

## **Effects on Voting Behavior and Voter Turnout**

This study examines the effects of several individual-level variables on voter behavior, in order to make inferences regarding voter turnout. These variables include education level, socioeconomic status, household income, religious attendance, rural or urban residence, political activism, contact from a party or candidate, whether the respondent feels a party adequately represents his or her view, whether voting is compulsory, how the respondent feels regarding the democratic process in his or her country, and the country's voting system (plurality, majority, or proportional). Focusing mainly on voting system, compulsory voting, and satisfaction with the democratic process, I argue that the greatest indicator of an individual's voting behavior is the voting system, followed closely by compulsory voting and democratic satisfaction. For this reason, governments should focus their efforts in these areas in order to increase voter turnout.

### **Introduction**

This project concerns the relationship between numerous variables and their effect on voting behavior at the individual level in a number of nations. The voting behavior of a country's citizens and voter turnout are essential elements of a functioning democracy. As Robert Maynard Hutchins, an American educator, once said, "The death of democracy is not likely to be an assassination from ambush. It will be a slow extinction from apathy, indifference, and undernourishment." One of the biggest indicators of apathy and indifference in a nation is low voter turnout. Unfortunately, it is the case in many democracies that low voter turnout has become a growing trend. If declining turnout is not combatted, these nations may experience the extinction of democracy. It is therefore important to consider the many factors that affect the decision to vote and turnout, in order to determine which may be most helpful to diagnose the problems a democracy is facing, and perhaps to reverse the trend of diminishing turnout at elections. There are many variables to consider, including education levels, socioeconomic status, feelings regarding party affiliation, religiosity, household income, and type of residential area. The effect of these variables on voting behavior have been tested using a multivariate logistic regression to determine what factors most influence individuals' voting behavior.

### **Review of Literature**

The effects of different voting systems on voter turnout have been studied often by past political scientists. Some recent studies include Bowler, et al. (2001); Chen (2011); Gregg (2004); Grofman, Bernard, and Selb (2011); Curtice, et al (2008); Karp and Banducci (1999); Kelly (2008); Lijphart (1999); Milner and Ladner (2006); Selb (2009); and Vowles (2010). Although a consensus has formed, agreeing that voter turnout is affected by the system of voting, there is much debate as to the form that works best. Furthermore, the reasons for differences in voter turnout are debated fiercely, and many political scientists study this phenomenon in different ways.

One common way of studying the effect of different voting systems on turnout is to study countries that switched from single member districts, in which one candidate wins representation of an area by gaining a majority of votes, to proportional representation (PR). In this vein, Vowles (2010) studied rates of voter turnout in New Zealand before and after its switch to a PR system. He found that the switch was detrimental to turnout rates. Under the Single Member District (SMDP) system, turnout rates declined from high 79% to 72% under the new PR system.

Kelly (2008) discussed the reasons for similar findings in the UK. He found PR systems to be confusing for voters, in that proportions of parties in parliament do not often match the percentage of votes received by each party. Moreover, proportional representation leads to fewer majorities. This leads to backdoor deals to form coalition governments that aren't as efficient as SMDP governments, causing voter disillusion.

Other studies, such as that conducted by Milner and Ladner (2006), found mixed relationships between proportional representation and voter turnout. In a study of Swiss municipalities, it was found that voter turnout was lower and declined more rapidly in SMDP districts than in PR districts. Over ten years (1988-1998), SMDP districts declined from 70.2%-62.6% turnout as compared to PR districts, which declined from 58.0%-50.2% turnout over the same period. However, when size of municipalities was controlled, the picture grew more complicated. It was found that PR voting staved off decline more effectively in small municipalities, whereas SMDP systems were more effective in large districts (Milner and Ladner, 2006).

