

Election Turnout Inequality – Insights from Administrative Registers

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Abstract

Using matched administrative election data from Norway, we document gender-specific turnout rates by a range of socio-economic outcomes as well as family relationships and immigrant status. High social rank is consistently associated with higher turnout: we find significant turnout gradients for education, occupational prestige, income, wealth, and parental economic resources during childhood. Turnout among spouses, parents and children, as well as siblings and cousins, are highly correlated, showing strong influences of family factors. Immigrant turnout falls far below that of natives of similar age, even many years after arrival. Turnout among children of immigrants is more similar to that of natives, indicating political integration across but not within generations. Election turnout inequality implies that voters differ from the electorate at large along a number of socio-economic dimensions; we find that such misalignment is similar to that observed in the US.

Keywords: election turnout, administrative register data, turnout inequality.

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1. Introduction

While high election turnout is important for the legitimacy of any democracy (e.g., Lijphart, 1997; Coma, 2016), electoral participation is on the decline around the world (IDEA, 2006). Turnout affects policies when voters differ systematically from the electorate. Equality in political participation is therefore central for a well-functioning democracy (Belletini et al., 2016; Lijphart, 1997; Martikainen et al, 2005). Evidence suggests that there are reasons for concern as political participation tends to be unequally distributed across citizens (Bartels, 2016; Brady et al., 1995; Griffin and Newman, 2005; Isaksson et al, 2013; Lijphart, 1997; Verba et al, 1995; Cancela and Geys, 2016). Participatory inequalities may affect what policy issues are brought to the agenda (e.g., Bartels, 2005; Griffin and Newman, 2005), potentially reinforcing existing economic and social inequalities. Hence, broad-based political participation is important due to its intrinsic democratic value and likely mitigates inequality.

Our knowledge on inequality in voting turnout remains inaccurate (Bernstein et al, 2001). Most previous studies rely on survey data.⁴ Such data suffer from problems of recall bias and social desirability bias in measuring outcomes,⁵ measurement error in independent variables, non-random selection of respondents, and often low numbers of respondents.⁶ In contrast, in the present study we rely on administrative data with validated voting records merged with register data for the complete population of eligible voters in 27 of the largest Norwegian municipalities.

Over the last decade, administrative records on voter turnout have become available in the Nordic countries and early scientific contributions drawing on administrative data include

⁴ There is a growing number of exceptions, such as Bhatti et al. (2012) on age inequality, and Martikainen (2005) on socioeconomic factors using administrative data. Some survey analyses validate turnout data using observed behavior, but in a meta-analysis of 90 papers on the individual level characteristics and turnout, Van Ham and Smets (2013) found that only 10 papers used validated turnout data.

⁵ For example, in the 2015 Norwegian Election Survey, 88.6 % of the respondents report having voted whereas electoral turnout was 60.0%. In Karp and Brockington (2005), overreporting in Norwegian election is estimated to 35 percent.

⁶ We may expect systematic measurement error as e.g. “..bureaucrats being more apt than others to report that they have voted in elections when they actually had not.” (Bednarczuk, 2016) and with low data quality, our perspectives on voter turnout are likely to be false; “..using reported votes in place of validated votes substantially distorts standard multivariate explanations of voting” (Bernstein et al 2001).

Martikainen (2005) and Bhatti et al. (2012). Norwegian studies are scarce.^{7,8} While an increasing number of election turnout studies address various aspects of political participation, we contribute with a comprehensive description illustrating the strength of linked administrative data sources.

The first contribution of our paper is to systematically study the structure of turnout and display the anatomy of electoral participation by gender. A detailed gender comparison is of interest in its own, but may also illuminate potential mechanisms driving differences in political participation between women and men. The typical list of covariates includes age, education, income, and ethnicity (see Smets and van Ham (2013) for a meta-analysis of correlates for individual level voter turnout in national elections). Traditionally in Western countries (Inglehart and Norris, 2003; Childs, 2004), and currently in developing countries (Isaksson et al., 2013), men are found to have higher turnout rates than women. Recent research suggests, however, that the gender gap in turnout in the Western world has gradually disappeared (Van Ham and Smets, 2013). We find a substantial and consistent gender difference in Norway whereby women are more likely to vote than men, up to age 75. Furthermore, the analysis reveals that the gender difference is fairly consistent across socio-economic groups. As for the age profile, we replicate the familiar finding that turnout dips during the first few years after reaching voting age, increases thereafter, but then decreases again at older ages (e.g., Bhatti and Hansen, 2012; Martikainen and Wass, 2002; Martikainen and Yrjönen, 1991; and Bhatti et al. (2012) for a review). The gender differential shrinks during the 60s, and from about age 70 men are more likely to vote than women. High social class, in terms of higher education, a more prestigious occupation, higher income or more wealth, are consistently related to higher turnout (see Martikainen (2005) for a recent review of the literature and findings using register data in Finland), and we find this in Norway as well. Family structure appears to have an important influence on turnout as we document a strong

⁷ Institute for Social Research together with Statistics Norway have used i) the electronic voter files, although without additional register data, to characterize voting patterns with respect to age and gender (information contained in the national id-number), ii) a sample of 10,000 drawn from the voter files linked with register data to investigate various gradients., liii) a sample of 465,000 of which 130,000 received an intervention SMS to stimulate the turnout, and iv) a sample of 140,000 immigrants linked with register data of which 20,000 was subject to SMS intervention; see Ferwerda et al. (forthcoming) and Bergh et al. (2016).

⁸ The Danish electronic voter files cover the complete electorate. These data are analyzed by *Centre for voting and parties*, University of Copenhagen, presenting social, economic and demographic gradients by municipality after each election.

correlation in electoral participation for married partners. We uncover, however, similar patterns for dissolved partnerships (separated or divorced), consistent with both selection into marriage and habit formation.

The second contribution is that we extend the study of social gradients to intergenerational aspects of turnout. Parent-child links enable us to construct measures of social background influences commonly used in the social mobility literature (e.g., Black and Devereux, 2011). First, we sort people into classes based on parents' earnings during childhood and find a strong and positive parental earnings gradient, very similar for men and women, suggesting that the gender turnout differential is stable across social classes. Second, studying dynasty members of the same generation, we find that family background matters beyond childhood economic conditions. Siblings, and also cousins, share factors associated with election turnout. Such a comprehensive description of family factors is only possible with access to administrative data with covariates ranging over decennials.

Our third contribution is a detailed study of immigrant turnout. In Norwegian local elections, immigrants with at least three years of residence have the right to vote. Like in many rich countries, the fraction of the electorate with an immigrant background has grown substantially over the last decades. Immigrant turnout is below that of natives. In a recent comparative study based on data from 11 rich democracies, foreign born citizens participate less frequently in elections, the turnout gap is larger among visible minorities, and the gap tends to decrease with years of residence (Würst et al 2011). The latter finding squares with other evidence suggesting a positive association between length of residence and electoral participation (e.g., Uhlaner, Cain, and Kiewiet 1989; Bass 2001a, 2001b; Ramakrishnan and Espenshade 2001; Lien 2004; Xu 2005; Messina 2006; Bevelander and Pendakur 2009; White et al. 2008; Bevelander, 2015). In the study of minorities, large administrative datasets outperform survey data simply by their larger sample sizes and we show how immigrant voting varies across origin countries and by years of residence. Immigrant turnout falls far below that of natives of similar age, even among foreign born who have lived in Norway for more than 15 years, and we find large differences by origin region. Except for immigrants from western countries, we fail to uncover evidence showing that immigrants become better integrated into political participation with time in the country. Studying turnout among children of immigrants, we extend our perspective on political integration beyond the first generation. The next

generation differs as turnout of children of immigrants is much more similar to that of equally aged children of natives than to that of their parents.

Finally, we present summary measures of turnout inequality describing how actual voters differ from the adult population. One key metric is the location of the *pivotal voter* in the overall (income) distribution. The pivotal voter is the median individual in the voters' distribution and we show that the location of the pivotal voter lies between the 55th and 60th percentiles of the population distribution, whether we look at income, wealth, education, occupational prestige, or age.

2. Administrative records – turnout and voter characteristics

In Norway, all eligible voters are automatically included in the electorate register of their residential municipality. In local elections, an individual aged 18 by the end of the year is eligible to vote if she/he is a Norwegian citizen or a Nordic citizen resident in Norway by end of June in the election year, or a foreign resident with minimum three years of continuous residency at the day of election. On the day of election, the regularly casted votes are recorded while the pre-votes and votes cast in other municipalities are recorded after being declared legitimate. Traditionally, the voter file used to be a physical document. Starting in 2011 a trial with computerized electronic voter records was implemented in nine municipalities. By 2015, 27 municipalities were included, covering 1.7 million voters out of 4.0 million eligible voters. These municipalities encompass the five largest municipalities, (Oslo, Bergen, Trondheim, Stavanger, Bærum). The remaining municipalities cover several middle-sized cities. Hence, the electronic voter files have an urban bias. The electronic file is a binary record of whether each eligible voter did cast a vote. The tax authorities maintain the electronic voter files and when constructing the files the authority uses the national personal id-number. This unique identifier enables us to link individual turnout to characteristics in other administrative registers including demographics, education, family relations, income and wealth, employment, occupation and labor market history. Currently the dataset covers the 2013 parliamentary election and the 2015 municipal election. As the number of included counties is largest for the 2015 election we here largely focus on that year.

