

Voter Turnout and Income Inequality in Latin America:

An Undergraduate Honors Thesis in Political Science

Gabriella Gyurkovics

University of Colorado, Boulder

Department of Political Science

Defense Date: March 31, 2022

Honors Thesis Committee:

Dr. Carew Boulding | Department of Political Science | Primary Advisor

Dr. Jennifer Fitzgerald | Department of Political Science

Dr. Tania Barham | Department of Economics

Abstract

The purpose of this paper is to gain some insight into the age-old question: Why is there income inequality at all in our modern world? I narrow this question down into a sub-question that I can investigate: what is the effect of voter turnout on income inequality? I narrow my regional focus to Latin America and add a temporal focus to the years from 2000 to present. I theorize that higher voter turnout leads to decreased income inequality. This is because, as theorized by Lijphart (1996), low voter turnout is by and large a result of the people in low economic groups' failure to turnout to vote. Therefore, the alternate hypothesis of this thesis is that high voter turnout leads to more equal income distribution in Latin America from 2000 to present. I discover that I cannot reject my null hypothesis. There is not sufficient statistically significant evidence to believe that, based on a multivariate ordinary least squares regression analysis, increased voter turnout leads to increased income equality. This paper has implications for future researchers studying the effects of voter turnout in Latin America and for researchers interested in answering macroeconomic questions about this region.

Keywords: voter turnout, income inequality, rational actor theory

Table of Contents

- I. Introduction**
- II. Literature Review**
 - A. Turnout and inequality
 - B. Levels of analysis
 - C. Variance in voter behavior
 - D. Response to the established literature
- III. Research Design and Methodology**
 - A. Data and analysis
 - B. Independent variable
 - C. Dependent variable
 - D. Control variables
 - E. Temporal considerations
- IV. Results**
 - A. Explanation of results
- V. Conclusion**
- VI. Bibliography**

Introduction

Favelas in Brazil are neighborhoods that are ravaged by severe poverty. There are some favelas that are directly bordered by some of the most expensive high-rise apartments complete with swimming pools, gardens, and tennis courts (see Appendix C). Why is there such a large difference between the rich and the poor in Latin America? There are countless potential reasons for high income inequality, but this paper examines the effect voter turnout has on income inequality.

The political science community has a longstanding understanding that there is a relationship between income inequality and voter turnout. Theoretical arguments, such as Lijphart's Presidential Address to the American Political Science Association, (1996) provide a theory that higher voter turnout decreases income inequality. Lijphart argues that when turnout is low, it is due to an absence of people in low-income groups at the polls. Therefore, when turnout is high, more poor people turn out to vote and vote for candidates that will improve their economic standing. Boulding and Holzner (2020), however, find that in Latin America, one of the poorest and most unequal regions of the world, "poor people are just as politically active as more affluent individuals." The contradiction between these scholars is particularly interesting. This project empirically tests our current understanding of Latin American inequality and provides a quantitative ordinary least squares regression multivariate test of the effect of voter turnout on income inequality in Latin America.

I would like to understand the causes of income inequality in Latin America, so I measure the impact of voter turnout on income inequality. I investigate the effects of voter turnout specifically, because of the theory behind Arend Lijphart's Presidential Address to the American Political Science Foundation in 1996. In his address, Lijphart (1996) argues that "unequal

turnout... is systematically biased against less well-to-do citizens.” This is because unequal voter turnout usually means that those of a lesser economic position account for the missing votes. Therefore, if more low-income people voted, there would be less inequality because, according to the rational actor theory, they would vote for candidates that would improve their economic standing. An improvement in economic standing could be done with various political measures such as social welfare programs and tax benefits for the lower classes. Lijphart (1996) studies the United States for his conclusions presented in the Presidential Address, but I use the same principles and apply them to Latin America. I study Latin America specifically because it is an outlier in the world for high inequality and for high voter turnout. However, there is no significant relationship between voter turnout and income inequality in this region.