Still other studies found the opposite effect of Proportional Representation voting systems on voter turnout. In a separate comparison of New Zealand, a modest increase of 3% voter turnout was found in the first election after changing from SMDP elections to PR elections (Karp and Banducci, 1999). In a comprehensive study of US local elections, an increase was also measured (Bowler, et al. 2001). In this comparison, cities that switched voting systems were matched with control cities that retained the SMDP system. Cities were matched based on location, percentage of minority voters, population, and median income figures. This study found a 5% increase in voter turnout after a system change. Despite this increase, however, turnout remained low.

Finally, voter turnout can be studied at the national level. One study conducted on the national level found a pronounced difference in voter turnout levels between nations, the highest in Italy (92.4%) and the lowest in Switzerland (40.9%). This study (Lijphart, 1999) found proportional representation and voter turnout to be strongly correlated. It was found that countries using PR had 8.9% higher turnout than those nations using SMDP.

But what is the cause of this difference? The majority of recent studies have focused on explaining the reasons behind the increase in voter turnout when switching to or participating in a proportional election. One such study posited that voter turnout increases when elections are more competitive, which would increase turnout in PR systems because they encourage more parties to compete (Selb, 2009). When an election is close, party elites mobilize to reach voters that are undecided or wouldn't normally participate in an election. However, there is still debate over which system produces more competition. In SMDP elections, it is most frequently two candidates fighting bitterly for every vote, in order to attain 50%+1 of the population's votes.

On the other hand, PR elections create bitter battles for each seat. Every party and candidate has a chance, and so competition is fostered in that way. Another possible explanation for changes in voter turnout is effects on low- versus high-knowledge voters. In one study, John Curtice, et al (2008) found turnout inequality between low- and high-knowledge voters to be much more pronounced in SMDP elections. However, this study stops short of explaining why.

Another theory regarding PR systems is that PR elections lead to more parties. One study, focusing on Switzerland and Spain, studied the link between PR elections and greater number of parties in contention for election (Grofman, Bernard, Selb, 2011). While this study found PR elections led to the competition of more parties, greater numbers of parties was not found to increase voter turnout. This study explained that an increased number of parties further complicate voting systems. More parties can confuse low-knowledge voters, creating more issues that voters may not be motivated to become educated about. Additionally, a PR voting system does not guarantee that percentages of popular vote directly correspond to numbers of representatives in parliament. Therefore, an increase in parties caused by a PR system of voting is not responsible for increased turnout in an election. This shows that a nation's voting system indeed has an effect on turnout, but fails to explain why.

A final study looked into 64 nations and a variety of causes for differences in voter turnout, before attempting to explain the reasons for the results (Chen, 2011). After analyzing these different elections, a strong correlation was found between proportional representation and increased voter turnout. The analysis then turned to the reasons behind this increased turnout. After assessing all the explanations offered in the different studies mentioned above, this study rejected all of them. In the end, the accepted explanation was that proportional representation increases the number of candidates. With a larger number of candidates, a larger number of ideologies are represented. Therefore, because constituents are more likely to vote for candidates that more closely represent their preferred policy, voter turnout will increase when more preferred policies are represented.

As seen in the above examples, the effect of voting systems on voter turnout is a topic under much debate. A number of studies have shown that proportional representation is responsible for equal or lower turnout than SMDP elections. However, a number of the above studies focus their analysis on one nation or a small number of nations. It is clear that local and state level elections are very different from national level elections. This may be the reason for debate regarding the effect of Proportional Representation systems of voting on turnout within a single country. Additionally, in analyses of national elections, it is often taken as assumed that proportional representation positively affects voter turnout. These studies then focus on why PR systems increase voter turnout, rather than proving that it is voting system and not another variable or a group of variables that are responsible for the increase. It is also important to remember that voting is an individual's decision. Therefore, it seems worthy for me to investigate the individual-level determinants of voter turnout in national elections.