Table 1 displays the main descriptive statistics. The turnout in our sample is 60.4 percent with a gender differential of four percentage points. The national turnout was 60.0 (SSB, 2017)

indicating that our 27 municipalities sample, in the main dimension, is representative. There

Table 1. Descriptive statistics

	Men (1)	Women (2)
Observations	844 356	856 775
Turnout (%)	58.4	62.4
Age	45.9	47.7
Educational attainment:		
Primary (%)	21.6	21.7
Secondary (%)	36.8	33.2
Undergraduate (%)	26.9	33.4
Graduate (%)	14.7	11.8
Income (1000 NOK)	646.5	457.2
Gross taxable wealth (1000 NOK)	1518.5	965.4
Treiman occupational class	45.3	44.6
Marital status:		
Married or cohabitant (%)	59.0	56.4
Separated (%)	1.3	1.4
Divorced (%)	5.9	9.1
Widow(er) (%)	1.9	7.5
Never married (%)	32.0	25.6

Note: Excluded from the overall electronic voter records are 18 561 observations of individuals who resided abroad the full year of the election or were below 18 at the end of the election year. Income data for those age 25-62 and not in education. Statistics for educational attainment and marital status omit 52 645 and 10 112 observations with missing data. The Treiman occupational class score is only available for employed persons in occupations that are included in the score (487 071 men and 458 211 women).

are substantial gender differentials within the electorate as women are older, have lower earning and hold less taxable wealth (partly due to administrative register allocation of wealth between spouses). Women are more likely to be divorced or a widow, and less likely to never marry. As women in recent cohorts have overtaken men in educational attainment, the genders hold about the same distribution of attainment in the full electorate. In Table 1, we leave out information on birth country since details on the immigrant electorate appear in Table 3 below.

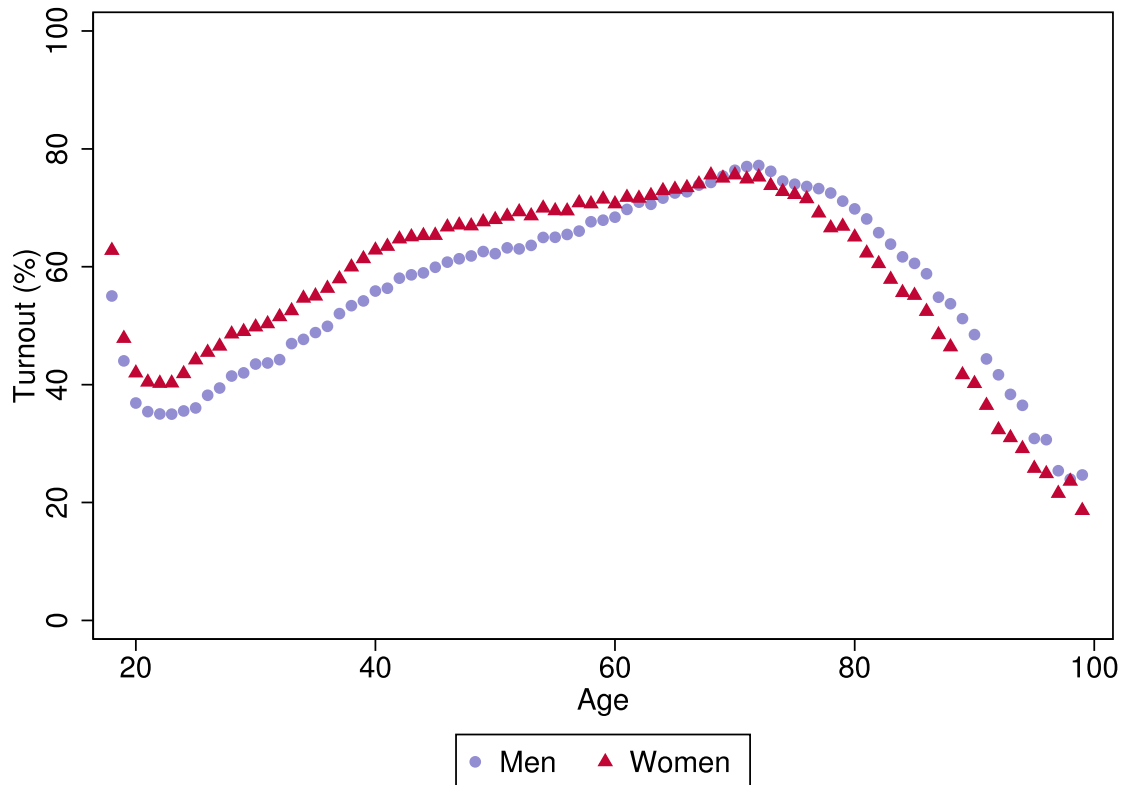


Figure 1: Turnout by age and gender

3. Age profiles

Women are more likely to vote than men and the average gender differential is 4 percentage points. In Figure 1 we plot the propensity to vote in local (municipal) elections in 2015, by gender across the age distribution. The shape confirms a curvilinear relationship between age and voting, where voting first increases and then declines in age (see e.g. Dassonneville, 2016, for a survey on age profile studies). For the younger voters, a combination of lack of identification with political parties, distance to a familiar voting environment for students, and potentially a cohort effect leading to reduced feeling of duty to vote contributes to a low turnout. For the oldest voters, declining turnout by age is presumably health related.

Moreover, we also find that new members of the electorate (aged 18 and 19) have substantially higher turnout rates than voters in their 20s, a feature seen in several countries including Norway, Denmark, and Finland (Aardal and Bergh, 2015, Bhatti et al 2012). For youth, being eligible for the first time seems to boost participation, but the effect soon fades away. One potential reason is that many young voters leave the parents' home and/or school during the early 20s.

The maximum propensity to vote of nearly 80 percent is reached around age 75. The steadily rising participation rate from age 23 combines generational and life cycle effects (Wass, 2007), as well as selective attrition when people age. As we illustrate in the next section, the life cycle effect partly relates to the probability of cohabiting, shown below to be positively associated with voting.

Up to about age 60, the gender differential is fairly constant across the age distribution. Turnout among men continues to rise until the mid 70s, while it tapers off among women. From age 70 onwards, men are more likely to vote than women (Bhatti and Hansen, 2012). The higher male propensity at old ages is conceivably a combined effect of (cohort specific) patriarch gender differences, a male biased education gap, and stronger selection on health.

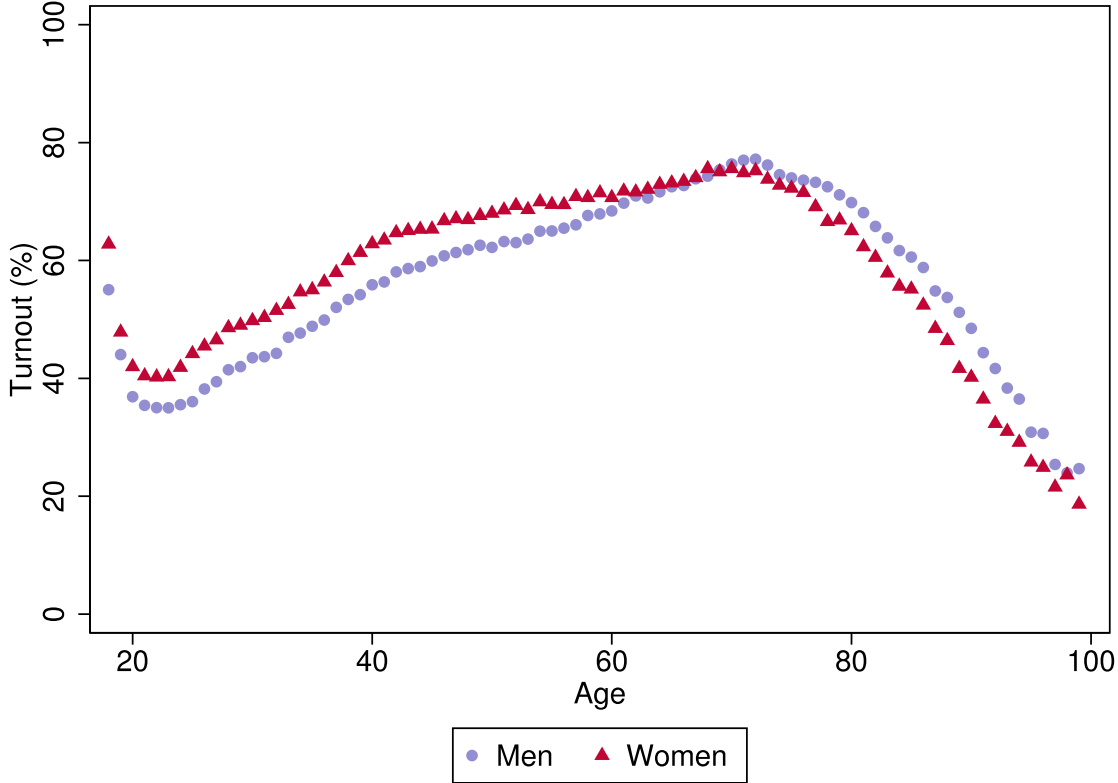


Figure 2: Turnout by age and gender

As we will see below, the voting propensity for married couples is high and the behavior within couples is highly correlated. The gender difference at the end of the age profile may therefore reflect selection mechanisms where women tend to outlive their spouse, and hence more often than men move from the married category to the single household category.

4. Socioeconomic gradients

4.1 Education

Highly educated people are more likely to vote than those who leave school early (see e.g. Denny and Doyle 2008; Kam and Palmer 2008; Solis 2013;). Figure 2 shows the propensity to vote by educational attainment.⁹ The education gradient is clearly positive for both men and women. It exhibits close to a doubling of the propensity from the lowest, primary education, to the graduate level (Master’s and PhD). The gender gap is largest in the lower end of the education distribution. When we compare graduates, males are just as likely as females to vote.

