Journal of Elections, Public Opinion and Parties
Vol. 22, No. 4, 479–500, November 2012

Retiring from Voting: Turnout among Senior Voters

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ABSTRACT *The Western population is growing older. Nevertheless, few studies examine the manner in which seniors are gradually demobilized from voting, partly because they are difficult to reach with surveys. Using a unique government records dataset of the actual turnout from the 2009 Danish municipal elections, we show how turnout for seniors falls more than 30 percentage points between ages 60 and 90. Though declining health matters, it is far from the entire story. Much of the turnout decline can be explained by the disruption of social ties. Withdrawing from the labour market demobilizes people. Seniors also tend to live alone more often than the general population, meaning that they receive less social encouragement to vote. We also look into why turnout drops faster for women than for men. Women lose their social network earlier than men. They are on average widowed and live alone at an earlier age than men, since women live longer and are typically younger than their husbands. Older generations of women are also less educated and have lower job market affiliation than men.*

Introduction

The Western population is greying. The share of the adult population aged 65 or older in the EU27 countries is projected to increase from 20% to 31% between 2008 and 2040. The share of the 80+ age group is projected to increase even more in relative terms – from 5% to 10% (Eurostat, 2008).[1] As the large post-war generations move beyond retirement – and the elderly thus comprise an ever larger share of the electorate – it becomes increasingly important to understand turnout among the elderly.

Electoral scholars have paid particular attention to numerous groups of special interest, including certain age groups. For instance, several groundbreaking studies within our discipline have focused on turnout among young voters (e.g., Franklin, 2004; Highton & Wolfinger, 2001; Plutzer, 2002). The turnout of older voters, however, has been somewhat neglected in the literature, even though this group, like young voters, has a substantially lower turnout than the middle-aged groups (Fieldhouse et al., 2007: 808). Seniors should be of great interest, since their share of the electorate is rapidly increasing and the low turnout among older voters

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ISSN 1745-7289 Print/1745-7297 Online/12/040479–22
http://dx.doi.org/10.1080/17457289.2012.720577

could potentially contribute to the general decline in turnout (Konzelmann et al., 2012). Additionally, as with the gradual mobilization of young adults, the demobilization of seniors may provide us with leverage for understanding some of the general mechanisms influencing the propensity to vote. In this article, using a unique government records dataset, we offer insights into how seniors (aged 60 and older[2]) are demobilized by examining why some seniors stop voting before others. In addition to explaining part of the general turnout decline among older voters, we also seek to uncover the mechanisms underlying a particularly intriguing pattern – the fact that turnout declines faster with age for women than for men (Wolfinger & Rosenstone, 1980).

Our analysis focuses particularly on the possible influence of social factors on voting patterns among seniors. Several scholars argue that voting is a social act, and renewed attention has been given to the social element of political behaviour in recent years (Beck et al., 2002; Fieldhouse & Cutts, 2012; Franklin, 2004; Nickerson, 2008; Zuckerman, 2005; Zuckerman et al., 2007). We hypothesize (and demonstrate empirically) that social networks are important for older voters when it comes to turnout. Thus, the declining turnout among seniors is partly a story about declining social ties.

The article is structured as follows. After a brief discussion of the basis for the study, we describe the data and discuss the distribution of turnout as a function of age and gender with particular focus on the group consisting of those over age 60. Next, the hypotheses concerning turnout are put forward. The analysis consists of two parts: first, the general pattern of demobilization is examined. Second, we zoom in on the female voters and partly explain the gender turnout differential among seniors. Both parts of the respective analyses indicate the importance of social network variables. The conclusion summarizes our findings.

Turnout among Senior Citizens

Most turnout studies examining particular age groups examine the turnout among younger voters. Relatively few focus on the elderly (Cumming & Henry, 1961; Jennings & Markus, 1988). When older voters are in focus, it is often in the context of registration rules or voting technology (Bullock & Hood, 2002; Roseman & Stephenson, 2005) or the consequences of age for aggregate turnout levels (Gimpel et al., 2004). Our purpose here is quite different – we analyse how the process of retiring from the civic duty of voting plays out among the elderly as their social ties slowly die (even literally).

The conventional wisdom is that the age–turnout relationship is curvilinear. Turnout increases with age until the 60s–70s, where a decline commences (Elklit & Togeby, 2009: 90; Fieldhouse et al., 2007: 803; Steinbrecher et al., 2007: 187; Wass, 2007: 651). Nevertheless, most studies do not describe or discuss the drop among the elderly in any detail. Many studies group voters over age 70 or 75, thus neglecting how steep the decline in turnout becomes as the voters become older (e.g., Martikainen et al., 2005; Niemi & Barkan, 1987; Verba & Nie, 1972; Wass,

2007). This is mainly because survey data rarely contains a sufficient number of senior citizens to enable focused studies of this group (Jennings & Markus, 1988). Surveys rarely reach seniors, and those they reach are likely not to be representative of older voters in general, as they tend to be more active than their same-age peers. In addition to the usual over-reporting of turnout (Bernstein et al., 2001; Karp & Brockington, 2005), this can lead to the overestimation of the participation of the elderly. The present study can overcome these problems by using government records of actual turnout with about 650,000 eligible voters aged 60 and older.

Another reason why scholars rarely study causes of the turnout decline among the elderly is possibly that the decline is thought to be "natural" or physical, as seniors slowly become weaker and less mobile. Converse and Niemi (1971: 445) interpret the decline in turnout among the elderly "to reflect the onset of physical infirmities and a narrowing of psychological participation in the broader life of society as senility approaches". This is also reflected in the existing literature, which often focuses on factors such as disability and health (Gehring & Wagner, 1999; Schur et al., 2002).

It is obviously difficult to imagine that the decline in health with age does not matter for turnout. However, a supplement to the explanation that turnout declines "naturally" may be that the relationship between ageing and turnout is also a consequence of a series of more general social events that just happen to affect seniors more than the rest of the population.[3] In this article we explore this explanation more in detail. The theoretical idea is not new – for instance, disengagement theory (Cumming & Henry, 1961) suggested half a century ago that a process of political disengagement occurs as the elderly gradually become less involved in society. However, other scholars take the opposite position; that if anything, social disengagement actually should lead to political re-engagement as the time spent on social networks decreases (Glenn & Grimes, 1968).

If social networks matter for turnout, this is likely to be particularly consequential for the turnout of the elderly, as they are often at a socially fragile point in their lives. The elderly are more likely to live alone, be widowed, and be outside of the workforce, etc.; that is, to be without things we know support turnout among citizens in general. That such factors – in addition to health – have an impact on turnout among older voters is the main argument of the present article.