### **Hypotheses**

My first and main hypothesis is that nations which use Proportional Representation to choose parliamentary representatives will have higher turnout in elections than nations that use single member district plurality or majority systems. Proportional Representation allows for more parties to be elected into a country's parliament. While it may be difficult for a third party to gain a plurality vote in any single district, it would not be difficult for that party to collect an effective number of votes across the nation to earn a seat under a plurality system. When it is easier to gain entrance into parliament, more parties will campaign in each election. This leads to a greater selection for voters, which will translate into greater feelings of efficacy among potential voters. Eligible voters will believe their voice is heard and their vote is important, leading more of the voting population to turnout at each election.

However, it may be the case that the number of parties is not a factor, in that people will vote as long as they feel their views are represented. It could be that both PR and SMDP systems represent all ranges of the political spectrum equally well, which causes voters to respond to both systems equally.

There are also many rival hypotheses that argue factors other than voting system are better indicators of voter turnout. For instance, when a voter has attained a higher level of education, they are more likely to vote. This may be because better-educated citizens have a better understanding of the political system in which they live and the impact their vote will have. Thus, nations with higher literacy rates and graduation rates will have higher turnout.

Some believe socioeconomic status or household income are better predictors of when a person will vote. Although the connection between socioeconomic status and education level is still studied, it can be argued that those with higher socioeconomic status have greater opportunities to vote. There is less strain on the individual from trying to make ends meet, which allows for greater opportunity to devote thought, time, and energy to voting.

It is also posited that a voter's area of residence, either in an urban or rural area will have an effect on their voting behavior. The causes of this may be purely logistical, in that it is easier to reach a voting station in some areas in comparison to others. The affect may also be due to differences in the attention elected officials pay to different constituent areas. If a constituent feels less likely to see the benefits of an election, he or she will be less likely to vote.

Equally important is to study the effects of candidate or party contact with voters, as an impetus to vote. Party and candidate contact is the most direct way to convey information that about their platforms, which can lead some to be persuaded to vote.

An additional relationship is believed to exist between increased attendance of religious services and greater likelihood of political participation, in the form of voting. Attendance of religious services may indicate that a voter has a propensity to participate in a number of activities, which would include voting.

Another cause for increased voter turnout is the constituents' satisfaction with the democratic process. When more people are dissatisfied with their democratic process, they may have the means to vote to change it. Others believe the opposite: if people are satisfied with the democratic process where they live, they may feel more comfortable participating in it.

Similarly, more potential voters may cast a ballot if they feel that there is a political party that holds their views. If there aren't any parties to whom a voter feels close, he or she may simply not vote because they feel they can never be represented.

A voter's political participation, in the form of persuading others, attending meetings, or putting up posters may also indicate future voting behavior. It seems rather unlikely that someone would help a party, candidate or organization to persuade others to vote or garner support if he or she had no intention to vote.

And finally, if voting is compulsory, more people will vote in an election. It is quite logical to assume that when the people of voting age in a country are forced to vote under varying degree of penalty, they will be more likely to vote. I believe, however, that when the

above variables are controlled for, the individual's voting system will have the greatest effect on turnout in national elections.

### **Data and Methods**

To discern whether these hypotheses are valid, I have analyzed fourteen variables from the Comparative Study of Electoral Systems, 2001-2006 (ICPSR 3808), collected by Virginia Sapiro and W. Philips Shively. The survey results have been compiled and supplemented with district-level information that provides insight into respondents' political context, while macro-level data detail the respondents' political systems, including the voting system.

The Comparative Study of Electoral Systems Dataset includes the variable B5043\_1, which records the electoral formula of each of the over fifty countries studied for every possible iteration of plurality, majority, or proportional systems of voting. I have collapsed this variable into two categories, coded 1 for plurality or majority systems and 2 for plurality systems. I have named this variable PR\_SYS\_2Cat. This will be the main independent variable, showing whether an individual's country uses a proportional system or another type of system. The dependent variable will be B3004\_1, which expresses whether the respondents questioned in the survey voted in the latest election. Respondents who cast a ballot are coded one and those who did not are coded two.

