



It's a Group Thing: How Voters go to the Polls Together

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Abstract

Across European Parliament, local and general elections in Denmark between half and three quarters of voters in households with multiple voters cast their vote within a minute of another household member. This finding, revealed using data from a time-stamped voter panel covering more than two million Danish voters, establishes that many families visit the polling station together. The result are replicated using survey data from Denmark, the UK and a range of other countries, indicating that voting together is a widespread phenomenon, supporting the characterization of voting as a social act. For the first time our analysis reveals that acquiring a potential voting partner increases turnout, whilst losing one decreases turnout.

Keywords Turnout · Social norms · Political participation · UK · Denmark

Introduction

Do people who live together vote together, and does that matter for turnout? One of the most persistent suggestions in the literature on electoral behavior in general, and voter turnout in particular, is that people are both similar to and influenced by their social intimates. As William Glaser (1959) and others concluded more than half a century ago, the turnout behavior of married couples is strikingly similar (see also, for instance Anderson 1943). Later studies have confirmed this pattern, often with a focus on households or married couples converging in turnout behavior (Wolfinger and Rosenstone 1980; Stoker

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and Jennings 1995). This suggests that household context is crucial in understanding individual turnout behavior (Cutts and Fieldhouse 2009; Bhatti et al. 2018). Whilst considerable research has pointed to the role of information and discussion (Huckfeldt and Sprague 1995), social norms (Knack 1992), and inter-personal mobilization (Rosenstone and Hansen 1993), a potentially important but rather less-explored explanation for this pattern is that citizens accompany each other to the polling stations.

Many established democracies have witnessed decreasing rates in turnout over the last few decades (Franklin 2004; International IDEA 2015; Vowles 2018). At the same time household structures have changed dramatically as families become simultaneously more complex and individualized. There are more single households than ever before, increasing divorce rates, fewer marriages, more non-marital childbearing, and more cohabitation outside marriage; the family has become a much less stable and more complex unit (Carlson and Meyer 2014; Tach 2015). This makes it more important than ever to study the extent to which individuals that live together vote together, and whether changes in family structure thus have consequences for turnout.

In this paper we provide the first objective analysis (i.e. not-self-reported data) of whether household members actually vote together. We examine how many voters vote with someone else in their own household, and who votes together and alone. While there has been much speculation about this, the empirical evidence is still scarce and has mainly been based on a small number of surveys (Fieldhouse and Cutts 2012). We also show that some types of individuals are more likely to vote with others than the population at large.

Second, we present evidence that addresses the question of the causal effect of voting together on turnout. Recently increasing attention has been given to the household as the most important unit for influencing the decision to turnout (e.g. Cutts and Fieldhouse 2009). While it now seems likely that household processes play a causally significant role in voting, it is less clear exactly what those processes are. One promising explanation could be that individuals affect each other because they are directly confronted with each other's decision to vote on Election Day and accompany each other to the polls. This has been referred to as the *companion effect* (Fieldhouse and Cutts 2012). Because voting together necessitates turning out to vote, it is very difficult to demonstrate whether the availability of a companion increases the probability of voting. Even large panel studies (e.g. the British Election Study) lack sufficient data on changes in availability of companions to assess the causal effect. While we do not claim to overcome all identification issues, in this study we exploit a unique administrative data set linking individual voters across three elections to provide new evidence of a companion effect.

We apply our analyses across three types of elections: a municipal election, a European parliament election and a general election in Denmark using a large, unique administrative dataset with the exact timing of the vote for more than two million individuals in the three elections merged with precise residential information. Additionally, in order to assess the external validity of our analyses we draw upon similar survey items in the British and Danish Election Studies to understand to what extent the level of voting together differs between the UK and Denmark, two very different cultural and electoral contexts.

In the following section we briefly summarize the theoretical rationale for and empirical evidence of voting together from the literature, and set out two hypotheses.

The analysis is divided into three parts. In the first we examine the extent to which citizens vote together and thereafter we describe which types of individuals are more likely to vote in company. In the last part of the paper we present evidence for the causal influence of voting together.

Theory, Evidence and Hypotheses

At least since Anderson (1943) it been recognized in the turnout literature that people vote together with the people they live with. This idea was originally based on observations and survey research that show that married couples vote more often than unmarried individuals (Wolfinger and Rosenstone 1980; Stoker and Jennings 1995, 2005). Research also shows that the intra-household turnout correlation is very high and increasing attention has been given to the household as the most important unit for influencing the decision to turnout (Cutts and Fieldhouse 2009; Bhatti et al. 2018). Individuals sharing residency are remarkably congruent in their voting behaviors and when one individual in a household is mobilized to vote, between 30 and 60% of the mobilization effect spills-over to other household members (Nickerson 2008; Sinclair et al. 2012; Bhatti et al. 2017). Fieldhouse and Cutts (2012) have coined the phrase the *companion effect* which points to the likely importance of voting in tandem. While all these studies suggest some kind of effect of household members on each other with respect to turnout, the correspondence in turnout has been mainly based on correlations in turnout at the household level rather than in systematic evidence of whether people actually vote at the same time. More recently, in order to address this, questions measuring voting together have been fielded in a number of election studies around the world. However, while these data (reported below) provide some descriptive evidence supporting the companion effect hypothesis that voting is a social act and not something that is carried out in isolation, these findings would be strengthened if corroborated with objective data. In addition, more evidence is required to establish causality. It remains to be demonstrated that the initial findings hold with objective data and that voting together has some causal influence on the decision to vote, for example by reducing the cost of voting (Nickerson 2008). Ultimately, if the decision to vote is a collective or joint decision rather than an individual one, then voting might be considered a collective act.

Before setting out our hypotheses regarding the impact of voting together, we briefly lay out our expectations concerning the number and type of people who vote together. The few existing surveys of voting together suggest that it is a widespread phenomenon and we expect our objective data to confirm this. We also might expect that the incidental benefits gained from voting together—for example the pleasure of taking a walk to the polling station together—are largely opportunistic and are therefore likely to be more important for married couples or electors living in larger households. As household size increases, the number of potential voting partners increases as well. This is important both in terms of the number of other voters who may invoke social norms of voting and the extent to which citizens confront the decision of other household members about whether to vote or stay home. Because social intimacy and the influence of the household might be expected to increase with marriage so should the relevance of voting with someone else.

The descriptive question of how many and who vote together is a necessary first step in the establishing the importance of the phenomenon, but it does not directly answer the bigger question of whether voting together increases turnout. There are good theoretical reasons to think this might be the case, not least because voting is a social act (Franklin 2004; Fieldhouse and Cutts 2016; Bhatti and Hansen 2012). The dual process model of behavior suggests two main sources of inter-personal influence: norms and information (Hogg and Vaughan 1995). First, individuals within a given household may influence each other because they are directly confronted with each other's decision to vote on Election Day. The social norm of voting likely plays an important role here. Social pressure from peers has been shown to have an important exogenous influence on voter turnout (Green and Gerber 2010) and may lead to the internalization of the norm of voting which can be manifested as civic duty (Coleman 1990). Moreover, if the norms of social intimates are particularly persuasive, social intimacy in families is likely to mean that household correlations in turnout result from the level of civic duty within the household (Fieldhouse and Cutts 2016). Second, because of higher rates of discussion within families than other social relationships (Huckfeldt and Sprague 1995; Zuckerman et al. 2007), household members are likely to influence each other's electoral participation by exchanging information, for example about the election, candidates or even how to vote (e.g. removing some of the anxiety of voting for the first time). In addition to informational and normative influence, we propose a third type of mechanism, the companion effect: by attending the polling station together, voters may reduce the cost of going to the polling station to cast the vote and increase the peripheral benefits such as enjoying the social aspect of the experience (Fieldhouse and Cutts 2016).

As discussed above, while (given the right data) it is possible to establish whether individuals vote together, it is more challenging to empirically verify that this has an *effect* on turnout, because voting together necessitates voting. However, what we can test is whether getting a *potential* voting partner is consequential for turnout. This leads us to the first hypothesis:

H1 *Acquiring a potential voting companion leads to increased turnout probability.*

Just like acquiring a potential voting partner changes the availability of a potential companion, so does losing one. For example, Hobbs et al. (2014) show how widowhood results in a long term drop in turnout. When examining loss of a partner we can even be more precise because we can empirically distinguish between actual voting partners (i.e. household members who voted together in the last election) and potential but not actual voting partners (i.e. household members who did not vote together in the last elections). If voting together matters, we could expect losing a voting partner would have greater adverse effects on voting than losing a household member in general. We therefore hypothesize:

H2 *Losing a voting companion leads to a greater fall in turnout probability than losing a non-companion.*¹

Electoral Context

This article draws on data from three recent Danish Elections. The choice of case is driven by the availability of unique data (described below). Our data are collected across three types of elections: municipal, European parliament and general elections. The three types of election provide variation in the prevailing level of turnout across which we can measure the companion effect. No voter registration is needed in Danish elections. Eligible individuals automatically get registered on the voter list of his/her local polling station and polling cards are mailed to the individual's official address before Election Day. Elections are non-compulsory.

The 2013 municipal elections² took place simultaneously in all of the 98 Danish municipalities on November 19, 2013. More than 30% of the Danish GDP is administered at the local level (municipalities and regions) and municipalities take care of most of the core functions in the welfare state such as child care, schools, elderly care, the social area, libraries and some parts of the health sector. At municipal elections each municipality is a constituency where between nine and 55 mandates are distributed proportionally among multiple parties. The municipal councils are elected for a fixed 4 year period. In 2013 turnout was 71.9% which was slightly above the historical average of about 70%.

The 2014 European parliament elections took place on May 25, 2014.³ In the elections the entire country is a single constituency and the 13 Danish parliamentarians are elected for a 5 year period on open party lists using proportional representation. In the 2014 election turnout was 56.3%.

