to provide you with several hypothetical scenarios related to the administration of in-person voting in the next federal election. Please read carefully. We will ask you some questions about each scenario.

We then provided each respondent with three such scenarios where each measure is independently randomized:

Imagine the following measures were in place for in-person voting in the next federal election:

- [Strict limits on the number of people allowed into a polling station at a time/No limits on the number of people allowed into a polling station].
- [Social distancing measures to keep people at least 2 m apart/No social distancing measures in place].
- [Requirement to wear a mask when inside the polling station/No requirement to wear a mask while inside the polling station].
- [Hand sanitizer is provided/Hand sanitizer is not provided].
- [Single-use pencils are provided/SINGLE-use pencils are not provided].

After each scenario, respondents were asked: “How safe or unsafe do you think it would be to vote in-person at a polling station with these measures in place?” (Response categories: very safe, somewhat safe, somewhat unsafe, very unsafe); and “How likely would you be to vote in-person at a polling station with these measures in place?” (Response categories: very likely, somewhat likely, not very likely, not at all likely). We expect each of these safety measures to improve both safety perceptions and in-person voting likelihood:

H3. Safety perceptions/in-person voting likelihood is higher in in-person voting scenarios with …

- Numerical limits (A)
- Social distancing measures (B)
- Mask requirements (C)
- Hand sanitizer provided (D)
- Single-use pencils provided (E)

The benefit of the above design is that the attributes correspond directly to measures that Elections Canada is considering for implementation in the next Canadian federal election. The drawback is that citizens may expect that these safety precautions would be implemented and so this design may elicit a strong response from respondents surprised by the absence of a safety measure in the control condition (i.e. someone who is informed there was “No social distancing measures in place”).

We implemented a second conjoint experiment (Study 4) in wave 22 of the MEO (N = 2,503). We aimed to replicate Study 3 but with a modestly different task: respondents were asked to imagine a given situation when they arrive to vote at their polling station. We provided respondents with three scenarios each, where five measures are independently randomized:

Imagine that it is election day. You arrive at your designated polling station and observe the following:

- There are [many/few] people inside the polling station
- [Hand sanitizer is readily available for public use/Hand sanitizer containers are empty]
- [Very few people are wearing masks/ Almost everyone is wearing a mask]
- Voters are [given brand new pencils to mark their ballots/reusing pencils left from previous voters]
- People are [crowded together in line/spaced apart in line by at least 2 m]
Two questions were asked after each scenario: “Would you proceed to vote at this polling station?” (Response categories: definitely, probably, probably not, definitely not) and “How safe or unsafe do you think it is to vote in this polling station?” (Response categories: very safe, somewhat safe, somewhat unsafe, very unsafe).

One drawback of conjoint experiments is that the treatment effects can only be generalized to situations with the attributes used in the vignette. If other factors are introduced to the decision situation, we might expect differences in treatment effects. Studies 3 and 4 notably lack features of the political context that may influence voter turnout. If these factors are introduced to the vignettes, the treatment effects for our safety precautions may well be crowded out.

To account for other environmental and contextual factors that may influence turnout intention, we conducted a third and final conjoint, Study 5, in wave 24 of the MEO (N = 1,481) fielded from October 6–14, 2020. In this study we introduced other environmental characteristics, like month of the election, weather on election day, the day of the week, the proximity of the polling station, and the competitiveness of the local and national races, in addition to the safety-related attributes we use for Study 4. Respondents were given the following vignette three times:

Imagine that it is election day in [August/November/February/May] and it is being held [in the middle of the week/on a weekend].

Your local race for Member of Parliament is [neck-and-neck/not very close], while the national race between the Liberals and Conservatives is [too close to call/likely to be a landslide].

Your designated polling location is [very far from/very close to] where you live. [It is pleasant outside/It is {raining/snowing} outside].

At this location there are [many/few] people inside the polling station and they are [crowded together in line/spaced apart by at least 2 m]. In addition, [hand sanitizer is readily available for public use/]

![AMCEs for Study 3 (top-left), Study 4 (top-right), and Study 5 (bottom). Note: 95 and 90% confidence intervals. Respondent-clustered standard errors.](image-url)
sanitizer canisters are empty) and voters are [given brand new pencils to mark their ballots/reusing pencils left from previous voters. [Very few people are wearing masks/Almost everyone is wearing a mask].

We then ask respondents “How likely would you be to vote at your designated polling station?” (Response categories: very likely, somewhat likely, not very likely, not at all likely).

