Income Inequality and Voter Turnout in Canada, 1988-2011

Matthew Polacko
King's College London

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Abstract

The political aspect of income inequality has only recently begun to achieve attention from Canadian scholars, which has predominantly been focussed cross-nationally, or on the United States. However, rising income inequality and declining political participation has afflicted Canada to a greater extent than the majority of OECD member states. Voter turnout in Canadian federal elections began to decline in the 1990s, precisely when income inequality began to rise substantially. In a longitudinal multi-level pooled analysis, this paper explores this important correlation by using Canadian Election Survey (CES) data from 1988 to 2011 and measures of income inequality at the provincial level. The results indicate that both low-income and income inequality are negatively associated with turnout and turnout is significantly lower in provinces where income inequality is high. Although low-income individuals are affected the most, the turnout of all income groups actually decreases, which provides robust evidence for relative power theory.

Introduction

The most common and crucial institutionalized form of political participation has long been voting and it is often seen as being interrelated with the performance and health of a democracy (Gidengil and Bastedo, 2014: 6). While people can have a variety of reasons for not voting, it is becoming increasingly evident that underlying demographic changes such as declining youth participation are being driven by a multitude of socioeconomic factors (LeDuc and Pammett, 2014: 22). This study will attempt to ascertain whether income inequality is also an important socioeconomic factor in turnout.

Both rising income inequality and declining political participation have afflicted Canada to a greater extent than the majority of OECD member states. Post-war turnout at national elections averaged around 75 percent in Canada until 1988. Since then it declined dramatically and has averaged in the low-60s the past few elections. The one exception being the recent 2015 election, which witnessed a substantial rise to 68.3 percent, but it remains to be seen if this number is sustainable, as it is more likely that it was a one-off transitory election driven by a deep desire for change of an unpopular government that had spent nearly a decade in power (Urban, 2016). Income inequality also held roughly steady since the Second World War but has increased substantially since the late 1980s. Thus, these changes in income inequality in Canada since the late 1980s form an important comparison with the precipitous decline in voter turnout that occurred after the 1988 federal election.

The most extensive research on income inequality and turnout has centred on the United States or has been conducted cross-nationally concentrating predominantly on Europe, with only a handful of Canadian elections included within the cross-national studies. Therefore, this study seeks to address this gap in the literature by conducting a longitudinal multi-level pooled analysis using survey data from eight federal elections held between 1988

and 2011 and macro-level data on the level of income inequality by province at the time of each election, in order to examine the effect of income inequality on voter turnout in Canada.

This paper will begin by providing a backgrounder and general information that relate to income inequality and voter turnout. Attempting to explore the relationship between income inequality and voting will then include a comprehensive review of the relevant existing theories including relative power theory, resource theory and conflict theory. The literature review will be followed by a description of the data and methodology utilized. This will be followed by a detailed discussion of the results and will finish with concluding remarks and important implications of the study.

Background

Income inequality

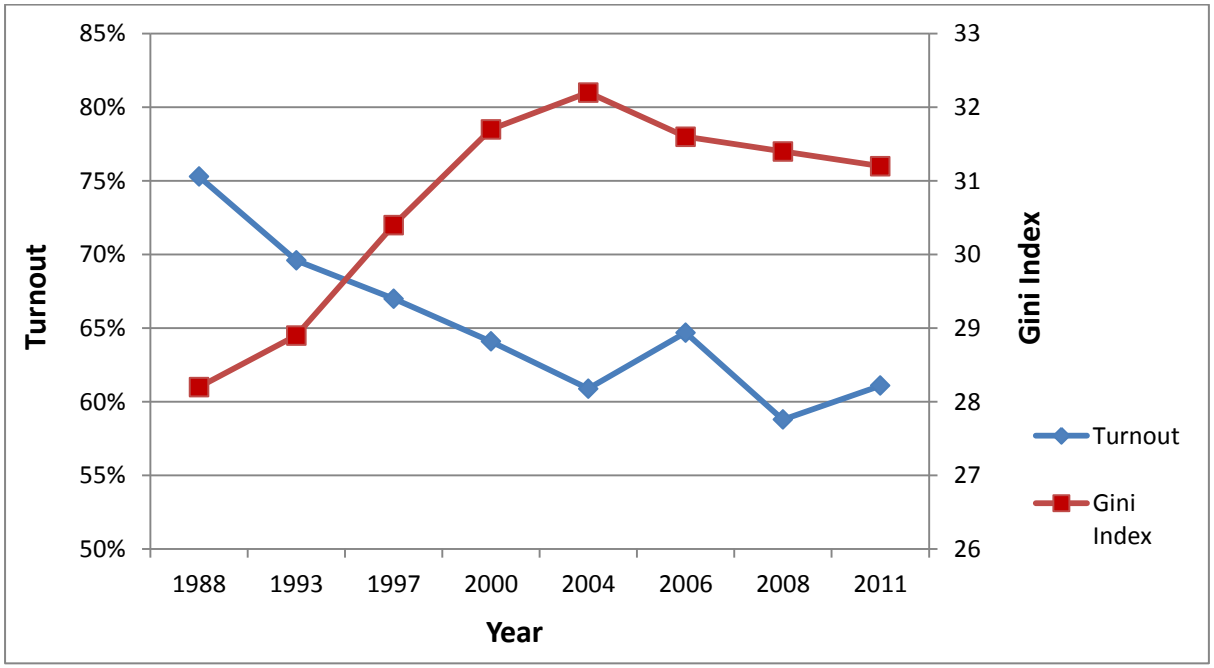
Income inequality has risen throughout the OECD in recent decades, following a long period of stability. The increase is largely owing to the fact that the incomes of higher-income individuals have grown much faster than those of low- and middle-income earners (Heisz, 2016: 77). It has predominantly been attributed to increasing globalization, technological change and public policy changes (Sran et al, 2014: 22). Some of the more pronounced political sources of increasing inequality that have been identified include the decline of labour unions, partisan polarization and increased lobbying power of organized business (Avery, 2015: 955).

There are many different ways to examine income inequality but the optimum and most widely used measure is the Gini coefficient. It is a summary indicator for a population that ranges between 0 and 1, where 0 represents complete equality and 1 represents complete inequality. The strength of the Gini coefficient is that it responds to all changes in the

distribution of income but it tends to be more responsive to changes in the middle distribution of income, which can understate tail-end changes in inequality at the very top or bottom (Heisz, 2016: 78-79).

Income inequality has risen both in countries that have traditionally had high levels of inequality such as the US and UK but also in countries where it has traditionally been low, such as Scandinavia. The average Gini coefficient for OECD countries stood at 0.29 during the mid-1980s but has since increased by nearly 10 percent by the late 2000s (Sran et al, 2014: 22). Canada ranks roughly in the middle of the OECD in both its current inequality levels and the degree of the increase since the 1980s. Prior to the Second World War, income inequality roughly matched current levels in Canada, but in between a phenomenon dubbed the "Great U-Turn" occurred, whereby a few decades of post-war healthy declines in income inequality then gave rise to steady increases the past few decades (Yalnizyan, 2010: 4). The considerable narrowing of income inequality from the 1940s through the 1970s was a period of middle class prosperity with low unemployment, high wages and major investments in public services and social programs. Subsequently, between 1988 and 2004, Canada's Gini coefficient rose dramatically from 0.282 to 0.322, before declining slightly after the financial crisis down to 0.312 in 2011 and has since continued its upward trajectory (Statistics Canada, 2013). As Figure 1 shows, the steepest rise in the Gini rate occurred in the mid-1990s, which coincides precisely when the largest decline in federal voter turnout occurred.

