Support for digitising the ballot box: a systematic review of *i-voting* pilots and a conjoint experiment

Stuart J. Turnbull-Dugarte* Daniel Devine†

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Abstract

Governments across the globe have been actively engaged in pilots aimed at implementing *i-voting*, which facilitates voting via the internet. *I-voting* innovations, such as those widely institutionalised in Estonia, Canada, and Switzerland, represent a modernising policy innovation that can increase the convenience of electoral participation and can also safeguard against the temporal suspensions of elections, such as those witnessed in a number of states during the COVID-19 pandemic. Whilst the wider implementation of *i-voting* has made some process, it has received mixed public support, mostly due to fears over its integrity. In this paper, we ask: what features of *i-voting* attract public support and inspire trustworthiness in its implementation? We answer this using a pre-registered conjoint experiment fielded in the UK, where we derive attributes from a comprehensive systematic review of existing literature and case studies of real-world implementation. Consistent with a rational-choice model of voting, reforms that are more convenient and have substantive reported benefits, specifically reforms that promise increases in participation, enjoy higher support. Electoral integrity remains an important factor in citizens support for, and trust in, *i-voting*: across the board, *i-voting* is perceived as less trustworthy than in-person voting, and proposals that may positively influence the risk of fraud are strongly rejected. Against pre-registered hypotheses, we do not find significant subgroup heterogeneity, for instance regarding satisfaction with internet coverage or the current electoral process, nor do we find significant variation based on past levels of engagement with alternative (convenience) options to in-person voting or indeed partisanship.

Keywords: conjoint experiment; democratic innovations, digital democracy; digitisation; electronic voting; i-voting; public opinion

*University of Southampton. Email: s.turnbull-dugarte@soton.ac.uk
†University of Southampton. Email: d.devine@soton.ac.uk

1 Introduction

Governments across the globe have been actively engaged in pilots aimed at testing voting via the internet (*i-voting*) using online voting platforms and smartphone applications, most famously and successfully in Estonia (Alvarez et al., 2009; Trumm, 2022; Vassil et al., 2016), but also in Norway, India, Armenia, Brazil, and many other countries. However, the success and longevity of the trials varies enormously, from just a handful of temporary, local trials in the United States and Britain, to full implementation in national elections in Estonia and continued successful ongoing use in Canada (Goodman & Stokes, 2020) and Switzerland (Petitpas et al., 2021). Given the continued ongoing advances in digital technology and its influence on liberal democracy (Gilardi, 2022) including, among other features, the increasingly digitised nature of different forms of participation (Blumenau, 2020; Turnbull-Dugarte et al., 2022) as as well as electoral campaigns themselves (Dommett et al., 2020; Hager, 2019; López Ortega, 2022; Trumm & Sudulich, 2022), it seems likely that some form of digitisation in elections is inevitable.

Despite an initial boom at the turn of the millennial, developments in *i-voting* have been on the back-burner – in many ways in response to significant concerns related to security and the risk of fraudulent activity – but public debate around innovations in digitising elections is enjoying something of a renaissance (Geller, 2020; Wolf, 2020). This has, like very much else, been accelerated by COVID-19: despite the normative implications of temporarily suspending democracy via postponing elections (James & Alihodzic, 2020), several states did so in response to the pandemic. Many legislatures, including the UK House of Commons (Smith & Childs, 2021), moved quickly to incorporate technological innovations and expand electronic voting procedures in order to facilitate the representative work of parliamentarians (James et al., 2023; Mencarelli, 2022; Smith & Childs, 2021; Williams, 2020). *I-voting* represents a remedial policy that can protect against the suspension of democratic processes during such crises, and facilitate democratic involvement in 'normal times'. Given demographic and techno-

logical shifts, the majority of citizens in democratic countries are now familiar with internet usage unlike in the early 2000s when many trials were conducted.[1] Combined, this means the demand for and likelihood of adopting *i-voting* and other forms of electronic voting (i-voting) has likely increased.

The introduction of *i-voting* is, in many ways, an organic continuation of successive electoral reforms and innovations that have been enacted over several years in order to keep electoral processes in toe with advances in modernisation, and to counteract negative trends in aggregate turnout levels. Based on the longstanding rational-choice model of participation which, among other factors, assumes that an individual's decision to vote is based on a utilitarian calculus of the relative costs and benefits of going to the polls (Riker & Ordeshook, 1968), *i-voting* is likely a cost-reducing and convenience-enhancing reform. Voting 'costs' are diverse (Blais et al., 2019), but reducing these costs, and by extension increasing the convenience of voting, is theorised to result in higher levels of turnout (Karp & Banducci, 2001). Empirical support for this is widespread (Damsbo-Svendsen & Hansen, 2023; de Benedictis-Kessner & Palmer, 2023; Garcia-Rodriquez & Redmond, 2020; Goodman & Stokes, 2020; Hajnal et al., 2017; Haspel & Knotts, 2005; Li et al., 2023; Miller & Powell, 2016), and contributes, in part, to explaining why one in five UK ballots are now (conveniently) cast by mail as opposed to in-person (Townsley et al., 2023). Theoretically, the pull of *i-voting* is clear from a convenience perspective: all else equal, who is more likely to turnout to vote – (a) the voter who has to brace the stereotypical (wet) British weather and walk half a mile to their local polling station, or (b) the voter who doesn't need to interrupt an afternoon of *Netflix and chill* to cast their vote using their smartphone?

According to *YouGov* online tracker data from March 2015, 41% of UK citizens said they would support or strongly support the introduction of *i-voting* (via a smartphone) in general elections, with 18% stating they neither support nor oppose the innovation. Some eight years have passed since *YouGov* last asked UK respondents this question

[1] In the case of the UK, data from the Office of National Statistics reports that 90% of the UK population of frequent internet users (*Exploring the UK's Digital Divide*, 2019).

and it is not improbable to assume that *i-voting* would now enjoy majority support. Indeed, evidence from Fisher and Savani (2022) suggests that, when asked if they would use *i-voting* should it be available, UK voters are, on average, more willing than not to do so. In this paper, we ask: what features of *i-voting* policy drives support for, and trust in, *i-voting*? We answer this by combing two complementary analyses. First, we conduct a systematic review of existing academic work and compile a unique dataset detailing twenty-six instances of *i-voting* implementations and trials completed in sixteen polities (including the European Union) over a period of nineteen years (2000-2019). Relying on this data, we derive the core dimensions of support and trust for digitising the voting process. Second, we build on these findings from the existing literature and real-world trials to implement an original, pre-registered conjoint experiment that experimentally manipulates reform features to ascertain which concrete reform attributes garner public support and can inspire trust.

Empirically, our results show that one of the strongest determinants of support for *i-voting* reforms lies on the reported benefits: claims that *i-voting* can increase participation in socially deprived areas substantively increases support for the digital innovations. Respondents also prefer implementation which has automatic registration, have been piloted in wealthy European countries, and allow voting online (rather than via SMS or phone). Whilst respondents penalise reforms that cost more, they don't reward policies that reduce the costs of elections. Against pre-registered hypotheses, we do not find significant sub-group heterogeneity when it comes to overall support for *i-voting*, for instance regarding satisfaction with internet coverage or the current electoral process; nor do we find significant variation based on past levels of engagement with alternative (convenience) options to in-person voting or indeed partisanship. The same is not true in the case of perceived trustworthiness: those voters acclimatised to engage in alternative forms of convenience voting – voting by mail or by proxy – report significantly higher levels of trust in *i-voting* reforms across a number of experimentally manipulated policy attributes.

Altogether, our results highlight features of *i-voting* that will be supported or opposed by the public, and that these beliefs are quite widespread. Whilst contributing to the broader literature about electoral turnout, our primary contribution is to the practical problem of how to garner support for, and therefore successful implementation of, new voting practices.

2 State of the art

Our review of the state of the art consists of two parts: first, a survey of *i-voting* trials actually implemented around the world and how they have been received; second, a systematic review of the academic literature. We describe the methodology of these respective searches in the Appendix, and here provide a narrative overview of the findings.

2.1 Trials & implementation processes

How have trials and the successful implementation of *i-voting* worked in practice? Our review of ongoing and past trials - conducted through internet searches, forward/backward searching, and cross-referencing with the International Institute or Democracy and Electoral Assistance database on *i-voting* applications[2] - provides unique insight into the implementation and real-world reception of the policy.[3] We summarise these in Table 1, highlighting the countries where *i-voting* trials have been conducted or implementation has been successful, the total number of trials, and the years which one or more implementations were active.

Most trials and successful implementations were conducted in the early-mid 2000s, and whilst some of these were ongoing (such as in France), many were one-off trials

[2] https://www.idea.int/data-tools/country-view/99/61

[3] A full list of sources for all of the listed trials is available in the supplementary material.

(such as in Norway). The majority of these were designed for a specific aim, namely, to allow groups to vote who were not able to vote in person, or whose ability to do so was very restricted. These include very particular groups such as diplomatic staff posted abroad in the case of Armenia, or soldiers serving in Afghanistan, Iraq, Timor-Leste, and the Solomon Islands, in the case of Australia (2007). Other trials were intended to facilitate voting for those who are excluded by the traditional voting process, such as people with disabilities (Australia 2011-2021), or who are difficult to reach (such as remote indigenous communities in Canada, which has been ongoing since 2003). A handful are much larger attempts at broadening voting options for the majority of citizens; Mexico has *i-voting* for local governors in some regions (since 2012), India trialled internet voting in Telangana State, and Estonia most famously has *i-voting* available for all elections.

Table 1: Details of identified implementation processes & pilot trials

Country	N	Years
Armenia	1	2011 –
Austria	1	2009
Australia	2	2007-2021
Brazil	1	2003–
Canada	4	2003–
Estonia	1	2005-
EU	1	2002-2003
France	1	2006–
India	1	2021
Mexico	1	2012–
Netherlands	3	2004-2006
Panama	1	2014–
Norway	1	2011
Switzerland*	1	2004-
UK	4	2001-2007
US	2	2000

*I-voting was temporarily suspended in Switzerland in 2019 but the process has now resumed

Given the variation in application and timing of *i-voting* trials, there are unsurprisingly mixed experiences. For some, the costs were far too high to justify its continuation: the 2007 trial for overseas Australian military was halted due to very low take-up and the

costs of administering it (1,159 AUD per vote). At the same time, others were very cheap and take-up increased over time: the percentage using *i-voting* in Estonia rose from 5.5% of the votes in 2007 to 43.8% in 2019 , costing just €2.32 per vote.

The primary motivation for the implementation of *i-voting* is either to increase turnout on average or for specific groups which may have chronically low turnout. In Estonia, as noted, whilst the *take-up* of *i-voting* in turnout has risen substantially, overall turnout is stable. In Brazil, however, one study reports an overall increase of 8.2% in turnout, primarily amongst those who are younger and highly educated but otherwise would not engage. In Canadian local elections, *i-voting* has increased voter turnout by 3.2 percentage points (a total increase of 8%) (Goodman & Stokes, 2020). Other trials in Canadian local elections (2006, 2008) led to no increase in turnout. Overall, whilst it is possible that *i-voting* may lead to higher voter turnout for specific populations, it is unlikely to substantially increase turnout overall (Vassil & Weber, 2011). Indeed, as Goodman and Stokes (2020) conclude, the cost combined with minimal influence on voter turnout led to trials being cancelled in the UK (in fourteen districts), Norway, Austria, and Canada.

A core concern in the existing trials, particularly those conducted before internet usage became near ubiquitous, is about the (perceived) trust and integrity in the trials. A report on the 2011 Norwegian trial suggested that trust was slightly lower when *i-voting* was used, but put this down to the already very high levels of trust in elections and the substantial scrutiny over the *i-voting* process (*Evaluation of the e-voting trial in 2011. Accessibility for voters, trust, secrecy and election turnout*, 2012); in the Swiss implementation process (over 300 during 2004-2019), there was high trust driven by those younger, more educated educated, or more used to using the internet; whilst in a 2000 trial in the Democratic Primary in Arizona (United States), the trial was legally challenged by the Voting Integrity group, who argued that it introduced inequities in participation (*Elections in the 21st Century: from paper ballot to e-voting*, 2002) (see also Berinsky, 2005).

The examples of trials and implementation highlight two core problems. The first is the apparent minimal effect on turnout, the primary outcome that is addressed by *i-voting* projects. Moreover, at least at the time of these studies, this was compounded by inequities in accessing *i-voting*, such that those who were most likely to benefit were also least likely to be able to access the technology. The second problem is that the trials are also often challenged by low trust or perceived legitimacy. We address how these problems can be overcome in our conjoint experiment.

2.2 Systematic review of the academic literature

Given the diversity of information on trials, we turn to a systematic review of academic literature. The systematic review was conducted through the University of Oxford's library, with the search terms *'"i-voting" OR "I-voting" OR "ivoting" OR "evoting" OR "internet voting" OR "electronic voting"'*. 812 documents were returned. We screened these for relevance based on title and abstract using three criteria: i) anything in the social sciences related to *i-voting*; ii) not a paper purely about technical implementation (such as programming software); iii) the paper referred to voting over the internet, not just *electronic counting* in in-person booths. We were left with 55 final sources.

Three prominent themes emerged from the studies: public attitudes to and support for *i-voting*, implementation challenges, and its effect on turnout. With respect to public attitudes, many studies highlight the importance of trust in the process for driving positive evaluations of *i-voting*, and this has predictable relationships with age, education, and existing internet usage. The implementing body is relevant: in the UK, trust is higher when it is implemented by the public sector than a private organisation (Carter & Campbell, 2011; Carter & France, 2012; Crothers, 2015; Fisher & Savani, 2022; Kenski, 2005; Schaupp & Carter, 2005; Serdült & Milic, 2017; Xenakis, 2005).

Whilst the review of the implementations highlighted concerns over political inequality, this did not emerge as a theme in the academic literature. Most evidence is from

Estonia and most is positive that it enhances mobilisation (Alvarez et al., 2009). Indeed, the primary divide is not so much that some would be *excluded* from the process if it were to be electronic, but rather existing divides with regard to trust in the process would lead to differential *uptake* (Serdült & Milic, 2017).