Based on Lijphart’s Presidential Address (1996), one might conclude that a region as unequal as Latin America could significantly improve its income distribution by encouraging low-income individuals to turnout to vote. Boulding and Holzner (2020), however, find a different conclusion in Latin America. They find that when low-income people participate in community organizations, they participate in politics at high levels (Boulding & Holzner, 2020). This participation takes the form of political protest, contacting government, and, most importantly for this project, voting. They argue that “community organizations help mobilize poor individuals both through the resources they provide for mobilization and because they serve as sites where political parties target individuals for mobilization” (Boulding & Holzner, 2020). Though Boulding and Holzner (2020) focus heavily on the effect of community organizations on political participation, their research has strong implications for this study. I study both work by Lijphart (1996), and by Boulding and Holzner (2020). Using an ordinary least squares regression

test I find that there is no relationship between turnout and income inequality. This result, however, could be due to several causes that will be explored in depth later in this paper.

It is especially important to understand the determinants of income inequality in regions like Latin America because so many people live in poverty. In fact, 209 million people in Latin America live in poverty today (ECLAC, 2021). The Economic Commission for Latin America and the Caribbean (2021) explains that this is a result of the economic distress caused by the COVID-19 pandemic of 2020, but this is an alarmingly high number of impoverished people. This project is important to political scientists and law makers so that they understand the reality of the Latin American experience and can explore effective solutions to widespread poverty in the region.

Other scholars such as Lijphart (1996), Boulding and Holzner (2020), Carreras and Castañeda-Angarita (2014), and Carey and Horiuchi (2017) explain voter turnout and inequality on different levels and for different countries, but this gap in the established literature validates the theoretical impact of this project and the importance of the results.

Literature Review

There is much that we already know about the political realities of Latin America, especially as politics relates to inequality. Latin America is the paradigmatic example of economic inequality, given the unique history of the region. In fact, the average Gini index in Latin America is 46.23 (Solt, 2019), while the average Gini index of the EU is 30.2 (Eurostat, 2019). The higher a Gini index, the less equal a region is, with 100 representing perfect inequality and 0 representing perfect equality (Farris, 2010). While every Latin American country is different with its own unique culture, experience, and peoples, I make a generalizable theory about the relationship between economic inequality and voter turnout in the region. To understand the methodology and hypotheses, it is necessary to understand the existing literature about the topic. The catalyst for this project was Arend Lijphart's Presidential Address to the American Political Science Association (1996). In this address, Lijphart (1996) argues that voter turnout is sparser among those in a low economic class. This means that those who turn out to vote by and large are wealthy, or at least middle class, educated citizens. Additionally, Lijphart (1996) asserts that "unequal turnout spells unequal political influence."

Turnout and Inequality

Lijphart's theoretical argument stems from rational actor theory. Rational actor theory was developed as a response to Hobbesian views of the state of nature (Aldrich, 1993). The Hobbesian view of the state of nature is that humans are ultimately self-interested. Without government to control people's desires, the world would devolve into chaos and anarchy. Proponents of the rational actor theory argue that without an authoritarian government to control one's self-interested desires, the market will control said desires. The basic assumption of the

rational actor theory are that people fully comprehend all the options they might select in each situation and will choose the option that benefits them the most (Aldrich, 1993; Monroe & Maher, 1995). The rational actor theory powers Lijphart's conclusion.

When applied to vote choice, rational actor theory would assume that people vote for candidates who will improve their lives in some way (Aldrich, 1993). Lijphart (1996) argues that the biggest benefit for people is economic well-being. Therefore, people of low economic statuses will vote for candidates who will improve their financial statuses through various welfare programs such as public education, public healthcare, and tax benefits for low-income groups.

The rational actor theory seems to explain the relationship between turnout and inequality well, especially when viewed through Lijphart's (1996) lens. What, then, explains the lack of relationship between voter turnout and inequality? The lack of relationship does not necessarily mean that rational actor theory is wrong. It might mean that Latin Americans' ultimate goal is different from the goal Lijphart (1996) found Americans' goal to be – improved economic standing. Boulding and Holzner (2021), for example, find that voter turnout is high in Latin America among low-income groups because they are more likely to be in community organizations. “Membership in organizations has an especially strong effect on voting and protesting for poor people” according to Boulding and Holzner (2021). These organizations may influence Latin Americans to vote for politicians that may not increase their personal economic standing but would help the community in another way. This is not because Latin American voters are not rational, it is because their ultimate goal is not improving their own economic well-being. Instead, these voters' ultimate goal is to help the community organization that encouraged them to vote in the first place. Consider, for example, the Bolivian Water War. In

2002, a US company bought the town of Cochabamba's water supply. Water was privatized and the price of this essential resource skyrocketed. The community was outraged, and revolts ensued (Finnegan, 2002). In an election, Bolivians in this situation might not care to vote for a candidate that will improve their economic standing overall, instead, they would likely vote for that candidate that promised to de-privatize their water. This decision is not irrational, it simply considers a different objective, the community's well-being, to be the ultimate goal.