A third variable, B2003 registers the education level of the respondents, in eight categories including no schooling or incomplete primary schooling (coded one) up to completed university undergraduate education (coded eight). Socioeconomic status is represented by B2012, and has four categories that include white collar (coded one), laborers labelled as "workers" (two), farmers (three), and self-employed respondents (four). Household income, split into five quintiles and coded one through five, falls under the variable B2020.

Frequency of religious attendance, varying from never (labeled one) to once per week (labeled six) is split into six categories in the variable labelled B2023. B2030 splits the respondents into five groups of rural or urban residence and includes rural areas/villages (labeled one), small/mid-sized towns (two), suburbs of large cities or towns (three), and those that live in large cities or towns (four). B3001\_1 and B3001\_2 document political participation, in the form of persuading others to vote for a party or candidate (\_1) and meeting attendance, placing posters, or other types of activism (\_2). If the respondent had participated in one of these activities, their answer was coded as one. If they did not, the answer was coded two.

B3003 asks whether the respondent was contacted by a political party or candidate. If the respondent was contacted, they received a label of one and if they were not, they received a label of two. B3012 asks if the respondent is very (coded one), fairly (two), not very (three), or not at all satisfied (four) with the political process in their country. B3023 asks if the parties in the country represent the respondent's views reasonably well. A positive answer is coded one and a negative answer coded two. And finally, B5037 documents whether voting in the respondent's state is compulsory, whether that be with strictly enforced sanctions (coded one), with weakly enforced sanctions (two), with limited enforcement (three), without sanction for violation (four), or not compulsory (five). Studying these variables together will help determine what conditions make for the best chance of voting. It will also help determine which variables have no effect on voter behavior, and will not significantly increase voter turnout when aggregated.

My method for studying these variables will be to use logistic regression. Logistic regression measures the effects of an interval-level independent variable on a binary dependent variable. A binary variable, like B3004\_1, has only two values, in this case either the respondent cast a ballot or did not vote. Logistic regression is also useful when studying the impact of independent variables for which we cannot assume a linear relationship. For variables like B2003, in which the difference in incomplete primary education and complete primary education cannot be assumed to equal the difference between incomplete secondary education and completed secondary education, it is more appropriate to calculate changes in logged odds. Whereas Ordinary Least Squares Regression assumes a linear relationship between variables and computes the percent change in the dependent variable for each one unit change in the independent variable, logistic regression calculates the change in the logged odds of the dependent variable for every one unit change of the independent variable, in order to measure the impact of variables for which a linear relationship cannot be assumed.

Although logged odds are difficult to interpret on their own, logistic regression also computes an odds ratio, which shows how much the odds of the dependent variable change for each unit change in the independent variable. The odds ratio (“ExpB”) is calculated by raising the natural log base  $e$  to the power of the regression coefficient. An odds ratio less than one indicates that the odds decrease as the independent variable increases, an odds ratio equal to one indicates no relationship, and an odds ratio greater than one corresponds to a positive relationship.

The odds ratio can also be used to determine the percentage change in odds for each unit change in the independent variable, which is easier to manage. This is accomplished by subtracting one from the odds ratio and multiplying by 100. The percent change in odds can be represented by the equation  $[(\text{ExpB}-1)100]$ . The percent change in odds is a quicker, more intuitive way to show the direction and strength of the relationship between variables calculated using logistic regression. In this way, I will determine the effect of the above independent variables on the dependent variable, to show which individual level factors affect voting behavior, and to infer the effects on voter turnout.

### **Data Analysis**

Logistic regression analysis produces a number of helpful values. One is the regression coefficient, “B”. This coefficient estimates the change in logged odds of the dependent variable for each one-unit increase in the value of the independent variable. The P-value significance shows how often the obtained B value would occur due to random error in the sample, in effect showing how confident one can be that the received result is occurring in the population. The odds ratio is called  $\text{Exp}(B)$ . I have calculated the percent change in odds, by using the formula  $[(\text{Exp}(B)-1)100]$ . This shows how much the odds ratio changes for each one-unit change in  $x$ . We will look at the significance of each B value first, to determine which B values are meaningful.