The Data and Danish Municipal Elections

Our data is based on actual turnout (government records) and government-issued, individual-level socio-demographic information; that is, not self-reported data from surveys. We have a total of more than 2.3 million voters (647,916 aged 60 or older). The data is from 44 local elections held simultaneously across Denmark on 17 November 2009.[4]

The turnout in Danish municipal elections is usually around 70% (Bhatti & Hansen, 2010; Elklit et al., 2000). The municipalities have multi-party electoral systems with proportional voting. The municipalities are responsible for most welfare services (e.g., childcare, elementary schools, care for seniors, libraries).

In each of the municipalities, the entire electoral register has been computerized and subsequently merged with extensive lists of socio-demographic statistics from Statistics Denmark.[5] The dataset is particularly well-suited for the present purpose, since it contains almost all of the seniors in the 44 municipalities. Thus, individual level sampling bias should be almost entirely eliminated.[6] It also provides very detailed, government-issued information about the social status of the elderly – that is, if they are widowed, living alone, etc. – as well as their health condition.

Voting is carried out at specially designated polling stations located in public buildings. No registration is required. All citizens are registered by the government and receive a polling card by direct mail. In addition to voting at the polling stations on election day, citizens can vote in advance by mail. Citizens with disabilities who are unable to leave their home can apply to vote in their own home under the supervision of two election officials. Votes are also collected at hospitals by specially appointed employees and at nursing homes, care homes and other types of sheltered housing. The municipality typically deploys its own officials. On election day, disabled voters who are unable to walk into the polling station can call for assistance and cast their vote immediately outside of the polling station (kerbside voting). Disabled voters are also able to request assistance to vote from two polling supervisors or appointed electors. Instead of one of the supervisors or appointed electors, the disabled voter can demand assistance from a person of her own choice to cast the vote as long as the person is not a running candidate (Ministry of Social Welfare, 2009). In other words, much is done to help the elderly and physically impaired to cast their vote, which might cause the effect of, for example, health on turnout to be smaller in Denmark than in democracies where efforts to collect votes among the elderly and physically impaired are weaker.

Turnout as a Function of Age

Figure 1 presents turnout as a function of age. The figure reveals a classic curvilinear relationship (e.g., Fieldhouse et al., 2007; Verba & Nie, 1972). In the formative years, young citizens vote less (see however Bhatti et al. 2012 for a modification). Turnout increases as they settle down. What is interesting for the purpose of this article is the steep decline in turnout among the elderly – a decline which is steeper than often found when using survey data (e.g., Verba & Nie, 1972).[7]

Turnout peaks around age 65 at about 80%. It then begins to fall, dropping to less than 50% at age 90 and to around 35% at age 100. The turnout for the very oldest is thus less than for first-time voters (about 45%). This sharp decline calls for an explanation.

We also consider the gender-based difference in turnout among the senior citizens. As the figure shows, women vote more than men until around age 60. From then on, the relationship is reversed. The sharper turnout decline for women than men (when examined cross-sectionally) is not a uniquely Danish phenomenon. For instance, it can be observed in the European Election Studies (EES), pooled file (EES, 2004),[8] in the US CPS survey data (e.g., CAWP, 2005), and in Finnish (Wass, 2007) as

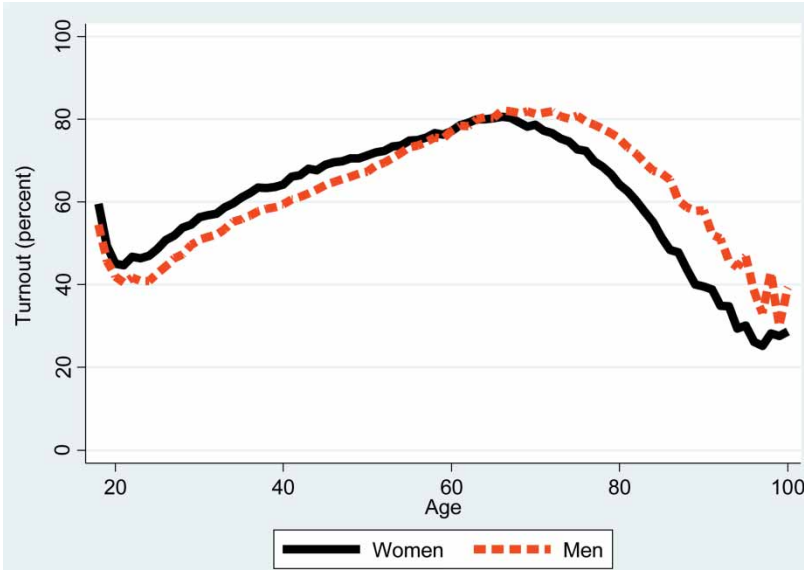

Figure 1. Turnout divided by age and gender (2009).
Note: Average N per gender-year is 14,075. Lowest N for men is 33 and 157 for women (100-year-olds).

well as German register-based studies (Steinbrecher et al., 2007). The gender differential among the elderly is a puzzle and is investigated as an adjunct to our focus on general turnout decline.

Hypotheses: The Process of Retiring from Voting

We start by considering factors that may account for the general decline in turnout. As our focus is the influence of social networks, three factors related to social networks are considered in addition to health. It is quite well established in the general literature that living with a partner or spouse increases turnout (e.g., Milbrath & Goel, 1977: 115). We would expect this, because a partner constitutes a social network that may keep the individual engaged in voting. Partners remind each other to vote and often walk to the polling station together (Pattie & Johnston, 2000). The data contains information about the number of individuals living in the household of the individual citizen.

H1: Living with someone increases the likelihood of voting.

Related to living with someone, our data allows us to test the effect of different types of marital statuses – being married, divorced, never married or widowed (e.g., Denver, 2008; Smets, 2010; Stoker & Jennings, 1995; Wolfinger & Wolfinger,

2008). Wolfinger and Rosenstone (1980: 45) find a particularly strong effect of marriage among older voters. For citizens over 78 years of age, marriage increases turnout 19 percentage points compared to unmarried citizens in the same age group. We expect being married to have a positive effect on turnout, whereas being single, widowed, separated or divorced has a negative impact. Married couples reinforce each other's political beliefs and encourage each other to participate in elections. Interestingly, considering the effect of being married and H1 simultaneously allows us to separate the effect of being married per se from living with someone in general (which is usually a positive side effect of being married). The data includes the marital status of each individual.

H2: Being married increases the likelihood of voting compared to all other marital statuses.

Social networks not only exist in private life, among friends and family, but also in the workplace. People likely discuss an impending election with their colleagues at work, and there may be social pressure and encouragement for being updated about politics (which reduces the costs of voting). Work may provide a feeling of being active in societal life. The data includes information about whether or not each individual has a job.

H3: Working increases the propensity to vote.