A primary implementation challenge concerns issues of public acceptability and uptake, but more broadly the belief that *i-voting* could not just be implemented singularly but part of broader institutional change, including preparing the legal and media environments (Duenas-Cid et al., 2020; Gibson et al., 2016; Górny, 2021). An example of these concerns is highlighted by Birch and Watt (2004), who note that *i-voting* cannot possibly guarantee the privacy or non-manipulation that voting in public can, and that this poses both legal and normative problems. Likewise, interviews with election officials in the UK highlighted that a move to *i-voting* would require a transformation of existing practices (Xenakis, 2005).

Finally, the literature also addresses the consequences of *i-voting*, with a more specific focus on turnout. As discussed already, most literature suggests either a minimal or null effect of *i-voting* on turnout. Recent evidence from Geneva (Petitpas et al., 2021) and Canada (Goodman & Stokes, 2020) suggests that *i-voting* may increase turnout amongst abstainers and casual voters but, perhaps importantly, that *i-voting* is habit forming and this may lead to a longer term increase in engagement (Solvak & Vassil, 2018). Relying on data from Estonia, Solvak and Vassil (2018) demonstrate that those who vote online once are far more likely to keep voting online in subsequent electoral contests. Similar habit-forming patterns are observed in Switzerland, particularly among *older* voters (Mendes & Serdült, 2017). Overall, whilst there is no clear evidence in terms of increasing turnout, it also does not harm it either and if anything may mobilise casual voters or abstainers. We summarise the conclusions in Table 2.

Our review of actually-existing *i-voting* projects and the academic work highlight core attributes of interest in designing an *i-voting* system. In both cases, public support for and trust in the process is highlighted as a fundamental issue in its implementation

Theme	**Conclusions**
Public attitudes	Studies highlighted importance of trust for support and intention to use *i-voting*, and concerns over accuracy of processing and storing data, and integrity of the infrastructure. General uncertainty over effectiveness and implications for inequality. Little evidence of ideology moderating support. Mixed relationship with demographics, but higher education related to more trust/intention to use. Support driven by its purported outcomes (e.g., reducing inequality, increasing turnout).
Implementation	Concern over outsourcing and who will provide the services. Elite fear of legal and technological challenges. Estonia seen as a role model but fear it will not generalise well. Public knowledge and fear of *i-voting* is a practical consideration. There is a perceived.trade-off between ease (e.g., voting at home) and security.
Turnout & equality	More attractive for younger and educated voters, may mobilise casual voters; there are concerns over digital divide though intention to use is not related to access; turnout evidence is mixed but likely minimal; mixed evidence on political equality, but is probably positive.

Table 2: Summary of systematic review

and use. Thus, we now turn to using the attributes highlighted in previous literature to experimentally understand *which drive support for and trust in i-voting projects*.

3 Conjoint experiment

We applied an experimental research design that allows us to manipulate the multi-dimensional features that are associated with public support for *i-voting* policy. We fielded an original pre-registered[4] conjoint experiment among a representative sample of online surveys respondents in the UK in May 2022. We rely on the UK for two reasons. First, as detailed in our systematic review, it is a country where active trials and *i-voting* pilots have been pursued and, as such, UK policy-makers and electoral administrators have signalled an interest in such innovations. Second, the existing empirical evidence suggests that, were *i-voting* to be readily available, British voters would be comfortable using the process (Fisher & Savani, 2022). In a country where trials have taken place and public opinion appears positively disposed we ask: what features of *i-voting* attract public support and trust?

Conjoint experiments are increasingly leveraged when assessing public preferences for policy questions given their utility in allowing researchers to isolate the causal impact of diverse and multidimensional attributes that inform individual-level preferences of policies (Hainmueller et al., 2014). Our conjoint experiment, which involved several iterations of a forced choice between paired hypothetical *i-voting* reforms, allows us to ascertain the concrete trade-offs that individuals consider when determining whether or not to support steps towards digitising the electoral process.

Figure 1 depicts an example of the conjoint task presented to respondents. Table A.3 in the Appendix summarises the full list of attribute values and their corresponding pre-registered hypotheses. In each iteration of our conjoint task, an individual respon-

[4]An anonymised version of the pre-analysis plan, pre- registered on the *Open Science Framework* is available at https://osf.io/dbsyw/?view_only=e51c776d9a884344b905d07ea1d9d9d1

	i-voting policy A	i-voting policy B
Voting method	Vote via website	Vote via website
Voting window	available for two weeks up to (and including) polling day	available on polling day only
Successful trials completed in	Argentina	US
Pilot outcome on participation	Decreases participation among young	Increases overall participation
Pilot outcome on integrity	None	Reduces risk of electoral fraud
Online voting platform controlled by	Local council & central government	Central government & private sector IT form
Change in government cost (per vote)	£1 (one pound more)	£5 (five pounds more)
Proposing party	Cross-party coalition	Conservatives
Endorsement	European Union (EU)	UK Electoral Commission
Pre-registration	Must opt-in by post	Must opt-in online

Figure 1: Example conjoint task

dent was shown two *i-voting* proposals and asked to identify i) which they prefer, ii) the perceived trustworthiness of the proposed reform relative to in-person voting, and iii) the likelihood that they would endorse the proposal. The first outcome is dichotomous and results from a forced selection. The latter two outcomes were measured on a continuous 7-point scale (0-6) with higher values indicating increased perceived trustworthiness and probability to support, respectively. We rescaled the continuous outcome measures onto a 0-1 scale to allow for the direct comparison of attribute effects across the different dependent variables.

The survey experiment was was completed by 1200 individual respondents who each completed five iterations of the forced-choice comparison between two hypothetical reforms resulting in a well-powered sample of 12,000 observations (1200x5x2). Re-

spondents were sourced from an online panel of survey respondents (Qualtrics) via quota-based sampling based on the gender, age, ethnicity, and educational distribution of the adult British population. [5]

3.1 Experimental findings

In reporting the results of the conjoint experiment, and as detailed in our pre-analysis plan, we focus on visualising and interpreting the marginal mean. Intuitively the marginal mean can be interpreted as indicating the mean level probability that a conjoint profile with a concrete attribute value will be selected, marginalizing across all other attribute values (Leeper et al., 2020). An alternative estimate – the average marginal component effect (AMCE) – is reported in the appendix for consultation. The marginal mean depicted in the figures below report the mean level of support for *i-voting* reforms in the forced choice component (left-hand panels), as well as the mean level of trustworthiness in the proposed reform relative to in-person voting (right-hand panel). Models estimating the overall likelihood of supporting the reforms are reported in the appendix material.

A matter of convenience?

We vary the convenience of proposed *i-voting* reforms by randomising the registration requirements; the methods via which votes can be cast, and; the temporal window via which citizens can cast their ballot.

Consistent with evidence on the mobilising effect of reducing individual-level electoral costs (Damsbo-Svendsen & Hansen, 2023; Garcia-Rodriquez & Redmond, 2020;

[5] A power calculation included as part of the experimental pre-analysis plan (see appendix Figure A.3, based on an expected average marginal component effect of 0.05, (alpha$<$0.05) and an individual attribute with up to seven unique values, indicated that a design sampling 1200 respondents would wield statistical power equal to .89. In line with existing conventions, we consider power in excess of 0.80 to be sufficient to identify effects distinguishable from zero.

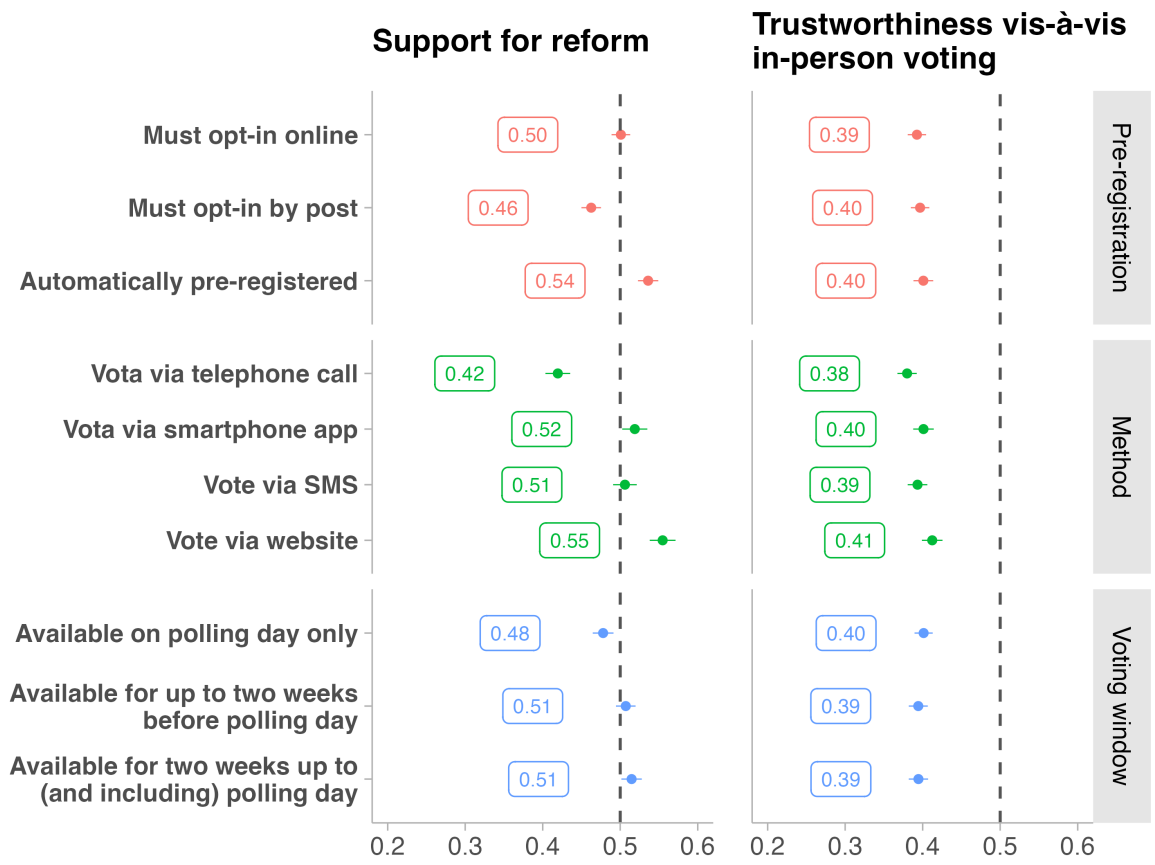


Figure 2: Convenience-based conjoint attributes

Hajnal et al., 2017; Haspel & Knotts, 2005; Miller & Powell, 2016) and expanding the convenience of engaging in the electoral process (Townsley et al., 2023), the results demonstrate that i) reducing bureaucratic barriers by applying automatic registration, ii) facilitating access via digital platforms on smart devices and the internet, as well as iii) expanding the time window for participation, are all significantly conducive to increased support for voting reforms. Despite the use of call-based telephone voting trials in some states, we find reforms proposing this method are not likely to enjoy public support.

In the case of trustworthiness, however, registration requirements, the voting methods available, or the temporal window during which citizens could vote, does little to shape perceptions. Across all of these attributes and their corresponding values, the perceived trustworthiness of reforms is consistently below that *relative* to in-person

voting.

A matter of benefits?

Figure 3 reports the mean levels of support for an *i-voting* policy caused by proposal attributes related to the results of previous trials.

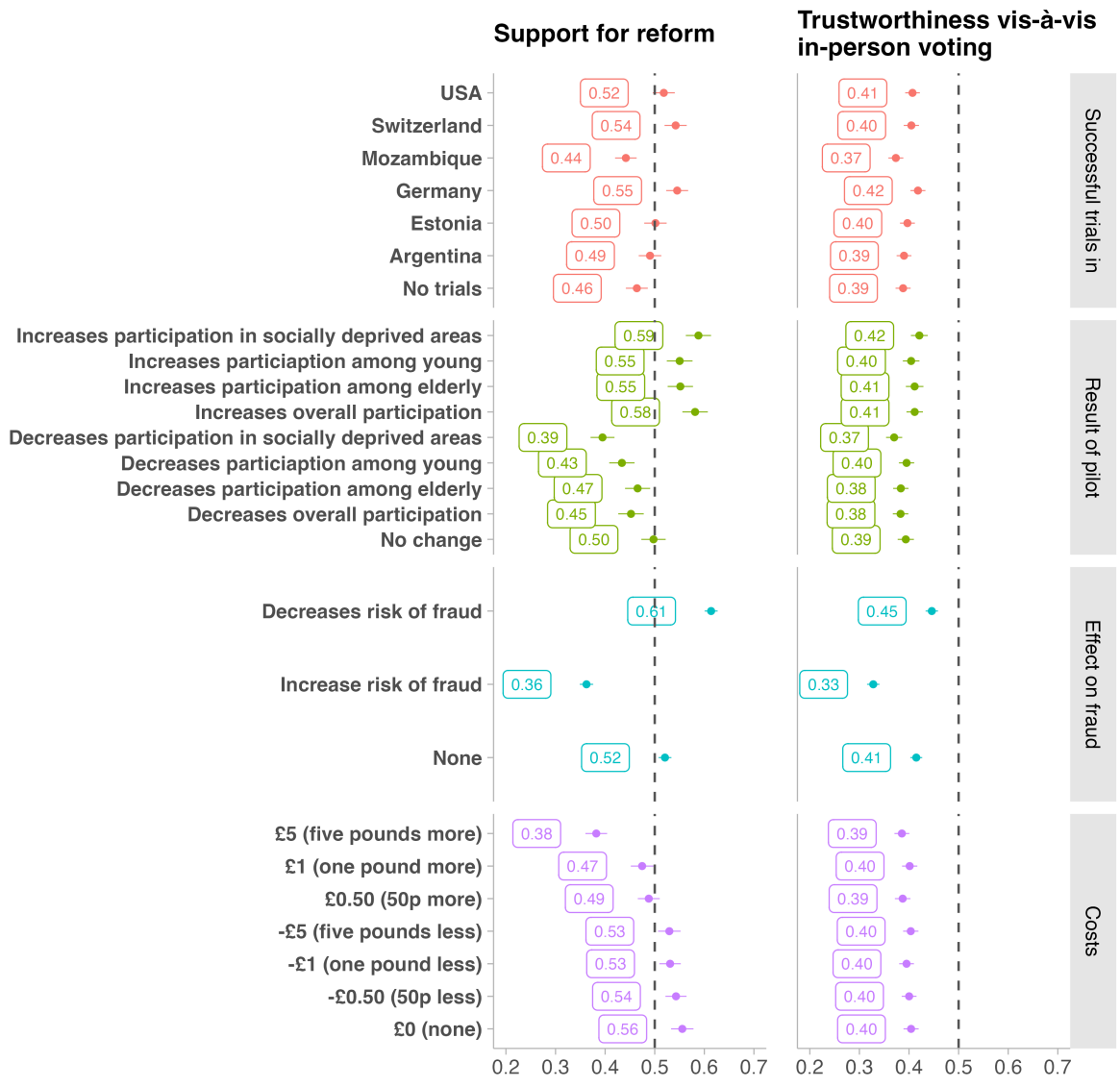


Figure 3: Trial-based conjoint attributes

There is a clear pro-western bias in citizens' support for reforms: those trialled in Germany and Switzerland enjoy the highest level of support (respectively, 55% and

54%), whereas trials exercised in Mozambique experience the lowest level of support at 44% which is a level of support statistically symmetrical to that expressed when no trials have taken place at all (46%). The case of Estonia is of note given that, despite being one of the notable world leaders in the development and successful application of nation-wide digital voting processes, reforms presented as being trialled in Estonia are neither endorsed or rejected with, on average, support at 50%. Similar patterns are observed in the case of perceived trustworthiness of the proposals: while trust in reforms is lower than in-person voting across the board, trust is significantly lower for reforms trialled in Mozambique and Argentina when compared to those trailed in the USA and Germany.