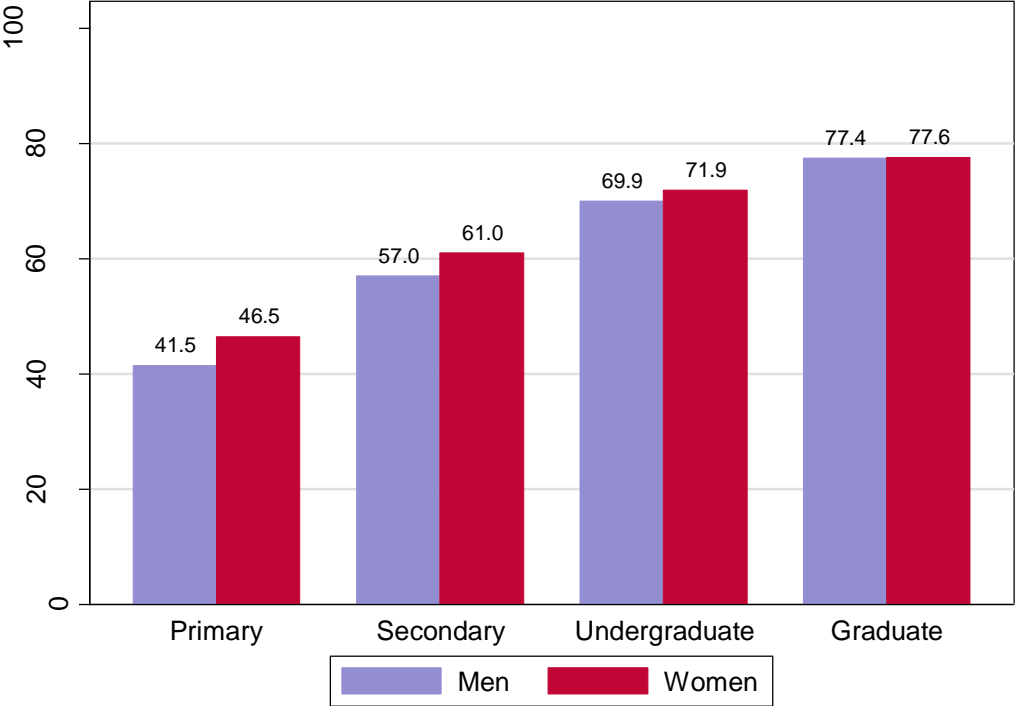


Figure 3: Turnout and by educational attainment

Note: Educational attainment is based on the first digit of the NUS2000 classification, similar to the ISCED. “Primary” captures levels 0-2 (compulsory primary and lower secondary education); “Secondary” levels 3-4 (completed high school/upper secondary); “Undergraduate” levels 5-6 (some higher education including Bachelor’s degree); and “Graduate” levels 7-8 (Master’s degree and PhD).

⁹ The evidence for causal interpretation of the education gradient is mixed. Drawing on a compulsory schooling reform in Norway in the 1960s and using municipality level data, Pelkonen (2012) concludes that additional years of schooling in the lower end of the distribution has no causal impact on election turnout.

4.2 Income

High income earners are more likely to vote (e.g. Rosenstone, 1982) and the gradient can be given alternative interpretations (e.g. Healy et al., 2017). In Figure 3 we show the turnout by income for single and married individuals in separate panels. Each scatter point represents two percentile increments along the income distribution. The gradient differs by marital

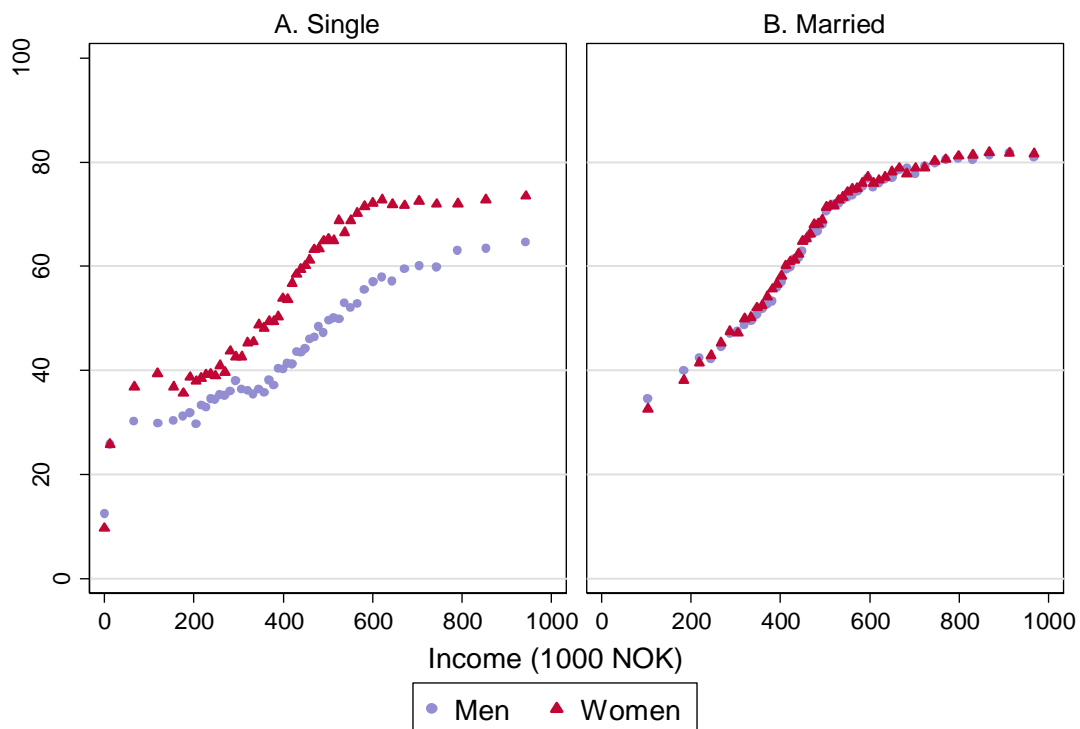


Figure 4: Turnout by income, gender, and marital status

Note: Income is the sum of incomes from sources (labor, capital, and public transfers). Each scatter point represents a two-percent bin of the relevant income distribution. The panel for married also includes registered partners and cohabitants; income is the average for the couple. Samples are restricted to ages 25-62 and exclude students. Observation counts in Panel A are 182 573 men and 155 957 women, and in Panel B 339 589 men and 325 523 women.

status and Figure 3 shows that the association is much weaker in the lower tail of the income distribution, especially for singles. For married couples, we compute the total combined income and assign one half to each. For the married, the voting propensities with respect to income are remarkably similar across men and women. As we return to below, part of this pattern is explained by the strong correlation in behavior within couples. Among singles, in

contrast, women are much more likely to vote than men. The average gender gap among singles, weighted across all income groups, is 10.8 percentage points. When splitting the electorate in two, we find that individuals with income above the median have a turnout of 64 percent compared to 52 percent in the lower half. This implies that the income bias¹⁰ is 12 percentage points. This is about one half of the income bias observed in the study of socioeconomic bias in US elections (Leighley and Nagel, 1992). We return to other measures of turnout bias (or inequality) below.

¹⁰ Following Leighley and Nagel (1992), a socioeconomic bias is defined as the percentage point difference in turnout between the electorate above versus below the median value of the chosen socioeconomic proxy (here income).

4.3 Wealth

Wealthy people are more likely to vote (Leighley and Nagler, 2014) and wealth might

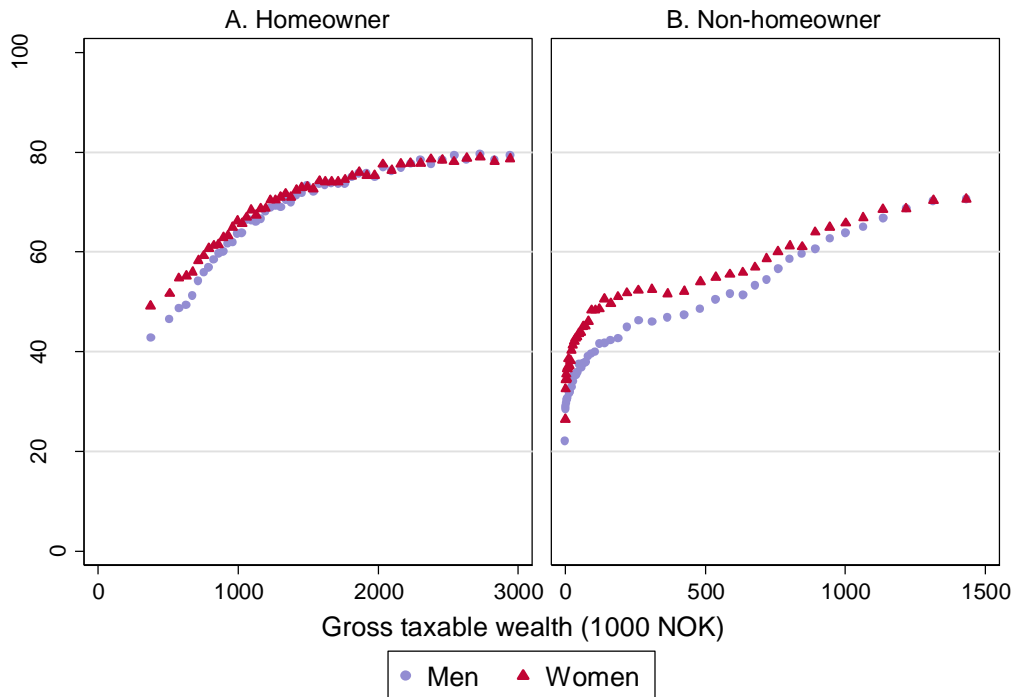


Figure 5: Turnout and gross wealth, by homeownership

Note: Observation counts in Panel A are 407 884 men and 427 725 women, and in Panel B 431 355 men and 424 056 women.

influence peoples' voting behavior (Persson and Martinsson, 2016). Like in most countries, the gross wealth distribution of Norwegian households is more dispersed than the income distribution. The first decile is just slightly above zero while the 9th decile is around 2.5 million kroner. Housing is the main element in most households' wealth. Of Norway's total population, 83 % live in self owned home and 50 % live in single family homes.¹¹ Property values are intrinsically difficult to calculate and tax values are typically well below market values. Since the tax value is set at 25 % of the market value, we multiply the tax-based housing wealth numbers by four. For couples, we sum the wealth and divide by two. Figure 4 shows voting relative to taxable gross wealth. We have split the sample by homeownership. There is a positive relationship for both groups. However, the gradient flattens out – as for

¹¹ For recent figures see <http://www.ssb.no/bygg-bolig-og-eiendom/statistikker/boforhold/aar/2016-09-29>

income – in the upper tail of the distribution. Turnout is lower among non-homeowners and their low propensity to vote is in accordance with the wealth gradient observed for homeowners: for both groups, turnout is about 60 % when wealth reaches one million kroner. The gender differential is clearly lower among the house-owners. This reflects the high fraction of couples among house owning households.