The 2015 national parliament election was held on 18 June 2015. Denmark has a parliamentary political system where elections to the national parliament are the most salient (only matched occasionally with referendums regarding EU membership). The 179 parliamentarians (of which four are elected directly in the Faroe Islands and Greenland) are elected for 4 years or until the prime minister calls for an election. The election system ensures national proportional representation though the representatives of the parties are elected in ten grand districts. Turnout in the 2015 was 85.9% and this close to the historical average.

¹ Non-companion refers to people who live with but did not vote at the same time as the subject. Thus a non-companion may be either a voter or a non-voter.

² Municipal elections are held simultaneous with the regional elections. However, the municipal elections get the vast majority of the attention.

³ The election was held simultaneous with the Danish Unified Patent Court membership referendum.

Data: Time Stamped and Validated Voter Files Across Three Elections

In this paper we exploit a unique feature of Danish digital voter lists: time stamps which provide us objective information about the exact timing of individuals' arrival at the polling desk to obtain their ballot. After the 2013 municipal election, the 2014 European election and the 2015 national election we collected data on actual turnout from the municipalities who administered the elections. The municipalities use two types of systems for recording whether an individual voted: manual lists or digital lists. In the polling stations with digital lists individuals are registered digitally when they arrive at the polling station to obtain their ballot (which is always a paper ballot) utilizing a barcode on the polling card. One crucial detail is that when the barcode is scanned, the voter is not only digitally marked on the voter list; the time of the scan is also registered. This information can be used to investigate whether individuals vote together as the time data can anonymously be linked to residential information and family information etc. in Statistics Denmark (Bhatti and Hansen 2010; Bhatti et al. 2014a, b; 2016).

As we are interested in whether people vote together we focus only on polling stations with digital lists. The digital lists were administered by the municipalities and there is therefore no individual level self-selection into the study, limiting the risks of response bias. Furthermore, as registration is automatic in Denmark the voter lists include all eligible individuals no matter their potential interest in voting as they did not have to take active steps to become registered. If a municipality participated we had access to information about turnout and the timing of the vote in minutes for all eligible individuals at the relevant polling stations. Crucially, after the election, we could match this information in anonymous form to detailed socio-demographical information from the official statistics bureau, Statistics Denmark. We obtained an address identifier allowing us to identify which individuals share a household. We had access to vote and address information for approximately 2.4 million individuals for the 2013 municipal elections, 2.3 million individuals for the 2014 European parliament elections, and around 2.5 million individuals for the 2015 General Election. The slight variation in sample size for each election is due to the differences in eligibility rules (the total number of eligible voters was between 4.14 and 4.42 million in the elections), and small variations in the participating municipalities, which arise mainly because more voter files become digital over time.

When utilizing the register data we focus exclusively on voting together with other eligible household members because this can be objectively identified by address of residence. As noted above, the household is theoretically the most interesting unit with respect to joint voting, having been identified as the most influential context for political socialization (Berelson et al. 1954; Glaser 1959; Zuckerman et al. 2007) and empirically the most important context for inter-personal influence on turnout (Nickerson 2008; Cutts and Fieldhouse 2009; Sinclair et al. 2012; Bhatti et al. 2017). It is also worth noting that the polling card has the address of the assigned the polling station and that assignment to polling stations are based on residential address such that household members are always assigned to the same polling station. These unique data allow us to examine the phenomena of voting together. Furthermore, the sample sizes and the fact that the electoral data can be linked to administrative data allows us to gain further leverage on the question regarding causal significance of voting together on turnout.

The unit of analysis in all analyses in this study is the individual voter. However, in order to calculate whether each individual voted with others, we used the individual address identifier in the register data to create all possible intra-household dyads. For each dyad, as an indicator of voting together, we identified whether the two individuals obtained the ballot at the voting station within one minute of each other.⁴ After dyads voting together were identified, we then deduced whether each individual was part of at least one dyad voting together. If so, they were classified as having voted with someone else from their household. If not, the person was considered as voting alone.⁵ Thus, in the analyses we have one record per elector and the main variable of interest concerns whether she voted with others in her household. We supplement the register data with surveys from two Danish election studies and the British Election Study which are based on subjective re-collections of the voting act but are able to capture voting together between non-cohabiting individuals.

Results

How Many People Vote Together?

Before testing our hypotheses, we examine the extent to which individuals vote together with their household members in Denmark (see Table 1) and in comparison with other countries where survey data are available (Table 2). The data in Table 1 uses the Danish register data which contain the timing of the vote from time stamps on the voter list. The individuals in the samples are divided depending on whether they did not vote, voted by post (in Denmark postal voting is a form of early voting usually cast at the city hall or citizen service centers), voted at the polling station alone or voted at the polling station with another household member.

Between 29 and 35% of all eligible individuals voted at the polling station on Election Day with someone from their household in each of the three elections. If we look only at voters, 41–51% voted within a minute of someone else in their household. This is, to our knowledge, the first evidence on the level of voting together from large-scale administrative data and it shows that voting together is a very common phenomenon. The 41–51% share of voters voting with others is remarkable when taking into account that some voters live alone and therefore by definition cannot vote with others in their household, while others vote by post and therefore cannot vote together on Election Day. If we restrict the sample to only individuals living in 2+ sized

⁴ I.e. we allow for 1 min divergence. Sometimes people voting together get into two different lines at the polling stations and get their ballot at slightly different times. One minute is still a sufficient small time interval to minimize the effect of randomly voting at the same time.

⁵ It is possible that those classed as 'voting alone' could have voted with someone not on the register or from outside the household (e.g. a friend or a child). Our survey data indicates that about 10% of Danes report going to the polling station only with someone from outside the household. Similarly analysis of network survey data from the British Election Study Internet Panel (wave 2) suggests that voting with a non-household member occurred in only 6% of all instances of voting together among respondents who named at least one political discussant and who voted in company.

Table 1 Voting mode for individuals in three Danish elections (percent)

	2014 European parliament election	2013 Municipal election	2015 General election
Non-voters	43.5	28.9	14.4
Voted by post	3.7	4.2	8.0
Voted at the polling station alone (i.e. not with a HH member)	23.8	34.5	42.4
Voted at the polling station with another HH member	29.1	32.5	35.2
Voting together as pct. of all voters	51.4	45.7	41.1
Voting together as pct. of all voters (2+ HHs)	68.8	59.6	56.2
Voting together as pct. of all polling station voters	55.0	48.5	45.4
N	2,335,013	2,387,939	2,497,217
Actual general turnout in the election (official statistics)	56.3	71.9	85.9

The number of early voters was 4.5, 5.3, and 8.7% respectively in the three elections. These voters are registered as a separate category in the analysis. Usually early votes are casted at the city hall or citizen service centers

households, the share of voters voting with others increase to 56% (2015 general election), 60% (2013 municipal elections) and 69% (2014 European Parliament election).

Looking across the three types of elections suggests that, despite large variations in salience between the three elections, differences are relatively modest. However, one interesting pattern appears: while the absolute percentage of individuals voting together is higher when turnout is high (29, 33 and 35% across the three elections ordered by overall turnout), the relative proportion voting together is higher in low salience elections (51, 46 and 41% respectively). This indicates that individuals voting together may be more resilient to factors that reduce turnout, perhaps because voting together decreases the costs and increase the peripheral benefits of voting. Together, these findings provide *prima facie* evidence of the companion effect.

It is relevant to ask if the findings from Denmark also hold elsewhere. In order to do so we have fielded identical survey items in the Danish Election Study and the British Election Study across different types of elections in the two countries, aiming to estimate the level of voting together in Denmark and the UK.⁶ We also utilize

⁶ The UK surveys are the British Election Study from the 2014 European election and the 2015 general election (Fieldhouse and Cutts 2016). The Danish survey data stems from the Municipality Election Study (Kjær 2017) and from the Danish National Election Study (Hansen and Stubager 2016) for the 2013 municipals elections and the 2015 national parliament elections. The municipal election study was conducted as a combination of web and phone interviews and had a total response rate of 44.6% yielding 4,528 respondents. The national parliament election study was carried out as a combination of web interviews and personal interviews and with 2,001 respondents it obtained a response rate of 48.8%. To inquire into whether respondents voted with others we in both surveys asked respondents “Thinking back to Election Day, which of the following best describes how you cast your ballot”. The categories in the municipal survey were “I visited the pooling station on my own”, “I visited the polling station with another person who did NOT vote”, “I visited the polling station with another person who voted”, “I do not want to answer”. In the national survey the categories were similar—however, “alone” was used

Table 2 Voting mode for individuals in nine elections from the UK, Denmark, Scotland, Canada, Italy and Wales (survey data, percent, excluding non-voters)

	Post	Alone at polling station	With others	With others as pct. of polling station voters
UK 2014 EP election	33	38	29	43
UK 2015 general election	29	40	31	43
DK 2013 municipal election	–	42	58	58
DK 2015 general election	–	41	59	59
Scotland 2011	19	47	34	42
Canada 2011	18	42	41	50
Italy 2011 (Referendum)	–	41	59	59
Wales 2011 (Referendum)	28	38	34	47
Wales 2011 (assembly)	27	39	35	48

Weights are applied in the Danish and UK surveys

previously reported findings from Italy, Canada, Scotland and Wales (Fieldhouse and Cutts 2012).⁷ Table 2 replicates the findings for voting together from Table 1 based on election studies from the six different locations. As the percent voting together of all electors is likely to be inflated by the fact that there is substantially under-reporting of non-voting in the surveys, we focus on the distribution of voting modes among voters.