We estimate the effects of each measure on perceptions of safety (Study 3 and 4) and vote likelihood (Study 3 through 5). The estimates can be interpreted as the causal effect of each attribute averaging across the distributions of all other attributes in the model, i.e. the average marginal component effect (AMCE). This will tell us which of these measures improves safety perceptions and the likelihood of in-person voting the most.

We expect the effect sizes of these studies to be considerably larger than those of Study 1 and 2 for a number of reasons. First, respondents are likely to have expectations about the administration of in-person polling locations: many are likely to assume that certain (but not all) of the presented policies will be in place if they vote in-person. At the time of fielding, hand sanitizer provision, social distancing, numerical restrictions, and mask mandates were relatively commonplace in environments like grocery stores or malls. Hence, respondents might be repelled by scenarios where those expectations are not met. Second, respondents were asked if they would vote at the polling station highlighted by the vignette. Participants reporting that they would not continue to vote might think they could cast their ballot either by mail or at another polling station.

It is important to acknowledge what these conjoints do and do not do. They do not provide a test of the effects of individual safety precautions on turnout or turnout intention for a given election. They do not provide valid and robust estimates for what respondents expect they would do when faced with situations where in-person polling stations fail to meet their expectations about safety if election administration agencies abandon visible and widely accepted safety precautions at polling locations.

5.2. Study 3–5 results

The AMCEs for Study 3 are displayed in the top-left panel of Fig. 3. All safety measures significantly improve perceptions of safety and the likelihood of in-person voting at the p < 0.001 level (two-tailed) in support of H3, but there are some differences in effect sizes. The effects of single use pencils (0.06 and 0.05 points on 0–1 scales) and hand sanitizer (0.09 and 0.08 points, respectively) are smaller than the effects of limits on the number of people, social distancing, and mandatory masks, which range from 0.12 to 0.14 points. These results demonstrate that safety measures can strongly improve the likelihood of voting in-person, particularly by limiting the number of individuals in a polling station, practicing social distancing, and making masks mandatory.

It is possible that Study 3’s effects are inflated by respondents taken aback by the complete absence of precautions taken in the baseline conditions. Study 4, in contrast, draws respondents’ attention to the conditions in one specific polling location. The AMCEs for Study 4 are presented in the top-right panel of Fig. 3. Again, all measures improve safety perception and vote intention (p < 0.001, two-tailed) with very similar effect sizes, in support of H3. The effects of single use pencils (0.10 and 0.07 points) and hand sanitizer (0.11 and 0.09 points) still trail social distancing and mask usage (effects ranging from 0.11 to 0.14 points). People, however, are perhaps less concerned about the number of people in a polling station (0.08 and 0.06 points), so long as they are spaced apart.

How do these effects compare to other environmental and political characteristics that may influence turnout intention? The AMCEs for Study 5 are shown in the bottom panel. Respondents were not responsive to any of these other characteristics on average, with the exception of a competitive local race, which is signed in the wrong direction. In support of H5, all but one safety-related attribute remains significant at the 0.001 level (except the number of people in the polling station, which was significant at the 0.01 level), although with perhaps more muted effect sizes.

It is also worth noting that the effects we observe here are additive. We can create a 0–5 index based on the total number of safety measures implemented in a given vignette. Going from vignettes with the worst possible conditions for safely voting to the best possible conditions increases likelihood of voting by 0.26 on a 0–1 scale. As a point of comparison, moving from the minimum to the maximum in a respondent’s self-reported political interest increases the likelihood of voting by 0.37 on this scale, while moving from the minimum to the maximum in a respondent’s level of education increases the likelihood of voting by 0.14 on this scale. These are sizable effects. Respondents are very attentive to safety-related characteristics of polling locations in comparison to other contextual factors such as the month of the election, the weather on election day, the day of the week, proximity to the polling station, and the competitiveness of the race, and even other individual-level determinants of participation, such as political interest and education.

6. Study 6: exposure to safety precaution information

The conjoint experiments tell us whether in-person voting safety measures increase in-person vote intention in hypothetical scenarios. But they do not tell us whether information about these measures counteract the depressive effects of COVID-19 on turnout intention that we identified in the Study 1 and 2 priming experiments.