Figure 1: Turnout by Gini Index, Canada, 1988-2011



Sources: Statistics Canada, CANSIM table 202-0709; Elections Canada, Voter Turnout at Federal Elections and Referendums

Voter Turnout

Political participation is the cornerstone of democracy, as it allows citizens to effectively communicate their needs and preferences to their government. It can be best defined as the "involvement in political processes and taking action on issues of concern" (Gidengil and Bastedo, 2014: 5). There are many ways that citizens can engage in political participation such as: joining a political party, donating to a candidate or party, volunteering for campaign work, signing petitions, joining a demonstration or boycott, contacting politicians, exchanging political information online and voting (Gidengil and Bastedo, 2014: 5). Voting is easily the most common institutionalized form of political participation and for many people it is the only form they take part in, as it takes the least amount of time and energy. Therefore, it is the best measure of political participation, as it captures almost everyone who engages in the aforementioned more demanding types of political participation (Painter-Main, 2014: 66).

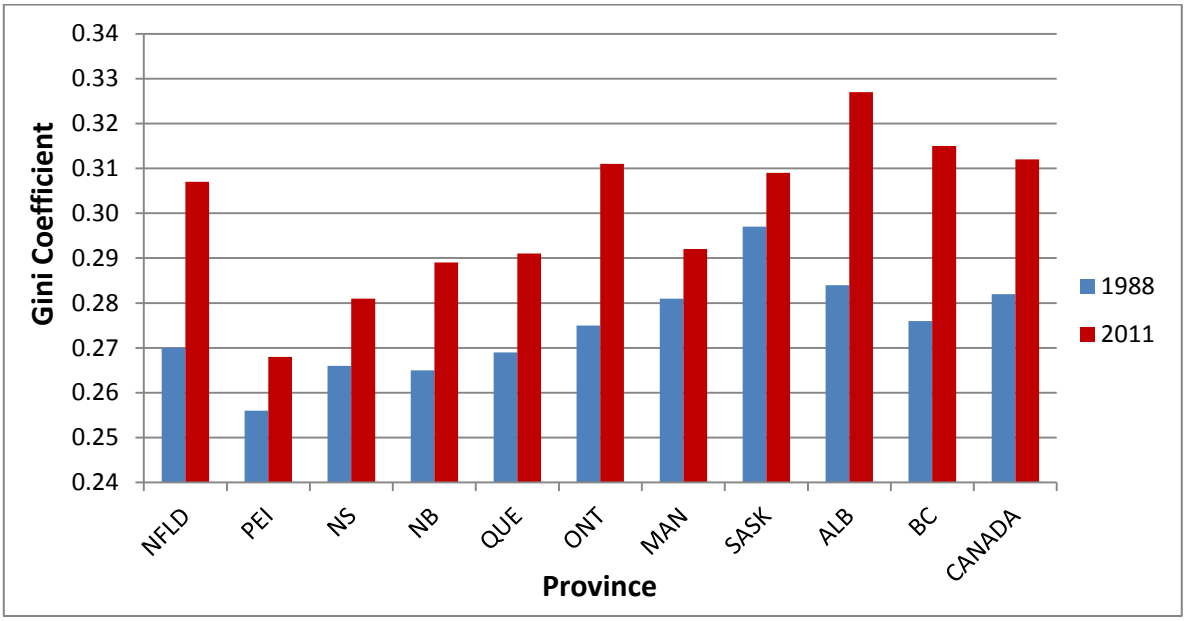
The essential place that voting holds in Western democracies has come under threat in recent decades due to declining electoral turnout. Voter turnout averaged 84 percent in the 1960s and fell 2 percent in each of the subsequent two decades and then plummeted a further 4 percent in each of the two subsequent decades, to reach a low of 72.5 percent in the 2000s (Schäfer and Streeck, 2013: 11). The trend is nearly universal and the decline in turnout is particularly low in Switzerland (likely from election weariness) and three Anglo-Saxon countries (UK, US and Canada). Between 1945 and 1988, turnout in Canadian federal elections averaged 75.4 percent and varied between a high of 79.4 percent in 1958 to a low of 67.9 percent in 1953 (Gidengil et al, 2004: 103). However, since 1988, Canadian turnout has dramatically fallen by around a fifth, as it has hovered around the 60 percent mark the past few federal elections. Although this is still 10 points higher than American presidential elections, it is still over 10 points lower than the median average turnout for other OECD members over the same period.

There are many country level factors that play a role in voter turnout, such as the size, concentration, stability and homogeneity of a nation's population (Blais, 2006). Institutional factors are also important such as the type of political system, registration procedures and whether voting is compulsory (Horn, 2011: 14). The two leading explanations as to why Canada's turnout is so low have been attributed to its political system and demographics, as turnout tends to be lower by 3 percent in majoritarian systems in comparison to proportional systems and it also tends to be lower in large sparsely populated countries like Canada (Gidengil et al, 2004: 104). These factors surely capture some of the explanation for Canada's poor turnout but it is likely that there is more to the story and another such country level factor could very well be income inequality.

Provincial level

When examining income inequality and voter turnout within Canada, the variation between provinces and regions is also substantial. Income inequality has risen across every province and region although the rise is unevenly spread (see Figure 2 below). Canada's richest provinces have witnessed the greatest rises led by Alberta and followed by British Columbia and Ontario, while the Atlantic region, led by Prince Edward Island, has experienced the smallest rises. Each province has also experienced their own trajectory (Yalnizyan, 2014: 53-54), as Saskatchewan was able to avoid the rises that occurred throughout the rest of the country in the 1990s and Newfoundland has differed from its Maritime neighbours in witnessing a pronounced rise in recent years. Canadian provinces have a great deal of autonomy with respect to social policy in comparison to many other federal countries and previous research indicates that shifts in inequality are largely attributable to provincial rather than federal transfers (Sealey and Andersen, 2015: 55). This likely explains why Saskatchewan experienced the smallest increase in income inequality from 1988 to 2011, as its provincial government was dominated by the leftist New Democratic Party (NDP) during the 1990s, when income inequality climbed the most throughout Canada.