4.4 Occupational prestige

Alternative measures of social stratification, generally preferred by sociologists, are based on occupational structure (Bergman and Joye, 2005). Clearly, occupation correlates with both education and income, but it also reflects life style and power in ways that may be difficult to capture with other socioeconomic indicators. A popular measure is Treiman's measure of occupational prestige, based on rankings of occupations in different surveys (Treiman 1977). The scale is argued to be universal and similar rankings are indeed obtained in many different countries and time periods (Hout and DiPrete 2006).

We use a standardized transformation of the international occupational codes (ISCO-88) to the Treiman scale, following Ganzeboom and Treiman (2001). Occupational prestige is only defined for people working and it is not available for all occupations. In total, we manage to assign 972,242 individuals to a Treiman score in our data. The scale gives high prestige occupations high values. Figure 5 displays the correlation between prestige and turnout. As with the other measures of social class, we see a clear prestige gradient for both men and women. The gender gap appears to be largest at the bottom of the distribution, but the pattern is not as clear as for income and wealth.

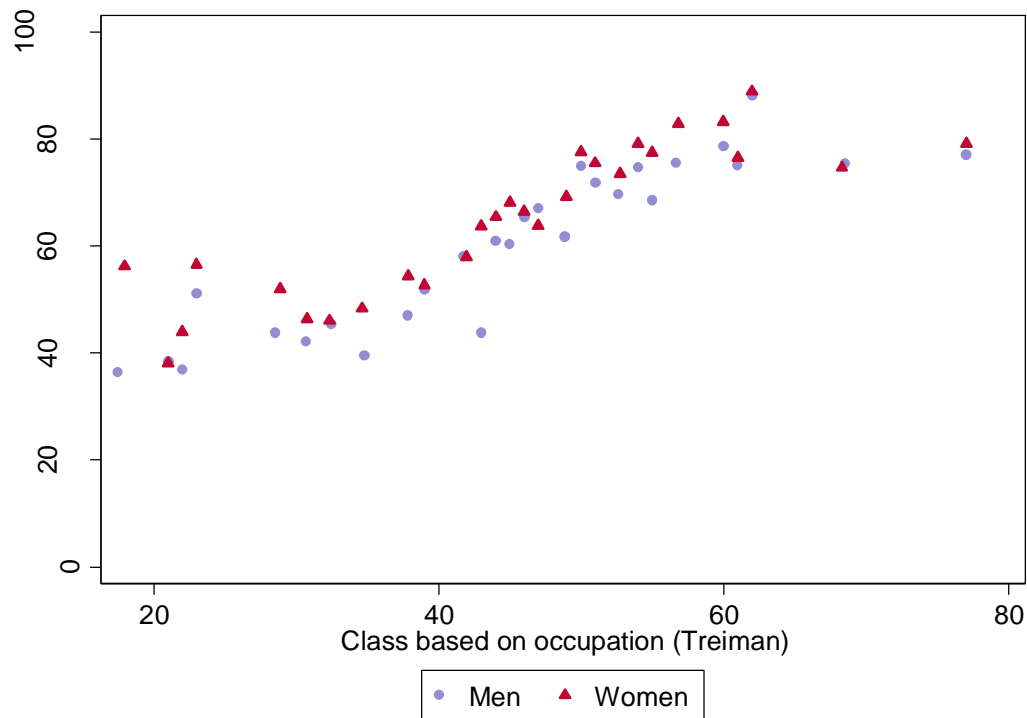


Figure 5: Turnout and occupational prestige

5. Childhood conditions

During the last decades, there is mounting evidence across a wide spectrum of countries that adult socio-economic outcomes are strongly influenced by childhood conditions (Corak, 2013). Even if Norway ranks among societies with the highest social mobility rates, family background remains an important determinant of human capital, income and wealth during adulthood (Bratsberg et al, 2007; Fagereng et al, 2015; Pekkarinen et al, 2016).

Consequently, one might expect that election turnout relates to economic resources of the parents. In Figure 6, we follow the recent intergenerational income mobility literature and measure childhood conditions by parental rank in the earnings distribution measured by average earnings during the first fifteen years of the offspring's life.

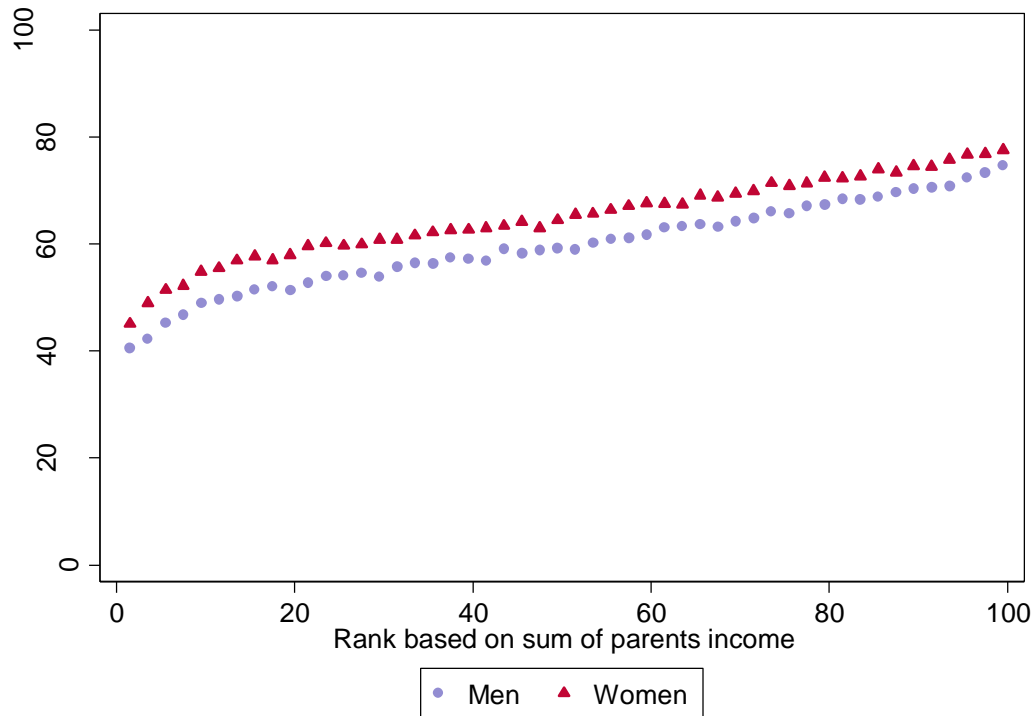


Figure 6: Turnout and parental earnings during childhood (age 0-15)

Turnout relates strongly to parental earnings during childhood. Comparing men in the two extreme locations, the poorest two percent had a turnout of 40 % while among the most advantaged, three in four men voted. The rank gradient is fairly constant and similar across genders, implying that the gender gap is independent of family background. Actually, by comparing Figures 3 and 6 it appears that own and parental earnings are equally strong predictors of turnout.

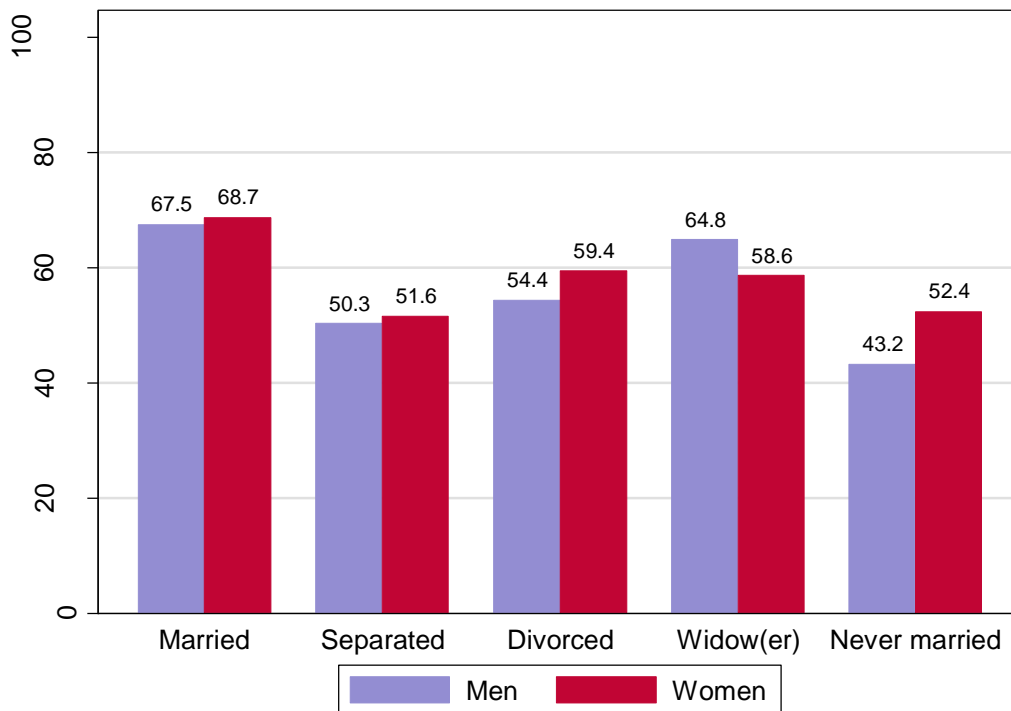


Figure 7: Turnout and extended marital status

Note: The married category includes cohabitants and registered partners. See Table 1 for cell frequencies.