6.1. Study 6 design

To address this question, we implemented Study 6, a pre-post test experiment, in waves 25 through 27 of the MEO (N = 4,530) fielded from October 14 to November 5, 2020. As in Study 1 and Study 2, respondents were asked at the beginning of the survey to report their likelihood of voting in a federal election if one was held tomorrow. However, at the end of the survey one group received the following information before the post-test turnout intention question: “ Elections Canada is likely to have in place multiple measures designed to keep citizens safe when casting a ballot in the next federal election such as a limit on the number of people allowed in the polling station at the same time, a requirement to wear masks, and physical distancing guidelines designed to keep individuals at least 2 m apart.” The other group did not receive this information. We test the following hypothesis:

H4. The negative effect of COVID-19 priming should be smaller among those given information about the likely safety measures in place for in-person voting.

We expect the pre-post reduction in turnout intention to be smaller among those in the treatment condition. In short, exposure to information about what measures Election Canada intends to implement should attenuate the pre-post decrease in turnout. We do not expect that it will increase turnout intention.

3 These results are not due to demand effects. Figures S4-S6 in the supplementary information illustrate the stability of our estimates across the three vignettes for each study.

4 This result can be explained by theory that posits that political competition can have two effects on citizens. On the one hand, it can serve as a motivation for participation. On the other hand, political conflict and competition can trigger negative emotions reducing their likelihood to engage with politics (Settle et al., 2017). Hence, a close local race might trigger anxiety among the respondents resulting in a negative effect of this variable on the intention to vote.
spread of the SARS-CoV-2 virus also heightens the risk of activities and things being equal, we should expect fewer people to vote when its cost the municipal elections in France contributed to the spread of COVID-19 research showing that in-person voting during Wisconsin primaries and events that require individuals to gather indoors with others. Voting midst of a pandemic. COVID-19 has heightened life stress in the general people in poor physical or mental health or who are experiencing a high degree of stress (Gagné et al., 2020; Hassell and Settle, 2017; Mattila et al., 2013; Pacheco and Fletcher, 2015).

Both of these theories have clear expectations for voter turnout in the midst of a pandemic. COVID-19 has heightened life stress in the general public through death, economic collapse, and social decline (Brooks et al., 2020; Petzold et al., 2020; Shanahan et al., 2020). We should expect citizens to be less likely to vote under these conditions. The spread of the SARS-CoV-2 virus also heightens the risk of activities and events that require individuals to gather indoors with others. Voting in-person is one such risk-laden activity, and indeed there has been some research showing that in-person voting during Wisconsin primaries and the municipal elections in France contributed to the spread of COVID-19 (e.g., Berry et al., 2020; Cassan and Sangnier, 2020; Cotti et al., 2021; Flanders et al., 2020; Zeitoun et al., 2020). Notwithstanding evidence of these risks, people may well perceive in-person voting to be a costlier activity than normal and adjust their behaviour accordingly.

We provide evidence using large-scale survey experiments in Study 1 and 2 that priming respondents to think about COVID-19 reduces their intention to vote in the next election (H1). This is particularly true among respondents most personally threatened by COVID-19 (H2). The effects we observe are small, but it is important to note that we observe them even though the information environment is pre-treating our respondents by priming COVID-19 often and at a high volume, leading to conservative estimates. The effects we observe here are also broadly similar to those found in real-world, non-experimental settings (Fernandez-Navia et al., 2021; Noury et al., 2021; Picchio and Santolini, 2021; Vázquez-Carrero et al., 2020), though we caution that we cannot draw a straight line between these estimates and our own, owing to different study designs and measurement strategies.

The advantage of our survey-based approach is that we can be confident we are observing a causal effect of COVID-19 priming on turnout intention and we can experiment with ways to reduce the effects we observe here (i.e., communication of safety precautions). The drawback is that we are not observing actual turnout, nor the direct causal effects of COVID-19 cases or mortality on this outcome. Future work should both explore these relationships in the field, ideally in ways that allow for clear causal identification and the ability to tease out the precise mechanism by which COVID-19 affects turnout.

Public health threats pose important challenges for maintaining civic engagement. Finding ways to solve this challenge is imperative. Here, we find that the implementation and communication of in-person voting safety measures can also mitigate these negative effects. Our conjoint experiments (Studies 3–5) show that people readily change their beliefs about the safety of in-person voting, and their willingness to vote in-person, in response to the safety measures implemented by election administration agencies at polling stations (H3).