Figure 2: Gini Coefficient by Province, 1988 and 2011

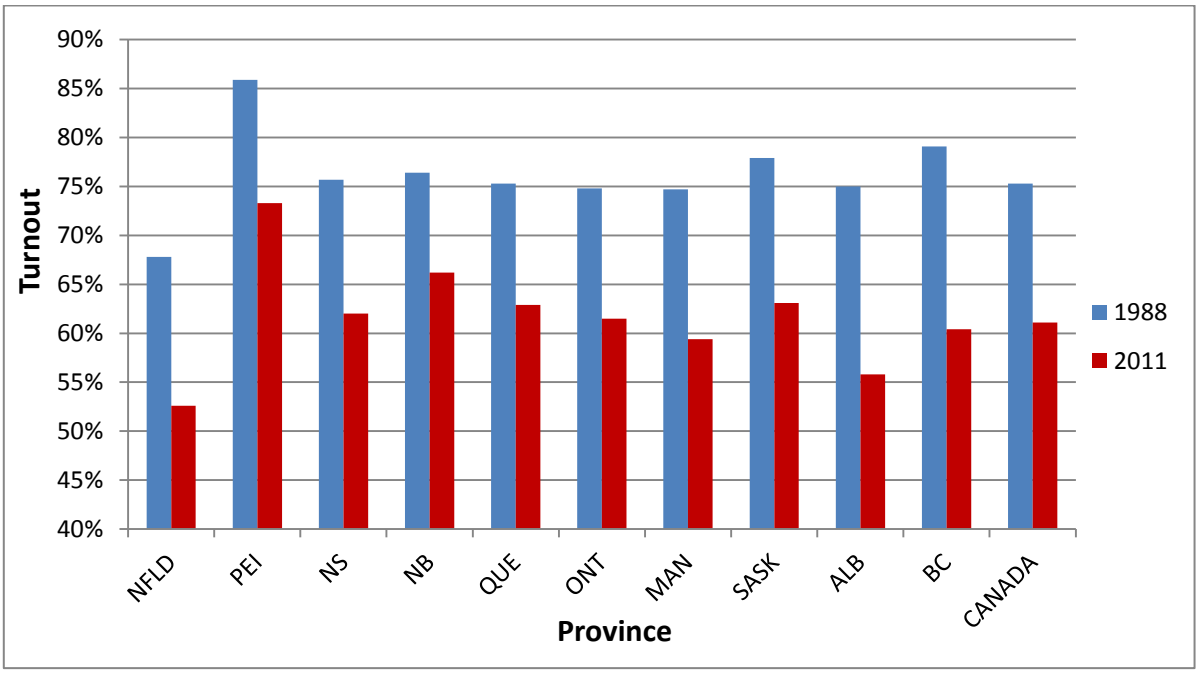


Source: Statistics Canada, CANSIM table 202-0709.

Canada is an anomaly in having higher turnout in subnational elections, as its provincial elections have not been privy to nearly the same decline in turnout as its federal elections. This can likely be partly attributed to the fact that Canada is a highly regionalized country and its two Atlantic island provinces have long stood out on turnout. Prince Edward Island has since Confederation had the highest turnout, due to its extremely small constituency sizes and high interest in politics, while Newfoundland stands out as long having had the lowest turnout, due to it being a latecomer in joining Canada and general disengagement towards federal affairs (Blake, 2005: 6-7). Each island province has maintained its leading position at opposite ends of the spectrum in spite of the great turnout decline. In fact, despite their massive gap in turnout, the two provinces have experienced largely the same highly uniform decline in voter turnout as the rest of the country. The only exceptions being the two most western provinces, (Alberta and British Columbia) which have witnessed the largest turnout decline at 19 percent, a full 5 percent above the national average

(see Figure 3 below). Coincidently, Alberta and British Columbia have also observed the steepest climbs in income inequality over the same period.

Figure 3: Turnout by Province, 1988 and 2011



Sources: Elections Canada, Voter turnout for the 2011, 2008, 2006 and 2004 general elections; Elections Canada, Voter turnout for the 2000, 1997, 1993 and 1988 general elections

Previous Literature

Income inequality has only recently come to the forefront of academic debate. Influential books such as Pickett and Wilkinson's *The Spirit Level* (2009) have identified instrumental reasons why income inequality is one of the leading issues of concern today by highlighting the social problems that income inequality exacerbates, such as poor health, crime, obesity, teenage pregnancy and a lack of social cohesion. Economists have also recently begun to link income inequality with worsening economic performance and growth. In her speech to the 2012 Annual Meetings of the IMF and World Bank, IMF Managing Director Christine Lagarde, spoke of her "third milestone: inequality and the quality of

growth," by pointing out that "recent IMF research tells us that less inequality is associated with greater macroeconomic stability and more sustainable growth" (Atkinson, 2015: 12).

Contrastingly, few topics in political science have garnered as much academic attention for as long a time as voter turnout. There are numerous studies that analyse the causes of voter turnout, but relatively few that directly explore the relationship between income inequality and turnout. In its initial phase of examination it was largely the preoccupation of American researchers, due to the vast differences in participation levels between the poor and wealthy that has existed in the US. It is only very recently that the field has grown globally and now attracts the attention of scholars in Canada and Europe (Seeber and Steinbrecher, 2011: 3). These academics have developed three principal theories attempting to explain the effects of income inequality on turnout, namely relative power theory, resource theory and conflict theory. Therefore, this study formulates three separate hypotheses, one for each principal theory.

Relative Power Theory

The most prominent theory attempting to explain the relationship between income inequality and voter turnout is relative power theory, which envisions a close relationship between how income and power are distributed in a society. It predicts that income inequality will have a negative effect on political participation and thus the political participation of all social groups and income levels will fall. This is due to increasing levels of income inequality leading to a greater concentration of wealth in the hands of high-income individuals, who then translate that increased wealth into greater political power, as policymakers respond to their interests over the poor (Jaime-Castillo, 2009: 5). The larger power imbalance enjoyed by the rich allows them to prevail in open conflicts on policy issues, as well as making it easier for them to successfully preclude class and redistribution issues that the poor more

naturally support from even being publicly debated (Solt, 2008: 49). Consequently, low-income individuals will lose interest in politics or abandon preferences that have little chance of being enacted due to the realization that they have a reduced probability of influencing the political process. On the one hand, this disengagement from the political process results in lower turnout from low-income individuals. Reduced political engagement and turnout, thus leads to more biased policy against the poor due to ever less representation, which spurs greater income inequality, as the cycle continues. On the other hand, the turnout of wealthy individuals is also reduced, although they are affected to a lesser extent because they only need to participate at the minimum level required in order to maintain their dominant position in the political process (Seeber and Steinbrecher, 2011: 6).

H1: Increased income inequality leads to reduced voter turnout amongst all income groups.

Frederick Solt has been the leading proponent of relative power theory and has found much compelling evidence in its support. He argues that the results from his 2008 cross-national study affirm that political equality is best achieved when "economic resources are distributed more equally" because "greater economic inequality increasingly stacks the deck of democracy in favour of the richest citizens" (2008: 57). He warns that the logical result will be that most people will come to "conclude that politics is simply not a game a worth playing (2008: 57). In a 2010 study on American gubernatorial elections he found that income inequality powerfully impacts turnout, as well as the degree of income bias in turnout (2010: 297). Furthermore, these results point to a self-reinforcing cycle at work, whereby income inequality produces electorates that are smaller and wealthier, which favour policy that ensures income inequality either maintains or increases and the cycle continues (2010: 298). Likewise in their investigations at the sub-national level, Galbraith and Hale (2008) and Mahler (2002) found further evidence that rising inequality reduces turnout. However, as Mahler notes his should be treated with some caution because the US accounts for most of

the negative relationship and if it were to be removed from his study group, then the results would no longer be statistically significant (2002: 130-131).

Seeber and Steinbrecher discovered a large turnout gap between the rich and poor in a majority of EU countries and the two countries with the lowest income bias in turnout were the only ones that had compulsory voting (2011: 18-19). Similarly, Stockemer and Scruggs' 2012 cross-national study also affirmed the benefits of compulsory voting on turnout by finding that making elections more decisive and a requirement actually bolstered turnout by 25 percent, although they found almost no evidence of a differential effect of income inequality on turnout (2012: 771).