6. Family relations

A wide variety of social outcomes relate strongly to family structures. This section illustrates, from several angles, how important family is when it comes to election turnout. First, we split the data by (extended) marital status and see how current as well as past marital status correlates with turnout. Second, we study how individuals who belong to the same social family, and even dynasty, tend to behave similarly when it comes to taking part in the election.

6.1 Current and past marital status

The income gradient (Figure 3) showed that turnout among married men and women were very similar. Consequently, the overall gender gap reflects that men who are not married nor lives with a partner, are much less likely to vote than women with the same household status. In Figure 7, we look in more detail at turnout by marital status.

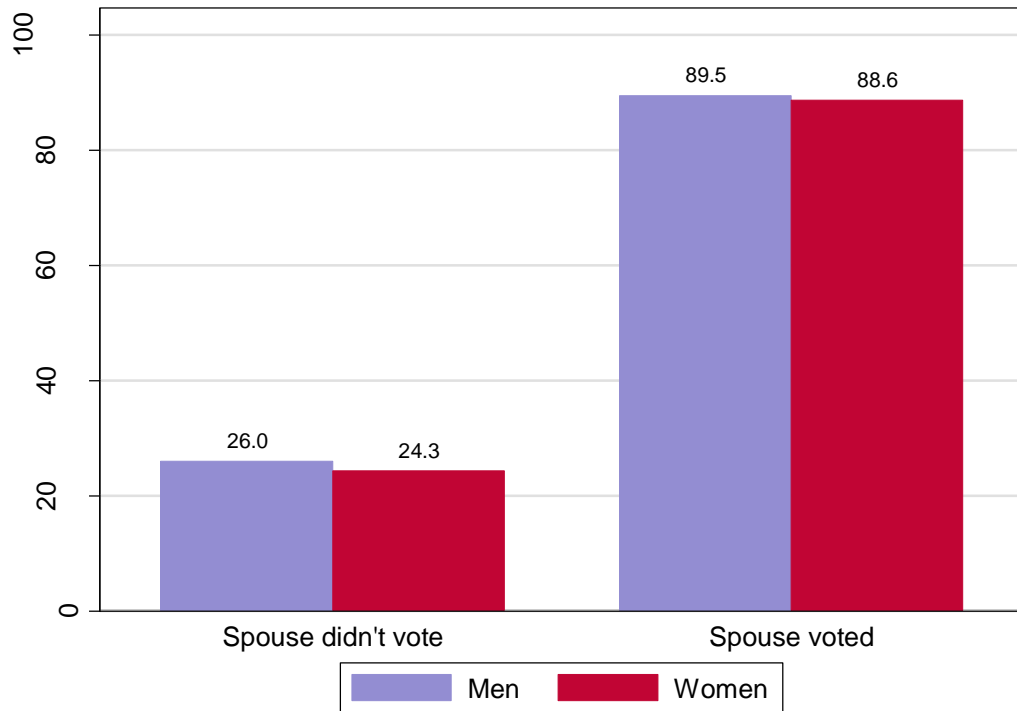


Figure 8: Turnout by spousal voting

Note: Spouses include cohabitants and registered partners. Sample is restricted to those with a spouse in the electronic voter records, and departs slightly from the “married” category in Fig 7 which also included some individuals whose spouse has missing data (typically because the spouse lives abroad). Overall turnout rates in the restricted sample is 70.0% for men and 69.3% for women. Observation counts are 467 735 men and 467 792 women.

As anticipated from the above, married men and women have similar turnout of about 70 %. Men who never have been married are those with the lowest turnout. Interestingly, the gender gap is small even among *previously* married (i.e., separated or divorced), hinting either that selection into marriage is an important reason for why men and women not living alone are similar, or that habit formation influences turnout equally strongly among previously married men and women. For those with a deceased spouse, a widower is actually more likely to vote than a widow.

6.2 Turnout among family members and dynasty members

With our detailed register data, we can go even further and investigate the role of family relations by comparing turnout among members who are in the same family or in the same dynasty. First, in Figure 8, we show voting patterns among married couples. Here we show

the propensity to vote conditional on the turnout of the spouse. Couples are positively selected as the unconditional probability of voting is close to 70 percent. As expected, the gender differences are small across couples. Even with this knowledge the actual correlation between spouses is striking. When conditioning on the spouse going to vote, the propensity to vote more than triples, from 25 (22.3) to 90.7 (89.4) percent, when comparing men (women) without a voting spouse to individuals with a voting spouse. Consequently, being married to a voter (or a non-voter) is one of the strongest predictors of participation in elections. This association presumably reflects assortative mating on traits, attitudes, interests and preferences related to political participation (Niemi et al. 1977), as well as joint decisions on election day (see e.g. Bhatti et al. 2017 on the effect of cohabitation and Hobbs et al. 2014 on the effect of widowhood on turnout). By just decomposing voting behavior among couples, we cannot tell whether the two individuals interact in ways that cause resemblance in turnout, match on voting propensity, and/or that they are exposed to the same contextual influences. Past research indicates a causal effect, though (Nickerson 2008).

Turning to family relations with genetic components, we find stark common patterns among different sets of dynasty members. Starting with parents and children, Figure 9 reveals strong

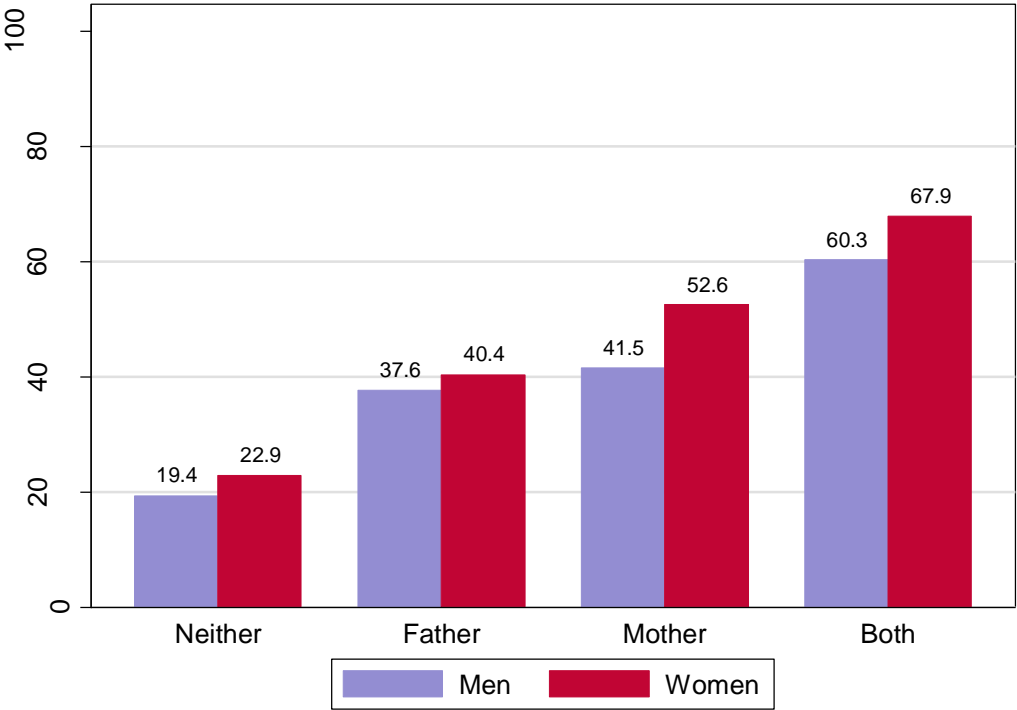


Figure 9: Turnout by parental voting and gender

Note: Sample is restricted to individuals age 18-38 with both parents in the electronic voter records. Observations counts are 163 695 men and 152 225 women.

intergenerational similarities in voting (as also discussed in Gidengil et al 2016). The figure shows how offspring turnout among men and women aged 18-38 varies with parental turnout. As these are observed in the same election, the two generations may influence each other (as shown by Dalgaard, 2016). Common environmental factors may work together with genetic traits in determining the voting patterns of the two generations. Comparing individuals with parents who did not vote and individuals for whom both parents voted, we see differences in turnout of more than 35 percentage points. Moreover, female turnout relates particularly strongly to whether or not their mother voted. The correlation between sons and fathers is strong, but is weaker than for daughters and mothers.

The sibling correlation reflects another dimension of the impact of family background and childhood environment on adult behavior. Rather than calculating the correlation(s) formally,

Figure 10 illustrates the power of family background by dividing the population according to voting among the other siblings. To account for the variety of family sizes, we calculate, for each individual, the percentage of their siblings who voted in the same election, only including brothers and sisters eligible to vote and living in municipalities included in the data. We see clearly from Figure 10 that turnout behavior has a strong family component. Starting from *few*, turnout is clearly increasing in the fraction of siblings who votes, for both men and women. For women, for example, turnout is 48.5% if none of her siblings voted, compared to 77.2% if all her brothers and sisters voted.

Even more distant members of the same dynasty share both environmental and genetic factors. In Figure 11 we replace siblings by cousins, defined as non-siblings who are descendent of the same grandmother (i.e. the mother of the father or the mother), and present turnout by the fraction of cousins who voted in the same election (conditional on presence in the data). As expected, the association is weaker than for siblings, but we find a substantial difference between those with none or few voting cousins and those who had full voting among cousins. For cousins, the difference is about 15 percentage points, roughly one half of the differential found for siblings. Taken together, Figures 10 and 11 clearly illustrate that family matters. Even dynasty members of the same generation with different parents share factors that influence election turnout.