These effects are large and exceed other characteristics of the socio-political context that might influence turnout, like electoral competitiveness, and cumulatively rival individual-level factors like political interest and education. However, it is important to note that these conjoint experiments do not aim to estimate “real world” effects of safety...
precautions on turnout. Respondents were asked, in the context of a specific vignette, their likelihood of voting at a specific polling station given the presence or absence of certain safety measures. Instead, these experiments illustrate the potential costs of failing to meet people’s expectations about safety measures in place at polling stations. Future research aiming to understand the real world marginal effects of these interventions will be important for practitioners interested in estimating the costs versus benefits of various interventions. Future work could seek to exploit variation in the implementation of safety measures to examine effects on turnout directly.

Finally, in Study 6 we find some evidence that providing people information about safety measures for in-person voting counteracts the effect of priming COVID-19 on turnout intention that we found in Study 1 and 2 (H4). These effects, however, are modest, as we would expect when most respondents likely have baseline expectations that such precautions will inevitably be in place at polling stations.

Our findings highlight the importance of in-person voting safety measures in preserving electoral participation in the midst of pandemic. Of course, mail-in ballots may partially alleviate threats to voter turnout from the pandemic (Thompson et al., 2020; Yoder et al., 2020) and the public’s view of this voting method is thus deserving of more research in Canada and cross-nationally. However, the ease and accessibility of mail-in ballots will vary across national and sub-national contexts, as will the willingness of citizens to cast ballots by mail. Over the course of fielding our surveys, the share of Canadians in our samples preferring to vote by mail has fluctuated from 19% in April of 2020 to as high as 34% in April 2021 but falling back to 20% by July of 2021. Even during a pandemic, a large majority of Canadians prefer to vote in person, while roughly 1 in 5 report they will definitely not vote by mail. Voting by mail is also preferred by older and more educated respondents.

We see the limitations of mail-in ballots in practice as well. Several provinces have held elections during the pandemic, most notably British Columbia (BC). Only 31% of British Colombians voted by mail as the second COVID-19 wave was developing (Elections BC 2020b), while a voter turnout of 53.9% was the lowest in recorded BC history (i.e., since 1928, see Elections BC 2020a). Mail-in ballots can’t be the whole solution, especially in contexts where the norm of voting by mail is less entrenched. Bolstering in-person voting matters as well.

Not all voters will be aware of precautions taken by election administration agencies to protect voters nor will everyone expect them to be in place. Communicating information about these measures appears to be a simple, low cost way of counteracting the effects of COVID-19 on voter turnout. Many voters, however, will expect these measures to be in place and to be adequately implemented. Our experiments suggest that failing to do so may reduce electoral participation.

Although we are beginning to enter the twilight of the COVID-19 pandemic in the developed world, many more elections will be conducted in the midst of the pandemic as nations struggle to vaccinate their populations and wrestle with the emergence of deadly variants. In the face of high costs – perceived or real – some potential voters will opt out of elections. Reducing those costs should be top of mind for election administration agencies and others interested in maintaining high levels of voter turnout. Our findings illustrate that during pandemics, or other public health crises that heighten the health risks of in-person voting, electoral agencies would be well advised to set up and actively and robustly communicate policies specifically aimed at protecting voters at the polls.

**Funding**

Funding was provided by McGill University, the Schwartz Reisman Institute for Technology and Society, and Elections Canada.

**Data availability**

Data and code are available at https://osf.io/2f5vq/.

**Acknowledgements and Funding**

We are grateful for useful feedback on this project from Quinn Albaugh, André Blais, Abdul Noury as well as from members of the Policy, Elections, and Representation Lab at the Munk School of Global Affairs and Public Policy. Thanks as well to the Media Ecosystem Observatory team, Taylor Owen, Derek Ruths, and Aengus Bridgman for fielding our survey questions, and to Elections Canada for commissioning this research. The observations and conclusions are those of the authors and do not necessarily reflect the opinions of Elections Canada. Additional funding was provided by McGill University and the Schwartz Reisman Institute for Technology and Society.

**Appendix A. Supplementary data**

Supplementary data to this article can be found online at https://doi.org/10.1016/j.electstud.2021.102421.
Fig. A1. Effect of election safety perception on pre-post change in turnout intention. Note: Controlling for COVID-19 threat perception, age, education, income, urban density, gender, and region. 95% confidence interval.

Fig. A2. Effect of prior wave COVID-19 threat perception on pre-post change in turnout intention controlling for age, education, income, urban density, gender, and region (left). Effect of prior wave election safety perception on pre-post change in turnout intention controlling for COVID-19 threat perception, age, education, income, urban density, gender, and region (right). Note: 95% confidence intervals. N = 4,571, fielded July 22-August 9, 2020 using Dynata. Quotas set on re-contacts in an identical fashion as for Study 1.