The reported *benefits* of *i-voting* trials and their influence on electoral integrity are also significant causal determinants of support. If, as is often argued by proponents, *i-voting* innovations are able drive participation – which, as demonstrated by (Goodman & Stokes, 2020) and (Petitpas et al., 2021), it *can* – citizens are significantly inclined to support these reforms (59%). Reform proposals that demonstrate negative impacts on mobilisation and, again, particularly among the socially deprived, are significantly less likely to enjoy mass support (39%).

Unsurprisingly, indications of the potential for risks to electoral integrity under *i-voting* lead to substantive changes in mass support. Where there is no evidence of a change in electoral integrity citizens are, on average, inclined to express a favourable (52%) view towards *i-voting*. This favourability increases by close to ten percentage points, however, when respondents are informed of the policy's ability to reduce the risk of fraud (61%). Should, however, the potential for fraud increase, then mass opinion is significantly opposed to these innovations (36%). Consistent with evidence of negativity bias, individuals punish risk-inducing proposals more than they reward benefit-inducing proposals. Relative to a no-change baseline, increasing risk in fraud engenders a negative shift in mass opinion that is close to twice as large as the positive shift engendered by decreasing risk.

Variation in the costs of proposed reforms is a significant determinant of support but does little to influence the perceived trustworthiness of the process. The large cost of elections has, at times, been a subject of public scrutiny, especially when elections are called in advance of their initial polling date. Citizens do not appear to be more inclined to support policies that *reduce* costs but they are, substantively, prone to reject proposals that imply an *increase* in costs. All proposals that reduce costs enjoy levels of support that are statistically indistinguishable from those that imply zero change from the status quo (56%). To take an illustrative example, an *i-voting* reform that would reduce the cost of the vote by £5 - a massive reduction that, on scale, would amount to proposals that imply even a small increment of £0.50 in cost per vote are subject to a significant seven percentage-point penalty (49%)

A matter of administration?

Finally, we turn to assess whether the level of government administration, private sector involvement, as well as political and technocratic endorsements influence support.

There is evidence that local-level political decision-making is preferred over national-level decision-making given that the latter is, at times, perceived to be too removed from the interests of individuals citizens (Fitzgerald & Wolak, 2016; Muñoz, 2017). The level of governmental involvement in administering *i-voting* does little to influence policy support. Although, on average, support for reforms is highest when both local and national level government are involved in administering the process, this support is not significantly distinct from that of alternative arrangements.

In contrast to the work of Fisher and Savani (2022), our analysis finds no evidence that private sector involvement exhibits any effect of substance or significance on individuals' propensity to endorse *i-voting*. Although, and as we show in supplementary subgroup analysis reported in the appendix, the null effects of private sector involvement masks significant asymmetries among partisans. Whilst Labour voters are

Figure 4: Political-based factors

significantly *less* supportive of *i-voting* proposals that involve private sector actors, Conservative voters are significantly *more* supportive. We interpret this variation as likely a reflection of Conservative party voters' positive disposition towards private enterprise and private-sector involvement in delivering public services more broadly as opposed to being related to digitising the electoral process specifically.

Proposals that boast cross-party endorsements enjoy significantly higher levels of mass support (54%) than those proposed by any single party. The lowest level of support is observed in the case of proposals endorsed only by the Conservative party (47%). It is

worth noting, however, that whilst lower than that observed among reforms proposed by Labour (50%), the Liberal Democrats (50%) or the Greens (48%), these differences are not statistically significant.

Beyond partisan endorsements, proposals that reported an endorsement from either the United Nations (UN), the UK Electoral Reform Society, the UK Electoral Commission, or the European Union, all observed significantly higher levels of support (equal to or greater than 50%) than those without an endorsement (46%).

3.1.1 Attribute interactions

Are there any particular combinations of our attributes that particularly boost or reduce support?[6] We test this by looking for average marginal interaction effects (AMIEs), which indicate which two-way combination of attribute levels changes support.

The AMIEs are reported in the online appendix file. A small number of interactions have very substantial effect sizes. We find substantial effects for the interaction between fraud and its social effects, such as on participation. The largest is between *i-voting* that decreases fraud *and* increases participation in socially deprived areas, which has an effect of approximately 0.08, or 8 percentage-points, compared to the effect of increasing fraud in socially deprived areas. Put symmetrically, if the policy increased fraud and increased participation, this would be seen very negatively. Additional positive effects are for implementations which reduce the cost of voting by £5 and are implemented by the council and central government, suggesting that cost-saving measures that are driven by a combined government effort are rewarded. Positive effects are also found for opt-in by post and *i-voting* being trialled in the USA, which has an effect of about 0.08. We suspect this is driven by older respondents who prefer post and are likely more supportive of the USA; this is because there is also a negative effect of the interaction between opting in by post and increasing participa-

[6] We are limited here to support as our trust measure is not binary, and the calculation of AMIEs requires a binary outcome.

tion amongst the young, and the a negative effect for decreasing participation for the elderly.

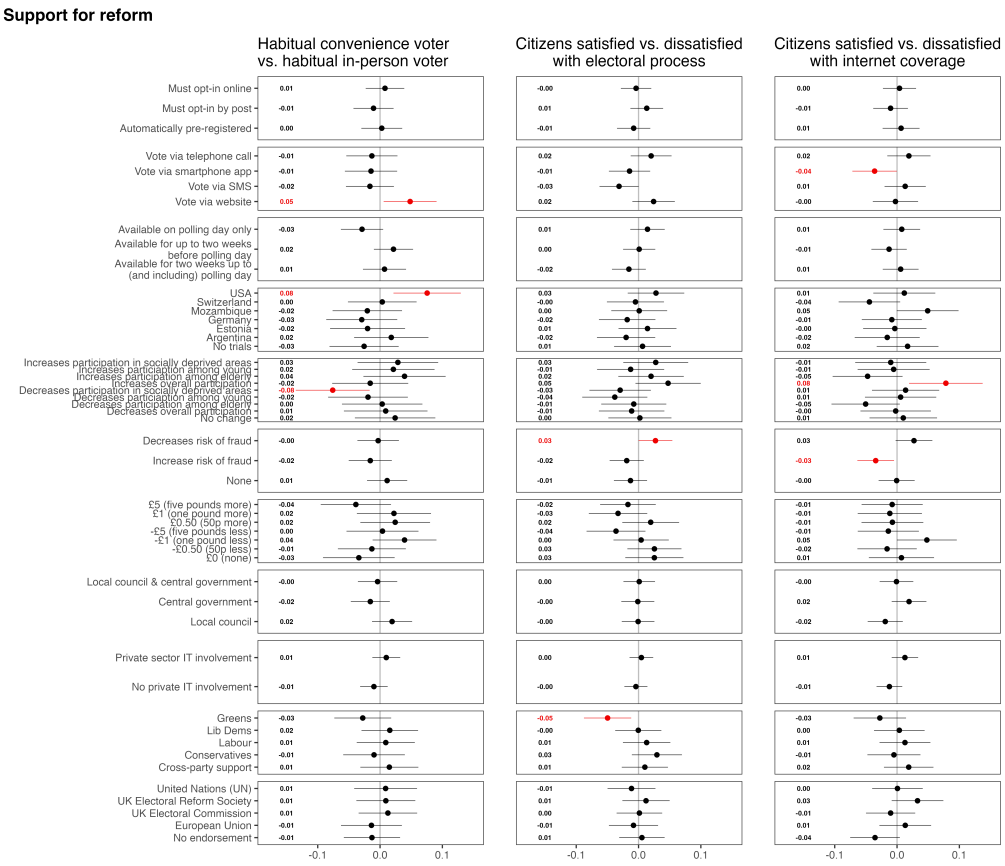
3.2 Subgroup analyses

To test the robustness and conditionality of the main results from the conjoint experiment, and as pre-registered, we also estimate the difference in attributes' effects among different theoretically important subgroups. We assess subgroup heterogeneity based on: i) experience with convenience voting, ii) levels of trust in electoral integrity, iii) and satisfaction with internet coverage. Tests of divisions among UK partisans are also considered in the appendix material.[7]

Following the recommendations of Leeper et al. (2020), we analyse subgroup heterogeneity in the effect of attribute values by estimating the marginal means among subgroups and the corresponding pairwise difference in the marginal mean between these groups, and do so for each of our core outcomes measures. Visualisations of the marginal means among different subgroups are reported in the appendix. As a mode of summary, in Figure 5 we report the difference in the marginal means: the upper panel reports differences in levels of overall support whereas the lower panel reports differences in the perceived trustworthiness of the proposals. Those differences reported in red indicate those that are statistically identifiable from zero ($p<.05$).

In the case of asymmetries between citizens based on their past experience with convenience voting – those who have experience voting by post of by proxy – there is limited evidence of subgroup variation. Convenience voters are, however and com-

[7]Partisans have far more diverging preferences than the other subgroups tested. In addition to the varying preferences on the role of the private sector mentioned above, alongside the predictable ingroup-based motivated reasoning, Conservative and Labour voters also differ in their responses to the effect of *i-voting* on participation. Compared to Labour voters, Conservatives are significantly *more* supportive of reforms that are likely to reduce overall turnout or reduce turnout among young voters while simultaneously *less* supportive of reforms that would active increase participation in socially deprived areas. Given the socio-demographic makeup of the Conservative party's electorate is older and, on average, comes from more affluent areas, these results indicate that Conservative voters appears to be engaged in politically strategic reasoning when forming their preferences on *i-voting* reforms that is not present among Labour voters.



(a) Support for policy

(b) Trustworthiness of policy

Figure 5: Subgroup variation – differences in the marginal means

pared to those who typically vote in person, more inclined to support policies that facilitate voting via a website and that have been trialled in the USA, whereas they are less inclined to support policies that reduce participation among socially deprived areas. As a result, we cannot conclude that support for *i-voting* is substantively different between voters with different levels of past engagement. As one might expect from citizens who are accustomed to voting via alternatives beyond casting an in-person ballot, the perceived trustworthiness of *i-voting* reforms is significantly higher among various values of all of the randomised policy features.

Comparing policy preferability between those who are satisfied and dissatisfied with how elections are run in the UK show little variation. The only significant differences in mean preferences is that those satisfied with elections are significantly: i) more trusting of policies shown to reduce the risk of of fraud, and ii) less supportive of policies promoted by the Green Party. In the case of trustworthiness, the electorally satisfied are significantly less inclined to be trusting of proposals that expand the voting window available for online voting, as well as those that may increase the risk of fraud.

One concern raised in the systematic reviews was that *i-voting* would lead to the effective disenfranchisement of those without internet access. To address this, we also considered whether support varies depending on whether people are satisfied with their internet access. Variation between these two groups, however, shows that the vast majority of attribute values exhibit similar effects. Where significant subgroup variation is present is case of i) voting via a smartphone, ii) effects on overall participation, and iii) the increased risk of fraud.

4 Discussion

States around the world have piloted or implemented *i-voting*, from Estonia, to Brazil, Armenia, India, and Canada. The wave of trials peaked in the early- to mid-2000s with

varying levels of success and public support, continuing in some capacity in states such as Canada, Estonia, and Switzerland. Due to technological and demographic shifts, the vast majority of citizens in most democratic countries now have easy access to the internet, and almost all will have substantial familiarity with operating day-to-day tasks online. In this context, we ask: what features of *i-voting* attract public support and trust?

This paper makes an empirical contribution and presents evidence from a comprehensive study of the determinants of public support for *i-voting*. We initially conducted a systematic review of twenty-six implemented trials in sixteen polities (including the European Union) between 2000 and 2019 and supplemented this with a systematic review of the academic literature, including fifty-five sources from an initial pool of 812. From these, we derived core attributes likely to influence public support for and trustworthiness in *i-voting*, given that (perceived) trustworthiness was a consistent concern in both the trials and academic literature. We then fielded an original pre-registered conjoint experiment in the UK to test the effect of these in an experimental setting.