Resource Theory

Resource theory adopts aspects of both relative power and conflict theory and maintains that whether income inequality has a negative or positive relationship with political participation depends on an individual's income. Resource theory insists that individuals must have resources available at their disposal such as money, education, time or political skills, in order to be able to successfully participate in politics. Therefore, political participation and turnout hinge on the individual resources available, so if one individual becomes poorer and another richer, the former will have less resources to become involved in politics and thus a reduced likelihood of voting (Avery, 2015: 957). Moreover, the greater the amount of income inequality in a society, the less politically active are the poor and the more active are the wealthy, so the turnout gap will be larger. However, the caveat is that overall turnout can still rise with increased inequality because if all income groups are getting richer in absolute terms, then they will still have more resources available to participate in politics, despite the fact that the poorest are getting poorer in relative terms (Jaime-Castillo, 2009: 6).

In sum, greater inequality is positively related for high-income earners and negatively related for low-income earners.

> *H2: Increased income inequality leads to reduced voter turnout amongst low-income individuals and increased turnout amongst high-income individuals.*

A few key cross-national studies have found a negative relationship between income inequality and turnout and support for resource theory. Anderson and Beramendi (2008) found that income inequality suppresses turnout because individuals living in more unequal countries are less likely to vote and that "the effects of income differentials are basically linear" (2008: 303). They subsequently point out that the decision to participate for low- and middle-income individuals must therefore be driven by resources (2008: 303). In a similar study, Schäfer found that inequality "reduces citizen's propensity to vote as well as their confidence in parliament and government" (2013: 188). His results were statistically significant and all else being equal, the difference between turnout drops roughly 18 points when moving from the most equal to the least equal country in his model (2013: 185). Furthermore, Lancee and Van de Werfhorst used data from the 2006 wave of the European Social Survey (ESS) to discover that the main effects of inequality manifest via resources at both the individual and societal level (2012: 1166). They posit that "inequality seems to isolate low-income individuals from civic and social life," while simultaneously promoting "the social integration of the rich" (2012: 1176).

Conflict Theory

Conflict theory lies in direct contrast to relative power theory and suggests that income inequality has a positive relationship with voter turnout and will thus actually increase voter turnout for all social groups and income levels. [1] It builds on the popular Meltzer-Richard model (1981), which posits that income inequality promotes redistribution

[1] It has found little support. Most notably some evidence was found in Brady's 2004 study on American presidential and mid-term elections and Jaime-Castillo's (2009) cross-national survey.

via the rational preferences of the median voter, because in a democracy every vote is equal and majority rule wins out (1981: 914). Therefore, conflict theory predicts that higher income inequality leads to a more conflictive politics because it assumes that everyone has the same political skills and what differentiates one individual from another is the interest generated from their position on the income scale (Jaime-Castillo, 2009: 6). The creation of a more conflictive political arena by increasing income inequality stimulates more engagement and turnout in the political process for poor and rich alike. This is owing to the fact that the poor, due to being made worse off from increased income inequality, start to push for more redistribution, which in turn becomes more costly to the rich, who then become more political engaged in order to counter the adoption of redistributive policies (Solt, 2008: 49).

> *H3: Increased income inequality leads to increased voter turnout amongst all income groups.*

In sum, it appears that there is not yet a conclusive answer to the effect of income inequality on political participation and the issue remains divided. Depending on the data and analysis used, it appears that there is some evidence for all three theoretical perspectives or even no link at all between income inequality and turnout, which may well be the result of "actual differences across political acts, places, or times" (Brady, 2004: 697). However, nearly all the studies were united in pointing out that more research is needed into the impact of income inequality on political participation, which this analysis aims to provide.

Data and Methodology

Data

To properly analyse the effect of income inequality on turnout, both individual-level and macro-level data is used. A prime way of measuring turnout at the individual-level is via surveys conducted at the time of national elections, which ask respondents whether they

voted. Such social survey data are most commonly used in producing inequality statistics at an aggregate level because they are abundant in explanatory variables, including information regarding a respondents' household income (Heisz, 2016: 79). Therefore, the individual-level data for this analysis was taken from eight waves of the Canadian Election Study (CES) that have taken place at each federal election since 1965. The CES surveys are the most extensive surveys on public opinion and voting for Canadian federal elections and contain information on respondents from all ten provinces. The eight federal elections utilized are from 1988 to 2011 and each survey contains between roughly 3,500 and 4,500 respondents for a total analytical sample of 31,981 respondents.[2]

The dependent variable seeks to measure turnout and is based on the survey question asking whether an individual voted in the recent election. Respondents who refused to supply an answer or responded "do not know" have been removed and the variable has been labelled VOTE (0 = "Did Not Vote" and 1 = "Voted"). A common problem with social surveys measuring turnout is that there is normally a large discrepancy between the numbers self-reported and the actual votes administered. One reason for this is that non-voters are much less likely to answer survey questions on voting as the people likely to take the time to respond to them are already more predisposed to being political engaged (Painter-Main, 2014: 68). Another reason is social surveys tend to disproportionately undercount typically low-turnout groups as it is more difficult to reach low-income groups that tend to be transient and can lack fixed addresses (Freeman, 2004: 703). Lastly, respondents often deliberately lie that they voted because voting has been perceived as the duty of a good citizen and thus reflects a "social desirability bias" in reporting (Morin-Chassé et al, 2016: 1-2). These reasons likely explain the wide gap in the actual reported figures by Elections Canada, which

[2] The eight included are the 1988, 1993, 1997, 2000, 2004, 2006, 2008 and 2011 elections.

are much lower than the figures provided by respondents in the CES surveys and could potentially introduce bias into the results.

The primary independent variable is the macro-level measure the Gini coefficient. It is labelled GINI and is utilized at the provincial level because Gini rates differ substantially across provinces and time during the period analysed. Research has shown that state Gini indexes from the US are a "valid and reliable estimate of income inequality across the states and over time" (Avery, 2015: 961). The adjusted after tax Gini coefficient is employed rather than the market income Gini coefficient because the main mechanisms leading inequality to affect turnout are most likely to operate via a person's disposable income after taxes and transfers than just their market income (Stockemer and Scruggs, 2012: 767). This information was obtained from Statistics Canada's CANSIM Table 202-0709, which measures Gini coefficients across Canada since 1976. To aid in interpretation of the regressions the Gini coefficients were multiplied by 100, in order to arrive at the common measure known as the Gini index, making the potential range from 0 to 100. An added benefit of using provincial Gini rates over the national rate, is that the variation in provincial rates over the period analysed is more than twice as large when only considering change at the national level. For the period studied, the provincial Gini Index ranges from 24.0 (Prince Edward Island in 1993) to 33.2 (Ontario in 2004).

