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# What drives fidelity to internet voting? Evidence from the roll-out of internet voting in Switzerland

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## ABSTRACT

To date, most of our knowledge regarding individuals' propensity to internet vote comes from cross-sectional survey data. In this paper we try to break new ground by tracking individuals' actual behaviour over time. Specifically, we analyze citizens' choice of voting channel by exploiting a unique longitudinal dataset – the Canton of Geneva's vote registry database. Our aim is to explore patterns in the propensity to use internet voting among eligible voters. To this end, we first mine the registry data to identify a subset of voters that have experimented with internet voting. In a second stage, we explore the effects of key socio-demographic variables on individual voters' fidelity to internet voting. Our results are counter-intuitive. While the conventional wisdom is that younger voters are most likely to be mobilised to use the internet voting channel, we show that this is not the case in one of the few political systems where internet voting is readily available. Indeed, our evidence suggests that it is the older voters rather than 'digital natives' (i.e., the younger voters) that are most likely to remain faithful to internet voting once they have experimented with it.

## 1. Introduction

In recent years the debate on internet voting – hereafter abbreviated to iVoting – has moved from more theoretical debates about the prospects or perils associated with iVoting to one that is informed by the availability of empirical data. Significant trials involving iVoting have been conducted in a number of countries across the globe: Estonia (Solvak & Vassil, 2016), Norway (Segaard, Christensen, Folkestad, & Saglie, 2014; Segaard & Saglie, 2012), Switzerland (Serdült, Germann, Mendez, Portenier, & Wellig, 2015), The Netherlands and the UK in Europe, Australia (Smith, 2016), and Canada and the US in North America (Hall, 2015). Not surprisingly, given the range of political systems this encompasses, the type of election that has been the object of iVoting trials has varied across cases. In many instances the trials have focused on parliamentary elections, in the US it was the Democratic primaries, while in Switzerland the attention has been mostly on referendum votes. It has been common to first conduct experiments with low salience elections, such as local elections, before 'upgrading' to higher salience national elections. The roll out of iVoting in Estonia neatly illustrates this dynamic (Alvarez, Hall, & Trechsel, 2009; Solvak & Vassil, 2016).

From a global perspective, the two countries with the richest experience in the use of iVoting to date are Estonia and Switzerland - both with over a decade of experimentation behind them (Hall, 2015).

Indeed, in the case of Estonia it makes little sense to talk of trials since iVoting has been fully generalised at the national level. This is still not the case in Switzerland. In terms of lesson drawing, the two cases provide very different insights. Although Estonia and Switzerland are both small in global population terms (1.3 and 8.3 million inhabitants respectively) they differ quite markedly in their territorial structure. Whereas Estonia is a centralized and unitary state, Switzerland is one of the most decentralized federal systems in the world. This affects the implementation of iVoting, which is a largely bottom-up process in Switzerland driven by pioneer sub-national units compared to the top-down approach in Estonia (Mendez, 2010). This in turn has affected the roll out of iVoting, a piecemeal approach with competing systems among the sub-national units in Switzerland versus a unified and swiftly generalised national solution in Estonia (Mendez & Serdült, 2014). Lastly there is the object of the iVoting solution, in Estonia it is mostly geared towards elections while in Switzerland iVoting is mostly about referendums. This last point is important given the central role played by instruments of direct democracy, such as the referendum and the initiative, in the Swiss political system. In fact, in federalist Switzerland it is the cantons that are in charge of implementing referendum votes and elections, not only the sub-national ones but the national ones too. Another critical feature is the fact that remote forms of voting via mail are already generalized in the Swiss case. The iVoting procedure is therefore an additional channel of voting to pre-existing remote

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**Table 1**  
Summary of main empirical studies dealing with the determinants iVoting

Author(s)	Case <sup>1</sup>	Year(s)	Publication <sup>2</sup>	Data Source <sup>3</sup>	N iVoters	Sample	D.V. <sup>4</sup>
Christin and Trechsel, 2004	CH: Geneva	2004	Report	OS	1132	iVoters	NA
Christin and Trechsel, 2005	CH: Geneva	2004	WP	S	123	Electorate	iVoting vs. Postal/Ballot
Serdült and Trechsel, 2006	CH: Zurich	2005	Report	S	74	Electorate	iVoting vs. Postal/Ballot
Serdült, 2010	CH: Geneva	2009	Proceedings	OS	2467	Expat	NA
				VR	4819	Expat population	iVoting vs. Postal/Ballot
Sciarini, Cappelletti, Goldberg, Nai, and Tawfik, 2013	CH: Geneva	2011	Report	S	207	Electorate	iVoting vs. Postal/Ballot
				OS	4908	iVoters	NA
				VRP	13310	Population	iVoting vs Postal ballot
Germann, Conradin, Wellig, and Serdült, 2014	CH: AG/BS/GR/SG	2011	Proceedings	S	110	Expat	iVoting vs Postal
Goodman, 2014	Canada:Markham	2003	Chapter	OS	3655	Electorate	NA
Breuer and Trechsel, 2006	Estonia	2005	Report	S	315	Electorate	iVoting vs Ballot
Trechsel, Schwerdt, Breuer, Alvarez, and Hall, 2007	Estonia	2007	Report	S	367	Electorate	iVoting vs Ballot
Alvarez et al., 2009	Estonia	2005/ 2007	Journal	S	682	Electorate	iVoting vs Ballot
				VR	30275	Population	Descriptives
Bochsler, 2010	Estonia	2007	WP	S	367	Electorate	iVoting vs Ballot
R. M.Alvarez and Nagler, 2001	US: Primaries AZ	2000	WP	VR	35768	Democrats	iVoting vs. Postal/Ballot
Solop, 2001	US: Primaries AZ	2000	Journal	S	318	Democrats	iVoting vs. Postal/Ballot
Prevost and Schaffner, 2008	US: Primaries MI	2004	Journal	VR	4972	Democrats	iVoting vs. Postal/Ballot
Bergh and Christensen, 2012	Norway: Local	2011	Chapter	S	1037	Electorate	iVoting vs non-Voters
				VR	27738	Population	iVoting vs Ballot
Henry, 2003	UK: Local	2002	Proceedings	OS	3310	Electorate	NA