Table A1
Sample characteristics

| Wave | N   | Start   | End     | Female | 18/34 | 35/54 | 55+ | Atlantic | Quebec | Ontario | West | French |
|------|-----|---------|---------|--------|-------|-------|-----|----------|--------|---------|------|--------|
| 9    | 2552 | 15-Jun  | 18-Jun  | 50.7   | 25.3  | 33.9  | 40.8 | 6.9      | 23.1   | 38.6    | 31.5 | 20.5   |
| 10   | 2548 | 22-Jun  | 29-Jun  | 50.8   | 27.0  | 33.3  | 39.7 | 7.2      | 23.4   | 38.1    | 31.3 | 20.6   |
| 11   | 2495 | 29-Jun  | 06-Jul  | 51.3   | 27.3  | 34.0  | 38.7 | 6.9      | 23.5   | 38.0    | 31.7 | 20.4   |
| 12   | 2539 | 07-Jul  | 13-Jul  | 52.3   | 23.3  | 35.5  | 41.3 | 6.9      | 23.1   | 38.2    | 31.8 | 20.7   |
| 13   | 2526 | 14-Jul  | 21-Jul  | 53.4   | 24.8  | 35.0  | 40.2 | 6.9      | 23.4   | 38.2    | 31.5 | 20.5   |
| 14   | 2500 | 10-Aug  | 12-Aug  | 51.2   | 27.1  | 33.6  | 39.3 | 7.0      | 23.3   | 38.2    | 31.6 | 20.0   |
| 15   | 1513 | 17-Aug  | 24-Aug  | 50.2   | 26.9  | 33.7  | 39.5 | 7.1      | 23.4   | 38.4    | 31.1 | 20.7   |
| 16   | 1508 | 24-Aug  | 31-Aug  | 51.5   | 26.7  | 33.9  | 39.4 | 7.0      | 23.3   | 38.5    | 31.3 | 20.4   |
| 17   | 1502 | 31-Aug  | 08-Sep  | 51.2   | 26.8  | 33.8  | 39.5 | 6.8      | 23.2   | 38.3    | 31.7 | 20.3   |
| 18   | 2503 | 21-Sep  | 28-Sep  | 50.3   | 27.3  | 34.3  | 38.4 | 6.8      | 23.5   | 38.0    | 31.7 | 20.3   |
| 19   | 1481 | 06-Oct  | 14-Oct  | 51.1   | 26.2  | 17.5  | 26.7 | 7.0      | 22.8   | 38.5    | 31.6 | 19.7   |
| 20   | 1523 | 14-Oct  | 21-Oct  | 46.1   | 33.6  | 38.3  | 33.9 | 7.0      | 22.5   | 38.7    | 31.8 | 19.2   |
| 21   | 1495 | 21-Oct  | 28-Oct  | 51.5   | 40.2  | 44.3  | 39.5 | 7.0      | 23.7   | 37.9    | 31.4 | 20.6   |
| 22   | 1512 | 29-Oct  | 04-Nov  | 51.5   | 27.1  | 33.7  | 39.3 | 6.9      | 23.5   | 38.3    | 31.3 | 20.6   |

Population

| 51.4 | 27.3 | 34.1 | 38.6 | 6.8 | 23.4 | 38.6 | 28.5 | 20.6 |

Table A2
Study 1 and 2 covariate descriptions

| Variable                  | Description                                                                 |
|---------------------------|-----------------------------------------------------------------------------|
| Vote intention            | Not at all likely, not very likely, somewhat likely, very likely             |
| COVID-19 threat perception | Not at all serious, not very serious, somewhat serious, very serious         |
| In-person voting safety perception | Very unsafe, somewhat unsafe, somewhat safe, very safe                       |
| Age                       | Age in years                                                                 |
| Income                    | 0 = None, 1 = $1–30,000, 2 = $30,001–60,000, 3 = $60,001–90,000, 4 = $90,001–110,000, 5 = $110,001–150,000, 6 = $150,001–200,000, 7 = More than $200,000; don’t know coded as missing |
| Education                 | 0 = High school or less; 1 = College or some university; 2 = Bachelor’s degree or higher |
| Urban/rural               | 0 = Rural place; 1 = Small town, 2 = Large town, 3 = Mid-sized city, 4 = Large city |
| Gender                    | 1 = Female                                                                   |
| Region                    | 1 = Atlantic, 2 = Quebec, 3 = Ontario, 4 = West                              |
Table A3
Estimates for Study 1 heterogeneous effects analysis