**Table I: Logged Odds Of Voting**

CURRENT ELECTION: DID RESPONDENT CAST A BALLOT 1	B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp (B)	
							Lower Bound	Upper Bound
1: R CAST A BALLOT								
Intercept	2.272	.234	94.139	1	.000	2.166	1.711	2.741
PR_SYS_2cat	.773	.120	41.369	1	.000	2.166	1.711	2.741
B2003	-.021	.002	78.683	1	.000	.980	.975	.984
B2012	-.049	.015	10.507	1	.001	.952	.925	.981
B2020	.008	.021	.157	1	.692	1.008	.968	1.050
B2023	.110	.019	31.680	1	.000	1.116	1.074	1.159
B2030	.006	.022	.065	1	.799	1.006	.964	1.049
B3001_1	-.077	.050	2.334	1	.127	.926	.839	1.022
B3001_2	-.084	.039	4.712	1	.030	.919	.852	.992
B3003	-.040	.032	1.595	1	.207	.961	.903	1.022
B3012	-.229	.024	93.930	1	.000	.796	.760	.833
B3023	-.087	.021	18.058	1	.000	.916	.880	.954
B5037	.727	.032	511.791	1	.000	2.068	1.942	2.202
2: R DID NOT CAST A BALLOT								
Intercept	-1.569	.248	40.050	1	.000	2.210	1.740	2.806
PR_SYS_2cat	.793	.122	42.213	1	.000	2.210	1.740	2.806
B2003	-.026	.003	90.756	1	.000	.975	.969	.980
B2012	-.009	.015	.377	1	.539	.991	.961	1.021
B2020	.003	.021	.017	1	.896	1.003	.962	1.045
B2023	.097	.020	23.893	1	.000	1.101	1.060	1.145
B2030	-.042	.022	3.624	1	.057	.959	.918	1.001
B3001_1	.136	.051	7.033	1	.008	1.146	1.036	1.268
B3001_2	-.087	.039	4.928	1	.026	.917	.849	.990
B3003	-.048	.032	2.243	1	.134	.953	.895	1.015
B3012	-.107	.024	19.525	1	.000	.899	.857	.942
B3023	.005	.021	.055	1	.815	1.005	.965	1.047
B5037	.995	.034	862.741	1	.000	2.706	2.532	2.892

**Table II: Odds Ratio and Percent Change in Odds**

<u>Variable</u>	<u>Exp(B): R cast a ballot</u>	<u>Percent change in odds, voted</u>	<u>Exp(B) R did not cast a ballot</u>	<u>Percent change in odds, did not vote</u>
PR_SYS_2Cat	2.166	116.6%	2.210	121%
B2003	.975	-2.5%	.969	-3.1%
B2012	.952	-4.8%	.991	-0.9%
B2020	1.008	0.8%	1.003	0.3%
B2023	1.115	11.5%	1.101	10.1%
B2030	1.005	0.5%	.959	-4.1%
B3001_1	.926	-7.4%	1.146	14.6%
B3001_2	.919	-8.1%	.917	-8.3%
B3003	.961	-3.9%	.953	-4.7%
B3012	.796	-20.4%	.899	-10.1%
B3023	.916	-8.4%	1.005	0.5%
B5037	2.068	106.8%	2.706	170.6%

The p-values found in **Table I** are mostly satisfactory: any p-value at or under .05 signifies that the relationship observed will occur by chance in 5% of cases or less. P values fall beneath this threshold for all variables but B3001\_1 in the “R cast a ballot” category; B2012 and B3023 in the “R did not cast a ballot” category; and B2020, B2030, and B3003 in both categories. For this reason, these variables are insufficiently explanatory, and will be neglected from further analysis.