Overall across all these countries between roughly one-third and two-thirds of those reporting having voted indicated that they voted together with someone at the polling station. There is some variation across countries with Denmark having twice the proportion of voters voting together compared to the UK (slightly less than 60% compared to 31%). A large part of this difference seems to be driven by the use of postal voting in the UK (postal voting is rare—approximately 5%—in Denmark and was therefore not given as a response option in the surveys). About 43% of British voters voting at a polling station voted with another person compared to approximately 58% in the Danish surveys. The difference between Britain and Denmark highlights a potentially negative aspect of postal voting. Postal voting may diminish some of the social aspects of voting by making voting a more individualized activity which could be more vulnerable to decline (Burden et al. 2014). Figures for Scotland, Canada and Wales resemble the UK while the numbers for Italy are close to the Danish ones. The findings show that across different countries and across different types of elections, voting together is a widespread phenomenon and is not specific to a single country or type of election.

The percentage of polling station voters who vote with others in Denmark is about 58% in the survey data compared to 45–49% in the register data from the same elections. The difference is most likely to be due to the fact that the register data

Footnote 6 (continued)

instead of the word “on my own” and we used “person or persons” instead of “person”. In the national election surveys individuals were given the option of providing multiple answers. However, only 31 individuals did this. In the analysis we only utilize their primary answer.

⁷ The data is from the Italian Election Study (2011), the Canadian CCAP Study (2011), the Scottish Social Attitudes Survey (2011) and the Welsh Election Study (2011 Referendum and Assembly Studies).

only identifies individuals voting together who share a household. Slightly more than 10% of those voting together in the survey data report voting only with someone outside the household. Furthermore, we cannot dismiss the possibility of over-reporting of voting together in the survey data. However, overall the survey data and register data is quite consistent.

Who Votes with Others?

Having established that voting together is a frequently occurring and general phenomenon we dig deeper into what types of individuals are most likely to vote with others. We expect that voting together is largely driven by opportunity, i.e. household size (no. of eligible individuals in the household) and marriage. To confirm this, for each election we calculate the share of each mode of voting (not voting, postal voting, voting alone and voting together), by the variables of interest. Figure 1 shows the rates of voting together by household size for each of the three Danish elections.

For all elections household size is strongly related to voting together. This is not surprising insofar as voting together (by definition) can only occur when the household size is greater than one. Looking at multi-person households, the descriptive relationship between size and voting together is modest. In absolute terms the share voting together declines slightly with household size in all elections—for instance, in the 2013 municipal elections 46% voted with others in two elector households while the corresponding number was 32% in large households (more than four electors). However, this is mainly because there are more non-voters in large households. When disregarding non-voters, the relative share of lone voters and individuals voting together is virtually constant across household size—for instance, in the 2013 municipal elections, the ratio of individuals voting together and voting alone is approximately 1.7:1 for household sizes of both two and greater-than-four. A possible explanation of the similar patterns in household sizes greater than two is that the opportunities of voting together in larger households may be offset by weaker ties among household members. Figure 2 shows an equivalent chart for marital status.

The charts confirm that married couples vote together more frequently than the rest of the population. The percentage of non-married individuals voting together is 15–22% across the elections while the corresponding numbers for married individuals is 45–51%.

To provide more insight into the differences between groups when controlling for a range of demographic predictors of turnout, we estimate multinomial logistic regression models for each election. The dependent variable is voting mode (voting alone, not voting, postal voting and voting together). The reference category is voting alone. We include a range of usual suspects as controls: age, age squared, age-cubed,⁸ gender, educational level (5 categories), income, children in the household, residential stability and ethnicity (3 categories). We restrict the models to include household sizes greater than one since single-individual households by definition

⁸ We use age, age squared and age-cubed based on the recent insight that the descriptive relationship between age and turnout may be negative until the early twenties, positive from the early 20's to middle age and then negative in old age (Bhatti et al. 2012).

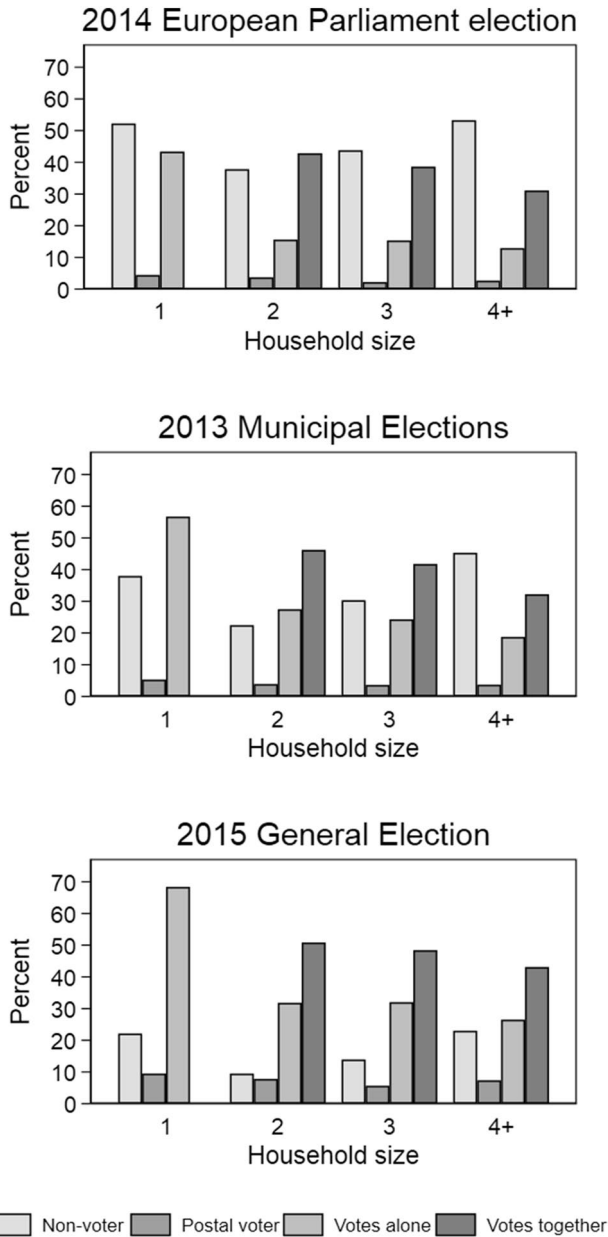


Fig. 1 Distribution of voting mode among individuals for each household size in three Danish elections. *Note* The number of observations for the three elections are 2,335,013, 2,387,939 and 2,497,217

cannot vote together. In Fig. 3 we show the predicted probabilities (averaged over observed values) for voting together compared to the corresponding probabilities for voting alone. Note that confidence intervals are plotted but are not visible due to the

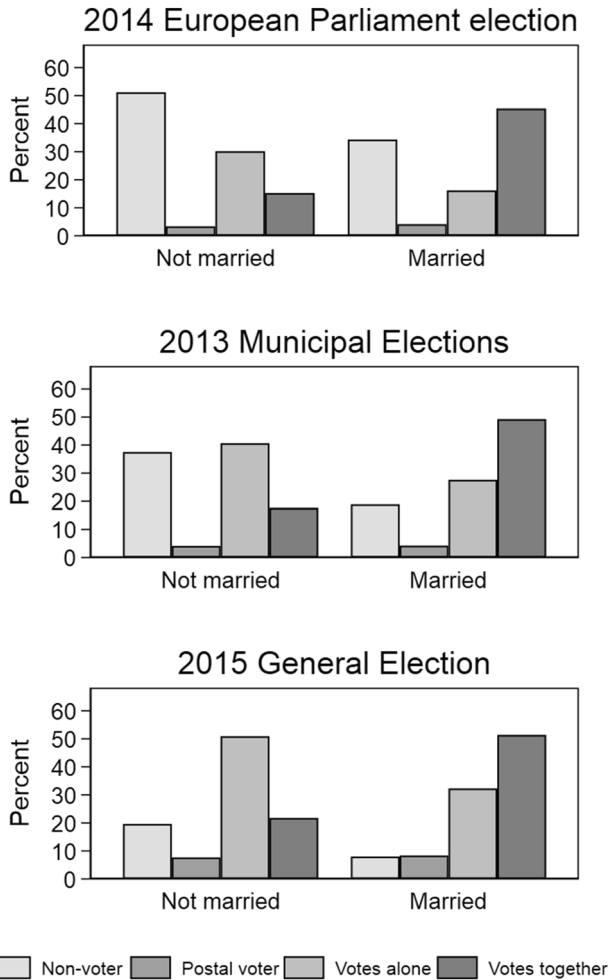


Fig. 2 Distribution of voting mode among individuals for each marriage category in three Danish elections. *Note* The numbers of observations for the three elections are 2,331,505, 2,382,947 and 2,490,782

large sample size. Numerical results can be found in Appendix Tables 3, 4, 5 of the appendix where we also show results split on household sizes.

The results are consistent across elections. Even when taking household size into account a married person has a higher likelihood of voting together compared to voting alone (see also the positive coefficients for married individuals in the multinomial logit models in Appendix Tables 3, 4, 5). Unsurprisingly, the differences between married and unmarried individuals are smaller than when household size and other factors are not taken into account, but the share voting together is still around 10% points higher for married couples.