The secondary independent variable is income, which measures the total household income of each respondent divided into five quintiles that are roughly equal in size. Quintiles were chosen because they have been the most commonly used form of measuring income inequality and turnout in the literature and are conducive to effective comparison between income groups. The coding of the INCOME variable (1 = "Low", 2 = "Lower Middle", 3 = "Middle", 4 = "Upper Middle" and 5 = "Upper"), was complicated for two reasons. The first is that the real value of the dollar changed substantially from 1988 to 2011 and the second is

that the eight waves lacked consistency in all containing either a variable that reported the total household income or a variable that divided respondent's answers in categories. In the survey waves that only included income categories, they normally contained over ten different categories. In order to remedy this, for the six surveys that contained total household income on an indefinite scale, they were divided into roughly even income quintiles. For the two surveys that contained only income categories, they were combined into five roughly equal income quintiles.[3]

The most relevant control variables have also been included such as GENDER, AGE and EDUCATION. Education is the socioeconomic variable most closely associated with voting as individuals with a college degree are 35 percent more likely to vote than those with less than five years of schooling (Blais, 2000: 49). Higher educated people are also more active in politics because it equips them with the cognitive skills needed to help navigate its complexities and helps foster a sense of duty to vote (Gidengil et al, 2004: 110). Similarly to income, it is also a categorical variable and measures the level of education achieved by each respondent from 1 to 11.[4]

Age is another important variable for turnout, as the likelihood of voting increases substantially as one gets older until around 55, when it then begins to level off, but it does continue to rise right through the 70s (Blais, 2000: 49-50). Young people are much less likely to vote and a big factor is that they often have not yet put down roots in a community, which can expose an individual to social pressures that encourage a feeling that one ought to vote

[3] What emerges overall is that the second quintile is about 6 percent larger than a fifth and the fourth quintile is about 4 percent smaller than a fifth, but the other three quintiles including the two most important ones (the first and fifth) are very nearly equal.

[4] The categories were consistent throughout each election survey and were left in their original form. The coding of the EDUCATION variable is: (1 = "No Schooling", 2 = "Some Elementary", 3 = "Graduated Elementary", 4 = "Some High School", 5 = Graduated High School", 6 = "Some Technical", 7 = "Graduated Technical", 8 = "Some University", 9 = "Graduated University", 10 = "Graduated Masters", 11 = "PhD or Professional Degree").

(Gidengil et al, 2004: 110). AGE is a continuous variable and in this dataset ranges from 18 to 102.

Gender is not as highly correlated with turnout as age and education, but a gender gap between men and women is often found in the turnout research. However, more established democracies with a longer history of elections, (like Canada) have a much reduced gender gap in recent years and women have even surpassed men in voting activity in many instances (Seeber and Steinbrecher, 2011: 7). For this dataset the GENDER variable is coded as (0 = "Female" and 1 = "Male").

Lastly, categorical variables capturing the election year and the provinces have been added in order to perform a multi-level analysis. As the dataset is pooled for a longitudinal analysis and to help capture the net effects of all variables that differ across units but are constant over time, a categorical YEAR variable has been added for each election year. Equally, to account for the variance across the ten provinces, a PROVINCE categorical variable has been added.

Methodology

In order to best examine the effect of income inequality on turnout, some cross-tabulations, graphical techniques and binomial logistic regressions were employed. As the dependent variable is binary and has only two values, binomial logistic regression was employed in the models in order to estimate the logged odds of voting. The equation estimated for the inclusion of all the independent variables and fixed effects is as follows:

$$Logged\ odds\ (VOTE) = a + b_1(GENDER) + b_2(AGE) + b_3(EDUCATION) + b_4(INCOME) + b_5(GINI) + b_6(YEAR\ or\ PROVINCE) + error$$

In the primary estimation, three models in all were employed, with a slight variance in each. Model 1 includes all of the variables minus the two fixed effects for province and year. A

stronger test was administered for the subsequent models due to the inclusion of fixed effects. For Model 2 the province fixed effect was added and for Model 3 it was removed and replaced with the year fixed effect. The fixed effects were not included in a model together because there is not enough variation on the key independent Gini variable, due to its location at the provincial level. In addition, to test each hypothesis in order to determine the effect of income inequality on various income groups, separate estimations have also been employed for each of the five income quintiles.

It appears that comprehensive research examining the regional aspect of the relationship between political and economic inequality in Canada has been lacking, thus a secondary estimation has been employed for each province. Similarly to the primary estimation, a binomial logistic regression was employed in turn on the logged odds of voting that includes all of the independent variables for each province. However, due to the small sample sizes of the four Atlantic Provinces (Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick), they have been combined into one Atlantic region. The other six provinces thus comprise the remaining secondary estimations in geographic order from east to west.

Results

The results reveal that the turnout rate at 87 percent overall is far greater than the national average from 1988 to 2011, (by over 20 percentage points). The turnout rate also incurs some cross-provincial variability and is most evident for Newfoundland, which reaches a low of 79 percent. In fact, the turnout rates of the other nine provinces all reside within 3 percentage points of the average turnout rate.

Primary Logistic Regression

Three models were employed in order to determine the effect of income inequality on turnout in Canada. The results for the four control variables are highly consistent across the three models. Most noticeable is that income has the largest effect on voting by a wide margin with the likelihood of voting increasing on average by 25 percent for each higher income quintile level. After income, the remaining highly statistically significant variables are age, education and Gini. Each level of education on average increases the odds of voting by nearly 20 percent and each additional year in age increases the odds of voting by on average nearly 5 percent. There is also a gender gap that is significant at 1 percent or less and women are between 8.7 and 9.2 percent more likely to vote than men.

Moreover and most important, is the fact that income inequality does indeed decrease the likelihood of voting quite significantly. For every 1 unit increase in the Gini index, individuals are 9.7 percent less likely to vote when fixed effects are absent. Although not as highly correlated as education and income, it is still a relatively high figure. For Model 2 when provincial fixed effects are added, the effect of Gini on turnout is even stronger, as the likelihood of voting decreases further to a full 11 percent. The addition of fixed effects for year then reduces the Gini impact by precisely half but there is still a reduced likelihood of voting of 5.5 percent. As Canada's national Gini index rate has increased over 3 units since the 1980s, this important finding means that taken cumulatively, Canadians are between 16.5 and 33 percent less likely to vote since income inequality started to rise. A model summary of the primary logistic regressions is displayed in Table 1 below.

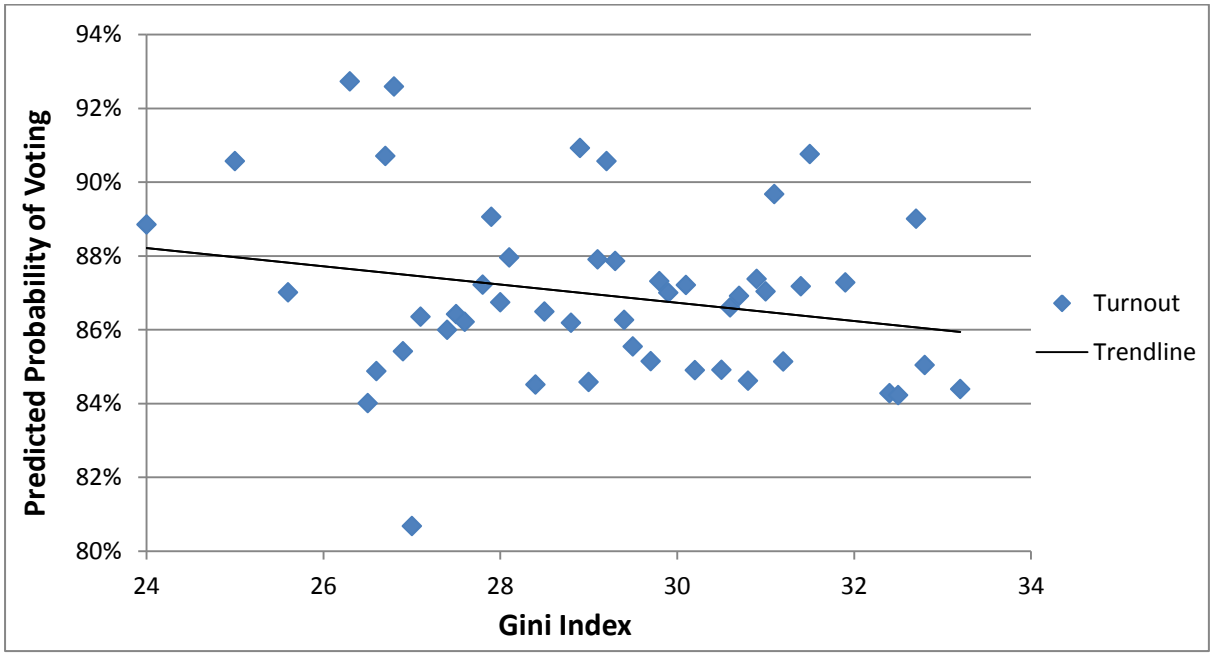
Table 1: Logistic Regressions Predicting the Likelihood of Voting