A headline result is that trustworthiness is lower for *i-voting*, relative to in-person voting, essentially regardless of the features that hypothetical *i-voting* reforms may propose. In other words, the real conditioning factor for trustworthiness is that it is internet versus in-person rather than any features of the two. This effect is large, at about 10 percentage-points. Some features reduce trustworthiness from this already low baseline, particularly whether *i-voting* increases the risk of fraud, and whether it is trialled in the Global South (Mozambique) rather than European countries. This, ultimately, echoes previous findings that the perceived trustworthiness of *i-voting* may reduce the propensity to adopt it but more broadly *i-voting* may also reduce perceptions of electoral integrity, given that it will likely be seen as less trustworthy than in-person voting. A broader consequence of this is that *i-voting*, at least presently and for its benefits, may also provide a route for ill-intentioned actors to undermine the results of elections or performance of democracy, as Brazil's Jair Bolsonaro did, calling

into question issues of fraud in his lost election.[8] Our results suggest that there is little in the design of *i-voting* that may mitigate this. Instead, broader public education, objective safeguards, and governance of elites may provide the necessary trust in *i-voting* systems.

In terms of support, we separate our results by convenience, benefits, and administration. While the former are components that tap into the rational choice framework of electoral participation (Riker & Ordeshook, 1968), the later represents an axis of concerns related to legitimacy. Regarding the first, we find that automatic registration, access on smart devices and the internet, and ensuring a wide time window all increase support, but voting by phone reduces it. With regard to benefits, citizens are strongly against reforms which increase the public cost of voting, but do not substantially reward those that *reduce* the cost of voting for the public purse. In addition, framing the reform as facilitating voting for those that are socially-deprived and increasing electoral integrity will likely increase support, though we note, for the latter, the important lower trustworthiness of *i-voting*. With regard to administration, the implementing actor is not relevant in shaping support, but having cross-party support and endorsement from typically independent bodies does bolster support. We find minimal heterogeneity amongst respondents, indicating that these preferences are quite consistent across demographics.

Finally, we also calculated average marginal interaction effects to understand what (two-way) combination of attributes can moderate support. We find some significant interactions, most notably that cost-saving measures which are led by a combined effort of council and central government boost support substantially, relative to the overall effect of cost-saving measures. We also find an interesting interaction between participation and fraud, in which increasing participation has a negative effect if it is combined with (fears of) increasing fraud; if it depressed participation but increases fraud, this is a positive, relative to the overall effect of it changing participation. Prac-

[8] See, for example: https://www.bbc.co.uk/news/63061930

tically, what this means is that it would be essential that *i-voting* does not, or is not seen to, simultaneously help participation but increase fraud.

It seems inevitable that interest in *i-voting* will increase, given demographic and technological shifts, and the drive to reinvigorate democracy and engage citizens who may otherwise not vote, particularly younger citizens who are less likely to vote but for whom internet voting would be second-nature. This also poses problems of electoral integrity, such that these changes may facilitate ill-intentioned actors in making (false) fraud claims to undermine support for the system. We have shown, concretely, through a review of existing trials, literature, and a novel conjoint experiment, which policy attributes are most likely to engender greater support for *i-voting*, and trust in the voting system. We have shown that these are consistent across demographics, whether there are interactions between different attributes, and their effects on trust.

We think focusing on the trustworthiness aspect is where we shall conclude. Trust and trustworthiness were seen as fundamental in the review of trials and academic research; our results are somewhat pessimistic, suggesting that, vis-à-vis in-person voting, *i-voting* is consistently seen as less trustworthy and that there is little, at least in the attributes we studied, that can change this. This poses two problems: first, at the implementation stage but more insidiously, that a shift to *i-voting* may encourage greater doubts about electoral integrity, as has occurred in recent elections in Brazil. Aside from the the concrete proposals we have trialled here, an essential next step that we have highlighted is to understand what can boost the perceived trustworthiness of *i-voting* initiatives. One possibility, which we have not addressed in this paper, lies in the technical aspects of implementation such as voter authentication. Future research could include these in similar designs to the one we have conducted here.

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Data availability: The original experimental data and replication script are available at: https://doi.org/10.7910/DVN/RJTVG8

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Smith, J. C., & Childs, S. (2021). *The Remotely Representative House? Lesson Learning From The Hybrid Commons*. Centenaray Action Group.

Solvak, M., & Vassil, K. (2018). Could internet voting halt declining electoral turnout? new evidence that e-voting is habit forming: Internet voting and habit formation. *Policy & Internet*, *10*(1), 4–21. https://doi.org/10.1002/poi3.160

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Appendix

i-voting reforms

Appendix

A Systematic review

The systematic review was conducted between the 28th of March and 5th April 2022 and involved two sources. The University of Oxford's library search service was searched with the keywords '"i-voting" OR "I-voting" OR "ivoting" OR "evoting" OR "internet voting" OR "electronic voting"', limiting this search to a) title-only b) peer-reviewed articles. This returned approximately 812 articles. We acknowledge that our constraints introduce some problems; restricting it to title-only may be excluding relevant information. Yet not limiting our search returns an unwieldy amount (over 2.5m returns, 270k journal articles), so this was a matter of practicality. We also acknowledge we will miss some 'grey literature' (i.e., unpublished) by our focus on published work; however, we do obtain many of these through snowball searching.

Of these 812 returned articles, they were screened for relevancy based on title and abstract. Our criteria at this point was quite broad, specifically a) anything in the social sciences in general relating to the acceptability, success, etc, of i-voting; b) was not a technical paper purely about technical implementation (e.g., programming software); and c) referred to voting over the internet (or equivalents), not just electronic counting.

This led to 71 sources. Using backwards/forwards search, we added six more (N=77). Of these, 22 were excluded; 10 because the full source could not be obtained; 1 because the text was not in English; and the remaining 11 because the full texts were not deemed relevant. An example of those that were deemed not relevant are Barbour, Michele E. (2008). Electronic Voting in Dental Materials Education: The Impact on Students' Attitudes and Exam Performance. Journal of Dental Education, 72(9), 1042-1047; Falck, Oliver, Gold, Robert, & Heblich, Stephan. (2014). E-lections: Voting Behavior and the Internet. The American Economic Review, 104(7), 2238-2265; Krivonosova, Iuliia. (2021). The forgotten election administrator of internet voting: Lessons from Estonia. Policy Studies, 1-23. Whilst the latter two appear relevant, the second is about the roll-out of the internet and its effect on turnout and the latter is

about the views of frontline election administrators. We include a list of the included studies in Table A.1

Table A.1: List of 55 studies included in the systematic review

Author(s)-year	**Title and journal**
Agbesi, Samuel. (2020)	Political Parties and Internet Voting System Adoption in Ghana. In Electronic Government and the Information Systems Perspective (Lecture Notes in Computer Science, pp. 174-186). Cham: Springer International Publishing.
Akos Cserny, & Andras Nemeslaki. (2018)	The challenges of e-voting. Viešoji Politika Ir Administravimas, 17(4), 497-509.
Al-Hamar, J. (2019)	Towards internet voting in the state of Qatar. Retrieved 29 March 2022, from https://figshare.com/articles/thesis/Towards_Internet_Voting_in_the_State_of_Qatar/9406220
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Anne-Marie Oostveen & Peter Van Den Besselaar (2004)	Internet Voting Technologies and Civic Participation: The Users' Perspective, Javnost - The Public, 11:1, 61-78, DOI: 10.1080/13183222.2004.11008847
Bélanger, F., & Carter, L. (2010, February)	The digital divide and internet voting acceptance. In 2010 Fourth International Conference on Digital Society (pp. 307-310). IEEE.

Birch, Sarah, & Watt, Bob. (2004)	Remote Electronic Voting: Free, Fair and Secret? The Political Quarterly (London. 1930), 75(1), 60-72.
Caporusso, L. (2010)	The role of trust, participation and identity in the propensity to e-and i-vote. In 4th International Conference on Electronic Voting 2010. Gesellschaft für Informatik eV.
Carter, L., & Bélanger, F. (2012)	Internet voting and political participation: An empirical comparison of technological and political factors. ACM SIGMIS Database: The DATABASE for Advances in Information Systems, 43(3), 26-46.
Carter, L., & Campbell, R. (2011)	The impact of trust and relative advantage on internet voting diffusion. Journal of theoretical and applied electronic commerce research, 6(3), 28-42.
Choi, Sang Ok, & Kim, Byung Cho. (2012)	Voter Intention to Use E-Voting Technologies: Security, Technology Acceptance, Election Type, and Political Ideology. Journal of Information Technology & Politics, 9(4), 433-452.
Christian Schaupp, L, & Carter, Lemuria. (2005)	Evoting from apathy to adoption. Journal of Enterprise Information Management, 18(5), 586-601.
Crothers, Charles. (2015)	Using the Internet in New Zealand elections and support for e-voting. Political Science, 67(2), 125-142.

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Faraon, M., Stenberg, G., Budurushi, J., & Kaipainen, M. (2015).	Positive but skeptical: A study of attitudes towards Internet voting in Sweden. In CeDEM Asia 2014: International Conference for E-Democracy and Open Government, Hong Kong, December 4-6, 2014.(pp. 191-205).
Fisher, J, and Savani, M. n.d.	Who's In Charge? The Impact of Public Sector Delivery and Perception of Risk on the Willingness to Voting Online
Germann, Micha, & Serdült, Uwe. (2014).	Internet Voting for Expatriates: The Swiss Case. EJournal of EDemocracy and Open Government, 6(2), 197-215.
Germann, Micha, & Serdült, Uwe. (2017).	Internet voting and turnout: Evidence from Switzerland. Electoral Studies, 47, 1-12.
Germann, Micha. (2020).	Making Votes Count with Internet Voting. Political Behavior, 43(4), 1511-1533.
Gibson, J Paul, Krimmer, Robert, Teague, Vanessa, & Pomares, Julia. (2016).	A review of E-voting: The past, present and future. Annales Des Télécommunications, 71(7-8), 279-286.
Goodman, N. (2010).	The Experiences of Canadian Municipalities with Internet Voting. CEU Political Science Journal, 5(4), 492-520.

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Lührs, Rolf, & Molinari, Francesco. (2010).	Editorial Note: Sustainable E-Participation. EJournal of EDemocracy and Open Government, 2(2), Iv-Xii.
Lust, Aleksander. (2018).	I-Vote, Therefore I Am? Internet Voting in Switzerland and Estonia. The SAIS Review of International Affairs, 38(1), 65-79.
Mellon, Jonathan, Sjoberg, Fredrik M., & Peixoto, Tiago. (2017).	Does online voting change the outcome? Evidence from a multi-mode public policy referendum. Electoral Studies, 47, 13–24.
Micha Germann, Uwe Serdült. (2017).	Internet voting and turnout: Evidence from Switzerland, Electoral Studies, 47(1), 1-12.
Mozley, K. 2021.	Remote E-voting: More than a Technical Challenge. Royal Holloway, University of London.
Musiał-Karg, M., & Kapsa, I. (2019).	Attitudes of polish voters towards introduction of e-voting in the context of political factors. In International Conference on e-Democracy (pp. 144-160). Springer, Cham.

Musiał-Karg, Magdalena, & Kapsa, Izabela. (2021).	Polish Mass Media Coverage and Public Opinion on E-democracy. Medijske Studije, 12(23), 2-18.
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Omotayo, Funmilola Olubunmi, & Adekunle, Olasubomi Adetutu. (2021).	Adoption and use of electronic voting system as an option towards credible elections in Nigeria. International Journal of Development Issues, 20(1), 38-61.
Petitpas, Adrien, Jaquet, Julien M, & Sciarini, Pascal. (2021).	Does E-Voting matter for turnout, and to whom? Electoral Studies, 71.
Pieters, W., & van Haren, R. (2007).	E-voting discourses in the UK and the Netherlands. (Technical Report of the Radboud University Nijmegen. Institute for Computing and Information Sciences). Radboud University Nijmegen.

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Ramonaitė, A. (2009).	Is i-voting a solution to diminishing voting turnout problem in Lithuania. Working paper for World Congress of the International Political Science Association.
Sadykova, Yana M, Starynskyi, Mykola V, Horobetc, Nataliia O, & Zhornokui, Yurii M. (2018).	A cost-benefit analysis of preconditioned and predicted effects from e-voting implementation in Ukraine. Trames (Tallinn), XII(3), 257-271.
Saglie, J., & Segaard, S. B. (2016).	Internet voting and the secret ballot in Norway: principles and popular understandings.Journal of Elections, Public Opinion and Parties,26(2), 155-169.
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B Experiment design

B.1 Summary statistics

Table A.2: Sample summary statistics

	Unique (#)	Missing (%)	Mean	SD	Min	Median	Max
Gender	2	0	0.5	0.5	0.0	1.0	1.0
LGBT+	2	0	0.1	0.3	0.0	0.0	1.0
Age	66	0	47.7	16.3	19.0	49.0	87.0
Race (non-white)	2	0	0.2	0.4	0.0	0.0	1.0
Education (degree)	2	0	0.4	0.5	0.0	0.0	1.0
Income	12	0	1.6	1.4	0.0	1.6	10.0
Region	12	0	6.5	3.5	1.0	7.0	12.0
Trust	8	12	2.1	1.4	0.0	2.0	6.0
Perception of electoral fraud	5	23	2.3	0.8	1.0	2.0	4.0
Perceived electoral satisfaction	6	5	2.5	0.9	0.0	3.0	4.0
Satisfied with internet	6	2	2.7	1.0	0.0	3.0	4.0
Past voting method	3	17	0.2	0.4	0.0	0.0	1.0
Ideology	4	10	0.8	0.7	0.0	1.0	2.0
2019 vote recall	11	0	2.5	3.3	0.0	1.0	10.0
2018 Brexit recall	4	0	0.7	0.8	0.0	1.0	3.0