| DV – Pre-post change in turnout intention | Coef   | SE   | Coef   | SE   |
|-----------------------------------------|-------|------|--------|------|
| COVID-19 threat perception              | -0.005** | 0.002 | 0.002 | 0.002 |
| In-person voting safety perception      | 0.004*  | 0.002 | 0.004* | 0.002 |
| Education                               | 0.001*** | 0.001 | 0.001 | 0.001 |
| Income                                  | 0.001*** | 0.001 | 0.001*** | 0.000 |
| Urban/rural                             | -0.004*** | 0.001 | -0.003** | 0.001 |
| Female                                  | 0.005  | 0.003 | 0.008** | 0.003 |
| Quebec                                  | -0.008  | 0.007 | -0.008  | 0.007 |
| Ontario                                 | 0.003  | 0.007 | 0.005  | 0.007 |
| West                                    | 0.009  | 0.007 | 0.009  | 0.007 |
| Constant                                | -0.073*** | 0.010 | -0.113*** | 0.011 |
| R²                                      | 0.008  |      | 0.018  |      |
| N                                       | 11,262 |      | 11,262 |      |

*p < 0.1, **p < 0.05, ***p < 0.01.

Table A4
Estimates for Study 2 heterogeneous effects analysis

| DV – Turnout intention | Coef   | SE   |
|------------------------|-------|------|
| Treatment              | 0.025 | 0.036 |
| COVID-19 threat perception | 0.026*** | 0.005 |
| Threat * Treatment     | -0.014** | 0.007 |
| Education              | 0.041*** | 0.006 |
| Education * Treatment  | -0.004  | 0.008 |
| Income                 | 0.014*** | 0.003 |
| Income * Treatment     | 0.002  | 0.004 |
| Age                    | 0.003*** | 0.000 |
| Age * Treatment        | 0.000  | 0.000 |
| Urban/rural            | 0.006*  | 0.003 |
| Female                 | -0.025*** | 0.009 |
| Female * Treatment     | -0.002  | 0.012 |
| Quebec                 | 0.059*** | 0.018 |
| Ontario                | 0.023  | 0.018 |
| West                   | 0.013  | 0.018 |
| Quebec * Treatment     | -0.049* | 0.025 |
| Ontario * Treatment    | -0.017  | 0.024 |
| West * Treatment       | -0.009  | 0.025 |
| Constant               | 0.586*** | 0.026 |
| R²                     | 0.085  |      |
| N                      | 6365   |      |

*p < 0.1, **p < 0.05, ***p < 0.01.

References

Berrill, Simone, Guichard, Lucas, Marchetta, Francesca, 2020. Turnout in the Municipal Elections of March 2020 and Excess Mortality during the COVID-19 Epidemic in France. Discussion Paper Series, IZA institute of Labor Economics: IZA DP No. p. 13335.

Blais, André, 2000. To Vote or Not to Vote? the Merits and Limits of Rational Choice Theory. University of Pittsburgh Press, Pittsburgh.

Blais, André, Jean-François, Daoust, Ruth, Dassonneville, Pelouquin-Skulski, Gabrielle, 2019. What is the cost of voting? Elect. Stud. 59, 145–157.

Brougham, Celine, Dormagen, Jean-Yves, Fons, Vincent, 2017. Voter registration costs and disenfranchisement: experimental evidence from France. Am. Polit. Sci. Rev. 111 (3), 584–604.

Brady, Henry E., McNulty, John E., 2011. Turning out to vote: the costs of finding and getting to the polling place. Am. Polit. Sci. Rev. 105 (1), 115–134.

Brooks, Samantha K., Webster, Rebecca K., Smith, Louise E., Woodland, Lisa, Wessely, Simon, Greenberg, Neil, James Rubin, Gideon, 2020. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. Lancet 395, 977–986.

Brouard, Sylvain, McAvay, Haley, 2020. Participation Aux Elections Municipales 2020 En Metropole : L’effet Du COVID-19?, Sciences Po CEVIPOF. Policy Brief.

Burden, Barry C., Canon, David F., Mayer, Kenneth R., Moynihan, Donald F., 2014. Election laws, mobilization, and turnout: The unanticipated consequences of election reform. Am. J. Polit. Sci. 58 (1), 95–109.

Cassan, Guilhem, Sangnier, Marc, 2020. Liberté, Egalité, Fraternité… Contaminez? Estimating the impact of French municipal elections on COVID-19 spread in France’. working paper (medRxiv). https://doi.org/10.1101/2020.06.24.20138990.