Another example of rational actor theory applying in places we might not expect takes place in the United States. In 2016, millions of people were surprised to hear the election of former US president Donald Trump as president of the United States. Political scientists were surprised that Trump's main voting bloc was low-income white Americans because their economic standing would not have been improved by Trump's proposed tax cuts for billionaires. Their vote, therefore, would have gone against the rational actor theory. Djupe and Claassen (2018), however, find that Trump supporters' goal was not improved economic well-being. Instead, their vote for Trump was motivated by fears of other races and immigration - fears that were successfully stoked by Trump on the campaign trail. These low-income white Americans were acting rationally, even though the end goal was different from what political pundits expected.

These examples point to the fact that though rational actor theory is a useful assumption to make when doing social science research, there might be more factors going on in the background than first meet the eye. This is the case with this study. It seems logical to assume that poor people would vote for candidates that improve their economic standing, but this is not the case. There might be something going on in the background that was not accounted for in this study but could be an interesting area for future research.

Levels of Analysis

Since there is a lacuna of research regarding the effects of voter turnout in Latin America, this study analyzes the findings of other researchers' work at different levels of analysis. One such paper is by Alberto Chong and Mauricio Olivera (2005). Chong and Olivera study the effects of compulsory voting on income inequality on a global scale. Compulsory voting is when the government enacts a set of mandates that encourage people to vote. For example, in Brazil, "failure to turnout can deny citizens access to a range of privileges such as the ability to apply for state employment, carry out financial transactions in banks, travel abroad, and obtain official identification documents" (Cepaluni & Hidalgo, 2016). In Latin America there are seven countries with some form of compulsory voting. They are Argentina, Bolivia, Brazil, Ecuador, Paraguay, Peru, and Uruguay. Compulsory voting increases voter turnout because people that might not normally vote are forced by the state to turn out. Chong and Olivera (2005) study 91 countries to find that "compulsory voting, when enforced strictly, improves income distribution." Chong and Olivera's (2005) study supports Lijphart's finding on a global level of analysis instead of the national level that Lijphart conducts his study on. Additionally, Chong and Olivera (2005) look at time delayed results on their independent variable (compulsory voting status) to find their result. It is important to study the delayed effects of voter turnout because there needs to be a time window for the aggregate macroeconomic results to become clear. Chong and Olivera's (2005) article is one of the most important pieces of literature I have considered when completing this project because it sets up the research question perfectly. I study increased voter turnout and its effects on income inequality in Latin America, while they study compulsory voting and its impacts on income inequality in various countries worldwide. Their research question is essentially the same as mine on a global scale instead of a regional scale.

Another article that proved to be particularly helpful to this research is by John M. Carey and Yusaku Horiuchi (2017). Carey and Horiuchi (2017) study the effects of voter turnout on income distribution in Venezuela. They conduct an individual level analysis of the same question that I ask. In fact, they also base their study on Lijphart's conclusions from the American Political Science Association's Presidential Address (Lijphart, 1996). Since Venezuela used to have compulsory voting laws, but then repealed them, the Latin American country proves to be the perfect natural experiment. "Venezuela offers the most promising environment to study downstream, national-level political and socioeconomic consequences of turnout bias—the ultimate outcome variable for Lijphart" (Carey & Horiuchi, 2017). Carey and Horiuchi (2017) find that the absence of compulsory voting "yielded a more unequal distribution of income." Since compulsory voting significantly improves voter turnout, compulsory voting and high voter turnout can be thought of as interchangeable terms for the extent of this argument. Carey and Horiuchi (2017) find results that are consistent with the results that I had expected to find. This proves to be reassuring because it signifies the relevance of this paper to the overall scholarly work on the topic.