The results for other variables are also interesting. In the European elections, highly educated voters were more likely to vote together in absolute terms, but

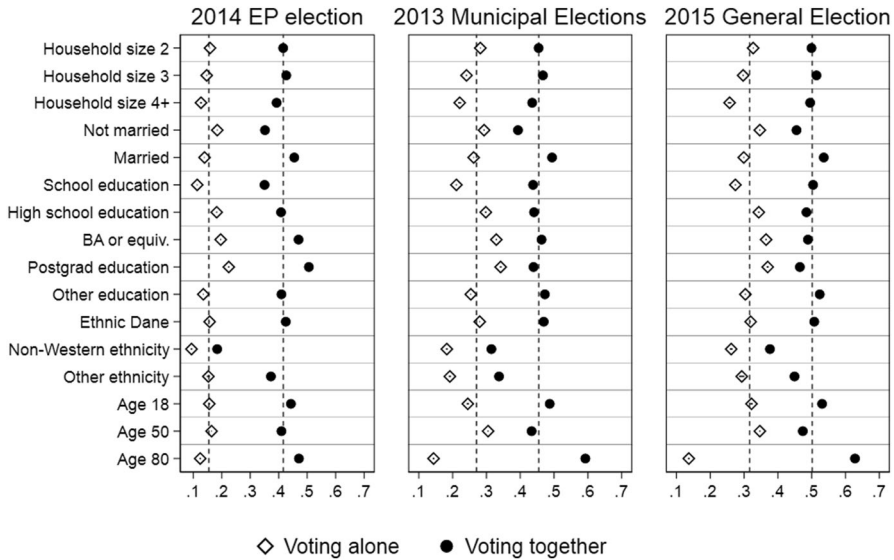


Fig. 3 Turnout estimated as predicted probabilities (calculated at observed values) of voting alone and voting together for different groups in three Danish elections (based on three multinomial logit models). *Note* Predicted probabilities with 95% CIs. Clustering at household level applied. For each panel the left-most dashed line is the overall proportion in the sample voting alone while the right-most is the proportion voting together

relative to voting alone, the proportion is lower than other groups across all elections (see also the negative coefficients for the high education groups in Appendix Tables 3, 4, 5). This may be because those with lower levels of education are more likely to drop out of voting when they have nobody to vote with. In other words having a voting companion may be especially important when an individual does not otherwise have the resources to vote. The corollary of this is that highly educated citizens are *relatively* less likely to vote together (compared to alone) possibly because their resources or norms of voting make them less reliant on the social benefits of voting, and are more likely to vote even if that means voting alone. Another potential explanation is that, insofar as the highly educated on average work longer work hours (Deding and Filges 2009), they might find it more difficult to coordinate going to polling station with a family member. Non-Western immigrants are less likely to vote together than ethnic Danes, while older people are more likely than the young. In further analyses (Appendix Tables 3, 4, 5) we have tested the robustness of the results to splitting the models on household sizes instead of controlling for household size. The results are generally consistent across models. Appendix Table 6 replicates the findings with survey data from the UK and Denmark (see the appendix). Again, the replication with survey data provides similar results as the objective data and across the two different contexts UK and Denmark.

The Relationship Between Opportunity of Voting Together and the Likelihood of Voting

We have now documented that individuals indeed vote together and that the tendency of voting together is, at least, partly driven by opportunity and social intimacy. This is interesting insofar as it informs us about how people vote. Whilst the descriptive patterns are indicative of a connection between the opportunity for voting together and actual turnout, the causal effect—whether voting together affects turnout—still remains unproven. In other words, does the availability of a voting partner cause an increased probability of voting? Recent studies have found that households are perhaps the most important unit for inter-personal mobilization (Nickerson 2008; Sinclair et al. 2012; Bhatti et al. 2017). This could, at least partly be due to the possibility of accompanying each other to the polls, as suggested by the companion effect.

We noted above that it is difficult to demonstrate whether voting together bears any causal significance on turnout as voting together can (by definition) only occur among voters. In other words how do we know if a non-voter would have voted had they had the option to vote in company? We can go some way towards measuring the *opportunity* to vote together with network survey data by examining the impact of inter-personal mobilization—that is whether a respondent is asked by a discussant to vote (Rosenstone and Hansen 1993). In the 2014 European Parliament wave of the British Election Study Internet Panel (Fieldhouse et al. 2015) this was asked in a discussant ego-network module alongside whether each discussant accompanied the respondent to vote. These data show a high degree of correspondence between being asked to vote by a discussion partner and voting together: 74% of discussants who asked a respondent to vote actually accompanied the discussant to the polling station. By contrast less than 1% of those voting together did so without having been asked. Nevertheless, another 17% of those asked also voted in company, but not with the discussant who invited them. This demonstrates an imperfect correspondence between conventional measures of inter-personal mobilization (being asked to vote) and voting together. Moreover, this still does not tell us whether each respondent would have voted had they never been asked or had the opportunity to vote together never arisen. This absence of a reliable counterfactual (only having data on voting together for voters) makes it difficult to assess the causal importance of the companion effect in cross-sectional data. To get a better understanding of this we examine whether individuals who *gain* the opportunity to vote with a companion have a higher propensity to vote than individuals who lose the opportunity. More specifically we conduct two analyses. First, we test whether acquiring a potential voting companion, from one election to the next, leads to increased turnout probability (H1). Second, we test whether losing a voting companion leads to a greater fall in turnout probability than losing a non-companion (H2).

To examine the consequences of acquiring a potential voting companion, we use data from individuals included in our register data about whom we also have information on turnout (though not timing) from the 2009 Danish municipal elections. This means that we can create an individual level two-wave panel of the same type of elections, with a sufficiently long time-lag for a substantial number of voters to

have changed their living circumstances. Specifically, we examine whether individuals who previously lived alone in 2009 but lived at least one other elector in 2013 saw an increase their probability of voting. We also test the reverse of this—whether losing a potential voting partner (from a multi-electror household to a single elector household)⁹ leads to a decrease in probability of voting. The sample for this analysis is all individuals in our data who were eligible in the 2009 and 2013 municipal elections (for 2009 we have access to data from 44 of the 98 Danish municipalities). A challenge for this analysis is the possibility that unobserved characteristics of citizens are correlated both with changes in household composition and changes in turnout behavior. By stratifying our analysis by previous turnout behavior we adopt the equivalent of a change score model which provides some protection against the effects of unobserved time-constant variables (Allison 1990; Berrington et al. 2006). We cannot eliminate this potential threat entirely, but we mitigate it as much as possible by matching on a range of pre-treatment characteristics using coarsened exact matching or CEM (Blackwell et al. 2009; Iacus et al. 2012). Subsequently, we conduct standard regression on the matched sample with appropriate weights to take into account differences in the relative number of treatment and control observations between strata.

In our models we split the sample depending on whether individuals voted or abstained at the outset in 2009 to allow for asymmetrical effects on previous voters and non-voters. This allows us to take into account that change over time could be dependent on the initial level of turnout. As the sample is stratified by turnout at the outset, the dependent variable is simply turnout in 2013 (0—abstained or 1—voted). The key independent variable is the change in the household type of the individual. We consider four different treatment statuses, one for losing a potential voting partner, two for no change (either no household partner in both periods or a partner in both periods), and another for gaining a partner. In our analyses we compare having no partner in both periods with gaining a partner, and having a partner in both periods with losing a partner. We match exactly on pre-treatment age (one category for each year of age), education (5 categories), civic status (married vs. non-married), income (6 categories), and residential stability (9 categories). The combination of these variables provides us with more than 40,000 potential strata. After the matching we conduct a standard logistic regression of change between 2009 and 2013 on a range of variables. Figure 4 depicts the results graphically, while Appendix Table 7 of the appendix show the results numerically (see Appendix Table 8 of the appendix for a robustness test without matching which yields similar conclusions).

The results in Fig. 4 and Appendix Table 7 indicate that a change in the availability of a potential voting partner is highly consequential for individual turnout. The results are especially consistent for those who abstained in 2009 (the bottom half of Fig. 4 and model 1–2 in Appendix Table 7). For those who were in a single elector household in 2009 gaining a potential partner resulted in an increase in turnout of about 10% points compared to those who did not gain a partner (bottom left of Fig. 4

⁹ As indicated we estimate the effects of going from one elector to 2+electors in the household and the other way around. In the following we write more briefly “gaining a partner” and “losing a partner”.

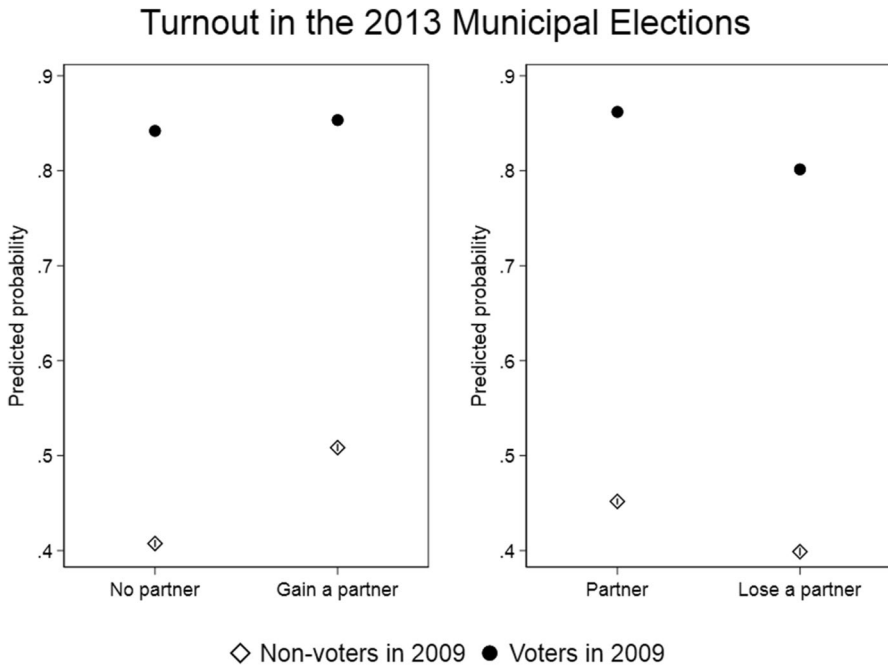


Fig. 4 Logistic regression of 2013 municipal election turnout by change in household composition, based on exactly matched samples of individuals and divided on 2009 turnout (predicted probabilities calculated at observed values). *Note* Predicted probabilities with 95% CIs. Clustering at by 2009-households level applied

and model 1 of Appendix Table 7). Among those who did have a potential voting partner in 2009, losing a potential partner resulted in a 5% point decrease in turnout (bottom right of Fig. 4 and model 2 of Appendix Table 7). For those who voted at the outset, losing a partner resulted in a 6% point drop in turnout (top right of Fig. 4 and model 4 of Appendix Table 7), but there is almost no effect of gaining one (top left of Fig. 4 and model 3 of Appendix Table 7). This might be because individuals voting at the outset were very likely to vote regardless of gaining a partner. Moreover, as well as inducing turnout, gaining a potential voting partner might disrupt previous voting patterns. For example, inevitably some subjects (including those that voted in 2009) gained a non-voting partner, which may have a demobilizing effect (Partheymüller and Schmitt-Beck 2012). In further analysis we tested this potential demobilizing effect by splitting the sample by whether those gaining a partner were joined by someone who was a voter or a non-voter in the previous election.¹⁰ The analysis (reported in Appendix Fig. 6) shows that the effect of gaining a partner is positive for non-voters moving in with either a voter or a non-voter, although the positive effect is larger for those who gained a voting partner. Moreover, even prior-voters who gained a non-voting partner saw no discernible drop in turnout.