	Model 1		Model 2		Model 3	
	B (SE)	**Exp (B)**	**B (SE)**	**Exp (B)**	**B (SE)**	**Exp (B)**
GENDER (0 = Female; 1 = Male)	-.091 (.044)	.913 **	-.093 (.044)	.911 **	-.096 (.044)	.908 **
AGE	.046 (.002)	1.047 ***	.046 (.002)	1.047 ***	.046 (.002)	1.047 ***
EDUCATION	.177 (.012)	1.194 ***	.177 (.012)	1.193 ***	.178 (.012)	1.195 ***
INCOME	.220 (.017)	1.247 ***	.219 (.018)	1.245 ***	.222 (.018)	1.248 ***
GINI (0-100)	-.102 (.012)	.903 ***	-.117 (.016)	.890 ***	-.056 (.017)	.945 ***
CONSTANT	1.249 (.356)	3.488 ***	1.818 (.483)	6.157 ***	-.174 (.517)	.840
PROVINCE Fixed Effect		No		Yes		No
YEAR Fixed Effect		No		No		Yes
Observations		20,179		20,179		20,179
Cox-Snell R^2		.066		.067		.070
Nagelkerke R^2		.123		.124		.131

a. Dependent Variable: VOTE; * significant at 5%, ** significant at 1%, *** significant at 0.1%.

In addition, the mean predicted probability of voting for Gini was calculated from each model. This technique that converts the logged odds of voting into predicted probabilities of voting was employed to arrive at the mean predicted probability of voting at different levels of income inequality. The predicted probabilities measure of association for Gini reveals that as the Gini rate increases, the turnout rate substantially decreases. A scatter plot of the mean predicted probability of turnout at each Gini Index point from Model 1 displays a trend line starting at just over 88 percent turnout at the lowest Gini rate, which gradually decreases to 86 percent at the highest Gini rate (see Figure 4 below). Deriving the mean predicted probability of turnout from Model 3, which had less of an impact on the Gini, still displays a very similar decreasing trend line. Although turnout starts roughly 0.5 percent less at the lowest Gini rate.

Figure 4: Scatter Plot - Mean Predicted Probability of Voting by Gini Index



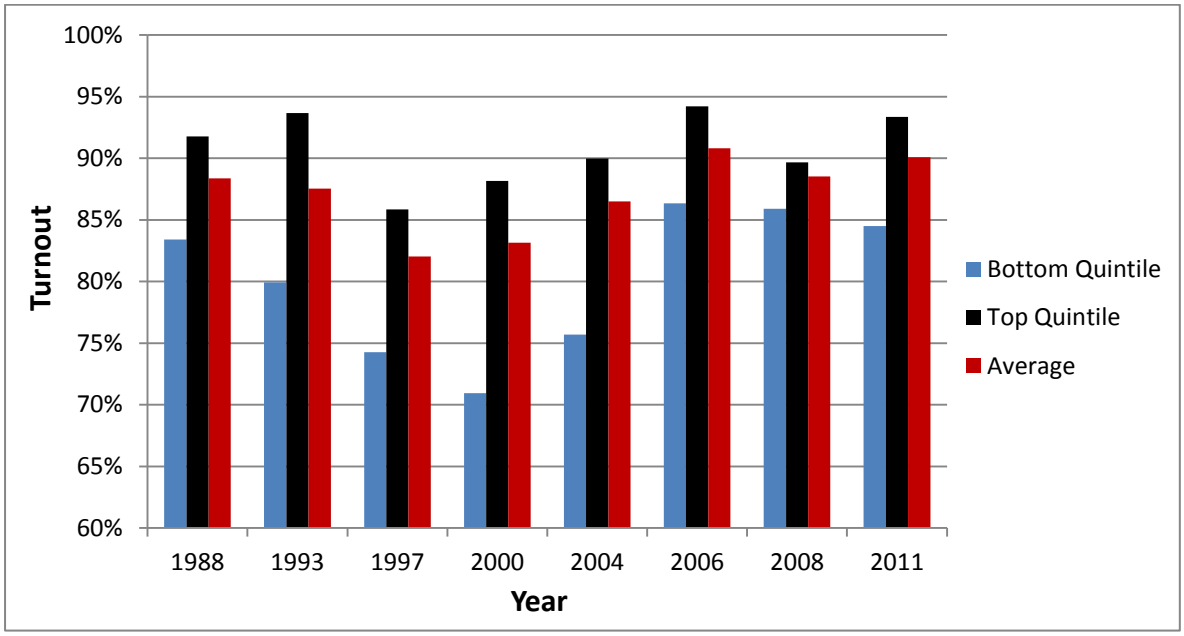
Income Bias and Skew

The independent variable that had the strongest relationship with turnout in this analysis was income and low-income individuals were significantly correlated with lower turnout. The best measures for exploring the effect of income on turnout are via income bias and income skew. Income bias in turnout calculates the bias in turnout towards the wealthy by dividing the difference in turnout between individuals in the top fifth of the income distribution by those in the bottom fifth. Income skew is similar to income bias but it simply calculates the percentage difference in turnout between the top and bottom quintiles.