In addition to the social factors, health is likely to be important for elderly turnout, as poor health can increase the costs of voting, for instance due to reduced mobility. Several studies have indicated that the sick (Bukov et al., 2002; Reitan, 2003) and disabled (Schur et al. 2000; Schur et al., 2002) participate substantially less than the average population in community affairs, including voting. Besides being interesting in itself, health is important when considering the impact of social factors, since such factors are likely to be strongly correlated with health because poor health can undermine social networks. We operationalize health with two indicators: the number of times admitted to the hospital (all illnesses included) in the period 2003–2007[9] and the total number of days spent there in the same period.

H4: Poor health reduces the propensity to vote.

In addition to attempting to explain turnout in general for the elderly from Figure 1 (the four hypotheses above), we look further into the peculiar relationship between turnout and gender among the elderly. Several studies note the gender difference in turnout within the older generation of voters (Jennings & Markus, 1988; Strate et al., 1989). Given the focus on social networks, a likely possibility could be that senior women receive less social encouragement to vote than men since they are more likely to live alone, a life-cycle factor pointed out by Wolfinger and Rosenstone (1980).

H5: The turnout differential between men and women can be explained by the gender difference in social networks among senior citizens.

There are also alternative explanations. A second possibility is that the lower female turnout could be due to socio-demographical variables; for instance, that the women in the older generations are less educated than men and withdraw from the workforce earlier. Third, the difference may also be due to unobserved generational factors, as the older generation of women were not politically socialized to vote to the same extent as the younger generations (Elklit et al., 2005: 67; Lane, 1959: 125; Wolfinger & Rosenstone, 1980: 40, 43).

We include a range of controls in the models – many of which are interesting themselves. Most importantly, we control for age and age squared to distinguish between the respective effects of the variables of interest from age per se. If the variables of interest indeed explain (part of) the turnout decline, we would expect substantially lower multivariate effects of age and age-squared compared to the bivariate patterns evident in Figure 1. Many studies find a strong correlation between educational attainment and turnout (Hillygus, 2005) which is probably also (at least partly) causal (Sondheimer & Green, 2010). Educational institutions may socialize students to vote, and education may reduce the costs of voting due to lower costs of acquiring information. We also consider the effect of being in education – even though few seniors actually are – which may also affect turnout.

We include whether the individual has children. This factor is theoretically very appealing, since children may provide a social network and possibly give seniors an incentive not to discount the future of society as much as they might otherwise be inclined to do.[10] Unfortunately, we only have a rough indicator for children. First, we can only see the number of children born to each individual, not whether the children are still alive. Second, the database is incomplete for children born before 1960 for women and before 1970 for men. Thus, the results we obtain from this factor are most likely much attenuated.

We also consider residential stability (e.g., Highton & Wolfinger, 2001; Milbrath & Goel, 1977: 113; Verba & Nie, 1972: 145). Moving possibly disrupts ties to the local community (Highton, 2000). In addition to a measure for time at the current address, we include the time the respondent has lived in their current municipality. The idea is that in addition to breaking up community ties, there may be extra costs associated with moving to a new municipality where the respondent has less familiarity with local politics.

Finally, in many Western societies, minority groups lag behind the respective majority groups in turnout (e.g., Togeby, 1999, 2008; Verba & Nie, 1972: 161). Thus, indicators for ethnicity and one for citizenship are included. More detailed information about the coding of the variable can be found in Table A1 of the appendix, while descriptive statistics are available in Table A2.

Results

In the first part below, we examine all elderly over 60 years of age to investigate H1–H4. The second part examines the difference between women and men (H5). Before we turn to the multivariate analysis of turnout, however, it can be useful to consider the extend to which the main variables of interest (mentioned in H1–H4) are in fact correlated with age and gender – i.e., do seniors lose their social network as they age and do women lose it more rapidly than men.

Figure 2 provides some preliminary indication that H1–H4 could explain the turnout decline and the turnout differential between men and women (H5). Almost 80% are living with others at age 60. For individuals aged 90, the share falls to about 20%. Also, at age 60, there are almost no widows or widowers. At age 90, about 70% of all respondents have lost their spouse (Figure 2b). Thus, individuals undoubtedly lose some of their social network with age. The bottom panel of Figure 2 shows, unsurprisingly, that most people leave the workforce between age 60 and 70 (Figure 2c). Health also declines with age, which is reflected in the close relationship between age and days spent in hospital (Figure 2d). Women tend to lose their social network at an earlier age than men. Figure 2 thus shows that elderly women tend to more often live alone (Figure 2a), to be more often widowed (Figure 2b) and to more often not be employed (Figure 2c) compared to elderly men. So the variables of interest are strongly related to age and gender. Below we examine whether this accounts for the turnout decline.

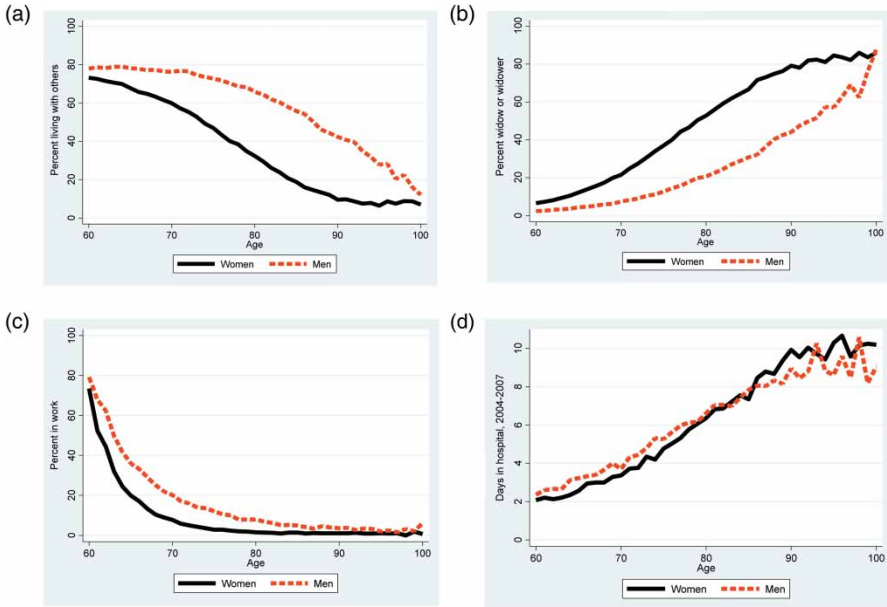

Figure 2. Relationship between selected independent variables and age, divided by gender
Note: Average N per gender-year is 7,891 in Figures 2a, 2b, 2c and 7,870 in Figure 2d.

How Seniors Retire From Their Civic Duties (H1–H4)

Table 1 examines the determinants of voting for senior citizens, 60 years or older, using a logistic regression. We were able to match 93.4% of the original 647,916 eligible voters on all variables. Model 1 contains only demographical variables, model 2 adds health while model 3 also includes the social network variables.