¹⁰ We restrict the sample to those living in one or two elector households in 2013 and with available information about their partners past voting (if living in two elector households).

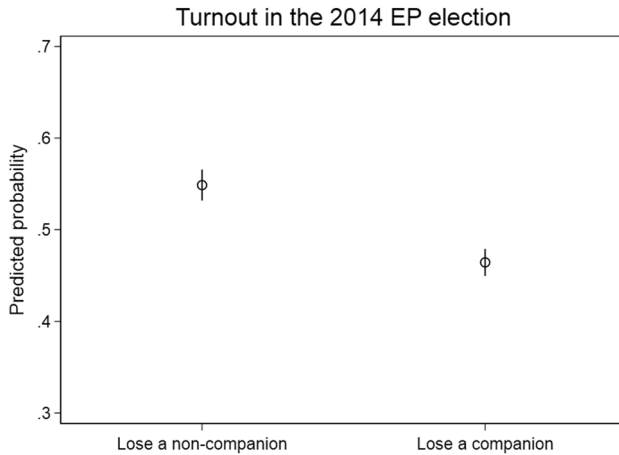


Fig. 5 Logistic regression of 2014 European parliament election turnout, 2013 voters who lost voting partners, based on exactly matched sample of individuals (predicted probabilities calculated at observed values). *Note* Predicted probabilities with 95% CIs. Clustering at by 2013-households level applied

Together these findings suggest that the positive impact of gaining the opportunity for voting together (the companion effect) outweighs any potential negative effects of anti-voting social norms. To sum-up, the results in Fig. 4 provide support for our first hypothesis: acquiring a potential voting companion leads to an increased turnout probability, whilst losing one has the opposite effect.

We noted above that, despite the panel design, it is possible that observed correlation between changes in turnout behavior and household status could be the result of a third factor driving both. An alternative way of approaching the question, which overcomes this, is to examine whether individuals who voted together in one election behave differently in subsequent elections to those who lived together but did not vote together (H2). More specifically, we can look at whether individuals who lose a voting partner are more adversely affected than individuals who split from a person they did not vote with. By focusing only on households that broke up we avoid the problem of unobserved variables that correlate with both household break up and changing turnout

To test this, we focus our analysis on households with two eligible-electors who voted in the 2013 election, which subsequently split up in the 6 months period between the 2013 and the 2014 elections. In other words, they did not live together at 2014 election, but did so in the 2013 election. In contrast to the previous analysis this has the advantage that, we are able to test directly the effect of the loss a voting companion, as opposed to any other household partner. We do not make any restrictions on their new household, i.e. they can be single or live with someone new, but we include an indicator of whether they lived with someone else in 2014. We look at the 2013 and the 2014 elections as 2013 is the first election in which time stamps are available (i.e. we do not have time stamps in 2009).

We estimate a logit model where the dependent variable is turnout in the 2014 European parliament election. We restrict the sample to those who voted in 2013

and had a partner who also voted to maximize the comparability of the ‘treatment’ and ‘control’ since, in both groups, the subject lived with an elector who voted in the previous election. The only difference between the groups is that in the companion ‘treatment’ group the pair attended the polling station together. Thus the key independent variable is whether the individual voted with the partner in 2013. Our expectation is that voting together in 2013 would have a *negative* effect on the change in turnout between the elections, as this would imply the loss of a voting partner as opposed to the loss of a partner who voted separately. In other words, if having a voting companion is important, then losing a voting companion should be more detrimental to turnout than losing a non-companion. This also allows us to separate the effect of merely living with a voter (which might be associated with increased normative influence or increased flows of information) from the effect of the opportunity to vote together. In other words, if the effects are just as large for the loss of a ‘non-companion’ co-habitee, this would suggest it is not the companion effect at play (and vice versa). The results are presented in Fig. 5. As in Fig. 4 we base the model on a matched sample created by CEM on pre-treatment variables and we apply appropriate weights in the regression. Note that the elections are only 6 months apart and therefore we are not able to control rigorously for time-varying variables which are mainly annual in the Danish registers. In Table 9 of the appendix we show the results numerically and in Appendix Table 10 we present an alternative model with no prior matching which yields similar results.

In line with the expectations we find a negative estimate of more than 8% points for individuals who split from a voting companion compared to someone who voted separately (see Fig. 5 or Appendix Table 9). In other words the negative effect of splitting is markedly higher for individuals who in the first election voted together than for individuals who split from a person they did not vote with—even though focus only on voters. We cannot completely exclude the possibility that these differences are partly driven by relevant unobserved differences between splitting couples that had previously voted together and alone. In other words there may be some unobserved factor that is correlated with both the transient component of turnout and whether a voting companion or non-companion was lost (e.g. splitting from a spouse compared to a flat-mate). However, given the protection offered by the panel design, the restriction of the sample, and the CEM, along with the substantial size of the effect, the results provide strong evidence in favor of the companion effect as an important mechanism driving turnout.

Conclusion

It has long been argued that voting is a social phenomenon, subject to the effects of inter-personal influence through shared information, indirect mobilization and social norms. More recently it has been argued that citizens frequently go the polls together and that this has consequences for turnout. However, the phenomenon has been difficult to examine empirically as questions about voting partners are not routinely asked in surveys and both self-reported turnout of self and political discussants may

be subject to response bias (through social desirability) and in addition there is often under-representation of non-voters in surveys. Furthermore, the extent to which voting together matters for turnout is difficult to study as individuals, by definition, can only vote together when they vote. The counterfactual—“would those individuals have voted in the absence of a voting partner?” cannot be answered even with (cross-sectional) network survey data. In this study we contribute to the literature by tackling this question using a longitudinal large-scale validated register dataset with the exact timing of the vote for more than two million individuals in three elections.

Voting with others is remarkably widespread. About 29–35% of all eligible Danes voted with another voter at the polling stations in the three elections under investigation, and if we restrict ourselves to voters only, the number is even higher—between 41 and 51% of voters vote with other household members at the polling station. We also showed that voting together also occurs frequently in Britain but less so than in Denmark, largely due to the frequent use of postal voting in the UK. Moreover, as hypothesized, voting together seems largely to be somewhat driven by opportunity and closeness in households—e.g. married individuals vote more frequently with others than non-married individuals. Also, high propensity voting groups seem to vote less with others relative to voting alone—perhaps because they are more resilient to the lack of a potential voting partner.

Investigating whether voting together has a causal effect on turnout is challenging. We leveraged the question by using this unique dataset to look at the consequences of obtaining a potential voting partner and losing an actual voting partner. What we found, consistent with our hypotheses, is that individuals who gained a potential voting partner between two elections had an increased probability of voting. Likewise, individuals who split from a voting partner saw a greater drop in the probability of voting than individuals who split from a household member who had not been a voting partner. These results provide support for the argument that voting is a social act and more specifically that the opportunity to go to the polling station to vote in the company of another voter (the companion effect) is not simply a function of normative influence. While there are challenges to causal inference our study adds to the existing literature by demonstrating both the extent and impact of voting together. It is worth noting that the effect sizes we have found are large in comparison to typical effect sizes in get-out-the-vote interventions. Our findings have important implications for understanding the decline in turnout in advanced democracies across the world. If companion effects or voting together encourage voting then part of this decline is likely to be attributable to changes in family and household structure. With the steady increase in single person households since the 1960s the opportunities for voting together have declined for many electors. And for some this means not voting at all rather than voting alone.

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Data The survey data use in the article are available for replication including the code for replication of all analyses in the article. Replication files are available at the Political Behavior Dataverse: <https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/SVG76>. The government administrative data based are stored on secured servers at Statistics Denmark. Due to security and privacy reasons, the data cannot be made publicly available on the Internet.

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Appendix

See Appendix Figure 6 and Appendix Tables 3, 4, 5, 6, 7, 8, 9, 10.