Variance in Voter Behavior

Since these three articles triangulate around the lacuna of research that has been done about economic inequality and Latin America as a whole region, it is necessary to examine previous literature about vote choice and economic inequality as separate topics. Miguel Carreras and Néstor Castañeda-Angarita (2014) research the individual level determinants of voter behavior. The research question that guides the analysis is: What are the individual-level reasons that make people vote in Latin America? Carreras and Castañeda-Angarita (2014) study 18 Latin

American democracies and hypothesize that the factors that influence turnout are age, education, and citizens' insertion in mobilizing networks. The authors use Latin American Public Opinion Project (LAPOP) data to run a multivariate regression model to control for the confounding variables. They find that age has a positive effect on turnout and so does interest in politics, partisanship, political awareness, and gender (women vote more than men). They also find that employed and civically active citizens are more likely to vote. This article is useful because the authors find that income has no correlation to turnout, except for exceptionally poor individuals who don't vote. Carreras and Castañeda's (2014) research is also useful because it addresses the possibility of the reverse causality of the variables in this study. However, since they find that the exceptionally poor individuals are the ones who are less likely to vote, it is likely that the ones being underrepresented in Lijphart's model are precisely those exceptionally poor people. In fact, since income is distributed exceptionally unequally in Latin America (Morley, 2001), there are more "exceptionally poor" non-voters in Latin America than in the United States.

Another counterargument that bears weight is that of Carolina A. Fornos, Timothy J. Power, and James C. Garand (2004). The research question that guides Fornos et al.'s (2004) analysis is: What explains voter turnout in presidential and legislative elections in Latin America? They propose that turnout is influenced by institutional and political variables but not by socioeconomic variables. The authors use voter turnout data to find this to be true. If turnout is not influenced by socioeconomic factors, it means that higher turnout does not necessarily mean more poor people vote. However, even if one's socioeconomic status is not the factor that *drives* one to vote, once they are at the polls, it is still reasonable to assume that a rational actor would still vote for candidates that will increase their socioeconomic status. In this sense, the reason that voters go to the polls is interesting and can be supporting evidence to the overall

claim of this paper, but all that matters is whether those individuals vote for candidates that will decrease income inequality in their countries.

Response to the Established Literature

The research questions and driving hypotheses in the articles by Lijphart (1996), Chong and Olivera (2005), and Carey and Horiuchi (2017) triangulate around the research question and driving hypothesis. The most general research question is: Why are some people rich and others, poor? The next, narrower question is: What influences income distributions in countries? Then I ask: What influences income distributions in Latin America? Finally, I come to my final research question: Does voter turnout influence income distribution in Latin America? The null hypothesis is that there is no relationship between income distribution and voter turnout. The alternative hypothesis is that higher voter turnout has an inverse effect on income distribution, in other words, the higher the voter turnout, the more equal income distributions will be.

The rational actor theory is the basis of Lijphart's conclusion and this argument. Lijphart's findings are obtained from research on the United States, but this research investigates similar effects of voter turnout on Latin America. Though I did not obtain statistically significant results in this study, that does not necessarily mean that Latin American voters are not acting rationally. In fact, Boulding and Holzner's (2021) research reflects an argument that voter turnout may be high in Latin America not because people want to vote for politicians that will improve their economic well-being, but because of an abundance of community organizations. Latin Americans' goals at the polls, therefore, may be completely different from what Lijphart found Americans' goals to be at the polls – improving economic standing. The research investigated by Lijphart (1996) demonstrates a need for this research. This research does not

only shed light on voter turnout and income inequality, it also explores the rational actor theory and how this theory may change by region. Therefore, Ljiphart's (1996) study and this one are closely related in the theoretical aspect of the argument.

Chong and Olivera's (2005) study of compulsory voting around the world is relevant to this project because they ask almost the same question and find results that I expected to find as well. Chong and Olivera (2005) look at time delayed results on their independent variable (compulsory voting status) to find their result. This is an informative technique that I replicate with my own data by placing a one year lag on the regression. I use time delayed results on voter turnout in presidential and legislative elections to ensure the data is reflective of the population of voters in these types of elections. The results are less statistically significant when the one year lag is placed on the regression than without the lag. This is informative because it means that the more representative the data is of the population at large, the less of a relationship there is between the independent and dependent variables. Though Chong and Olivera (2005) find a relationship when using time delayed results, this may be because of a difference between the effect of compulsory voting and non-compulsory voting on income inequality. Their study establishes a need for this project because this hypothesis is similar to theirs. I ask whether increased voter turnout decreases income inequality. Chong and Olivera (2005) investigate almost the same question on a different level of analysis – the global level. The results of this study are also particularly interesting because they directly contradict Chong and Olivera's (2005) results. The reasoning behind this difference is further explored in the results section of this paper.