Interestingly, model 3 performs substantially better than model 1 and 2, indicating that the social network variables are important even when controlling for demographics and health (in addition to the increased explanatory power, the average marginal effects declines slightly for several of the demographical variables). There is strong evidence in favour of H1. Living with someone increases the likelihood of voting by seven percentage points compared to living alone. The finding is important, since there is a strong relationship between living alone and getting older (as shown in Figure 2a).

All the marital status dummies are negative, implying that being married increases turnout, even when living with others is taken into account (H2). The likelihood of voting is 7–8 percentage points higher for married citizens compared to those who never married or are divorced. Being widowed also contributes to turnout decline among the elderly, but the effect is much weaker than the effect of having never married or of being divorced – only two percentage points. Thus, it would seem as though being married may provide access to a large network of friends and family which does not disappear because the partner dies. Being a widow is unsurprisingly related to age (Figure 2b) and thus contributes modestly to turnout decline.

We also find strong support for the third social network hypothesis, H3. Working implies a five percentage point higher turnout probability than not working. This suggests that social ties at the workplace can contribute to increase turnout in addition to private ties such as living with someone or being married. The finding matters for turnout decline, since seniors typically retire between ages 60 and 70 (Figure 2c).

Even though our health data stops in December 2007, we find an effect of health on turnout (H4), and the effect is relatively unaffected by social networks (the average marginal effects are similar in models 2 and 3). For instance, an individual who has been admitted to a hospital ten times during the period 2004–2007 has a five percentage point lower probability of turning out than an individual who was not admitted to the hospital during the time period (an effect that is over and above the effect of days spent in hospitals, since that is controlled for). Also important, however, is the fact that that the network effect is present in model 3 even though we control for health.

The remaining variables have the expected effects. Individuals with children vote three percentage points more than individuals without children, even though – as previously mentioned – the effect is probably somewhat attenuated due to incomplete information about births before 1960. This further strengthens the assertion that social ties are important. Another (partially related) explanation is simply that individuals with children discount the future less. There is a positive effect of residential and municipal stability. Thus, moving has a negative effect on voting, and moving to

Table 1. Turnout among seniors (60 and older)

	Model 1		Model 2		Model 3	
	Log. coef.	Marg.effect	Log. coef.	Marg.effect	Log. coef.	Marg.effect
Lives with other voter(s) (H1)	-	-	-	-	0.43*** (0.013)	7
Marital status (base = married)						
Widowed (H2)	-	-	-	-	−0.14*** (0.014)	−2
Divorced (H2)	-	-	-	-	−0.52*** (0.014)	−8
Never married (H2)	-	-	-	-	−0.42*** (0.018)	−7
In work (H3)	-	-	-	-	0.30*** (0.011)	5
No. of times/ten admitted to hospital, 2004–2007 (H4)	-	-	−0.32*** (0.025)	−5	−0.29*** (0.024)	−5
No. of days/ten spent in hospital, 2004–2007 (H4)	-	-	−0.078*** (0.0043)	−1	−0.067*** (0.0042)	−1
Male (H5)	0.12*** (0.0060)	2	0.14*** (0.0060)	2	0.034*** (0.0062)	1
Age in 1,000 days	1.04*** (0.024)	-	1.04*** (0.024)	-	1.31*** (0.025)	-
Age in 1,000 days squared	−0.021*** (0.00045)	-	−0.021*** (0.00045)	-	−0.026*** (0.00047)	-
Has children	0.40*** (0.0089)	6	0.40*** (0.0089)	6	0.20*** (0.0099)	3
Completed education (base = primary school)						
High school diploma	0.59*** (0.025)	10	0.57*** (0.025)	9	0.56*** (0.025)	9
Technical education	0.41*** (0.0077)	7	0.40*** (0.0077)	7	0.36*** (0.0078)	6
Higher education (four years or less)	0.84*** (0.011)	14	0.83*** (0.011)	14	0.79*** (0.011)	13
Higher education (five years or more)	0.91*** (0.019)	15	0.89*** (0.019)	14	0.79*** (0.019)	13
In education	0.15 (0.11)	2	0.13 (0.11)	2	0.17 (0.12)	3
Residential stability (in 1,000 days at current address)	0.21*** (0.0060)	3	0.19*** (0.0061)	3	0.12*** (0.0062)	2
Municipal stability (in 1,000 days in current municipality)	0.099*** (0.0060)	2	0.11*** (0.0060)	2	0.098*** (0.0062)	2
Income in DKK 1,000,000	0.24*** (0.029)	4	0.23*** (0.028)	4	0.17*** (0.027)	3
Non-Danish, Western ethnicity *(base = Danish)*	−0.29*** (0.027)	−5	−0.29*** (0.027)	−5	−0.27*** (0.028)	−4
Non-Danish, non-Western ethnicity *(base = Danish)*	−1.07*** (0.027)	−18	−1.08*** (0.027)	−18	−1.14*** (0.028)	−18

Non-Danish, Western citizenship *(base = Danish)*	−0.73*** (0.038)	−12	−0.74*** (0.038)	−12	−0.80*** (0.039)	−13
Non-Danish, non-Western citizenship *(base = Danish)*	−0.46*** (0.042)	−7	−0.46*** (0.042)	−7	−0.55*** (0.043)	−9
Constant	−13.0*** (0.32)	-	−13.0*** (0.32)	-	−16.6*** (0.33)	-
N	604,831		604,831		604,831	
McFadden's R^2	0.075		0.079		0.098	
Log Likelihood / Chi^2	−303,444/38,235		−302,171/39,713		−295,833/46,841	

Notes: *p < 0.05, **p < 0.01, ***p < 0.001. Standard errors in parentheses are clustered by household. The effect sizes in column 2, 4 and 6 are average marginal effects calculated by "margins" in STATA. All models include municipal fixed effects (43 municipal dummies), omitted due to space considerations.

another municipality has a particularly strong negative effect (possibly due to less familiarity with local politics in the new venue). Education matters more than income, and non-Danes vote substantially less than Danes.

Though most of the variables of interest are related to age (Figure 2) and turnout (Table 1), our model does not eliminate the effect of age per se. The effect of age per se in model 3 from the age of 60 to 90 is a 21 percentage point drop (26 percentage points in model 1), which is a very substantial effect. In a model with only age, the corresponding effect is 35 percentage points. In other words, the variables in our model account for about 40% of the original age–turnout relationship among the elderly voters.[11]

The Gender Effect (H5)

Gender is significant in Table 1, model 3, but the effect is very small compared to the bivariate relationship evident in Figure 1 and the partial relationships from models 1–2 in Table 1. This implies that the variables in Table 1 explain a major part of the observed gender differential and that social networks play a particular important role. For a more accurate assessment of the performance of our models with respect to gender, Table 2 shows the average marginal effect of being a male compared to a female in a bivariate model compared to the three models from Table 1.