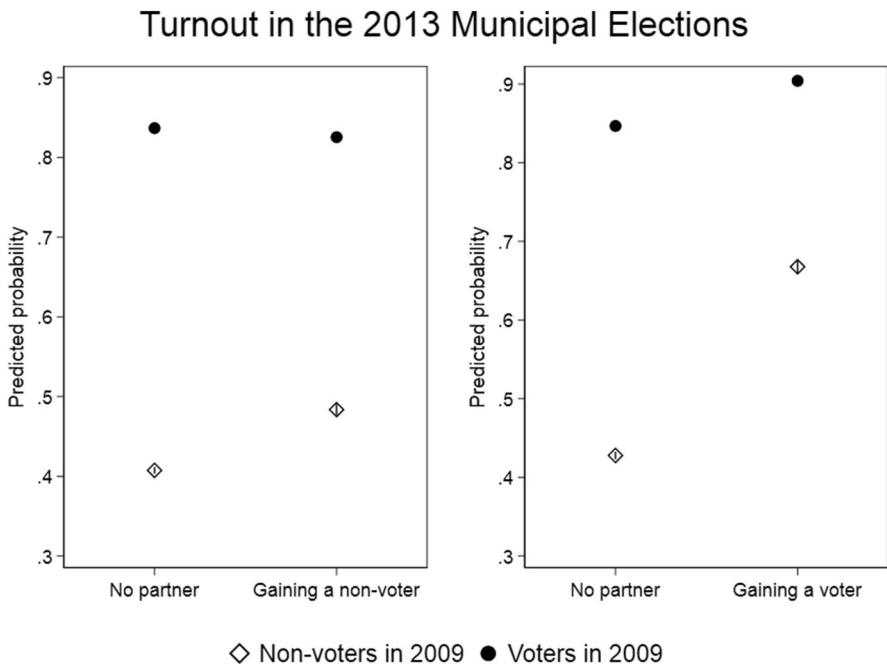


Fig. 6 Logistic regression of 2013 municipal election turnout by change in household composition, based on exactly matched samples of individuals and divided on 2009 turnout (predicted probabilities calculated at observed values). *Note* Predicted probabilities with 95% CIs. Clustering at by 2009-households level applied. The sample is restricted to 1-person households in 2009 and 1–2 person households in 2013

Table 3 Predicting voting mode with register data (multinomial regressions) for the DK 2014 European Parliament elections. Reference category is voting alone (voting file)

	Household size 2+			Household size 2			Household size 3			Household size 4+		
	Non_voter	Postal_voter	Together	Non_voter	Postal_voter	Together	Non_voter	Postal_voter	Together	Non_voter	Postal_voter	Together
Household size 3	0.09*** (0.01)	0.01 (0.02)	0.10*** (0.01)	-	-	-	-	-	-	-	-	-
Household size 4+	0.35*** (0.03)	0.47*** (0.07)	0.16*** (0.02)	-	-	-	-	-	-	-	-	-
Married	0.10*** (0.01)	0.42*** (0.02)	0.54*** (0.01)	0.09*** (0.01)	0.41*** (0.02)	0.50*** (0.01)	0.19*** (0.02)	0.48*** (0.04)	0.80*** (0.02)	0.19*** (0.04)	0.58*** (0.10)	0.91*** (0.04)
Women	0.09*** (0.00)	0.24*** (0.01)	0.18*** (0.00)	0.09*** (0.00)	0.22*** (0.01)	0.12*** (0.00)	0.12*** (0.01)	0.39*** (0.03)	0.36*** (0.01)	0.05 (0.02)	0.14*** (0.05)	0.33*** (0.02)
Age in 10 years	1.95*** (0.04)	-2.96*** (0.10)	-0.97*** (0.04)	1.42*** (0.05)	-3.02*** (0.11)	-0.55*** (0.05)	2.66*** (0.10)	-1.82*** (0.22)	-1.33*** (0.11)	2.19*** (0.20)	1.54*** (0.47)	-1.44*** (0.19)
Age in 10 years ²	-0.45*** (0.01)	0.61*** (0.02)	0.20*** (0.01)	-0.36*** (0.01)	0.62*** (0.02)	0.11*** (0.01)	-0.58*** (0.02)	0.35*** (0.05)	0.32*** (0.02)	-0.46*** (0.04)	-0.32*** (0.10)	0.31*** (0.04)
Age in 10 years ³	0.03*** (0.00)	-0.03*** (0.00)	-0.01*** (0.00)	0.03*** (0.00)	-0.04*** (0.00)	-0.01*** (0.00)	0.04*** (0.00)	-0.02*** (0.00)	-0.02*** (0.00)	0.03*** (0.00)	0.02*** (0.01)	-0.02*** (0.00)
Educations (base = primary)												
High school	-0.85*** (0.01)	0.54*** (0.02)	-0.29*** (0.01)	-0.95*** (0.01)	0.45*** (0.03)	-0.30*** (0.01)	-0.66*** (0.02)	0.91*** (0.05)	-0.29*** (0.02)	-0.93*** (0.03)	0.23*** (0.08)	-0.34*** (0.03)
BA or equivalent	-1.20*** (0.01)	0.60*** (0.02)	-0.21*** (0.01)	-1.21*** (0.01)	0.59*** (0.02)	-0.20*** (0.01)	-1.15*** (0.02)	0.78*** (0.06)	-0.27*** (0.02)	-1.49*** (0.05)	0.05 (0.10)	-0.38*** (0.04)
Postgrad	-1.72*** (0.01)	0.87*** (0.02)	-0.25*** (0.01)	-1.75*** (0.01)	0.84*** (0.02)	-0.23*** (0.01)	-1.64*** (0.03)	1.12*** (0.07)	-0.28*** (0.03)	-1.75*** (0.08)	0.91*** (0.21)	-0.38*** (0.06)
Other	-0.38*** (0.01)	0.33*** (0.02)	0.00 (0.01)	-0.41*** (0.01)	0.33*** (0.02)	0.00 (0.01)	-0.33*** (0.02)	0.43*** (0.05)	-0.06*** (0.02)	-0.48*** (0.04)	-0.17*** (0.08)	-0.07*** (0.03)
Personal income	-0.04*** (0.00)	0.02*** (0.00)	0.01*** (0.00)	-0.04*** (0.00)	0.02*** (0.00)	0.01*** (0.00)	-0.04*** (0.00)	0.01 (0.01)	0.01*** (0.00)	-0.06*** (0.01)	-0.05*** (0.01)	0.02*** (0.01)

Table 3 (continued)

	Household size 2+			Household size 3			Household size 4+					
	Non_voter	Postal_voter	Together	Non_voter	Postal_voter	Together	Non_voter	Postal_voter	Together			
Residential stability	-0.02*** (0.00)	-0.02*** (0.00)	0.00 (0.00)	-0.01*** (0.00)	-0.02*** (0.00)	-0.00** (0.00)	-0.03*** (0.00)	-0.01** (0.00)	0.02*** (0.00)	-0.07*** (0.01)	-0.06*** (0.01)	0.02*** (0.00)
No. of children in family	-0.13*** (0.00)	-0.38*** (0.01)	-0.13*** (0.00)	-0.13*** (0.00)	-0.44*** (0.01)	-0.25*** (0.00)	-0.05*** (0.01)	-0.21*** (0.02)	0.12*** (0.01)	-0.14*** (0.03)	0.00 (0.01)	0.19*** (0.01)
Ethnicity (base = Danish)												
Non-Western ethnicity	1.25*** (0.02)	-0.49*** (0.05)	-0.36*** (0.02)	1.17*** (0.02)	-0.44*** (0.06)	-0.36*** (0.03)	1.27*** (0.04)	-0.63*** (0.12)	-0.42*** (0.04)	1.45*** (0.06)	-0.61*** (0.16)	-0.26*** (0.07)
Other ethnicity	0.18*** (0.02)	0.01 (0.04)	-0.11*** (0.02)	0.17*** (0.03)	0.01 (0.04)	-0.10*** (0.02)	0.28*** (0.06)	0.02 (0.13)	-0.07 (0.06)	0.29** (0.11)	0.19 (0.17)	-0.25* (0.12)
Constant	-0.68*** (0.06)	1.53*** (0.14)	1.94*** (0.06)	0.26*** (0.07)	1.66*** (0.16)	1.59*** (0.07)	-1.82*** (0.12)	-0.21 (0.28)	1.73*** (0.14)	-0.86*** (0.24)	-3.86*** (0.58)	2.11*** (0.24)
N	1,619,317			1,254,580			267,538			97,199		
Pseudo R ²	0.07			0.06			0.08			0.10		
Log likelihood	-1,716,815.47			-1,343,768.40			-272,290.06			-93,195.08		
Chi ²	131,614.41			105,430.24			29,449.47			7,347.64		

Unstandardized logit coefficients. Standard errors in parentheses clustered by household ID. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. 1% winsorizing applied to the income variable

Table 4 Predicting voting mode with register data (multinomial regressions) for the DK 2013 municipal elections

	Household size 2+			Household size 2			Household size 3			Household size 4+		
	Non_voter	Postal_voter	Together	Non_voter	Postal_voter	Together	Non_voter	Postal_voter	Together	Non_voter	Postal_voter	Together
Household size 3	0.29*** (0.01)	0.24*** (0.01)	0.19*** (0.01)	-	-	-	-	-	-	-	-	-
Household size 4+	0.57*** (0.03)	0.49*** (0.04)	0.20*** (0.01)	-	-	-	-	-	-	-	-	-
Married	-0.25*** (0.01)	0.25*** (0.01)	0.35*** (0.01)	-0.26*** (0.01)	0.26*** (0.02)	0.30*** (0.01)	-0.20*** (0.02)	0.31*** (0.04)	0.60*** (0.02)	-0.18*** (0.04)	0.18* (0.07)	0.68*** (0.03)
Women	-0.11*** (0.00)	0.04*** (0.01)	0.08*** (0.00)	-0.11*** (0.00)	0.04*** (0.01)	0.00 (0.00)	-0.07*** (0.01)	0.10*** (0.02)	0.29*** (0.01)	-0.13*** (0.02)	-0.06 (0.04)	0.30*** (0.02)
Age in 10 years	2.32*** (0.04)	-3.01*** (0.08)	-1.51*** (0.03)	1.59*** (0.05)	-2.26*** (0.10)	-1.34*** (0.04)	3.07*** (0.09)	-3.57*** (0.20)	-1.48*** (0.09)	2.51*** (0.17)	-0.64 (0.36)	-1.52*** (0.14)
Age in 10 years ²	-0.57*** (0.01)	0.55*** (0.02)	0.28*** (0.01)	-0.44*** (0.01)	0.40*** (0.02)	0.24*** (0.01)	-0.71*** (0.02)	0.68*** (0.05)	0.32*** (0.02)	-0.54*** (0.04)	0.08 (0.08)	0.31*** (0.03)
Age in 10 years ³	0.04*** (0.00)	-0.03*** (0.00)	-0.01*** (0.00)	0.03*** (0.00)	-0.02*** (0.00)	-0.01*** (0.00)	0.05*** (0.00)	-0.04*** (0.00)	-0.02*** (0.00)	0.04*** (0.00)	0.00 (0.01)	-0.02*** (0.00)
Educations (base = primary)												
High school	-0.76*** (0.01)	-0.17*** (0.02)	-0.34*** (0.01)	-0.87*** (0.01)	0.00 (0.02)	-0.34*** (0.01)	-0.59*** (0.02)	-0.30*** (0.03)	-0.36*** (0.02)	-0.74*** (0.03)	-0.48*** (0.05)	-0.36*** (0.03)
BA or equivalent	-1.24*** (0.01)	-0.01 (0.01)	-0.38*** (0.01)	-1.30*** (0.01)	0.08*** (0.02)	-0.36*** (0.01)	-1.09*** (0.02)	-0.05 (0.04)	-0.40*** (0.02)	-1.25*** (0.04)	-0.46*** (0.07)	-0.55*** (0.03)
Postgrad	-1.31*** (0.01)	0.23*** (0.02)	-0.47*** (0.01)	-1.40*** (0.01)	0.31*** (0.02)	-0.45*** (0.01)	-1.11*** (0.03)	0.11* (0.05)	-0.49*** (0.02)	-1.05*** (0.10)	0.17 (0.15)	-0.62*** (0.04)
Other	-0.52*** (0.01)	-0.11*** (0.01)	-0.10*** (0.01)	-0.57*** (0.01)	-0.01 (0.01)	-0.10*** (0.01)	-0.43*** (0.02)	-0.24*** (0.03)	-0.14*** (0.01)	-0.52*** (0.03)	-0.58*** (0.05)	-0.18*** (0.03)