The income skew in turnout is normally larger in countries with lower turnout such as the US, where the variance has typically been reported at over 35 percent (Mahler, 2008: 175). In Canada, it is also sizable, as the Comparative Study of Electoral Systems (CSES) found that it was 17.6 percentage points in the 1997 federal election (Mahler, 2008: 176). The income skew revealed in this analysis is not as large, but it should be noted that overall turnout is 8 percent larger than the CSES survey, which means that there is much less room

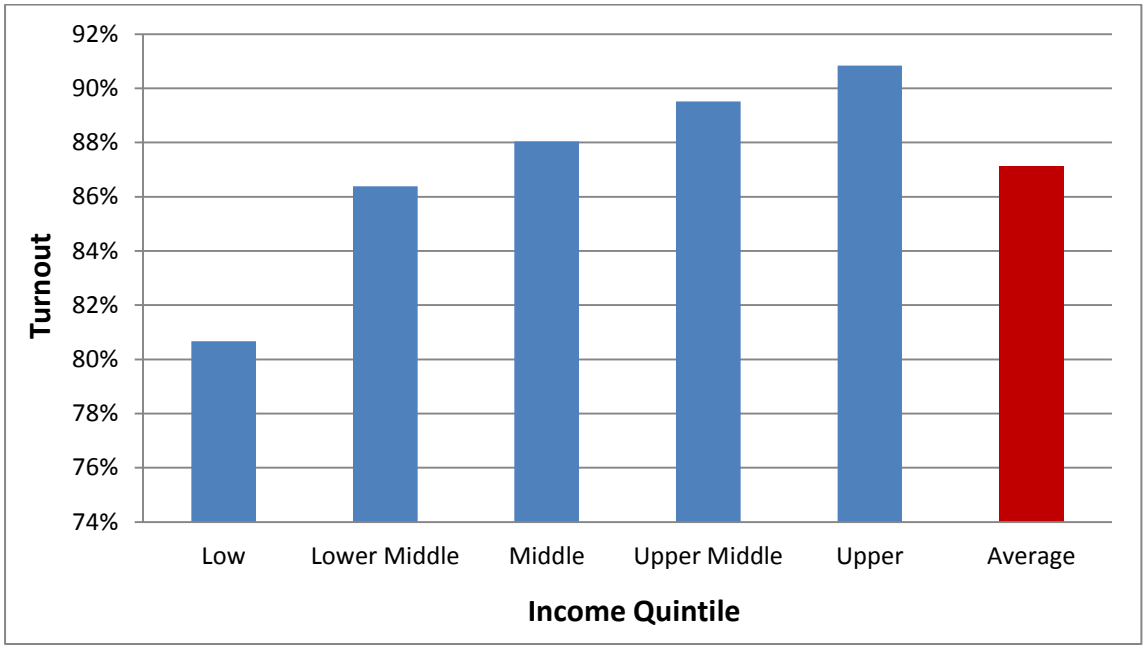
for a large income skew. However, this analysis did find that the income skew was higher than average in 1997 at 12 percent (see Figure 5 below). When examining this income skew longitudinally, it seems that it has not increased overall but reached its highest levels between 1993 and 2004, which was precisely when income inequality climbed the most in Canada.

Figure 5: Turnout of Top to Bottom Income Quintile, 1988-2011



This analysis also found that the overall income skew between 1988 and 2011 in Canada was 10 percent, with fully half of the skew accounted for between the lowest two income quintiles (see Figure 6 below).

Figure 6: Turnout by Income Quintile



As has been shown, income inequality is negatively related to voter turnout in Canada. However, in order to test the second part of the three hypotheses regarding the effect of increasing inequality on various income groups, separate regressions have been employed for each income quintile. The results yield a reduced likelihood to vote in every single income quintile, whether no fixed effects, year or province fixed effects are included. As expected the lowest income quintile is impacted the most, with a 1 unit Gini increase resulting in a 10.9 percent decreased likelihood of voting without fixed effects (see Table 2 below). The middle three quintiles are also highly significant and see an average voting odds decrease of around 10 percent with a 1 unit Gini increase, while the highest quintile is statistically significant and witnesses an 8.4 percent decrease in voting odds. The addition of province fixed effects reduces the lowest quintile's voting odds further down to 16 percent, with the middle quintiles maintaining roughly their average. Surprisingly, the richest quintile's voting odds actually decline 13.4 percent but the explanatory power of its model is nearly twice as low as the poorest quintile's. The inclusion of year fixed effects instead of province actually sees the greatest reduced likelihood to vote in the fourth quintile but the

skew between the poorest and richest quintiles is even greater than the previous models at 3.9 percent.[5]

Table 2: Logistic Regressions Predicting the Likelihood of Voting by Income Quintile

	Quintile 1		Quintile 2		Quintile 3		Quintile 4		Quintile 5	
	B (SE)	Exp (B)	B (SE)	Exp (B)	B (SE)	Exp (B)	B (SE)	Exp (B)	B (SE)	Exp (B)
GENDER (0 = Female; 1 = Male)	.025 (.091)	1.025	-.143 (.086)	.867	-.249 (.099)	.779 *	-.059 (.118)	.943	-.064 (.113)	.938
AGE	.041 (.003)	1.042 ***	.050 (.003)	1.051 ***	.047 (.004)	1.048 ***	.053 (.005)	1.054 ***	.049 (.005)	1.051 ***
EDUCATION	.182 (.025)	1.200 ***	.188 (.024)	1.207 ***	.156 (.026)	1.169 ***	.200 (.032)	1.221 ***	.144 (.029)	1.155 ***
GINI (0-100)	-.116 (.025)	.891 ***	-.092 (.024)	.912 ***	-.105 (.028)	.900 ***	-.116 (.031)	.891 ***	-.088 (.031)	.916 **
CONSTANT	1.893 (.717)	6.641 **	1.284 (.709)	3.612	2.274 (.834)	9.714 **	2.162 (.932)	8.691 *	1.878 (.932)	6.542 *
PROVINCE Fixed Effect		No		No		No		No		No
YEAR Fixed Effect		No		No		No		No		No
Observations		3,588		5,016		4,160		3,342		4,073
Cox-Snell R^2		.079		.075		.051		.049		.036
Nagelkerke R^2		.127		.136		.097		.100		.078

a. Dependent Variable: VOTE; * significant at 5%, ** significant at 1%, *** significant at 0.1%.

Overall, these results provide robust evidence for relative power theory and confirm the first hypothesis that increasing income inequality reduces turnout for all income groups. However, the lowest income quintile was most affected and the first three models revealed that individuals from the poorest quintile are nearly 60 percent less likely to vote than individuals in the richest quintile. A 2011 report by the research organization Samara on the views of the politically disengaged in Canada, offers some further evidence to this claim. The report revealed that "growing inequality" was cited by the low-income focus group who rarely voted as a prime reason for not participating politically (The Samara Blog, 2012). They also "viewed themselves as passive observers of politics not by choice" but because of a "lack of time or energy" due to more pressing concerns in their lives and due to a pervasive

[5] The author is willing to elaborate or provide the fixed effects regression results through correspondence

feeling of powerlessness at being able to influence an unresponsive political system (Bastedo, et al, 2011: 10-11).

Secondary Logistic Regression

The secondary logistic regression explores the effect of inequality on turnout inter-regionally. Gini was found to be highly significant at less than .01 percent in Quebec, Ontario and Alberta and significant at less than 1 percent in the Maritimes, Saskatchewan and British Columbia. The direction of the relationship between turnout and income inequality was also negative for the Maritime region and all of the provinces, except for Saskatchewan. Saskatchewan experienced the smallest increase in income inequality over the period analysed, which could account for the positive relationship.

Most noticeable was the pronounced effect in opposite directions for Alberta and Saskatchewan. Alberta experienced the largest rise in income inequality from 1988 to 2011 and an increase in the Gini Index by 1 unit in the province, reduced the likelihood of voting by 19.1 percent. Conversely, a 1 unit increase in the Gini Index for the province's neighbour Saskatchewan actually increased the likelihood of voting by a sizable 19.2 percent. It should be noted that the sample size for the province is very low at only 1,026 but the strong relationship is also likely owing to the fact that it was the only province to experience a marked decline in income inequality for an extended period during 1988 to 2011. Saskatchewan's Gini Index rate was the highest in 1988, a substantial 1.3 units higher than any other province and actually fell throughout the entire 1990s, at precisely the time when the rest of the country experienced the sharpest rises in income inequality (Statistics Canada, 2013). The province's fall in income inequality actually coincided with the steepest drop in turnout of any province between 1988 and 2004, a full 19 percent (Elections Canada).