As Table 2 illustrates, the variables included in the multivariate model almost entirely explain the gender difference. In the bivariate model the turnout differential is 4.2 percentage points while in model 3 it is only 0.5 percentage points. In other words, the variables in Table 1 account for about 85% of the original gender differential.

Slightly more than half of the gender differential can be explained by the demographics only model (model 1). The key factor here is education. Women in the 60 and older age group have substantially less education than men – a variable which is closely related to turnout. For instance, only 3% of the senior women have a

Table 2. Average marginal effects of gender in Table 1 compared to a bivariate model

	Average marginal effect
"Bivariate" model	4.2%-point
Model 1 (only demographics)	2.0%-point
Model 2 (demographics and health)	2.2%-point
Model 3 (demographics, health and social factors)	0.5%-point

Notes: The "bivariate" model contains only gender, age and age-squared. Age is included in the "bivariate" model to correct for the fact that the average woman in the sample is slightly older than the average man due to differential mortality. The multivariate models are from Table 1. The effect sizes are average marginal effects calculated by "margins" in STATA.

higher education (five years or more) compared to 8% of the men. When health and social factors are included, most of the remaining difference is accounted for. The fact that women become disengaged from their social networks earlier than men, as Figure 2 illustrated (the supplementary Table A3 of the appendix shows the mean of all variables included in the study, separately by gender), thus seems be an important explanation of the gender differential. Women live alone more often than men at a given age and are widowed much earlier than men. This is because women are typically younger than their husbands and vice versa (on average, the males in the sample were 3.6 years older than their respective wives), and men on average live shorter lives. At a given age, women simply have a higher probability of having outlived their spouse (Wolfinger & Rosenstone, 1980). Women also retire earlier than men. In sum, women appear to lose their most important social networks at an earlier age than men, which contributes to the bivariate relationship between turnout and gender.

The factors explaining the turnout differential are interesting in the perspective of possible future developments, as some of them are generational while others are embedded in the life-cycle. The next generation of women are better educated than men, which almost certainly will reduce the differential in the future. The gender differential could possibly also be narrowed by women retiring relatively later. Furthermore, there may be generational effects unrelated to the variables investigated in Table 1. Interestingly, however, not all factors are equally likely to change between generations. The age differential between spouses makes the likelihood of living alone higher for elderly women than elderly men. Partnership patterns might well change somewhat over time, but women still tend to marry older men in the next generations. This may contribute to maintaining part of the gender differential in the future.

Conclusion

This study has focused on the turnout of senior citizens, a group that has been somewhat overlooked in the literature. Two intriguing patterns called for explanation: the rapid demobilization of seniors from around age 65–67 (which is not always so clearly observed in survey studies, likely due to self-selection) and the fact that women demobilize earlier than men.

Our findings emphasize the importance of having a social network. Living with someone is identified as a strong predictor of voting. This is important, since the risk of living alone correlates strongly with age among the elderly. Being widowed is also a factor to take into account, although the negative effect is much less than never having been married or being divorced. Leaving the workforce also contributes to lower turnout. Interestingly, these three factors matter even though we have relatively good controls for demographics and health – a factor which unsurprisingly matters in itself.

The initial puzzle of why female turnout declines much faster than male turnout could largely be explained by the variables in the model. Part of the difference was

simply due to education and other socio-demographical characteristics that will change over time as new generations of women become older. However, social networks also play an important role. Women are generally younger than their spouses and on average live longer than men, meaning that they have a higher propensity to live alone at a given age (Wolfinger & Rosenstone, 1980). This will only change if relationship and marriage patterns change among future generations.

Although the study adds to the literature on elderly voting, it also has its limitations. First, it is based on cross-sectional data, which has limitations when it comes to separating generational factors from life-cyclical factors. Even though the government records data provide us with better than usual controls, the study is also more vulnerable to unit heterogeneity than a panel study. Moreover, while we explain almost all of the gender difference, we only account for about 40% of the overall turnout decline among the elderly. Thus, though the present study advances our knowledge about turnout among seniors, further studies are needed on this important subject. In order to advance our understanding we aim to utilize upcoming elections to establish a panel of government records data and combine it with surveys of the social network (friends, etc.). Such a design would allow us to address some issues involving unobserved unit heterogeneity as well as advance our understanding on how social networks matter for individual level turnout.

Acknowledgements

Earlier versions of this article were presented at seminars at the University of Copenhagen, Université de Montréal and Penn State. We are also indebted to André Blais, Wouter van der Brug, Robert S. Erikson, Ed Fieldhouse, Mark Franklin, Asmus Leth Olsen, Eric Plutzer, Hanna Wass and the JEPOP anonymous reviewers for very useful comments and suggestions along the way. Our gratitude also goes to The Danish Ministry for Refugee, Immigration and Integration Affairs and the Danish Ministry of Interior and Health for funding the project and to the participating municipalities for graciously providing the voter files. None of the individuals or institutions mentioned would necessarily endorse this study or should be held responsible for its content.

Notes

1. The percentages are calculated as the respective shares of the population aged 15 and older (Eurostat, 2008).
2. We chose 60 years as the cut-off age rather than the official retirement age of 65. In practice, many Danes retire at age 60 when becoming eligible for the so-called "*efterløn*", which is an early retirement scheme.
3. It should be noted that there may also be factors that could actually stem the decline in turnout among seniors such as habituation and accumulated political knowledge and resources (Goerres, 2007).
4. As we rely on government records data and not on sample survey data, it is not possible to include attitudinal variables in the analysis. This is a drawback of the dataset used because such variables could potentially help us to inquire further into the causal mechanisms (as we will return to in the

conclusion). Nevertheless, with regard to estimating the total effect of the variables of interest we will argue that the benefit of including attitudinal variables is limited as commonly used variables like political interest and level of political discussion might be intermediate outcomes or even partially endogenous to the dependent variable, turnout. If such variables were included, our estimates would be biased even through the explained variance would increase in the models (Bhatti & Hansen, 2012). Furthermore, as we have discussed elsewhere, it requires very large sample sizes in order to achieve reliable results on turnout effects across age groups (Bhatti et al., 2012). Also, it may be particularly difficult to get representative samples in groups which are difficult to reach due to low response rates, such as the young and the elderly (for instance, non-response will likely be particularly high among those elderly with poor health).