Table 4 (continued)

	Household size 2+			Household size 2			Household size 3			Household size 4+		
	Non_voter	Postal_voter	Together	Non_voter	Postal_voter	Together	Non_voter	Postal_voter	Together	Non_voter	Postal_voter	Together
Personal income	- 0.07*** (0.00)	0.05*** (0.00)	- 0.04*** (0.00)	- 0.06*** (0.00)	0.06*** (0.00)	- 0.04*** (0.00)	- 0.08*** (0.00)	0.06*** (0.01)	- 0.03*** (0.00)	- 0.13*** (0.01)	- 0.03* (0.01)	- 0.03*** (0.00)
Residential stability	- 0.05*** (0.00)	- 0.03*** (0.00)	- 0.01*** (0.00)	- 0.04*** (0.00)	- 0.03*** (0.00)	- 0.01*** (0.00)	- 0.07*** (0.00)	- 0.02*** (0.00)	0.01*** (0.00)	- 0.09*** (0.01)	- 0.06*** (0.01)	0.01*** (0.00)
No. of children in family	- 0.26*** (0.00)	- 0.18*** (0.01)	- 0.10*** (0.00)	- 0.23*** (0.00)	- 0.26*** (0.01)	- 0.20*** (0.00)	- 0.19*** (0.01)	- 0.03* (0.01)	0.10*** (0.01)	- 0.14*** (0.01)	0.00 (0.02)	0.13*** (0.01)
Ethnicity (base = Danish)												
Non-Western ethnicity	1.35*** (0.01)	0.38*** (0.02)	0.01 (0.01)	1.46*** (0.01)	0.43*** (0.03)	0.11*** (0.02)	1.19*** (0.02)	0.20*** (0.05)	- 0.19*** (0.02)	1.04*** (0.03)	0.25*** (0.07)	- 0.15*** (0.03)
Other ethnicity	1.24*** (0.01)	0.10*** (0.03)	0.03* (0.01)	1.22*** (0.02)	0.10** (0.03)	0.06*** (0.02)	1.27*** (0.04)	0.17* (0.08)	- 0.01 (0.04)	1.36*** (0.06)	0.10 (0.11)	- 0.01 (0.06)
Constant	- 1.67*** (0.06)	2.40*** (0.11)	2.70*** (0.05)	- 0.42*** (0.07)	1.18*** (0.15)	2.73*** (0.06)	- 2.62*** (0.11)	3.20*** (0.25)	2.18*** (0.11)	- 1.64*** (0.20)	- 0.15 (0.43)	2.33*** (0.19)
N	1,676,110			1,280,711			280,819			114,580		
Pseudo R ²	0.08			0.07			0.08			0.10		
Log likelihood	- 1,822,716.08			- 1,384,242.50			- 307,188.80			- 122,406.07		
Chi ²	157,917.94			134,639.75			32,626.89			8,493.18		

Reference category is voting alone (voting file). Unstandardized logit coefficients. Standard errors in parentheses clustered by household ID. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. 1% winsorizing applied to the income variable

Table 5 (continued)

	Household size 2+			Household size 2			Household size 3			Household size 4+		
	Non_voter	Postal_voter	Together	Non_voter	Postal_voter	Together	Non_voter	Postal_voter	Together	Non_voter	Postal_voter	Together
Personal income	-0.15*** (0.00)	0.03*** (0.00)	-0.04*** (0.00)	-0.14*** (0.00)	0.03*** (0.00)	-0.04*** (0.00)	-0.14*** (0.01)	0.05*** (0.00)	-0.03*** (0.00)	-0.17*** (0.02)	-0.03** (0.01)	-0.02*** (0.00)
Residential stability	-0.03*** (0.00)	-0.03*** (0.00)	-0.01*** (0.00)	-0.02*** (0.00)	-0.03*** (0.00)	-0.01*** (0.00)	-0.06*** (0.00)	-0.02*** (0.00)	0.01*** (0.00)	-0.09*** (0.01)	-0.07*** (0.01)	0.01*** (0.00)
No. of children in family	-0.26*** (0.01)	-0.33*** (0.01)	-0.12*** (0.00)	-0.21*** (0.00)	-0.36*** (0.01)	-0.21*** (0.00)	-0.20*** (0.01)	-0.23*** (0.01)	0.08*** (0.01)	-0.18*** (0.02)	-0.17*** (0.02)	0.11*** (0.01)
Ethnicity (base=Danish)												
Non-Western ethnicity	1.53*** (0.01)	-0.42*** (0.03)	-0.11*** (0.01)	1.55*** (0.02)	-0.34*** (0.03)	-0.10*** (0.02)	1.47*** (0.03)	-0.56*** (0.06)	-0.15*** (0.03)	1.41*** (0.04)	-0.68*** (0.10)	-0.15*** (0.04)
Other ethnicity	0.77*** (0.03)	0.08* (0.03)	-0.04 (0.02)	0.73*** (0.03)	0.11** (0.04)	-0.02 (0.02)	0.92*** (0.07)	-0.01 (0.10)	-0.05 (0.06)	0.67*** (0.12)	-0.13 (0.18)	-0.14 (0.10)
Constant	-3.55*** (0.08)	-0.10 (0.08)	2.01*** (0.04)	-2.10*** (0.07)	0.02 (0.10)	2.30*** (0.06)	-4.62*** (0.13)	-1.47*** (0.17)	0.98*** (0.10)	-3.46*** (0.26)	-2.35*** (0.38)	2.23*** (0.18)
N	1,734,070			1,328,742			294,230			111,098		
Pseudo R ²	0.07			0.07			0.06			0.09		
Log likelihood	-1,851,271.51			-1,401,250.16			-316,706.45			-123,535.99		
Chi ²	144,915.19			121,060.14			28,261.02			8,878.45		

Unstandardized logit coefficients. Standard errors in parentheses clustered by household ID. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. 1% winsorizing applied to the income variable

Table 6 Predicting voting mode with survey data (multinomial regressions). Reference category is voting alone (survey data)

	UK 2013 EP elections			UK 2015 general elections			DK 2013 municipal elec-tions			DK 2015 general elec-tions		
	Abstain	Post	Together	Abstain	Post	Together	Abstain	Together	Abstain	Together	Abstain	Together
Household size 3	0.03 (0.06)	- 0.03 (0.07)	0.29** (0.06)	- 0.06 (0.09)	- 0.27** (0.06)	0.09 (0.05)	0.85 (0.438)	0.50 (0.324)	-	-	-	-
Household size 4+	- 0.08 (0.07)	- 0.33** (0.09)	0.08 (0.08)	0.13 (0.10)	- 0.26** (0.07)	- 0.04 (0.07)	- 0.47 (1.071)	- 0.52 (0.391)	-	-	-	-
Married	0.27** (0.06)	0.28** (0.07)	0.80** (0.07)	0.49** (0.09)	0.37** (0.06)	1.06** (0.06)	- 0.14 (0.320)	0.16 (0.185)	0.15 (0.385)	1.13*** (0.147)	0.15 (0.385)	1.13*** (0.147)
Woman	0.60** (0.04)	0.40** (0.05)	0.51** (0.05)	0.38** (0.06)	0.25** (0.04)	0.33** (0.04)	- 0.19 (0.223)	- 0.00 (0.127)	- 0.00 (0.291)	- 0.37 (0.291)	- 0.37 (0.291)	0.11 (0.122)
Age in years	0.07 (0.04)	0.11** (0.04)	- 0.07 (0.04)	0.05 (0.05)	- 0.05 (0.03)	- 0.26** (0.03)	0.00 (0.240)	- 0.32* (0.129)	0.21 (0.238)	- 0.26* (0.123)	0.21 (0.238)	- 0.26* (0.123)
Age in years ²	- 0.00** (0.00)	- 0.00** (0.00)	0.00 (0.00)	- 0.00 (0.00)	0.00 (0.00)	0.01** (0.00)	- 0.00 (0.005)	0.01* (0.003)	- 0.01 (0.005)	0.00 (0.003)	- 0.01 (0.005)	0.00 (0.003)
Age in years ³	0.00** (0.00)	0.00** (0.00)	- 0.00 (0.00)	0.00 (0.00)	- 0.00 (0.00)	- 0.00** (0.00)	0.00 (0.000)	- 0.00** (0.000)	0.00 (0.000)	- 0.00** (0.000)	0.00 (0.000)	- 0.00 (0.000)
Education (base = primary)												
GCSE D-G (DK = base)	- 0.35** (0.13)	- 0.12 (0.14)	- 0.03 (0.14)	- 0.36* (0.17)	- 0.17 (0.12)	0.12 (0.12)	-	-	-	-	-	-
GCSE A*-C (DK = base)	- 0.21* (0.10)	0.01 (0.10)	0.14 (0.10)	- 0.34** (0.13)	- 0.06 (0.09)	0.22* (0.09)	-	-	-	-	-	-
A-level (DK = high school)	- 0.24* (0.10)	- 0.05 (0.11)	0.22* (0.11)	- 0.67** (0.13)	- 0.12 (0.09)	0.23* (0.09)	- 0.02 (0.531)	0.18 (0.329)	- 1.57*** (0.455)	- 0.38 (0.233)	- 1.57*** (0.455)	- 0.38 (0.233)