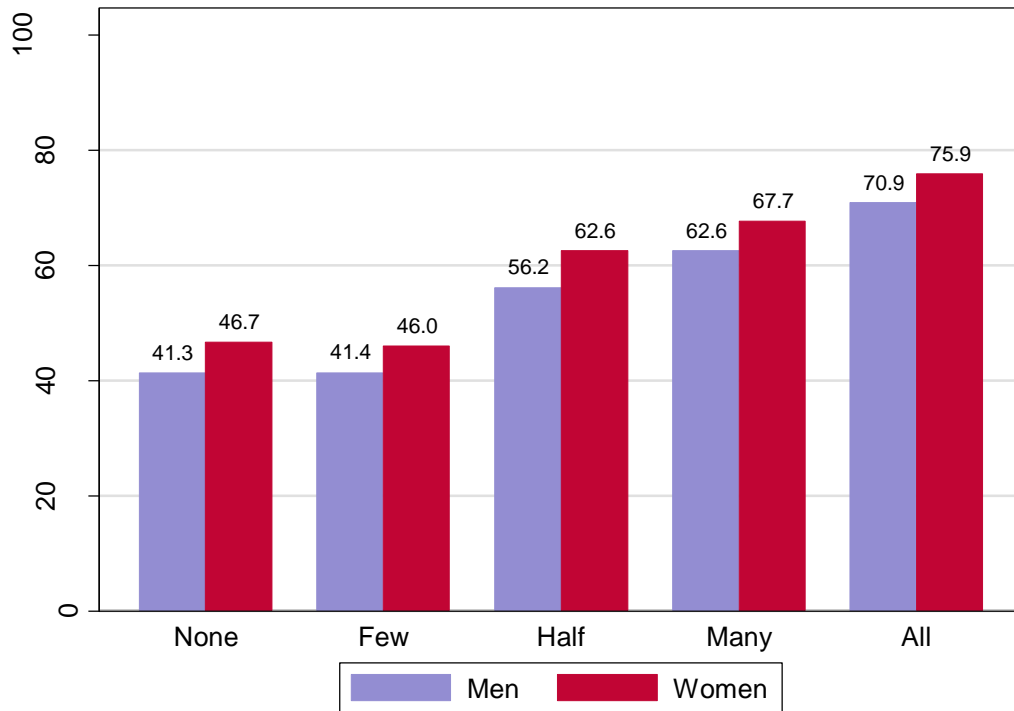


Figure 10: Turnout by average turnout among siblings and gender

Note: Sample is restricted to individuals age 18-58 with at least one sibling in the electronic voter records. Observation counts are 342 909 men and 330 110 women. “Few” denotes that at least one but fewer than half of the siblings voted; “many” that more than half but not all voted.

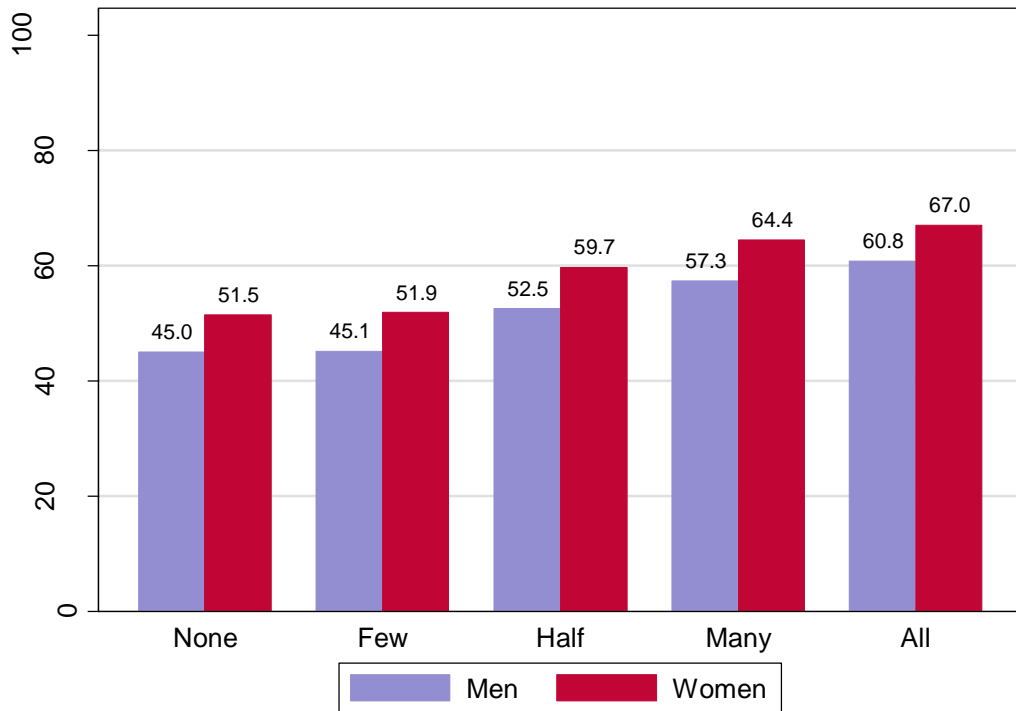


Figure 11: Turnout by average turnout among cousins and gender

Note: Sample is restricted to individuals age 18-58 with at least one cousin in the electronic voter records. Observation counts are 177 167 men and 171 872 women. “Few” denotes that at least one but fewer than half of the cousins voted; “many” that more than half but not all voted.

7. Socio-economic factors – a regression analysis

The associations between socio-economic factors and turnout presented so far do not account for the fact that individual characteristics and family factors are highly correlated. In Table 2, we present conditional associations in terms of regression coefficients without claiming causal interpretations. Since parental and dynasty voting information is only available for a subset of the data (for example, both parents and adult children must be included in the 2015 electronic voter register), we present results separately for the full sample and for a restricted sample.

For the full sample, we first present regression coefficients from single factor regressions and then estimates from the multiple regression, separately by gender. The same structure follows for the sample with the complete set of family factors. First, each of the factors correlate with turnout, even when we control for the full set of regressors. Second, the associations between economic factors (own income and wealth) and turnout are dramatically reduced when we condition on others factors, suggesting that money per se has limited impact on turnout. Turnout differentials across education groups, however, remain substantial. The influence of marital status and the resemblance in turnout within couples are remarkably strong, even controlling for other socio-economic factors. There are still indications that childhood conditions matter, moving from the bottom to the top rank in the parental earnings distribution is associated with close to a 10 percentage points increase in turnout in the multiple regression. Turning to the reduced sample with dynasty turnout information, the coefficients of economic factors are even smaller, and for parental income in particular. Turnout among children and parents remain strongly correlated, reduced by about one half when controlling for other factors. Even the turnout associations between siblings and cousins are significant, both in terms of behavior and statistical precision.

Table 2. Turnout and socioeconomic factors. Linear Probability Model.

	Full sample				Reduced sample			
	Men		Women		Men		Women	
	One factor at a time (1)	Multiple reg (2)	One factor at a time (3)	Multiple reg (4)	One factor at a time (5)	Multiple reg (6)	One factor at a time (7)	Multiple reg (8)
Age/10	0.078*** (0.000)	0.043*** (0.000)	0.056*** (0.000)	0.041*** (0.000)	0.126*** (0.003)	0.040*** (0.003)	0.102*** (0.003)	0.033*** (0.003)
Education:								
Second	0.189*** (0.002)	0.117*** (0.002)	0.172*** (0.002)	0.118*** (0.002)	0.163*** (0.006)	0.091*** (0.005)	0.144*** (0.007)	0.074*** (0.006)
Undergrd	0.315*** (0.002)	0.221*** (0.002)	0.278*** (0.002)	0.222*** (0.002)	0.331*** (0.006)	0.193*** (0.005)	0.313*** (0.006)	0.173*** (0.006)
Graduate	0.420*** (0.002)	0.265*** (0.002)	0.375*** (0.002)	0.276*** (0.002)	0.467*** (0.007)	0.245*** (0.007)	0.448*** (0.007)	0.222*** (0.007)
Income/1M	0.313*** (0.002)	0.041*** (0.002)	0.383*** (0.003)	0.104*** (0.003)	0.288*** (0.006)	0.016** (0.007)	0.384*** (0.009)	0.055*** (0.010)
Wealth/1M	0.059*** (0.000)	0.006*** (0.000)	0.046*** (0.000)	0.002*** (0.000)	0.075*** (0.001)	0.012*** (0.002)	0.054*** (0.001)	0.002 (0.001)
Homeowner	0.205*** (0.001)	0.024*** (0.001)	0.162*** (0.001)	0.019*** (0.001)	0.143*** (0.004)	0.004 (0.004)	0.114*** (0.004)	0.004 (0.004)
Married	0.386*** (0.001)	0.278*** (0.001)	0.299*** (0.001)	0.235*** (0.001)	0.388*** (0.004)	0.277*** (0.005)	0.314*** (0.004)	0.234*** (0.004)
Sps did not vote	-0.589*** (0.002)	-0.521*** (0.002)	-0.589*** (0.002)	-0.520*** (0.002)	-0.583*** (0.006)	-0.485*** (0.005)	-0.565*** (0.005)	-0.465*** (0.005)
Parent inc rank/10					0.024*** (0.001)	0.002*** (0.001)	0.025*** (0.001)	0.002*** (0.001)
Parent vote:								
Only dad					0.153*** (0.008)	0.091*** (0.007)	0.132*** (0.008)	0.067*** (0.007)
Only mom					0.164*** (0.008)	0.099*** (0.007)	0.221*** (0.008)	0.143*** (0.007)
Both					0.344*** (0.006)	0.186*** (0.006)	0.376*** (0.006)	0.210*** (0.006)
Siblings:								
Few					0.036*** (0.014)	0.013 (0.013)	0.036*** (0.015)	0.027* (0.013)
Half					0.117*** (0.006)	0.037*** (0.006)	0.145*** (0.006)	0.058*** (0.006)
Many					0.196*** (0.013)	0.079*** (0.011)	0.240*** (0.013)	0.111*** (0.012)
All					0.248*** (0.004)	0.109*** (0.004)	0.262*** (0.004)	0.118*** (0.004)
Cousins:								
Few					-0.000 (0.007)	-0.001 (0.006)	0.002 (0.007)	0.004 (0.006)
Half					0.059*** (0.007)	0.007 (0.006)	0.081*** (0.007)	0.027*** (0.006)
Many					0.111*** (0.006)	0.024*** (0.005)	0.122*** (0.006)	0.036*** (0.005)
All					0.142*** (0.006)	0.037*** (0.005)	0.148*** (0.006)	0.042*** (0.005)
Constant		0.173*** (0.002)		0.220*** (0.002)		-0.009 (0.011)		0.049*** (0.011)
R ²		0.291		0.271		0.264		0.276
Obs		557 651		564 259		64 992		61 265

*/**/***Statistically significant at 10/5/1 percent levels.