5. Statistics Denmark is the official census bureau funded by the government and is responsible for compiling statistics from various Danish authorities on all levels.
6. In 39 municipalities, there were no missing districts or eligible voters at all. In the municipality of Rudersdal, one district was missing; in the municipality of Copenhagen one table – 1,514 of 427,940 eligible voters (voters are assigned randomly to tables) within one of 54 districts; and in Aarhus, six districts were missing. In all of the cases, the municipalities had lost the registration lists. Esbjerg participated only with the districts with electronic registration lists. In all four municipalities, there was no self-selection involved, and the missing districts/tables should therefore not pose a problem for the analysis. In one municipality, Odense, the electronic registration list in District 4 broke down for a couple of hours. This resulted in 1,160 voters being erroneously coded as non-voters. Excluding district 4 in Odense does not alter any of the conclusions. 6–7% of the sample eventually drops from the multivariate analysis due to the lack of independent variables, but even then this problem is likely to be very modest compared to survey-based samples.
7. In the American 1996, 2000 and 2004 Current Population Survey (CPS), for instance, the turnout for men aged 75+ was between 4.3 percentage points lower and 0.5 percentage points *higher* than the group aged 65 to 74 (for women, the drop is up to about 9 percentage points) (CAWP, 2005). The 2004 European Election Study offers another example, where male turnout increased throughout the course of life (EES, 2004, own calculations).
8. Own calculations based on EES (2004). In the 2004 EES, men and women have roughly equal turnout until their 50s. Among individuals in their 70s, men vote 7–8 percentage points more often than women. After 80 years of age, the differential is 16 percentage points (the percentages reported are from the unweighted samples – the results are quite similar with the European election weight or the party strength/turnout weight).
9. Regrettably, the registers for hospital admittance do not go further than the year 2007 (December 2007) at present. This may attenuate our estimates from this factor.
10. Several studies of the effect of children find no effect or a slightly negative effect (e.g., Pachego & Plutzer, 2007; Plutzer, 2002; Wolfinger & Wolfinger, 2008). The effect is likely to be more positive among elderly than younger individuals, however, since the adult children of senior citizens rarely live at home (therefore causing less stress) and since the incentive not to discount the future should matter more for the elderly than the average individual.
11. We also tried a specification without age squared which makes the interpretation of the age effect easier. In such a specification the average marginal effect of age is -0.019 in a model with only age, -0.012 in model 1, -0.011 in model 2 and -0.0084 in model 3. However, as the curvilinear specification (in logits) performs better and is theoretical meaningful, this more elaborate specification is reported in Table 1.

References

Beck, Poul A., Dalton, Russel J., Green, S. & Huckfeldt, Robert (2002) The social calculus of voting. *American Political Science Review*, 91(1), pp. 57–73.

Bernstein, Robert, Chadha, Anita & Montjoy, Robert (2001) Overreporting voting: why it happens and why it matters. *Public Opinion Quarterly*, 65(1), pp. 22–44.

Bhatti, Yosef & Hansen, Kasper M. (2010) Valgdeltagelsen ved kommunalvalget 17. november 2009. Beskrivende analyser af valgdeltagelsen baseret på registerdata. Working paper no. 3. Copenhagen: University of Copenhagen, Department of Political Science.

Bhatti, Yosef & Hansen, Kasper M. (2012) Public employees lining up for the polls – the conditional effect of living and working in same district. *Public Choice*, Advance online access. DOI: 10.1007/s11127-012-9919-y.

Bhatti, Yosef, Hansen Kasper, M. & Wass, Hanna (2012). The relationship between age and turnout: a roller-coaster ride. *Electoral Studies*, 31(3), pp. 588–593.

Bukov, Aleksej, Maas, Ineke & Lampert, Thomas (2002) Social participation in very old age: cross-sectional and longitudinal findings from BASE. *Journal of Gerontology*, 57(6), pp. 510–517.

Bullock, Charles S. & Hood, M.V. (2002) One person – no vote; one vote, two votes: voting methods, ballot types, and undervote frequency in the 2000 presidential election. *Social Science Quarterly*, 83(4), pp. 981–993.

CAWP, Center for American Women and Politics (2005) *Gender Differences in Voter Turnout* (New Brunswick, NJ: Eagleton Institute of Politics, Rutgers).

Converse, Philip E. & Niemi, Richard (1971) Non-voting among young adults in the United States, in: William J. Crotty (ed.) *Political Parties and Political Behavior* (Boston: Allyn and Bacon), pp. 443–466.

Cumming, Elaine & Henry, William E. (1961) *Growing Old: The Process of Disengagement* (New York: Basic Books).

Denver, David (2008) Another reason to support marriage? Turnout and the decline of marriage in Britain. *British Journal of Political Science*, 10(4), pp. 666–680.

EES (2004) *European Parliament Election Study 2004*, available at <www.piredeu.eu>.

Elklit, Jørgen & Togeby, Lise (2009) Where turnout holds firm: the Scandinavian exceptions, in: Joan DeBardeleben & Jon H. Pammett (eds) *Activating the Citizen: Dilemmas of Citizen Participation in Europe and Canada* New York: Macmillan), pp. 83–105.

Elklit, Jørgen, Møller, Birgit, Svensson, Palle & Togeby, Lise (2000) *Hvem stemmer - og hvem stemmer ikke? En analyse af valgdeltagelsen i København og Århus ved kommunal-bestyrelsesvalgene i 1997* (Århus: The Danish Democracy and Power Study).

Elklit, Jørgen, Møller, Birgit, Svensson, Palle & Togeby, Lise (2005) *Gensyn med sofavælgerne: Valgdeltagelse i Danmark* (Århus: Aarhus University Press).

Eurostat (2008) Ageing characterizes the demographic perspectives of the European societies. Iss. 72/2008.

Fieldhouse, Edward & Cutts, David (2012) The companion effect: household and local context and the turnout of young people. *The Journal of Politics*, forthcoming.

Fieldhouse, Edward, Tranmer, Mark & Russell, Andrew (2007) Something about young people or something about elections? Electoral participation of young people in Europe: evidence from a multilevel analysis of the European Social Survey. *European Journal of Political Research*, 46(6), pp. 797–822.

Franklin, Mark (2004) *Voter Turnout and the Dynamics of Electoral Competition in Established Democracies since 1945* (New York: Cambridge University Press).

Gehring, Uwe W. & Wagner, Michael (1999) Voting participation in old and very old age. Findings from the Berlin aging study. *Kolner Zeitschrift Fur Soziologie und Sozialpsychologie*, 51(4), pp. 681–705.

Gimpel, James G., Morris, Irwin L. & Armstrong, David R. (2004) Turnout and the local age distribution: examining political participation across space and time. *Political Geography*, 23(1), pp. 71–95.

Glenn, Norval D. & Grimes, Michael (1968) Aging, voting, and political interest. *American Sociological Review*, 33(2), pp. 563–575.

Goerres, Achim (2007) Why are older people more likely to vote? The impact of ageing on electoral turnout in Europe. *British Journal of Politics and International Relations*, 9, pp. 90–121.

Highton, Benjamin (2000) Residential mobility, community mobility, and electoral participation. *Political Behavior*, 22(2), pp. 109–121.

Highton, Benjamin & Wolfinger, Raymond E. (2001) The first seven years of the political life cycle. *American Journal of Political Science*, 45(1), pp. 202–209.