Next, we will consider the B values for each variable, which can also be found in **Table I**. The sign of the B coefficient signifies the direction of the relationship. In this case, a positive B value shows that the logged odds of voting or not voting increase as the independent variable increases. A negative B value means that the logged odds of voting or not voting decrease as the independent variable increases. In the “R cast a ballot” category, B2030 is positive, and both B3001\_1 and B3023 are negative. In the “R did not cast a ballot” category, both B3001\_1 and B3023 are positive, whereas B2030 is negative. In both categories, PR\_SYS\_2Cat, B2020, B2023, and B5037 are positive. B2003, B2012, B3001\_2, B3003, and B3012 are negative.

The only variables that highly increase the odds of voting or not voting were PR\_SYS\_2Cat and B5037, the variables that represent the respondents’ countries’ voting



systems and their laws regarding compulsory voting. To get a clearer picture, we will next consider the variables' odds ratios and percent changes in odds.

The odds ratio of each variable's relationship on voting behavior is represented by the Exp (B) column in the above table, which I transcribed into the table below. An odds ratio near one indicates that the relationship between the two variables is slight—as the independent variable increases by one unit, the respondents are nearly one time as likely to vote. In other words, for variables with an odds ratio near one, the likelihood of voting stays nearly the same as the value of the independent variable is increased.

As can be seen in **Table II**, only the variables PR\_SYS\_2Cat, B3012, and B5037 have an odds ratio that is not nearly equal to 1. For both PR\_SYS\_2Cat and B5037, the odds ratio is positive, which shows that a one-unit change in each variable increases the logged odds of respondents voting. This means that, because of the way in which PR\_SYS\_2Cat was coded, the logged odds of voting in a PR system are 116.6% higher than the logged odds of voting in a plurality or majority system. Similarly, when respondents are not at all satisfied with their democratic process the logged odds of voting are 20.4% lower than the logged odds of voting for those who are not very satisfied with their democratic process. The trend continues for the remaining categories of fairly satisfied and very satisfied. On the other hand, as enforcement mechanisms for violation of compulsory voting laws are lessened (B5037), the logged odds of voting increase by 106.8%. This contradicts the above hypothesis regarding compulsory voting, which stated that fewer respondents would vote under less stringent regulations.

The above coefficients have shown that the best indicators of the odds of voting are voting system, whether plurality, majority, proportional; whether voting is compulsory, with varying levels of sanctions; and how satisfied the respondent is with the democratic process, whether that be very, fairly, not very, or not at all satisfied. Because the other factors considered—education level, socioeconomic status, household income, religious attendance, rural or urban residence, political activism, contact from a party or candidate, or whether the respondent feels a party adequately represents his or her views—did not significantly change the odds of voting, it may be prudent for governments and candidates not to focus their efforts on these areas. Although it may be worthwhile to increase education levels for its own sake, it will not increase turnout on Election Day. In the same way, to focus Get-Out-The-Vote drives on groups of people who fall into one or another category of the above variables will not have an effect. A campaign that focuses on all categories will have a greater effect than one that focuses only on certain groups.

For this reason, governments may wish to focus their efforts on increasing their constituents' satisfaction with the democratic process, or to change the vote system to proportional representation in order to increase voter turnout, because these factors have a significant effect at the individual level. At the very least, the effects of these variables should be studied further at the national level.

## **Conclusion**

The above data successfully prove the hypothesis that voting system is the greatest indicator of individual voting behavior, and may therefore have the greatest effect on the aggregate level. Although both compulsory voting and satisfaction with the democratic process

proved to be adequate indicators of voting behavior, voting system accounted for the greatest change in the logged odds of voting. Even though this analysis cannot adequately prove that the individual relationship shown here will be significant at the aggregate level, the relationship is significant enough to warrant further study at the national level. It is clear that the logged odds of an individual voting are greater under a proportional representation system. Whether countries that use proportional representation systems experience higher turnout than those using other systems should receive more attention, in order to combat the problem of voter apathy and ever-decreasing levels of voter turnout in a number of democratic nations.

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