Note: Samples consist of individuals age 22-72 with valid data for all variables included in the multiple regression models and exclude the top percentile of the income and wealth distributions respectively.

8. Immigrants and children of immigrants

Over the past two decades, the immigrant population in Norway tripled and a rapidly increasing share of the electorate has an immigrant background.

Table 3. Descriptive statistics, immigrant electorate

	Men				Women			
	Observations (1)	Turnout (%) (2)	Age (3)	Years since entry (4)	Observations (5)	Turnout (%) (6)	Age (7)	Years since entry (8)
A. Adults (age 25-62)								
Low income country	36 378	38.5	41.1	11.5	44 472	38.9	40.2	11.5
Eastern Europe	35 886	8.1	40.6	7.6	24 568	20.5	39.4	9.4
High income country	24 625	35.1	39.9	8.7	17 545	43.8	38.6	9.5
Natives	409 078	65.2	43.1		402 832	69.9	43.4	
B. Youth (age 18-34)								
Young arrivals	11 934	25.9	25.4	18.6	11 456	22.1	25.4	18.6
Second generation	11 609	35.2	24.0		11 121	41.4	23.9	
Natives	181 776	48.8	26.2		177 490	56.0	26.1	

Note: The five major low income source countries in the adult electorate are Pakistan (9%), Somalia (9%), Iraq (9%), Iran (7%), and Vietnam (6%). Top five Eastern European countries are Poland (42%), Lithuania (11%), Bosnia and Herzegovina (9%), Russia (8%), and Kosovo (7%). Top five high income countries are Sweden (34%), Germany (12%), Denmark (12%), UK (9%), and USA (5%). Young arrivals are those born abroad to two foreign-born parents and who immigrated to Norway at ages 0-15; top five countries are Iraq (12%), Somalia (10%), Bosnia and Herzegovina (7%), Pakistan (7%) and Kosovo (5%). Second generation counts those born in Norway to two immigrant parents; top five ancestry countries are Pakistan (26%), Vietnam (11%), Turkey (9%), Sri Lanka (6%), and Morocco (6%). Natives refer to those born in Norway to two Norwegian-born parents.

Since acquisition of Norwegian citizenship differs across source countries and the timing of naturalization is selective (Bratsberg and Raaum, 2011), a study of immigrant turnout should be based on country of origin rather than on foreign citizenship. Official statistics from 2015 reports that close to 13.3% of the electorate has an immigrant background. Over the last decade, the composition of the immigrant electorate has also changed as the share of rich source countries has declined. In relative terms, the Eastern European immigrant population exhibits the fastest growth rates, following the extension of the EU in 2004 spurred labor migration to Norway.

In Table 3, we split immigrants into three source country groups reflecting cultural and economic similarity as well as admission class (e.g. refugees, family migrants, etc); (i) High

income countries (Western Europe, US, Canada; typically labor and family) (ii) Eastern Europe (typically labor migrants in recent cohorts) and (iii) Low income countries in Africa, Asia and South-America (typically refugees and family migrants). Immigrants from low income countries have the longest years of residence, reflecting low outmigration rates when compared to those from high income countries.

We distinguish between immigrants arriving as adults and those who entered Norway before turning 16 (Youth in Table 3). As human capital accumulation is affected by age at entry (e.g. Böhlmark, 2008), we split the children of immigrants into young arrivals (<16 years of age) and Norwegian born children of immigrants, often called the second generation, or first-generation Norwegians. The two groups are of equal size and the foreign born are just slightly older.

Table 3 clearly shows that immigrants are much less likely to vote, compared to natives. The turnout is strikingly low among (the labor) migrants from Eastern Europe. Note also that the gender gap is absent among immigrants from low income countries. Boys are more likely to vote than girls among young arrivals (dominated by youth from the same low-income countries).

Many theoretical perspectives on integration and political participation would predict that immigrant turnout approaches that of similar natives as time is spent in the host country (Wass et. al. 2015). In Figure 13, we plot the age-corrected immigrant-native turnout differential by years since entry, starting from the first year of as member of the electorate. As we control for aging, the profile ideally reflects how the differentials emerge when the immigrant spends an extra year in Norway, accounting for the fact the both groups age.

The patterns are striking. Among immigrants from rich countries, turnout is strongly and positively correlated with years since (electorate) entry. For immigrant from low-income countries, there is no association whatsoever. The Eastern European pattern actually reflects two very different immigrant groups. The relatively few Eastern Europeans with many years in Norway, are much less likely to vote than natives. The labor migrants from Eastern Europe arriving since the EU extension in 2004 have extremely low turnout rates (close to one tenth of that of natives and other immigrant groups). While female turnout exceeds that of men with four to five percentage points among natives, we find no distinct gender difference

among immigrants from low income countries. Thus, when we plot immigrant-native differentials for low income countries as in Figure 11, they will be larger (in absolute value) for women.

Turnout of the next generation (or the first-generation Norwegians) clearly exceeds participation among their immigrant parents. Figure 13 shows the turnout by age and gender

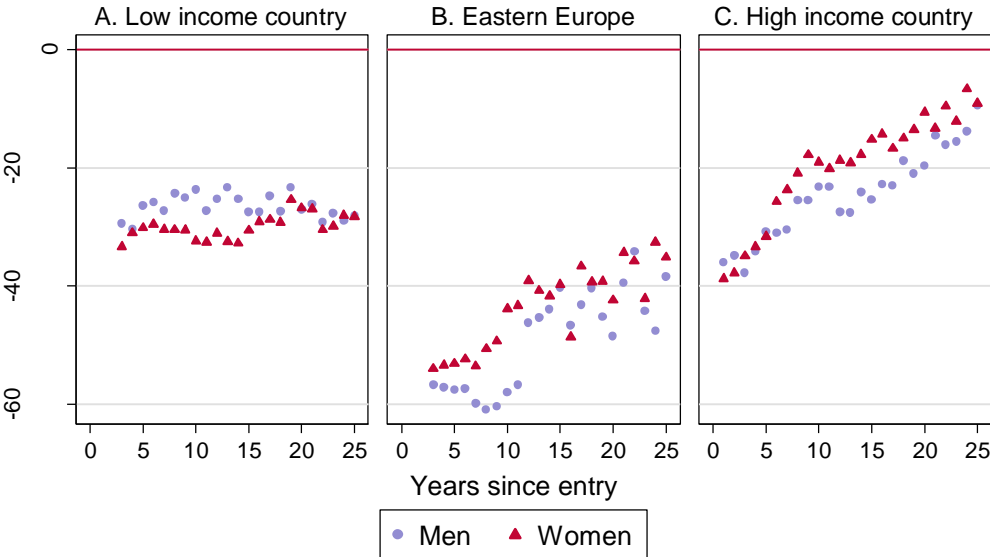


Figure 13: Immigrant turnout difference from natives by origin region, gender, and years since entry

Note: Scatter points show age-adjusted turnout differential between immigrants and natives. For sample sizes and major countries, see Table 3.

for the young arrivals (during childhood, 0-15) and second-generation immigrants, as well as children of two native-born parents.

Both groups of immigrant children have a drop from age 18 to 22, just like natives, and turnout is rising with age from the early 20s onwards. Children of immigrant are less likely to vote,

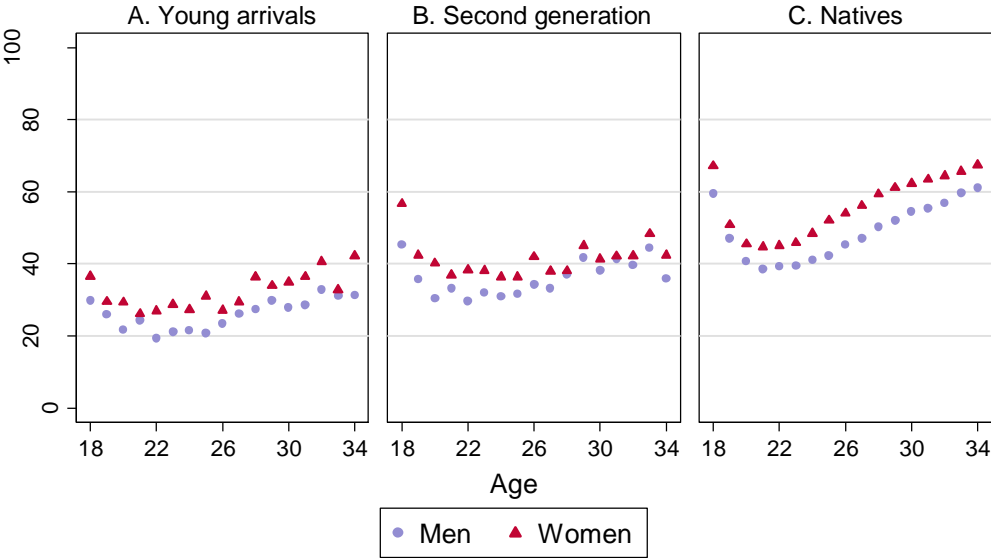


Figure 14: Turnout among children of immigrant and native parents by age and gender

Note: For classifications and observation counts, see Table 3.

compared to natives of similar age, but the differential is considerably lower than for their parents. As for other social outcomes like schooling (Bratsberg et al, 2012) and employment, country of birth appears to matter. The second generation is more likely to vote than young arrivals, suggesting that childhood conditions and human capital accumulation matter, even for political participation. Among boys in their early-/mid-twenties who arrived as children, only one in five voted. Turnout seems to be declining in age at immigration, whether it is due to selective migration pattern rather the effects of more intense host country environment exposure. Higher turnout among girls is also found for young immigrant adults who spent their early years in Norway. Their gender pattern appears more similar to that of equally aged natives, and unlike what we find for their parents.