Hillygus, D. Sunshine (2005) The missing link: exploring the relationship between higher education and political engagement. *Political Behavior*, 27(1), pp. 25–47.

Jennings, M. Kent & Markus, Gregory B. (1988) Political involvement in the later years: a longitudinal survey. *American Journal of Political Science*, 32(2), pp. 302–316.

Karp, Jeffrey & Brockington, David (2005) Social desirability and response validity: a comparative analysis of overreporting voter turnout in five countries. *Journal of Politics*, 67(2), pp. 825–840.

Konzelmann, Laura, Wagner, Corina & Rattinger, Hans (2012) Turnout in Germany in the course of time, life cycle and cohort effects on electoral turnout from 1953 to 2049. *Electoral Studies*, 31(2), pp. 250–261.

Lane, Robert E. (1959) *Political Life* (New York: The Free Press of Glencoe).

Martikainen, Pekka, Martikainen, Tuomo & Wass, Hanna (2005) The effect of socioeconomic factors on voter turnout in Finland: a register based study of 2.9 million voters. *European Journal of Political Research*, 44(5), pp. 645–669.

Milbrath, Lester W. & Goel, M.L. (1977) *Political Participation. How and Why Do People Get Involved in Politics?*. 2nd ed. (Lanham: University Press of America).

Ministry of Social Welfare (2009) Local and regional government elections act. *Consolidated Act No. 144 of 24 February 2009*. English translation available at <http://elections.ism.dk/local-elections/Documents/KRL2009uk.pdf>.

Nickerson, David W. (2008) Is voting contagious? Evidence from two field experiments. *American Political Science Review*, 102(1), pp. 49–57.

Niemi, Richard G. & Barkan, Joel D. (1987) Age and turnout in new electorates and peasant societies. *American Political Science Review*, 81(2), pp. 583–588.

Pacheco, Julianna S. & Plutzer, Eric (2007) Stay in school, don't become a parent: teen life transitions and cumulative disadvantages for voter turnout. *American Politics Research*, 35(1), pp. 32–56.

Pattie, Charles & Johnston, Ron (2000) People who talk together vote together: an exploration of contextual effects in Great Britain. *Annals of the Association of American Geographers*, 90(1), pp. 41–66.

Plutzer, Eric (2002) Becoming a habitual voter: inertia, resources, and growth in young adulthood. *American Political Science Review*, 96(1), pp. 41–56.

Reitan, Therese C. (2003) To sick to vote? Public health and voter turnout in Russia during the 1990s. *Communist and Post-Communist Studies*, 36, pp. 49–68.

Roseman, Gary & Stephenson, E. Frank (2005) The effect of voting technology on voter turnout: do computers scare the elderly?. *Public Choice*, 123(1), pp. 39–47.

Schur, Lisa, Shields, Todd & Kruse, Douglas L. (2000) What determines voter turnout? Lessons from citizens with diasabilities. *Social Science Quarterly*, 81(2), pp. 571–587.

Schur, Lisa, Shields, Todd, Kruse, Douglas L. & Schriner, Kay (2002) Enabling democracy: disability and voter turnout. *Political Research Quarterly*, 55(1), pp. 167–190.

Smets, Kaat (2010) A widening generational divide? Explaining trends in the age gap in voter turnout between younger and older citizens. PhD thesis, European University Institute, Florence, Italy.

Sondheimer, Rachel M. & Green, Donald P. (2010) Using experiments to estimate the effects of education on voter turnout. *American Journal of Political Science*, 54(1), pp. 174–189.

Steinbrecher, Markus, Huber, Sandra & Rattinger, Hans (2007) *Turnout in Germany. Citizen Participation in State, Federal and European Elections since 1979* (Baden-Baden: Nomos).

Stoker, Laura & Jennings, M. Kent (1995) Life-cycle transitions and political participation: the case of marriage. *American Political Science Review*, 89(2), pp. 421–433.

Strate, John M., Parrish, Charles J., Elder, Charles D. & Ford, Coit (1989) Life span civic development and voting participation. *American Political Science Review*, 83(2), pp. 443–464.

Togeby, Lise (1999) Migrants at the polls. An analysis of immigrant and refugee participation in Danish local elections. *Journal of Ethnic and Migration Studies*, 25(4), pp. 665–684.

Togeby, Lise (2008) The political representation of ethnic minorities. Denmark as a deviant case. *Party Politics*, 14(3), pp. 325–343.

Verba, Sidney & Nie, Norman H. (1972) *Participation in America: Political Democracy and Social Equality* (Chicago: University of Chicago Press).

Wass, Hanna (2007) The effects of age, generation and period on turnout in Finland 1975–2003. *Electoral Studies*, 26(3), pp. 648–659.
Wolfinger, Nicholas H. & Wolfinger, Raymond E. (2008) Family structure and turnout. *Social Forces*, 8(4), pp. 1513–1528.
Wolfinger, Raymond E. & Rosenstone, Steven J. (1980) *Who Votes?* (New Haven: Yale University Press).
Zuckerman, Alan S. (2005) Returning to the social logic of political behavior, in: Alan S. Zuckerman (ed.) *The Social Logic of Politics: Personal Networks as Contexts for Political Behavior*, Philadelphia: Temple University Press).
Zuckerman, Alan S., Dasovic, Josip & Fitzgerald, Jennifer (eds) (2007) *Partisan Families: The Social Logic of Bounded Partisanship in Germany and Britain* (New York: Cambridge University Press).

Appendix

Table A1. Variable description

Variable name	Coding
Lives with other voter(s) (H1)	The variable is coded from the electoral registers. The electoral registers were computerized manually by municipal employees for three-quarters of the eligible voters. The researchers checked the accuracy of the district totals. One-quarter of the eligible votes used a barcode on the polling cards, in which case no manual computerization was needed.
Widowed (H2)	The variable HTYPE from Statistics Denmark includes the civil status of each individual. The original variable contained seven categories. The category "registered partnership" (typically homosexual partnerships) was recoded as "married". "Longest living of two partners" was recoded as "widowed". "Broken partnership" was recoded as "divorced".
Divorced (H2)	See "widowed".
Never married (H2)	See "widowed".
In work (H3)	The variable SOCSTIL1 from Statistics Denmark contains the dominant labour market affiliation of each individual. The variable was recoded into a dichotomous variable – all non-work categories were recoded as "0", all types of job-categories were recoded as "1".
Number of times admitted to hospital, 2004–2007 (H4)	The variable UANTS99 from Statistics Denmark contains the number of times admitted to the hospital for each individual in a given year. The number of times for each of the four years were added together to form a single indicator.
Number of days spent in hospital, 2004–2007 (H4)	The variable PDGS99 from Statistics Denmark contains the number of days spent in hospital in a given year. If a hospital stay ending during the year started the

(*Continued*)

Table A1. (Continued)