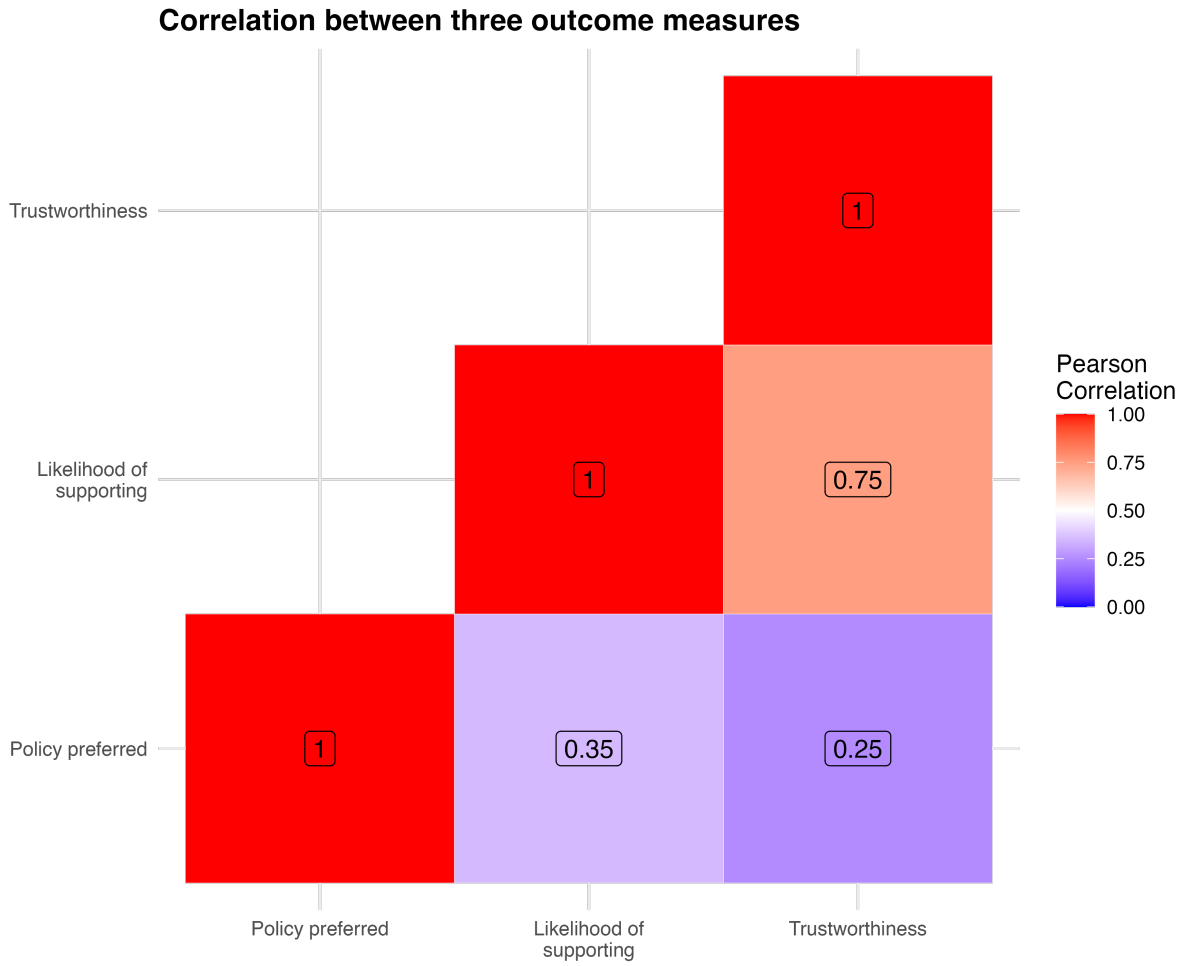

Figure A.1: Independence of outcome measures

B.2 Conjoint attribute values & hypotheses

Table A.3: Attribute values & pre-registered expectations

Attribute	Attribute values
Pre-registration	*Automatically pre-registered* Must opt-in by post – Must opt-in online –
Method	*Vote via website* Vote via smartphone app + Vote via telephone call – Vote via SMS (text) –
Voting window	*available for two weeks up to (and including) polling day* available for up to two weeks before polling day + available on polling day only –
Successful, rigorous trials of security and integrity completed in	*None* Estonia – UK + Germany + Switzerland + Argentina – Mozambique –
Pilot outcome on participation	*None* Increases overall participation + Decreases overall participation – Increases participation among young + Decreases participation among young – Increases participation among elderly + Decreases participation among elderly – Increases participation in socially deprived areas + Decreases participation in socially deprived areas –
Pilot outcome on integrity	*None* Reduces risk of electoral fraud + Increases risk of electoral fraud –
Online platform controlled by	*Local council* Central government Local council & central government Local council & private sector IT firm – Central government & private sector IT firm – Local council, central government, & private sector IT firm –
Change in public cost (per vote) to government	*£0 (none)* £0.50 (50p more) – £1 (one pound more) – £5 (five pounds more) – - £0.50 (50p less) + - £1 (one pound less) + - £5 (five pounds less) +
Proposing party	*Cross-party coalition* Conservatives – Labour – Liberal Democrats – the Greens –
Endorsement	*None* UK Electoral Commission + United Nations Electoral Assistance Division (UN) – UK Electoral Reform Society + European Union (EU) –

Italics indicates baseline reference category

\+ attribute value hypothesised to increase Pr(Selected) vs baseline

\- attribute value hypothesised to decrease Pr(Selected) vs baseline

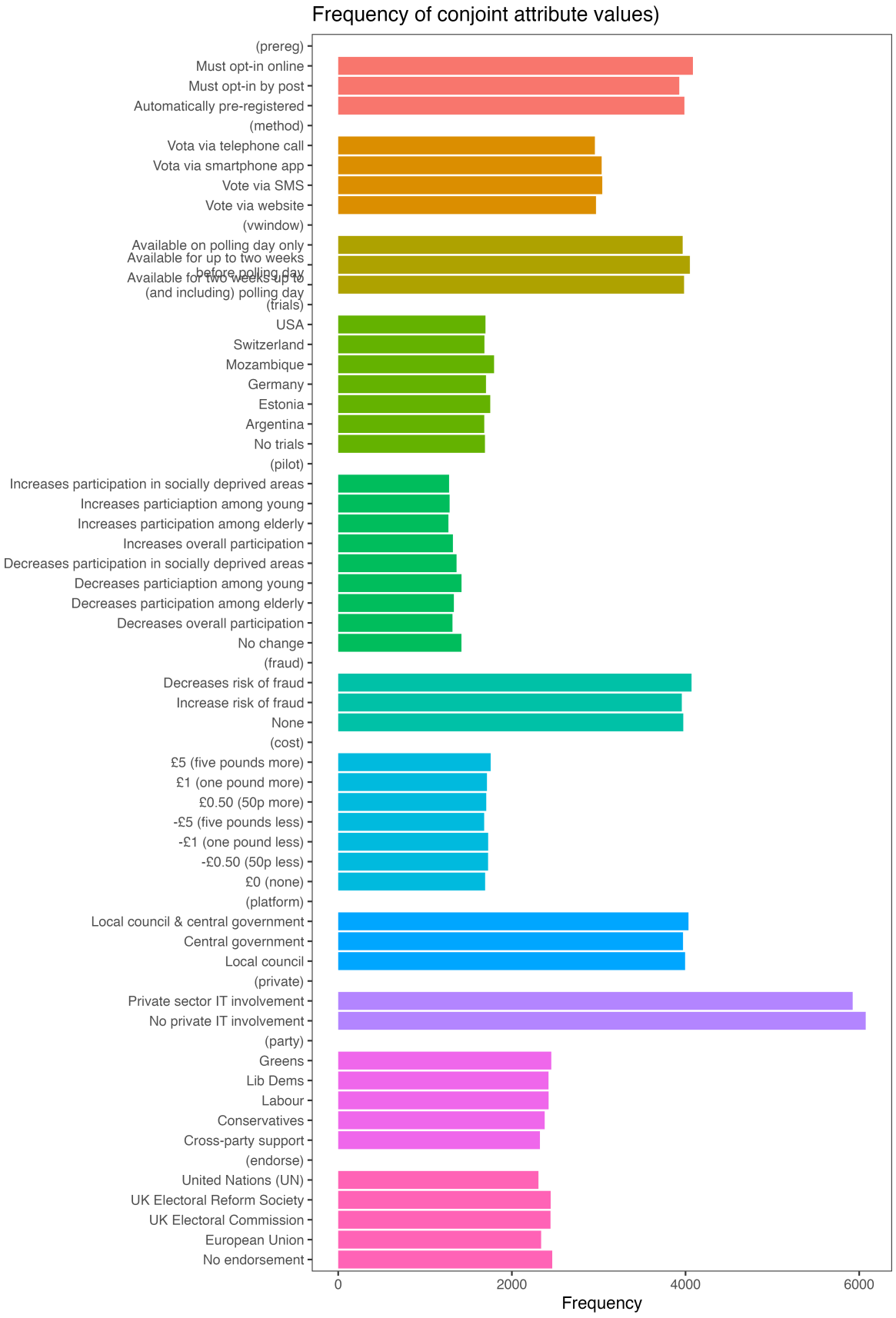

Figure A.2: Distribution of attribute values among generated profiles

B.3 Power calculation

Observations in the dataset will represent policy proposals. A sample of 1200 respondents will produce 12,000 observations based on an individual comparing two randomly assigned policy profiles via five different tasks (1200*2*5).

The power calculation included in our pre-analysis plan reported in Figure A.3 below – based on an expected average marginal component effect of 0.05 ($p<0.05$), an attribute with 7 values, and a sample of 1200 individuals completing 5 forced comparison – indicated that our experimental research design would wield statistical power equal to .89. In line with existing conventions, we consider power in excess of 0.80 to be sufficient to identify effects statistically distinguishable from zero.

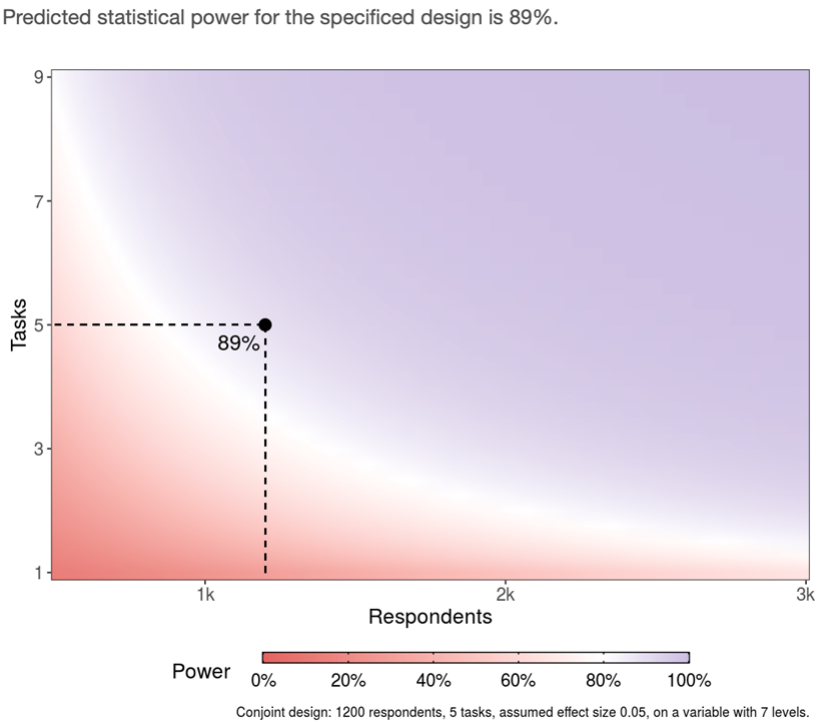

Figure A.3: Power-calculation

C Experiment main results

Table A.4: Marginal means: proposal selected

Level	Est.	SE	Lower CI	Upper CI
Must opt-in online	0.501	0.006	0.489	0.513
Must opt-in by post	0.463	0.006	0.450	0.475
Automatically pre-registered	0.536	0.007	0.523	0.549
Vota via telephone call	0.419	0.008	0.404	0.435
Vota via smartphone app	0.519	0.008	0.503	0.535
Vote via SMS	0.506	0.008	0.491	0.521
Vote via website	0.555	0.008	0.538	0.571
Polling day only	0.478	0.007	0.465	0.491
Two weeks before polling day	0.507	0.006	0.495	0.520
Two weeks plus polling day	0.515	0.007	0.502	0.528
USA	0.518	0.011	0.496	0.540
Switzerland	0.542	0.011	0.520	0.564
Mozambique	0.442	0.011	0.420	0.464
Germany	0.545	0.011	0.523	0.567
Estonia	0.501	0.012	0.479	0.524
Argentina	0.490	0.012	0.468	0.513
No trials	0.464	0.011	0.442	0.486
Increases participation in socially deprived areas	0.588	0.013	0.563	0.614
Increases participation among young	0.550	0.013	0.524	0.576
Increases participation among elderly	0.552	0.013	0.526	0.577
Increases overall participation	0.581	0.013	0.556	0.607
Decreases participation in socially deprived areas	0.395	0.012	0.371	0.419
Decreases participation among young	0.434	0.013	0.408	0.459
Decreases participation among elderly	0.465	0.013	0.440	0.491
Decreases overall participation	0.452	0.013	0.426	0.478
No change	0.498	0.012	0.473	0.522
Decreases risk of fraud	0.614	0.007	0.601	0.627
Increase risk of fraud	0.362	0.007	0.349	0.376
None	0.521	0.007	0.508	0.534
£5 (five pounds more)	0.382	0.011	0.360	0.404
£1 (one pound more)	0.475	0.012	0.452	0.497
£0.50 (50p more)	0.488	0.011	0.466	0.510
-£5 (five pounds less)	0.529	0.012	0.507	0.552
-£1 (one pound less)	0.531	0.011	0.509	0.553
-£0.50 (50p less)	0.543	0.011	0.522	0.564
£0 (none)	0.556	0.011	0.533	0.578
Local council & central government	0.509	0.006	0.497	0.521
Central government	0.499	0.007	0.486	0.512
Local council	0.492	0.007	0.479	0.505
Private sector IT involvement	0.498	0.005	0.489	0.507
No private IT involvement	0.502	0.005	0.493	0.511
Greens	0.482	0.009	0.464	0.501
Lib Dems	0.503	0.009	0.485	0.521
Labour	0.503	0.009	0.485	0.522
Conservatives	0.475	0.010	0.455	0.494
Cross-party support	0.538	0.009	0.520	0.556
United Nations (UN)	0.512	0.010	0.493	0.531
UK Electoral Reform Society	0.511	0.009	0.493	0.530
UK Electoral Commission	0.519	0.009	0.501	0.537
European Union	0.496	0.010	0.476	0.515
No endorsement	0.463	0.009	0.445	0.481