Cotti, Chad D., Engelhardt, Bryan, Foster, Joshua, Erik Nesson, Paul, Niekamp, 2021. The relationship between in-person voting and COVID-19: evidence from the Wisconsin primary. Contemp. Econ. Pol. 39 (4), 760–777.

Downs, Anthony, 1957. An Economic Theory of Democracy. Harper, New York.

Elections, B.C., 2020a. General election statistics in comparison: 1928-2020. https://elections.bc.ca/docs/stats/General-election-statistics-in-comparison-1928-2020.xls. (Accessed 19 August 2021). Accessed.

Elections, B.C., 2020b. Voter turnout estimate updated; interim statement of votes available. Elections BC, November 20, 2020. https://elections.bc.ca/news/voter-turnout-estimate-updated-interim-statement-of-votes-available/.

Fernandez-Navia, Tania, Polo-Muro, Eduardo, Tercero-Lucas, David, 2021. Too afraid to vote? The effects of COVID-19 on voting behaviour. Eur. J. Polit. Econ., 102012.

Flanders, W. Dana, Flanders, William D., Goodman, Michael, 2020. The association of voter turnout with county-level coronavirus disease 2019 occurrence early in the pandemic. Ann. Epidemiol. 49, 42–49.

Frank, Marco, Stadelmann, David, Torgler, Benno, 2020. “Election Turnout during States of Emergency and Effects on Incumbent Vote Share”, CREMA Working Paper Series 2020-10, Center for Research In Economics, Management And the Arts (CREMA).

Gagné, Thierry, Schoon, Ingrid, Sacker, Amanda, 2020. Health and voting over the course of adulthood: Evidence from two British birth cohorts. SSM Pop. Health 10.