Variable name	Coding
	previous year, the number of days was counted from the day of admittance, even though some days could be during the previous year. For each year, numbers greater than 365 were given the value 365. The number of days for the four years were then added together to form the indicator.
Male (H5)	The variable KON from Statistics Denmark contains the gender of each respondent.
Age in 1,000 days	The age in days was calculated on the basis of the individual's birthday, which was available via the personal identification number (CPR).
Has children	The variables were calculated from the Danish Fertility Database provided by Statistics Denmark. The database contained a personal identification of each child along with a personal identification of both of its parents. The dataset was collapsed by parent identification in order to calculate the number of children for each parent. The fertility database is considered as complete for mothers of children born 1960 and later, and fathers from 1970 (data for fathers is almost complete back to 1960).
High school	The variable HFUDD from Statistics Denmark contains the exact completed education of each individual. Each education has a standard category according to its level. There were nine standard categories. The two types of high school were recoded as one category. All three types of higher education below master level (short higher education, middle higher education and BA/BSc) were included in "higher education (four years and below)". PhDs were included in "higher education (five years and above)".
Technical education	See "high school".
Higher education (four years or less)	See "high school".
Higher education (five years or more)	See "high school".
In education	The variable IGUDD from Statistics Denmark contains information about the education the respondent is currently engaged in. Individuals without an entry in IGUDD were coded as "0", others were recoded "1".
Residential stability (in 1,000 days at current address)	The variable BOPIKOM from Statistics Denmark contains a residency code consisting of a municipal code, a street code, a floor code and a door number code. A household is measured by a unique

(*Continued*)

Table A1. (Continued)

Variable name	Coding
	BOPIKOM code. We had the BOPIKOM for each individual during the life-course (then database is entirely complete from 1979, movements between the municipalities are complete from 1971; however, there are a substantial number of entries further back). Residential stability was calculated as the number of days in the current (as of 17 November 2009) household before election day.
Municipal stability (in 1,000 days in municipality)	The variable is generated from BOPIKOM, described above. Municipal stability was calculated as the time since the individual moved to a new household in another municipality (thus, municipal stability is always equal to or greater than residential stability for each individual).
Income in 100,000 DKK	The variable PERINDKIALT from Statistics Denmark contains the annual income for each individual. The income is the sum of salary, public transfers and capital income for each individual. Subsidies for medicine, lottery winnings, pension contributions from the employer, pensions utilized before retirement and income not reported to the public authorities (e.g., tax evasion) is not included in the variable.
Non-Danish, Western ethnicity	The variable IELAND from Statistics Denmark contains the country of origin of each respondent. The variable was recoded into three categories. "Danish ethnicity" contains only ethnic Danes. Western countries include the EU15 countries as well as Lichtenstein, United States, Norway, Island, Canada, Switzerland, Monaco, Australia and New Zealand. All other countries are in the non-Western category.
Non-Danish, non-Western ethnicity	See "Non-Danish, Western ethnicity".
Non-Danish, Western citizenship	The variable STATKODE from Statistics Denmark contains the country of citizenship for each individual. The variable was recoded into categories following the same category definitions as the ethnicity variables.
Non-Danish, non-Western citizenship	See "Non-Danish, Western citizenship".

Notes: Variables have the register date 1 January 2009. Exceptions are education (register date 1 January 2010 to ensure the correct school year is utilized), residency (register date 17 November 2009), work (register date 1 November 2008), children, and income (register date 1 January 2008 as no newer income or childbirth information is currently available).

Table A2. Summary statistics

	Mean	SD	Min	Max	N
Voted	0.77	0.42	0	1	604,831
Lives with other voter(s) (H1)	0.64	0.48	0	1	604,831
Widowed (H2)	0.19	0.39	0	1	604,831
Divorced (H2)	0.14	0.35	0	1	604,831
Never married (H2)	0.07	0.25	0	1	604,831
In work (H3)	0.24	0.43	0	1	604,831
Number of times admitted to hospital, 2004–2007 (H4)	0.91	2.05	0	395	604,831
Number of days spent in hospital, 2004–2007 (H4)	4.02	12.30	0	492	604,831
Male (H5)	0.46	0.50	0	1	604,831
Age in 1,000 days	25.75	2.80	21.9	37.9	604,831
Has children	0.78	0.41	0	1	604,831
High school	0.02	0.13	0	1	604,831
Technical education	0.36	0.48	0	1	604,831
Higher education (four years or less)	0.16	0.37	0	1	604,831
Higher education (five years or more)	0.05	0.22	0	1	604,831
In education	0.00	0.03	0	1	604,831
Residential stability (in 1,000 days at current address)	8.68	7.72	0	37.9	604,831
Municipal stability (in 1,000 days in municipality)	12.54	7.69	0	37.9	604,831
Income in DKK 100,000	2.50	13.99	−342	10,331	604,831
Non-Danish, Western ethnicity	0.02	0.15	0	1	604,831
Non-Danish, non-Western ethnicity	0.02	0.14	0	1	604,831
Non-Danish, Western citizenship	0.01	0.10	0	1	604,831
Non-Danish, non-Western citizenship	0.01	0.09	0	1	604,831

Notes: Variables have the register date 1 January 2009. Exceptions are education (register date 1 January 2010 to ensure the correct school year is utilised), residency (register date 17 November 2009), work (register date 1 November 2008), children, and income (register date 1 January 2008 as no newer income or childbirth information is currently available).

Table A3. Variable means, divided by gender

	Women	Men
Voted	0.74	0.80
Lives with other voter(s) (H1)	0.55	0.75
Widowed (H2)	0.28	0.09
Divorced (H2)	0.16	0.13
Never married (H2)	0.05	0.08
In work (H3)	0.18	0.32
Number of times admitted to hospital, 2004–2007 (H4)	0.87	0.97
Number of days spent in hospital, 2004–2007 (H4)	3.98	4.07
Male (H5)	0.00	1.00
Age in 1,000 days	25.97	25.49
Has children	0.73	0.84
High school	0.02	0.02
Technical education	0.32	0.40
Higher education (four years or less)	0.16	0.16
Higher education (five years or more)	0.03	0.08
In education	0.00	0.00
Residential stability (in 1,000 days at current address)	8.69	8.67
Municipal stability (in 1,000 days in municipality)	12.99	12.00
Income in DKK 100,000	2.07	3.00
Non-Danish, Western ethnicity	0.02	0.02
Non-Danish, non-Western ethnicity	0.02	0.03
Non-Danish, Western citizenship	0.01	0.01
Non-Danish, non-Western citizenship	0.01	0.01

Notes: Variables have the register date 1 January 2009. Exceptions are education (register date 1 January 2010 to ensure the correct school year is utilised), residency (register date 17 November 2009), work (register date 1 November 2008), children, and income (register date 1 January 2008 as no newer income or childbirth information is currently available).