Table A.5: Marginal means: proposal trust

Level	Est.	SE	LowerCI	UpperCI
Must opt-in online	0.393	0.006	0.381	0.404
Must opt-in by post	0.397	0.006	0.385	0.409
Automatically pre-registered	0.401	0.006	0.388	0.414
Vota via telephone call	0.380	0.006	0.367	0.392
Vota via smartphone app	0.401	0.007	0.388	0.414
Vote via SMS	0.393	0.006	0.381	0.406
Vote via website	0.412	0.007	0.399	0.426
Polling day only	0.401	0.006	0.390	0.413
Two weeks before polling day	0.394	0.006	0.382	0.407
Two weeks up plus polling day	0.395	0.006	0.382	0.407
USA	0.407	0.008	0.392	0.422
Switzerland	0.405	0.008	0.389	0.420
Mozambique	0.373	0.008	0.358	0.389
Germany	0.418	0.008	0.403	0.433
Estonia	0.397	0.008	0.382	0.412
Argentina	0.390	0.008	0.375	0.405
No trials	0.388	0.008	0.373	0.403
Increases participation in socially deprived areas	0.421	0.009	0.404	0.438
Increases particiaption among young	0.404	0.009	0.388	0.421
Increases participation among elderly	0.411	0.009	0.394	0.429
Increases overall participation	0.411	0.008	0.395	0.428
Decreases participation in socially deprived areas	0.370	0.008	0.354	0.386
Decreases particiaption among young	0.395	0.008	0.380	0.410
Decreases participation among elderly	0.384	0.008	0.368	0.399
Decreases overall participation	0.383	0.008	0.367	0.399
No change	0.394	0.008	0.377	0.410
Decreases risk of fraud	0.446	0.006	0.433	0.458
Increase risk of fraud	0.328	0.006	0.315	0.340
None	0.415	0.006	0.403	0.427
£5 (five pounds more)	0.386	0.008	0.371	0.401
£1 (one pound more)	0.401	0.008	0.386	0.417
£0.50 (50p more)	0.387	0.008	0.372	0.403
-£5 (five pounds less)	0.404	0.008	0.388	0.419
-£1 (one pound less)	0.395	0.008	0.380	0.410
-£0.50 (50p less)	0.400	0.008	0.385	0.415
£0 (none)	0.404	0.008	0.389	0.419
Local council & central government	0.401	0.006	0.389	0.413
Central government	0.393	0.006	0.381	0.406
Local council	0.396	0.006	0.384	0.408
Private sector IT involvement	0.393	0.006	0.382	0.404
No private IT involvement	0.400	0.006	0.389	0.412
Greens	0.403	0.007	0.390	0.417
Lib Dems	0.394	0.007	0.381	0.408
Labour	0.396	0.007	0.382	0.410
Conservatives	0.389	0.007	0.375	0.403
Cross-party support	0.401	0.007	0.387	0.415
United Nations (UN)	0.398	0.007	0.384	0.411
UK Electoral Reform Society	0.404	0.007	0.390	0.417
UK Electoral Commission	0.396	0.007	0.382	0.410
European Union	0.391	0.007	0.377	0.404
No endorsement	0.395	0.007	0.381	0.408

Table A.6: Marginal means: likelihood proposal endorsed

Level	Est.	SE	Lower CI	Upper CI
Must opt-in online	0.398	0.007	0.385	0.411
Must opt-in by post	0.396	0.007	0.383	0.409
Automatically pre-registered	0.415	0.007	0.401	0.429
Vote via telephone call	0.370	0.007	0.356	0.384
Vote via smartphone app	0.417	0.007	0.402	0.432
Vote via SMS	0.399	0.008	0.384	0.414
Vote via website	0.427	0.007	0.413	0.442
Polling day only	0.405	0.007	0.392	0.419
Two weeks before polling day	0.399	0.007	0.386	0.413
Two weeks up plus polling day	0.405	0.007	0.391	0.419
USA	0.414	0.009	0.398	0.431
Switzerland	0.419	0.009	0.402	0.437
Mozambique	0.376	0.008	0.360	0.392
Germany	0.418	0.009	0.401	0.434
Estonia	0.407	0.009	0.390	0.424
Argentina	0.396	0.009	0.379	0.413
No trials	0.394	0.009	0.377	0.411
Increases participation in socially deprived areas	0.448	0.009	0.430	0.467
Increases participation among young	0.433	0.010	0.414	0.452
Increases participation among elderly	0.428	0.010	0.408	0.447
Increases overall participation	0.432	0.009	0.414	0.451
Decreases participation in socially deprived areas	0.355	0.009	0.337	0.373
Decreases participation among young	0.382	0.009	0.364	0.399
Decreases participation among elderly	0.385	0.009	0.366	0.403
Decreases overall participation	0.372	0.009	0.354	0.391
No change	0.401	0.009	0.383	0.419
Decreases risk of fraud	0.456	0.007	0.442	0.469
Increase risk of fraud	0.333	0.007	0.319	0.347
None	0.419	0.007	0.406	0.432
£5 (five pounds more)	0.365	0.009	0.348	0.382
£1 (one pound more)	0.398	0.008	0.382	0.415
£0.50 (50p more)	0.390	0.009	0.373	0.407
-£5 (five pounds less)	0.424	0.009	0.406	0.441
-£1 (one pound less)	0.411	0.009	0.394	0.428
-£0.50 (50p less)	0.416	0.009	0.400	0.433
£0 (none)	0.419	0.009	0.402	0.437
Local council & central government	0.407	0.007	0.393	0.420
Central government	0.404	0.007	0.390	0.418
Local council	0.399	0.007	0.385	0.412
Private sector IT involvement	0.402	0.006	0.390	0.415
No private IT involvement	0.404	0.006	0.392	0.417
Greens	0.406	0.008	0.391	0.421
Lib Dems	0.397	0.008	0.382	0.412
Labour	0.403	0.008	0.388	0.419
Conservatives	0.392	0.008	0.376	0.408
Cross-party support	0.418	0.008	0.403	0.433
United Nations (UN)	0.408	0.008	0.393	0.424
UK Electoral Reform Society	0.408	0.008	0.392	0.423
UK Electoral Commission	0.404	0.008	0.389	0.420
European Union	0.397	0.008	0.381	0.412
No endorsement	0.399	0.008	0.384	0.414

C.1 Average marginal component effects (AMCE)