Therefore, Saskatchewan stands out as a significant outlier in the relationship between income inequality and turnout in Canada and warrants further research.

Manitoba displayed the smallest reduced likelihood of voting at 6.3 percent and was the only province to not experience a significant Gini relationship at less than .05 percent. Coincidentally, it also experienced the second lowest increase in income inequality from 1988 to 2011. The Gini variable actually had the greatest effect on Quebec at a slightly higher rate than Alberta, despite Quebec placing in the middle of income inequality rises over the period analysed. However, this result should be treated with some caution as the explanatory power of its regression was by far the lowest and more than twice as low as Alberta's.

Moreover, income was also affected the least by a very wide margin in both Alberta and Saskatchewan, as they were the only provinces to not experience a significant relationship at less than .05 percent and the voting odds were only 9.6 and 4.9 percent respectively. It is possible that the much weaker turnout relationship with low-income in each province partially compensated for the abnormally strong relationships they each had with income inequality. As the macro-level of province-wide income inequality seems to impact turnout much more than individual-level low-income. The model summary for the secondary logistic regressions appears below in Table 2 for Eastern Canada and Table 3 for Western Canada.

Table 3: Logistic Regressions Predicting the Likelihood of Voting (Eastern Canada)

	Atlantic		Quebec		Ontario	
	B (SE)	Exp (B)	B (SE)	Exp (B)	B (SE)	Exp (B)
GENDER (0 = Female; 1 = Male)	-.119 (.126)	.888	-.122 (.086)	.885	-.157 (.084)	.855
AGE	.039 (.004)	1.040 ***	.035 (.003)	1.036 ***	.050 (.003)	1.051 ***
EDUCATION	.145 (.034)	1.156 ***	.116 (.022)	1.123 ***	.178 (.023)	1.195 ***
INCOME	.334 (.057)	1.397 ***	.217 (.036)	1.243 ***	.257 (.032)	1.293 ***
GINI (0-100)	-.097 (.039)	.908 *	-.257 (.052)	.773 ***	-.135 (.024)	.874 ***
CONSTANT	1.259 (1.094)	3.524	6.559 (1.477)	705.775 ***	2.087 (.738)	8.064 **
PROVINCE Fixed Effect		No		No		No
YEAR Fixed Effect		No		No		No
Observations		2,552		5,228		5,755
Cox-Snell R^2		.062		.042		.077
Nagelkerke R^2		.118		.078		.144

a. Dependent Variable: VOTE; * significant at 5%, ** significant at 1%, *** significant at 0.1%.

Table 4: Logistic Regressions Predicting the Likelihood of Voting (Western Canada)

	Manitoba		Saskatchewan		Alberta		BC	
	B (SE)	Exp (B)	B (SE)	Exp (B)	B (SE)	Exp (B)	B (SE)	Exp (B)
GENDER (0 = Female; 1 = Male)	-.183 (.201)	.833	.116 (.194)	1.123	.186 (.133)	1.205	-.160 (.132)	.852
AGE	.053 (.007)	1.055 ***	.045 (.006)	1.046 ***	.057 (.005)	1.058 ***	.054 (.004)	1.056 ***
EDUCATION	.181 (.053)	1.199 ***	.163 (.053)	1.177 **	.275 (.037)	1.317 ***	.260 (.037)	1.297 ***
INCOME	.210 (.081)	1.234 **	.048 (.070)	1.049	.092 (.050)	1.096	.284 (.051)	1.329 ***
GINI (0-100)	-.065 (.084)	.937	.176 (.075)	1.192 *	-.212 (.054)	.809 ***	-.098 (.039)	.907 *
CONSTANT	-.216 (2.375)	3.488 ***	-6.640 (2.244)	.003 **	3.760 (1.588)	42.941 *	.219 (1.176)	1.245
PROVINCE Fixed Effect		No		No		No		No
YEAR Fixed Effect		No		No		No		No
Observations		951		1,026		2,071		2,596
Cox-Snell R^2		.083		.073		.094		.095
Nagelkerke R^2		.151		.130		.165		.185

a. Dependent Variable: VOTE; * significant at 5%, ** significant at 1%, *** significant at 0.1%.

Conclusion

This study has analysed the effect of income inequality on turnout in Canada and has contributed to a growing body of literature examining the political side of income inequality. Previous research has been focussed cross-nationally or on the United States and Europe, so a case study of Canada expands our knowledge of this important topic beyond the usual regional scope. However, further research is needed and the limitations of this study provide ample room. Prime amongst them is the extent of endogeneity in this situation, as it seems that politics affects inequality and inequality affects politics. This reciprocal relationship involves policymakers impacting the distribution of incomes through redistribution on social programs such as pensions, unemployment compensation and healthcare and income inequality likewise affecting politics through the public's desire for redistribution via political participation. Consequently, it is not entirely evident whether it is growing income inequality that is reducing turnout or whether declining turnout is further causing increasing inequality, as policymakers become less incentivized to combat inequality, due to the poor voting less.

Nevertheless, this study has yielded important insights into income inequality and political participation in Canada. It has found that Canadian provinces with the largest increases in income inequality have largely suffered the greatest reduced likelihood to vote and the provinces with the smallest increases in income inequality have enjoyed the lowest reduced likelihood to vote (in the case of Saskatchewan even improved voting odds). It has also found that both low-income and income inequality are negatively associated with turnout. For every 1 unit increase in the Gini Index individuals are between 5.5 and 11 percent less likely to vote and low-income earners are nearly 60 percent less likely to vote than high earners. Therefore, income inequality does in fact significantly reduce turnout in Canada. Although low-income individuals are affected the most, the turnout of all income groups actually decreases, which provides robust evidence for relative power theory.

The main function of elections is the distribution of power and it appears that increasing income inequality serves to further exacerbate the power of the wealthy. American Political scientists such as Larry Bartels in *Unequal Democracy* (2008), Jacob Hacker and Paul Pierson in *Winner-Take-All Politics* (2010) and Martin Gilens in *Affluence and Influence* (2012), have identified the negative effects of income inequality on American democracy and the role that money plays in determining the outcome of democratic elections, as well as the policy responsiveness of politicians to the wealthy. It would appear from this study that Canada is treading down a similar path to its southern neighbour. Although the influence of money is not as prevalent in Canadian democracy as in the US, it is still hindered by the narrow boundaries of what is considered acceptable public debate and a sometimes "distorted presentation of economic and social realities" (Broadbent Institute, 2012: 5). Therefore, when there is little chance of electing a representative that will champion their interest, individuals are often behaving rationally by refraining from voting.

The policy implications of these findings is the quality of democracy appears to be at threat from increasing income inequality in Canada. The self-reinforcing nature of political and economic inequality means that policymakers need to address both sides of the equation. This study has contributed to this debate by identifying income inequality as another significant culprit in declining turnout and consequently should provide further impetus to policymakers to adopt policies that aid in combating income inequality.

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