Note: The compilation of empirical studies draws on the meta-analysis in Serdült, Germann, Harris, Mendez, and Portenier (2015).

<sup>1</sup> CH is an abbreviation for Switzerland.

<sup>2</sup> In the publications column WP refers to a Working Paper while Journal refers to a peer reviewed journal article.

<sup>3</sup> The abbreviations for the data source column are: S = Survey (in most cases a traditional telephone survey based on random sampling); OS = Online survey (iVoters that have been invited to fill in questionnaire after iVoting); VR = Vote registry data; VRP = Vote Registry Panel data (this only applies to longitudinal data where the same individuals are tracked).

<sup>4</sup> D.V. refers to the dependent variable of the study. Note, NA (not applicable) is used mostly for online surveys of iVoters. Typically such studies present descriptives of socio-demographic profiles rather than engage in statistical modeling exercises.

voting forms by mail.

In view of its federalised context, vibrant tradition of direct democracy and institutionalised forms of remote voting by mail, the potential for lesson drawing from the Swiss case will be especially pertinent for some of the classic federations. Possessing a somewhat atypical political system for a European country, Switzerland is often compared in the literature with the subnational units in the US with a tradition of direct democracy, such as California and Oregon, that have institutionalised the referendum and initiative procedures (Qvortrup, 2014). Indeed, as in Switzerland, these two US states have also more or less generalised voting by mail (in the case of Oregon it is the only form of voting) (on mail voting in the US see Gerber, Huber, and Hill (2013)). The broader research question that therefore animates this paper is what happens when iVoting is introduced in such a federalised context and one where remote forms of voting are already well established. The focus is on individual voters that have experimented with iVoting. The specific research question is to what extent do voters remain loyal to the iVoting channel after having used it? Furthermore, which type of voter is more likely to remain faithful to iVoting and which type more likely to 'switch' among available voting channels.

Answering these research questions has some important policy implications that may be generalisable beyond the Swiss case. To tackle these questions we exploit a unique data source – the Canton of Geneva's vote registry database – which we use to track citizens' actual behaviour in terms of selecting among different available voting channels over time. The article proceeds as follows. We first review in Section 2 the literature on what we know about the profile of iVoters and derive four hypotheses to structure our investigation. Section 3 describes the dataset, our case selection and the methods used. Section 4 then presents the results of the empirical analysis while the concluding section discusses the implications of our work, as well as its limitations, and future research directions.

## 2. Theory and hypotheses

We begin by reviewing the literature on what we know about iVoting and iVoters. We draw a distinction between empirical studies that focus on 'intent' to iVote, which are usually based on the hypothetical scenario of whether a prospective voter would use iVoting if given the opportunity (e.g. Choi & Kim, 2012; ChristianSchaupp & Carter, 2005; Powell, Williams, Bock, Doellman, & Allen, 2012), on the one hand, and empirical studies that are based on actual trials of iVoting on the other. It is the latter literature which constitutes our main point of theoretical departure (Table 1 provides an overview). Usually this literature covers cases where repeated iVoting trials have been conducted, even if iVoting has subsequently been abandoned as in Norway or the UK. We first review what we know about the profile of iVoters, with greater attention to those cases where iVoting is becoming a more generalised feature of the electoral landscape (as listed in Table 1).

We begin by noting the columns in Table 1, which provides a meta-analysis of the empirical literature on iVoting.<sup>1</sup> Note that our focus is on country cases where significant trials of iVoting have taken place. There are six country cases that have generated some of the most important empirical studies on iVoting. Interestingly, not all countries have continued with their initial iVoting experimentation, as is the case for Norway and the UK. The type of election varies too. In many cases, experimentation has taken place at the local level, at least initially. Estonia is the only case that has generalized iVoting for what is usually considered first-order elections, i.e., general elections. The US cases all stem from two experiments with iVoting for Democratic primaries in 2000 and 2004. While for Switzerland the examples are all related to referendum votes. The 'year' column covers the year of the trials that were studied. In most cases, the empirical studies are one-shot analyses dealing with a single trial although there are some that offer a longitudinal perspective. However, hardly any of these longitudinal studies

<sup>1</sup> This draws on the extended meta-analysis provided in Serdült et al. (2015).

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