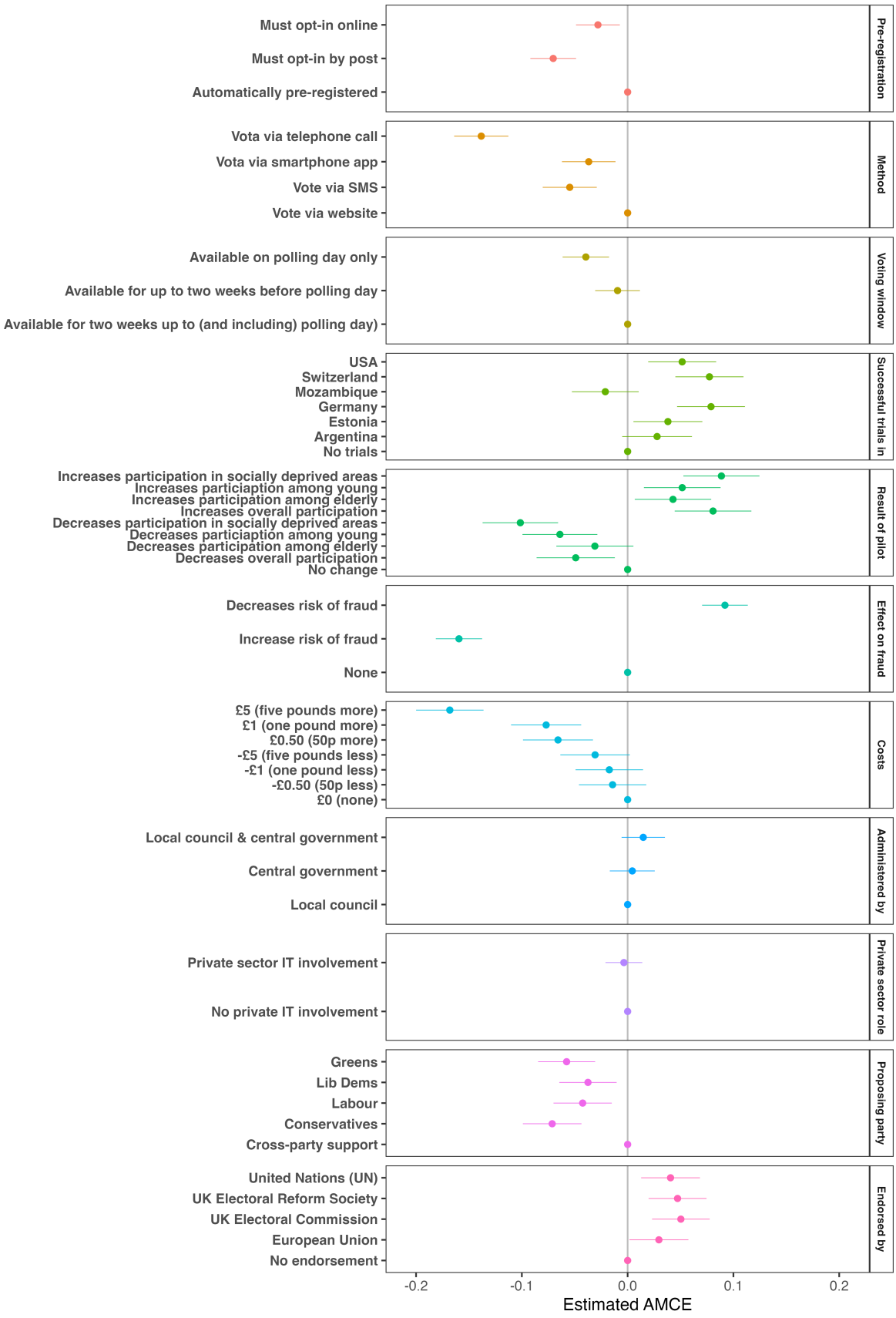

Figure A.4: AMCE on support for *i-voting* reform

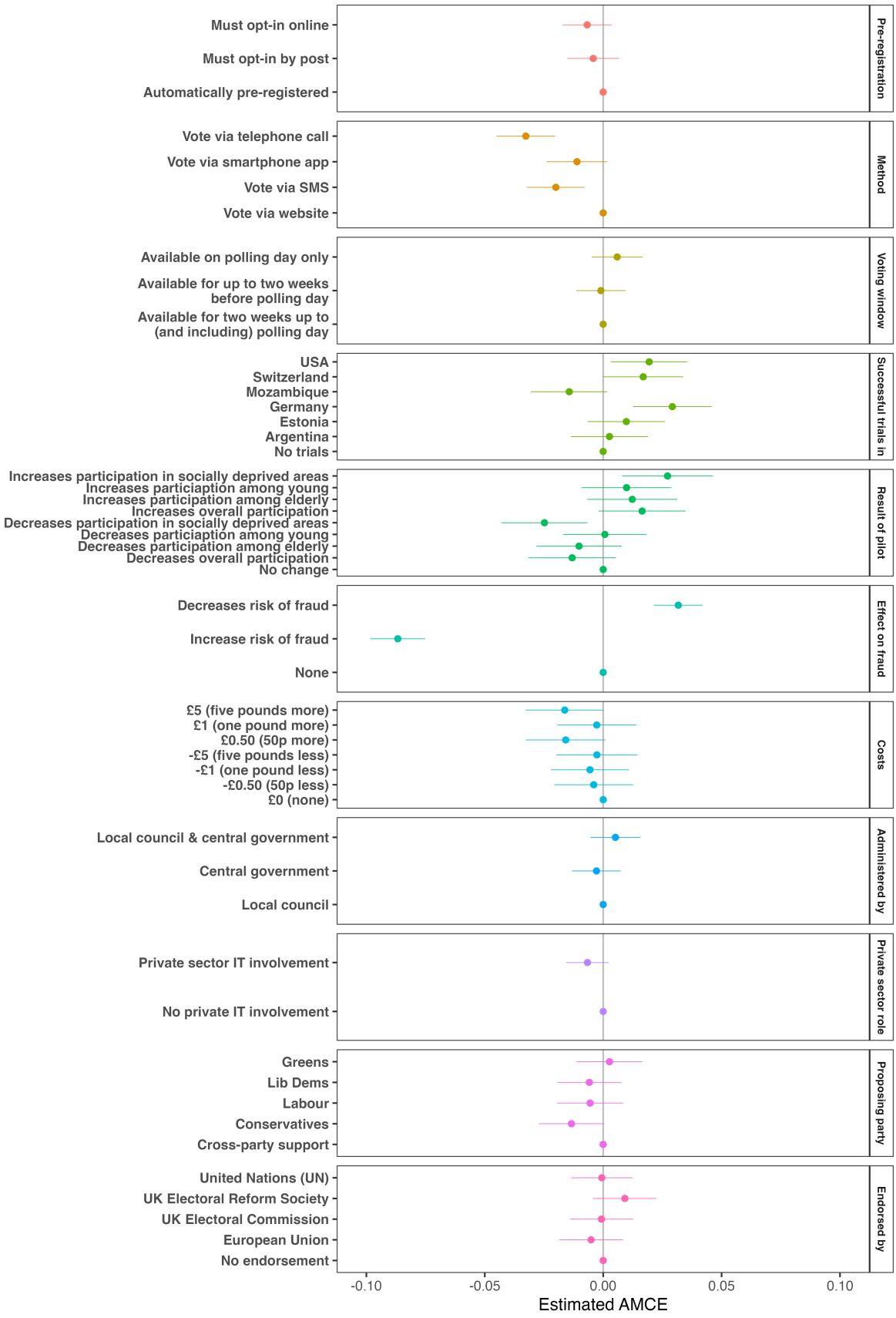

Figure A.5: AMCE on trustworthiness *i-voting* reform

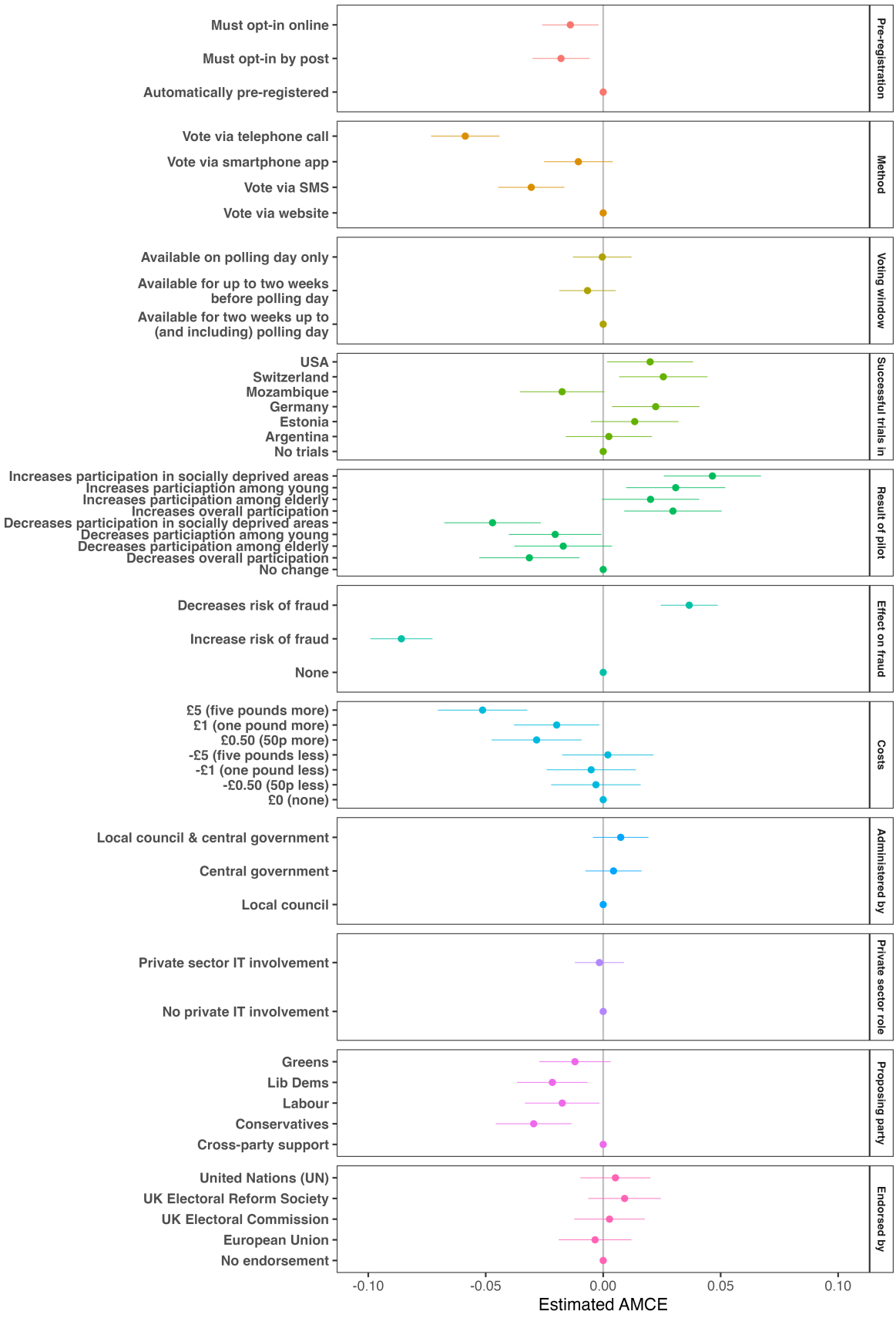

Figure A.6: AMCE on likelihood of endorsing *i-voting* reform

D Experiment subgroup analysis : support for reforms

Figure A.7 reports the marginal mean (left-hand panel) and the pairwise difference in the marginal mean (right-hand panel) in support for *i-voting* reforms among respondents stratified by their level of self-reported satisfaction with their internet coverage.

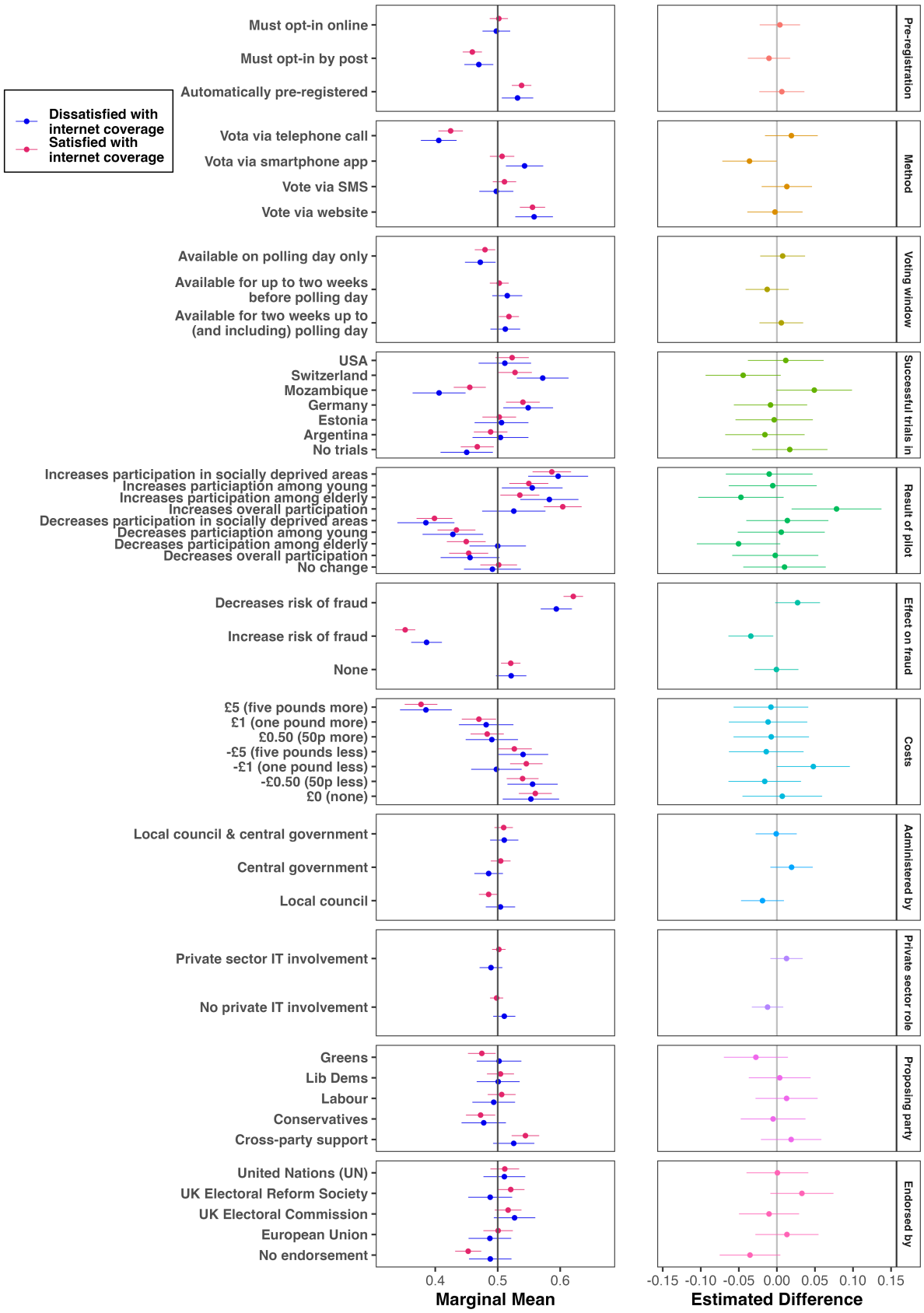

Figure A.7: Variation in support by internet satisfaction

Figure A.8 reports the marginal mean (left-hand panel) and the pairwise difference in the marginal mean (right-hand panel) in support for *i-voting* reforms among respondents stratified by their past experience with convenience voting.

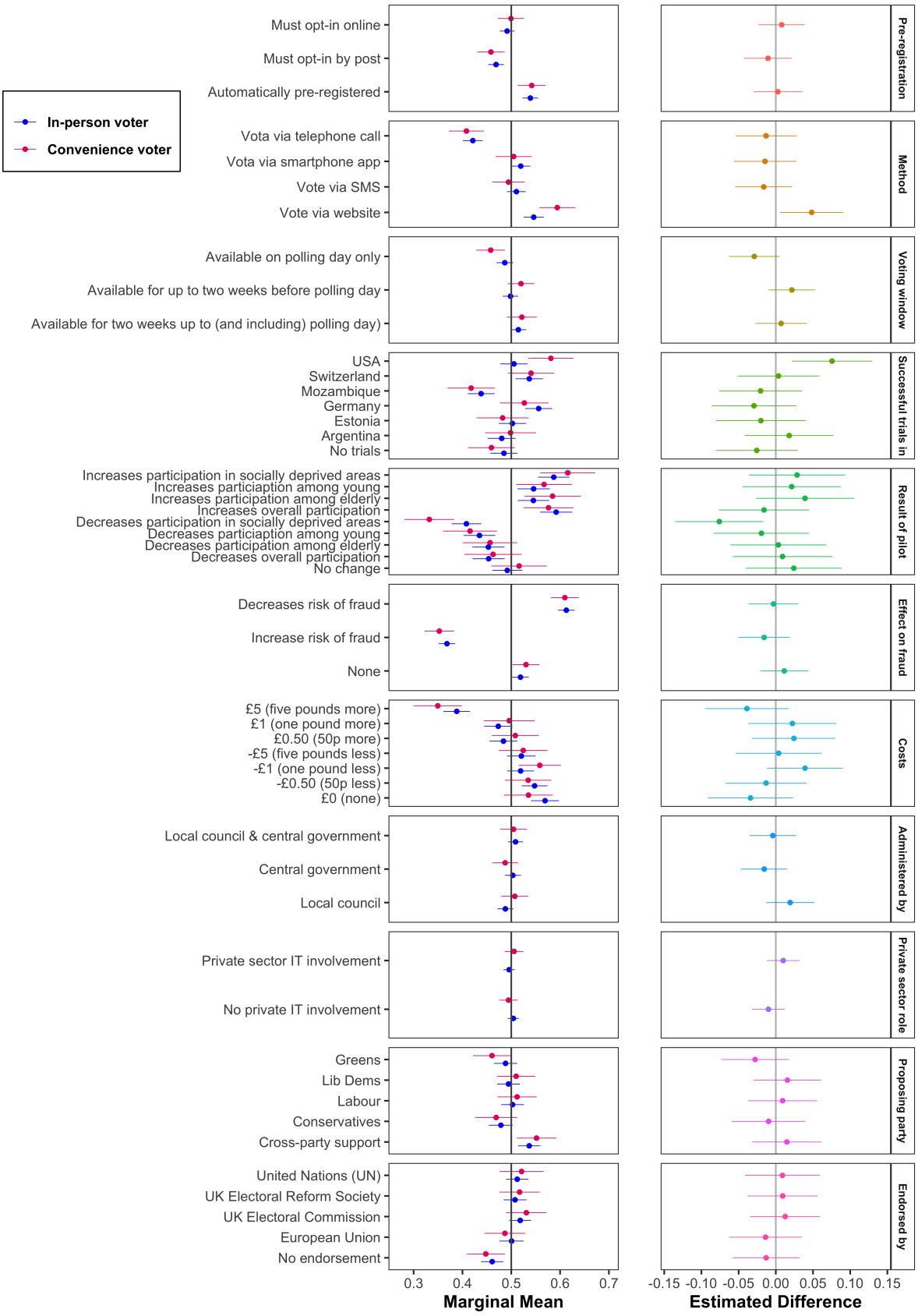

Figure A.8: Variation in support by past voting experience

Figure A.9 reports the marginal mean (left-hand panel) and the pairwise difference in the marginal mean (right-hand panel) in support for *i-voting* reforms among respondents stratified by their support of the two dominant parties in the UK: the Conservatives and Labour

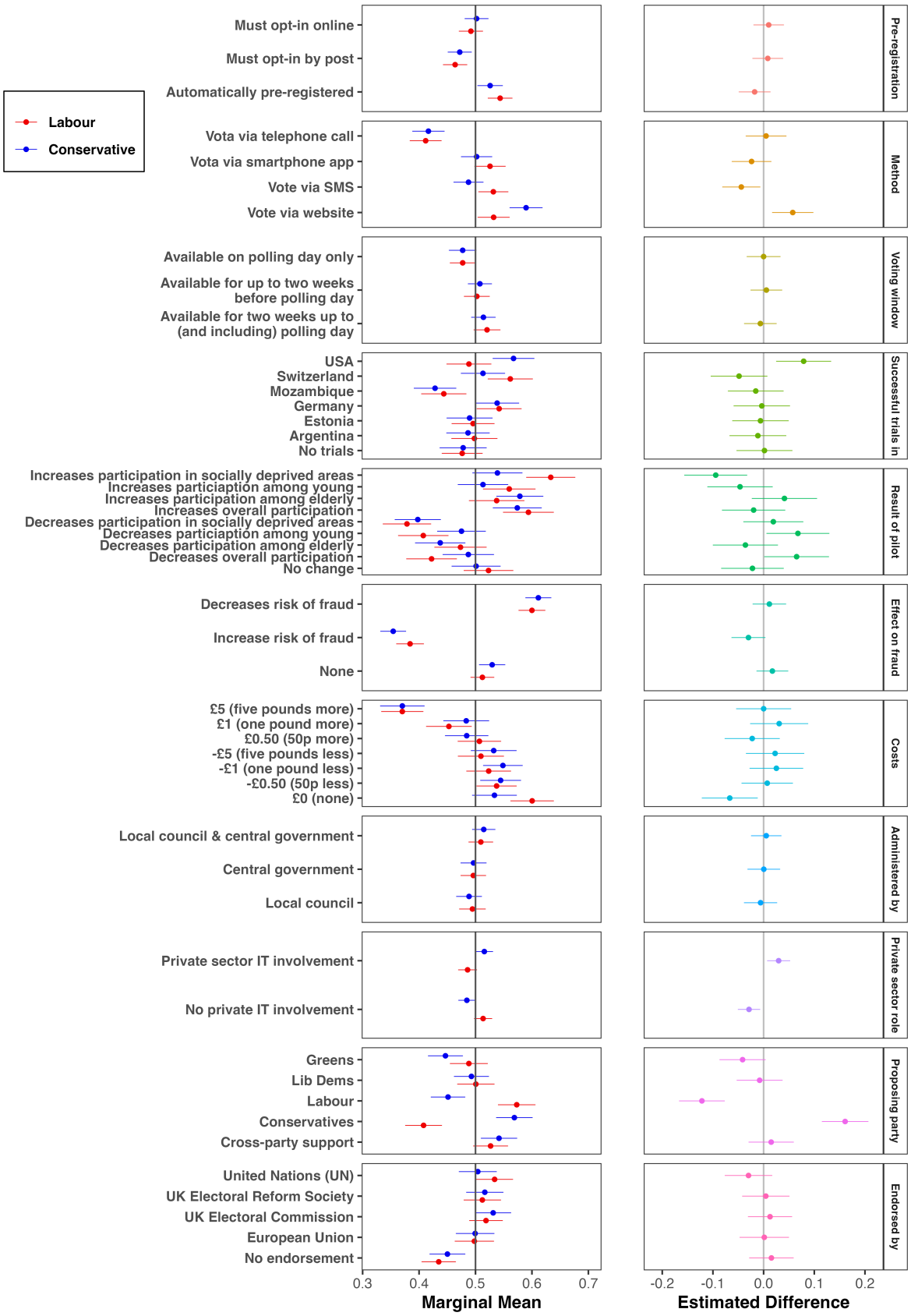

Figure A.9: Variation in support by (bi-) partisanship

E Experiment subgroup analysis : trustworthiness of reforms

Figure A.10 reports the marginal mean (left-hand panel) and the pairwise difference in the marginal mean (right-hand panel) in the perceived trustworthiness of the *i-voting* reform (compared to in-person voting) among respondents stratified by their level of self-reported satisfaction with their internet coverage.