9. Public and private sector employees

Political preferences of public sector employees differ from those in private firms. This differential can reflect both individual incentives and self-selection on political attitudes (Rattsø and Sørensen, 2016). Factors discussed in the literature include that public sector employees are more likely to vote in local elections because of personal economic (budget size) or professional interest (quality of public service), lower costs (workplace close to poll station) or individual characteristics (education). Corey and Garand (2002) argue that public sector employees are particularly affected by the electoral outcome, and hence are more likely to vote *ceteris paribus*. Recent empirical evidence (Bhatti and Hansen, 2013) documents a public-private sector turnout differential of about 11.5 percentage points in Denmark, with local government employees voting slightly less than those employed by the central government. Table 4 reveals a similar pattern for Norway, but with the sector differentials even larger than those in Denmark. Public servants in the central government are most likely to vote, followed closely by municipal employees. As expected from income and education gradients uncovered in prior sections, the non-employed have the lowest turnout rates.

Table 4. Turnout by sector of employment (public/private) and gender.

	Men		Women	
	Share	Turnout	Share	Turnout
Private sector employee	63.6	57.3	41.9	62.5
Central government employee	8.9	74.6	14.8	75.1
Local government employee	6.9	73.5	21.3	70.5
Not employed	20.6	42.3	22.1	47.1
All	100	56.9	100	62.7

Note: Age 25-62. Observations 577,719 men and 556,012 women.

The split into public and private sectors also suggests that occupational structure contributes to our understanding of the observed gender differential. While the overall gender differential is nearly 6 percentage points for those aged 25-62, voting behavior *within* sector is more similar across genders. Actually, among employees in local government administration, i.e., utilities and services like education and health care, (the small fraction of) men are more likely to vote than female colleagues. Implicitly in Table 4, a substantial part of the gender gap reflects that women are more likely to work in the public sector where both genders are more

active when it comes to voting. As an illustrative counterfactual, changing the occupational structure among men to mimic that of women, keeping occupation-specific turnout constant, would raise male turnout from 56.9 to 60.1 percent (by 4.2 percentage points). If we let women have male occupations, their turnout would drop by 1.7 percentage points to 61.0 percent.

10. How voters differ from the electorate

When only 60 percent of the electorate actually exercises their voting rights, the average voter likely differs from the average member of the electorate. The evidence in the previous sections reveals systematic differences between voters and non-voters along a number of dimensions. The political economy literature discusses how political participation correlates with economic variables such as income and wealth and how such correlations may affect the democratic choices of redistributive policies (e.g., Wolfinger and Rosenstone, 1980; Lijphart, 1997; Leighley and Nagler, 2013). A key factor in how turnout inequality enters an analysis of winners and losers of redistribution, is the degree of mismatch between the income distributions of voters and the electorate. As preferences for redistributive policies typically decrease with higher income, at least in cross sectional data (Lind 2010), a richer decisive voter implies less redistribution. Bénabou (2000) analyzes how a redistributive income tax rate will be low if the propensity to vote among the rich exceeds that among the poor.

There are several possible measures of socioeconomic bias in voting. Leighley & Nagler (1992; 2014), for example, focus on the turnout of the upper versus the lower half in the income distribution of eligible voters. A related summary measure (Bénabou, 2000) is the location of the *pivotal* voter in the overall income distribution. The pivotal voter is the individual with the median income among those that actually exercise their voting rights. In the United States, the pivotal voter has an income that corresponds to that of the 55.5 percentile in the electorate distribution, implying that the poorer segments are underrepresented in the ballot box (Benabou, 2000). The position of the pivotal voter is critical as all voters with equal or higher income could form the majority in a vote. In Table 5, column (1), we report the equivalent measure for the 2015 Norwegian election. In the case of Norway, the position of the pivotal voter is at the 57th percentile of the income distribution, hence in fact slightly

higher than that found in the US. For permanent income, the pivotal voter rank is at the 54th percentile. For wealth, the discrepancy is even larger and the measure is at the 60th percentile. Real world income distributions are skewed so the median income is lower than the average. Increased inequality tends to increase this median-mean ratio, and theoretically leads to more

Table 5. The pivotal voter rank for earnings, age, wealth and education.

	Pivotal voter rank (1)	Turnout below median (2)	Turnout above (3)
Income	57	0.90 (54)	1.11 (67)
Own permanent income	54	0.93 (67)	1.07 (77)
Wealth	60	0.79 (48)	1.20 (73)
Housing wealth	59	0.86 (52)	1.20 (73)
Occupational prestige	57	0.84 (53)	1.20 (76)
Age	56	0.84 (51)	1.16 (70)
Years of education	58	0.87 (54)	1.18 (73)

Note: 71 percent is the theoretical maximum for pivotal voter rank given average turnout of 58. Turnout rates just below and just above are in parentheses.

redistribution (Romer 1975, Meltzer and Richard 1981). This theory assumes, however, that all voters vote. When only some voters vote, the relevant measure is the ratio of the median income among the *voting* population to the average income of the *whole* population. Consistent with the positive income turnout gradient, in our data the pivotal voter's income exceeds the average income in the electorate at large. As expected, the median income of the whole electorate falls *below* the average. Therefore, if income net of taxes and transfers were the only concern of voters, this would lead the majority of voters (i.e., those with incomes equal to or higher than the median among voters) to vote against redistributive taxation.

In Table 5, we also include the same measure for a few other key variables, showing that the imbalance we found for income and wealth also holds for occupational prestige, age and years of education. Biases in these dimensions may affect the political priorities with regards to education support and pensions.

The last two columns in Table 5 show the complementary metric of turnout inequality, similar to that used by Leighley and Nagler (1992; 2014). For *income* the two numbers show the turnout relative to average for those below and above the median income respectively while

the numbers in parenthesis give the turnout of the individuals strictly below and strictly above the median, respectively. For income those below the median has a propensity to vote that is 90 percent of the average turnout rate while the propensity among those above the median is 110 percent of the average. From Leighley and Nagler (2014) the equivalent ratios in 2008 US presidential election were 88 percent below the median and 111 percent above the median. Hence, by this measure, the Norwegian inequality in turnout is only marginally below that of the US. For education, the skewedness in Norwegian turnout gives ratios of 87 and 118, while the same numbers in the US are 85 and 114. The comparison of Norwegian register data from local elections and US survey data from presidential elections comes with obvious caveats, but nonetheless shows that Norwegian turnout inequality is substantial, also when based on an international comparison.

11. Conclusions

Using high quality register data covering 1.7 million individuals from the Norwegian electorate, we document substantial inequalities in voter turnout along a wide array of dimensions. Beyond the non-linear age profile and a strong education gradient, economic resources, both in terms of income and wealth, correlate with election turnout. Family structure also influences turnout, illustrated from a wide range of angles. First, turnout is strikingly similar among couples. Second, the importance of family factors is reflected in the strong parental earnings gradient as well as highly correlated turnout between children and parents, and among siblings as well as cousins. Although attenuated relative to a simple model, all these factors carry statistically significant coefficients in a multivariate regression model of election turnout.

Immigrant turnout falls far below that of natives of similar age. Except for migrants from high-income countries, there is no indication that additional years of residence lead to convergence with native turnout rates. Across generations, however, we find clear indications of integration as immigrants who arrived during childhood, and in particular second-generation immigrants, are more similar to their native peers than to the parent generation of immigrants.

Election turnout inequality also mirrors occupational structures as those holding more prestigious jobs are more likely to vote. Moreover, public sector employees are more likely to vote than those in the private sector and the high fraction of women working in the public sector is a candidate explanation for why female turnout exceeds that of men with a margin of four percentage points.

Some socioeconomic turnout associations are gender neutral, while others differ for men and women. The education gradient is greater for men, and at post-graduate educational attainment there is no gender turnout differential. Women and men in couples are equally likely to vote, indicating that the overall gender differential can be attributed to low turnout among single men. Among immigrants, there is no gender difference among those originating from low-income countries hinting that cultural factors of the home country have some influence.

All associations in this study are descriptive. To disclose casual links, there is need for clever and sharp identification strategies. There are numerous examples of correlations that need to be scrutinized: Do resemblances in turnout within couples reflect assortative mating or social interaction? Does the occupational position causally affect turnout or is it simply a reflection of sorting? Among immigrants, is cohort heterogeneity or selective outmigration masking an underlying integration process, creating biased estimates of the effect of years of residence? Does money really matter or is it what follows from poverty that actually explains why people with fewer resources tend to abstain from voting. Administrative data as illustrated in this paper offer ample opportunities to answer these and similar questions. There is no doubt that our understanding of why people do or do not vote will gain enormously from administrative data made available for research purposes.

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