Goodman, Nicole, Stokes, Leah C., 2020. Reducing the cost of voting: an evaluation of internet voting. Br. J. Polit. Sci. 50 (3), 1155–1167.
Pettigrew, Stephen, 2017. The racial gap in wait times: why minority precincts are
Papageorgiou, Achillefs, Mattila, Mikko, Rapeli, Lauri, 2019. Does health affect party
Pacheco, Julianna Sandell, Plutzer, Eric, 2007. Stay in school, don’t become a parent:
Ojeda, Christopher, Pacheco, Julianna Sandell, 2017. Health and voting in young
time and the costs of voting. J. Polit. 67 (2), 560–573.
Hannell, Hans J.G., Settle, Jaime E., 2017. The differential effects of stress on voter
turnout. Polit. Psychol. 38 (3), 533–550.
Highton, Benjamin, 2017. Voter identification laws and turnout in the United States.
Ann. Rev. Polit. Sci. 20 (1), 149–167.
Hobbs, William R., Chrisakis, Nicholas A., Fowler, James H., 2014. Widowhood effects
in political participation. Am. J. Polit. Sci. 58 (1), 1–16.
Holbein, John B., Hillygus, D. Sunshine, 2016. Making young voters: the impact of
pre-registration on youth turnout. Am. J. Polit. Sci. 60 (2), 364–382.
Mattila, Mikko, Peter, Soderlund, Hanna, Wass, Rapeli, Lauri, 2013. Healthy voting: the
effect of self-reported health on turnout in 30 countries. Elect. Stud. 32, 886–891.
McNulty, John, Dowling, Conor, Ariotti, Margaret, 2009. Driving saints to sin: how
increasing the difficulty of voting dissuades even the most motivated voters. Polit.
Anal. 17 (4), 435–455.
Montgomery, Jacob, M., Nyhan, Brendan, Torres, Michelle, 2018. How conditioning on
posttreatment variables can ruin your experiment and what to do about it. Am. J.
Polit. Sci. 62 (3), 760–773.
Morris, Kevin, Miller, Peter, 2021. ‘Voting in a Pandemic: COVID-19 and Primary
Turnout in Milwaukee, Wisconsin’, Urban Affairs Review.
Noury, Abdul, Abel, Francois, Gergaud, Olivier, Garel, Alexandre, 2021. How does
COVID-19 affect electoral participation? Evidence from the French municipal
elections. PLoS One 16 (2), e0247026.
Ojeda, Christopher, Pacheco, Julianna Sandell, 2017. Health and voting in young
adulthood. Br. J. Polit. Sci. 49, 1163–1186.
Pacheco, Julianna Sandell, Fletcher, Jason, 2015. Incorporating health into studies of
political behavior: evidence that health impacts turnout and partisanship. Polit. Res.
Q. 68 (1), 104–116.
Pacheco, Julianna Sandell, Flutzer, Eric, 2007. Stay in school, don’t become a parent:
Teen life transitions and cumulative disadvantages for voter turnout. Am. Polit. Res.
35 (1), 32–56.
Pacheco, Julianna Sandell, Flutzer, Eric, 2008. Political participation and cumulative
disadvantage: The impact of economic and social hardship on young citizens. J. Soc.
Issues 64 (3), 571–593.
Papageorgiou, Achilles, Mattila, Mikko, Rapeli, Lauri, 2019. Does health affect party
identification? Evidence from German panel data. Representation 55 (2), 215–224.
Pettigrew, Stephen, 2017. The racial gap in wait times: why minority precincts are
understudied by local election officials. Polit. Sci. Q. 132 (3), 527–548.
Petzold, Bruno, Moritz, Bendau, Antonia, Plag, Jens, Pyrkosch, Lena, Maricic, Lea
Mascarell, Betzler, Felix, Roggli, Janina, Große, Julia, Andreas Ströhrle, 2020. Risk,
resilience, psychological distress, and anxiety at the beginning of the COVID-19
pandemic in Germany. Brain and Behavior 10, e01745.
Picchio, Matteo, Santolini, Raffaella, 2021. The COVID-19 Pandemic’s Effects on Voter
Turnout. GLO Discussion Paper, p. 812.
Quirin, Stephen, 2015. Facilitating the electorate: a multilevel analysis of election
timing, registration procedures, and turnout. Irish Polit. Stud. 30 (4), 482–509.
Riker, William H., Ordeshook, Peter C., 1968. A Theory of the Calculus of Voting. Am.
Polit. Sci. Rev. 61 (1), 25–42.
Sandell, Julianna, Flutzer, Eric, 2005. Families, divorce and voter turnout in the US.
Polit. Behav. 27 (2), 133–162.
Santana, Andres, Rama, Jose, Casal Bertois, Fernando, 2020. The Coronavirus Pandemic
and Voter Turnout: Addressing the Impact of Covid-19 on Electoral Participation.
Working paper: 10.31235/osf.io/3d4ny.
Settle, Jamie E., Dawes, Christopher T., John Loewen, Peter, Panagopoulos, Costas,
2017. Negative affectivity, political contention, and turnout: a genopolitics field
experiment. Polit. Psychol. 38 (6), 1065–1082.
Shanahan, Lilly, Steinhoff, Annakatrin, Bechtiger, Laura, Murray, Aja L., Amy, Nivette,
Hepp, Urs, Ribeaud, Denis, Eisinger, Manuel, 2020. Emotional distress in young adults
during the COVID-19 pandemic: evidence of risk and resilience from a longitudinal
cohort study. Psychol. Med. 1–10.
Stewart, Charles, 2012. Waiting to vote in 2012. J. Law Polit. 28, 439–463.
Thompson, Daniel M., Wu, Jennifer A., Yoder, Jesse, Hall, Andrew B., 2020. Universal
vote-by-mail has no impact on partisan turnout or vote share. Proc. Natl. Acad. Sci.
Unit. States Am. 177 (25), 14052–14056.
Vázquez-Carrero, Miguel, Artes, Joaquín, García, Carmen, Luis Jiménez, Juan, 2020.
Empirical Evidence of the Effects of COVID-19 on Voter Turnout, vol. 50. CEPR
Papers, pp. 181–208.
Yoder, Jesse, Handan-Nader, Cassandra, Myers, Andrew, Tobias, Nowacki, Thompson,
Daniel M., Wu, Jennifer A., Yoganson, Chinoa, Hall, Andrew B., 2020.
‘Absentee Voting Is Popular during COVID-19 but Does Not Change Turnout or
Partisan Rates of Voting’, Working Paper. http://www.andrewbenjaminhall.com/Y
oder_et_al_absentee_short.pdf.
Zeitoun, Jean-David, Faron, Matthieu, Manternach, Sylvain, Fourquet, Jérôme,
Lavielle, Marc, Jérémie, H., Lefèvre, 2020. Reciprocal Association between
Participation to a National Election and the Epidemic Spread of COVID-19 in France:
Nationwide Observational and Dynamic Modeling Study. https://doi.org/10.1101/
2020.05.14.20090100. working paper (medRxiv):