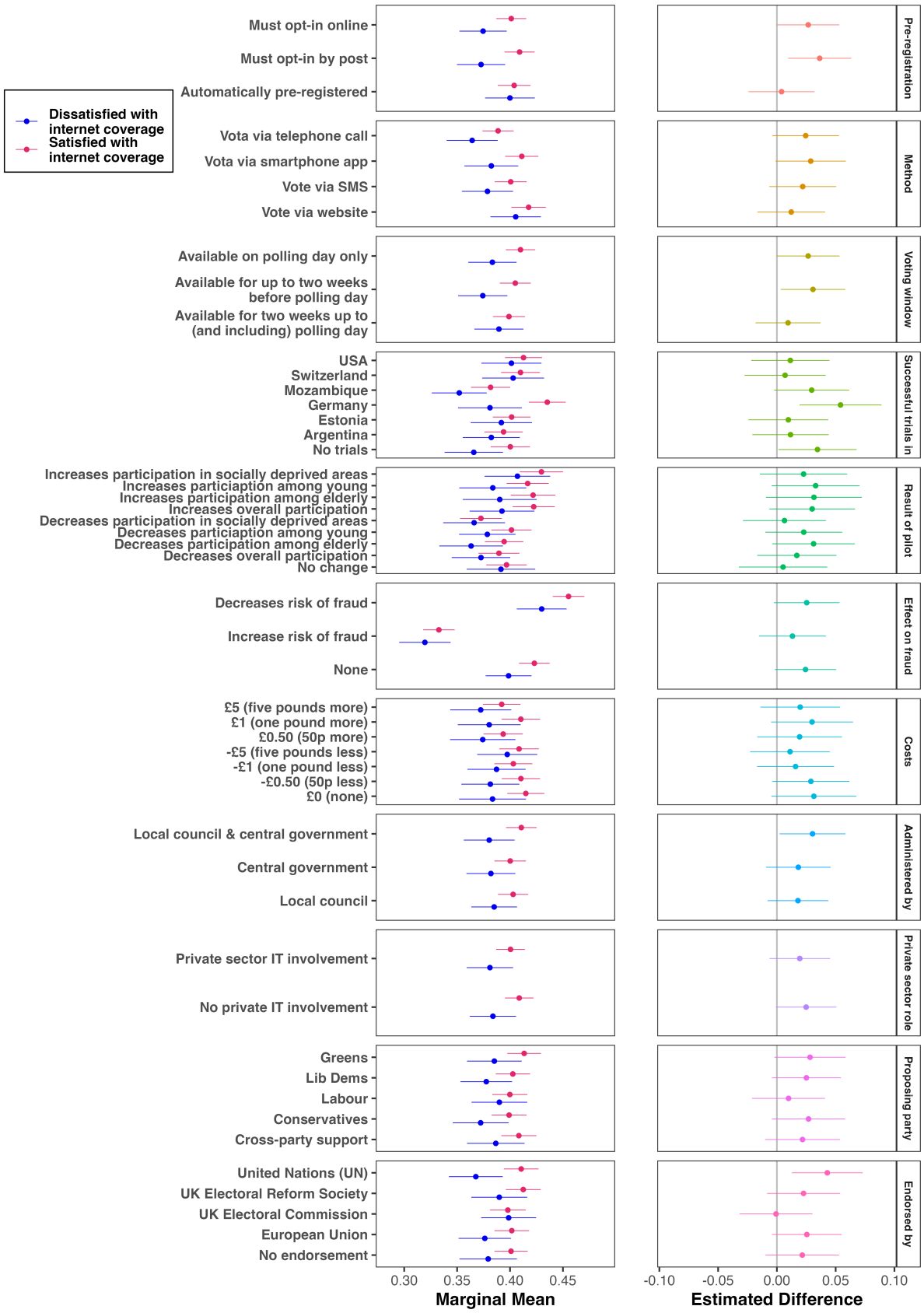

Figure A.10: Variation in trust by internet satisfaction

Figure A.11 reports the marginal mean (left-hand panel) and the pairwise difference in the marginal mean (right-hand panel) in the perceived trustworthiness of the *i-voting* reform (compared to in-person voting) among respondents stratified by their past experience with convenience voting.

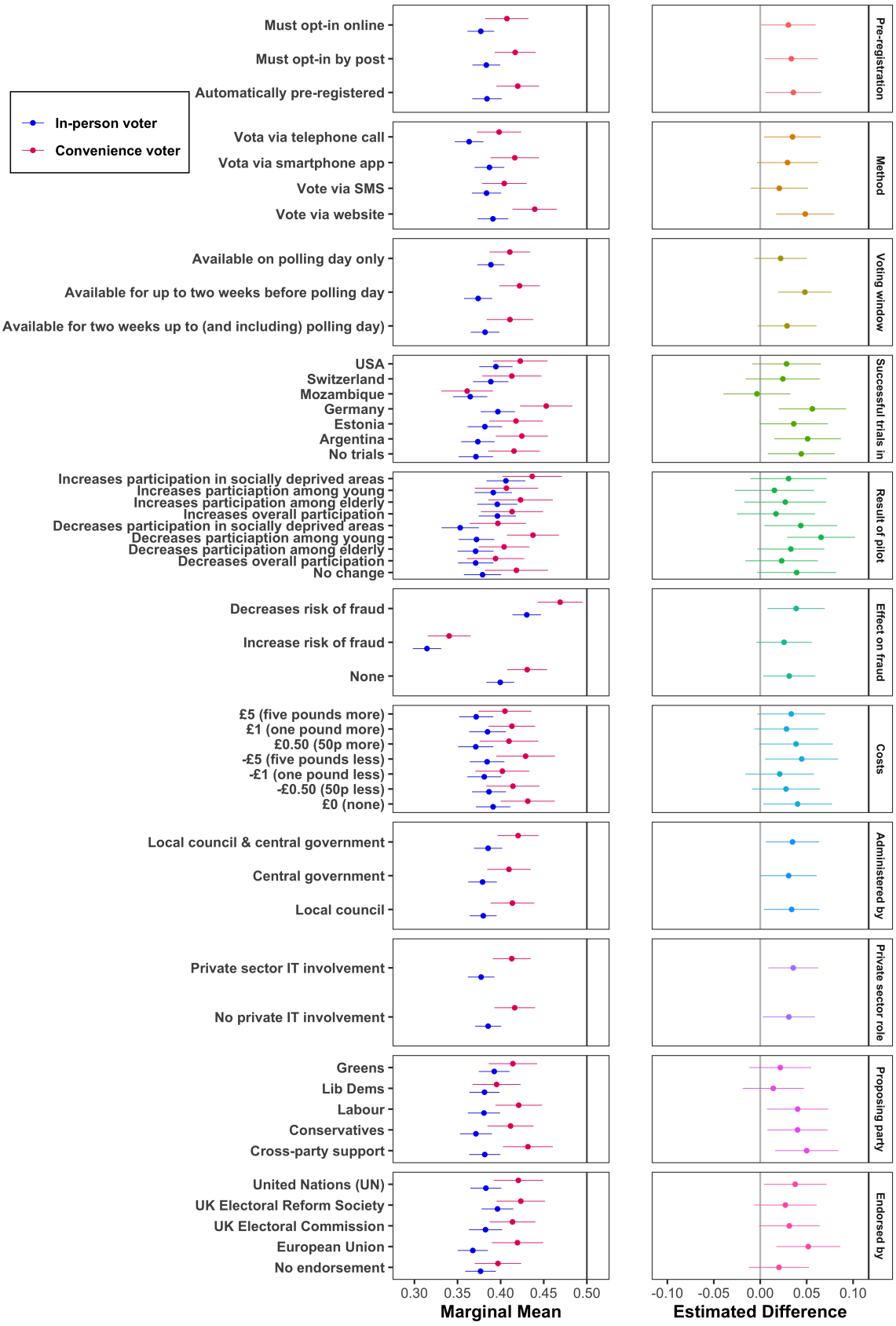

Figure A.11: Variation in trust by past voting experience

Figure A.12 reports the marginal mean (left-hand panel) and the pairwise difference in the marginal mean (right-hand panel) in support for *i-voting* reforms among respondents stratified by their support of the two dominant parties in the UK: the Conservatives and Labour

Figure A.12: Variation in trust by (bi-) partisanship

F Average marginal interaction effects

Figure A.13 visualises the significant interaction effects between different attribute combinations. The warmer red indicates a negative interaction effect, whilst the colder blue indicates a positive interaction effect.

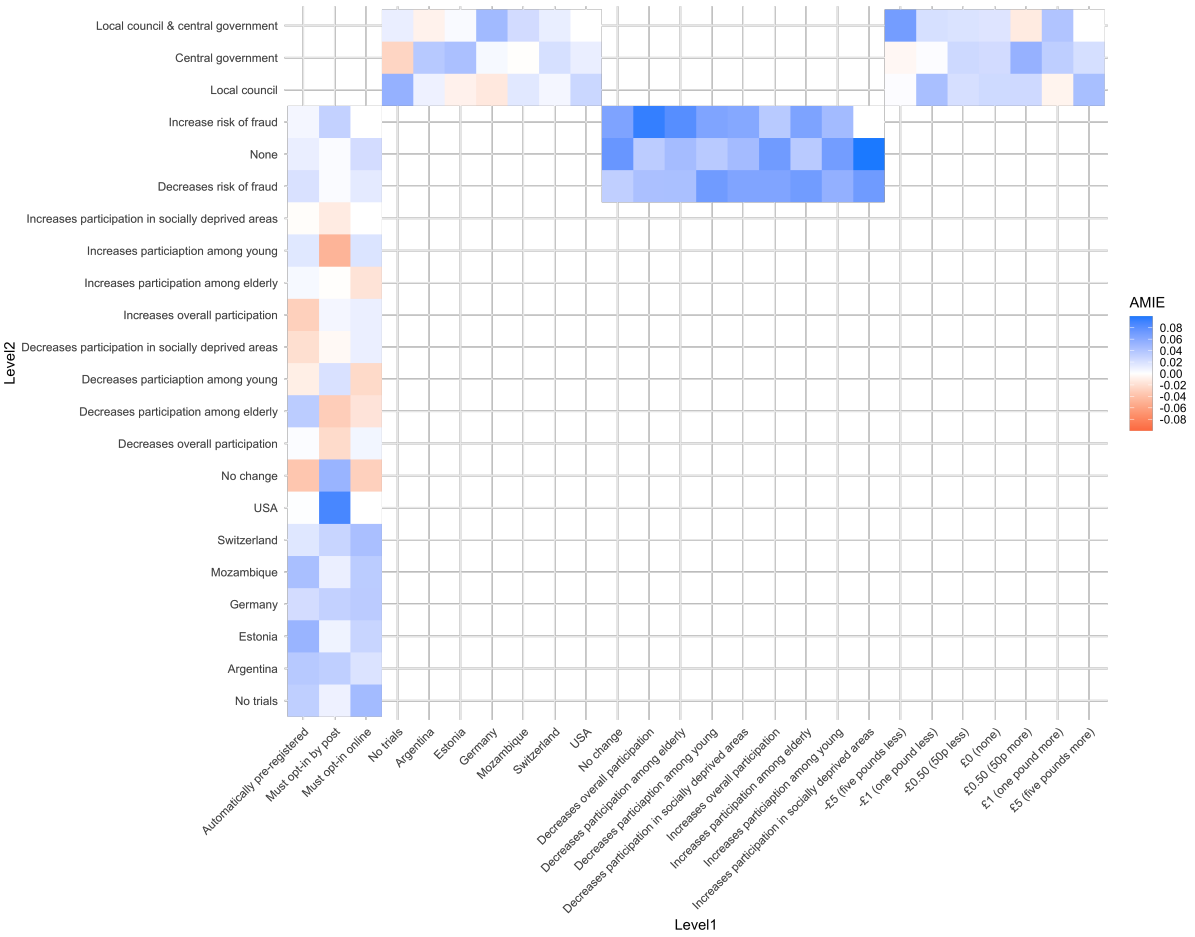

Figure A.13: Average Marginal Interaction Effects of the attributes