Table 6 (continued)

	UK 2013 EP elections			UK 2015 general elections			DK 2013 municipal elec- tions			DK 2015 general elec- tions		
	Abstain	Post	Together	Abstain	Post	Together	Abstain	Together	Abstain	Together	Abstain	Together
Undergraduate	-0.75** (0.10)	-0.27** (0.10)	0.03 (0.10)	-1.20** (0.14)	v0.25** (0.09)	0.12 (0.09)	-1.15** (0.428)	-0.27 (0.186)	-2.61*** (0.668)	-0.27 (0.186)	-2.61*** (0.668)	-0.48* (0.211)
Postgraduate	-1.00** (0.12)	-0.37** (0.13)	-0.10 (0.13)	-1.50** (0.20)	-0.31** (0.11)	-0.02 (0.11)	-0.93 (0.497)	-0.27 (0.264)	-2.08*** (0.629)	-0.27 (0.264)	-2.08*** (0.629)	-0.30 (0.238)
Other	-0.37** (0.11)	0.05 (0.11)	0.22 (0.11)	-0.59** (0.15)	-0.09 (0.10)	0.24* (0.10)	-0.36 (0.285)	-0.28 (0.149)	-0.88* (0.355)	-0.28 (0.149)	-0.88* (0.355)	-0.23 (0.198)
HH income (midpoint)	-0.00 (0.00)	0.00 (0.00)	-0.00** (0.00)	-0.01** (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.02 (0.050)	-0.04* (0.022)	-0.12* (0.059)	-0.04* (0.022)	-0.12* (0.059)	0.05 (0.025)
No. of children in family	-0.10** (0.03)	-0.12** (0.03)	-0.24** (0.03)	-0.16** (0.04)	-0.15** (0.03)	-0.15** (0.02)	0.06 (0.153)	-0.03 (0.088)	-0.15 (0.168)	-0.03 (0.088)	-0.15 (0.168)	0.12 (0.071)
Constant	0.27 (0.54)	-2.09** (0.62)	0.08 (0.61)	-0.54 (0.70)	0.18 (0.48)	2.63** (0.46)	-1.03 (3.590)	5.59** (2.012)	-2.50 (3.116)	5.59** (2.012)	-2.50 (3.116)	4.58** (1.642)
N	16,542		16,821			2976		1,717		1,717		
Pseudo R ²	0.04		0.04			0.04		0.08		0.08		
Log likelihood	-21,958.06		-20,778.40			-2002.02		-1,288.69		-1,288.69		
Chi ²	1978.78		1840.15			87.68		161.35		161.35		

Unstandardized logit coefficients. Standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. “-” denotes that the variable in question was not available in the survey. HH income is in 10,000 £ in UK and 100,000 DKK in Denmark. Weights applied to the Danish data. The sample is restricted to 2+ sized households for UK2013, UK2015 and DK2013 consistent with Appendix Tables 3, 4, 5. We did not make this restriction for DK2015 due to the unavailability of household size information

Table 7 Logistic regression of 2013 municipal election turnout based on exactly matched samples of individuals and divided on 2009 turnout

	Only people abstaining in 2009		Only people voting in 2009	
Gain partner (compared to none in both waves)	0.41*** (0.01)	–	0.09*** (0.02)	–
Lose partner (comp. to having partner(s) in both waves)	–	– 0.22*** (0.01)	–	– 0.44*** (0.01)
Δ Married	0.13*** (0.02)	0.24*** (0.01)	0.06* (0.03)	0.10*** (0.01)
Δ Education	0.17*** (0.01)	0.15*** (0.01)	– 0.01 (0.01)	– 0.20*** (0.01)
Δ Income in DKK	0.02*** (0.01)	0.01** (0.00)	0.00 (0.01)	– 0.05*** (0.00)
Δ Residential stability	0.00 (0.00)	0.01*** (0.00)	0.04*** (0.00)	0.06*** (0.00)
CEM applied on pre-treatment variables	Yes	Yes	Yes	Yes
Constant	– 0.43*** (0.01)	– 0.25*** (0.01)	1.66*** (0.01)	1.91*** (0.01)
N	200,578	420,869	267,730	1014,435
Pseudo R ²	0.01	0.01	0.00	0.02
Log likelihood	– 136,242.85	– 287,405.08	– 115,290.38	– 411,865.00
Chi ²	2096.73	2155.42	189.30	7848.51
Treatment observations matched	71,324	71,666	71,502	101,800
Treatment observations unmatched	2348	1263	2296	896
Control observations matched	129,254	349,203	196,228	912,635
Control observations unmatched	30,884	41,899	46,640	61,960

Unstandardized logit coefficients. Standard errors clustered by 2009-households in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Δ Married is scaled from – 1 to 1 where – 1 is getting divorced between the two elections, 0 is unchanged status and 1 is being married. Δ Education which is scaled from – 4 to 4, reflecting 5 categories. 1% winsorizing applied to the Δ income variable. Δ Residential stability is the difference in the number of 1000 days at the current address at the elections. CEM is conducted on pre-treatment variables: on pre-treatment age (one category for each year of age), education (5 categories), civic status (married vs. non-married), income (6 categories), and residential stability (9 categories). The number of matched strata in the four models are 7966, 11,661, 9677 and 16,086. CEM-weights are applied in the regression

Table 8 Logistic regression predicting turnout in the 2013 municipal elections divided on 2009 turnout

	Only people abstaining in 2009	Only people voting in 2009
No change—alone-alone	– 0.03** (0.01)	0.23*** (0.01)
No change—alone-partner	0.28*** (0.01)	0.48*** (0.01)
Gain partner	0.39*** (0.01)	0.37*** (0.01)
Δ Married	0.21*** (0.01)	0.31*** (0.01)
Δ Education	0.28*** (0.01)	0.20*** (0.01)
Δ Income in DKK	0.04*** (0.00)	0.01* (0.00)
Δ Residential stability	– 0.00** (0.00)	0.05*** (0.00)
Pre-treatment levels of controls and age dummies included	Yes	Yes
Constant	– 1.39*** (0.02)	0.08*** (0.02)
N	697,840	1,393,954
Pseudo R ²	0.04	0.06
Log likelihood	– 462,210.64	– 481,058.67
Chi ²	29,213.99	48,886.76

Unstandardized logit coefficients. Standard errors clustered by households in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Δ Married is scaled from –1 to 1 where –1 is getting divorced between the two elections, 0 is unchanged status and 1 is being married. Δ Education which is scaled from –4 to 4, reflecting 5 categories. 1% winsorizing applied to the Δ income variable. Δ Residential stability is the difference in the number of 1000 days at the current address at the elections

Table 9 Logistic regression of 2014 European parliament election turnout, 2013 voters who lost voting partners, based on exactly matched sample of individuals

	Only people voting and having a voting partner in 2013
Lose a companion (compared to losing a non-companion)	– 0.34*** (0.05)
Lives with others in 2014	0.04 (0.05)
Δ Married	0.07 (0.10)
Δ Residential stability	0.02 (0.01)
CEM applied on pre-treatment variables	Yes
Constant	0.19*** (0.04)
N	10,558
Pseudo R ²	0.01
Log likelihood	– 7276.30
Chi ²	59.26
Treatment observations matched	5053
Treatment observations unmatched	2289
Control observations matched	5505
Control observations unmatched	3074

Unstandardized logit coefficients. Standard errors clustered by 2013-households in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Δ Married is scaled from –1 to 1 where –1 is getting divorced between the two elections, 0 is unchanged status and 1 is being married. Δ Residential stability is the difference in the number of 1000 days at the current address at the elections. CEM is conducted on pre-treatment variables: on pre-treatment age (one category for each year of age), education (5 categories), civic status (married vs. non-married), income (6 categories), and residential stability (9 categories). The number of matched strata is 1462. CEM-weights are applied in the regression

Table 10 Logistic regression of 2014 European parliament election turnout, 2013 voters who lost voting partners

	Only people voting and having a voting partner in 2013
Companion	– 0.42*** (0.04)
Lives with others	0.18*** (0.04)
Δ Married	– 0.02 (0.08)
Δ Residential stability	0.04*** (0.01)
Pre-treatment levels included	Yes
Constant	– 0.79*** (0.12)
N	15,921
Pseudo R ²	0.05
Log likelihood	– 10,419.21
Chi ²	943.83

Unstandardized logit coefficients. Standard errors clustered by 2013-households households in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Δ Married is scaled from – 1 to 1 where – 1 is getting divorced between the two elections, 0 is unchanged status and 1 is being married. Δ Residential stability is the difference in the number of 1000 days at the current address at the elections. Pre-treatment variables are age, education, civic status, income, and residential stability

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