Carey and Horiuchi's (2017) research also demonstrates a gap in the established literature that I fill with this project. They find that compulsory voting in Venezuela decreases income

inequality. Therefore, I expected that income inequality would also decrease in other Latin American countries with high voter turnout, regardless of compulsory voting status. However, I did not find this to be the case. I found no relationship between voter turnout and income inequality. This may be because there is a difference in the effect of turnout on income inequality when it is compulsory versus when it is voluntary. Carey and Horiuchi's (2017) research demonstrates a need for this project, and some interesting areas for future research after finding the results for this project.

My research on the established literature allows me to create the most comprehensive analysis of the independent variables and dependent variable. I predicted, based on the established literature, that high voter turnout will decrease income inequality. The methods I use to determine a lack of relationship between these variables are explored further in the research design and methodology section.

Research Design and Methodology

The relationship between voter turnout and income inequality is a complicated subject. I have extensively studied the established literature on this topic to gain an insight into the research design and methodology that is optimal to conduct this type of study. This section explores the quantification of the independent variable, control variables, and dependent variable. I also explain the type of analysis I conduct to ensure the most accurate models possible.

I focus on Latin America for this project because it is an outlier in the world for high voter turnout and high income inequality (Morley, 2001). Many other scholars have found a relationship between turnout and income inequality on different levels of analysis (Lijphart, 1996; Chong & Olivera, 2005; Carey & Horiuchi, 2017), but none have studied turnout and inequality on a regional level. Carey and Horiuchi (2017) study these two variables on an individual level in Venezuela. Lijphart (1996) studies these variables on a national level in the United States, and Chong and Olivera (2005) study these variables on a global level by studying all countries with compulsory voting. Boulding and Holzner (2020), however, find that voter turnout is high in Latin America because of intensive community networks and organizations. The puzzle of turnout and inequality in this region of the world piqued my interest and has proved to be an interesting and complex topic to study.

Data and Analysis

For this project I use a multiple regression analysis to measure the independent and control variables' effects on the dependent variable. Multiple regression is the most useful type of analysis for my study because it allows one to determine the effect of an independent variable

on the dependent variable while accounting for the effects of multiple independent variables (Fleming & Cowen, 2012). “As the name implies, multivariate regression is a technique that estimates a single regression model with more than one outcome variable. When there is more than one predictor variable in a multivariate regression model, the model is a multivariate multiple regression” (UCLA, 2021). It is necessary for my research question to account for the impact of other independent variables so I can control for the effects of confounding variables. Therefore, I will also use a multiple regression analysis.

I will be using secondary data for this analysis. Secondary data is data that is collected by someone else. This may take the form of news interviews, survey responses, or financial data collected by an organization such as the International Monetary Fund or LAPOP. This type of data is beneficial to researchers because there is a plethora of variables available, and it allows researchers to analyze temporal trends (Fleming & Cowen, 2012). Another important consideration for published (secondary) data is that it is usually non-reactive (Fleming & Cowen, 2012). Nonreactive data is not affected by the researchers collecting the data. This ensures accurate and honest responses from the population at large.

Published data is a great way to study the relationship between phenomena without having to collect many different variables myself. Secondary data allows researchers to examine temporal trends and are usually nonreactive (Fleming & Cowen, 2012). Nonreactive data is beneficial because it ensures reliable and honest answers from respondents. This is helpful in my study specifically because without accurate responses for independent variables such as age, political participation, and education, I would not be able to control for the effects of these variables on my overall research questions. Also, the effects of voter turnout take years to become evident, so I need to use data that can account for these temporal considerations.

Independent Variable

The primary independent variable is the percentage of voter turnout in legislative and presidential elections since the year 2000. The year 2000 is a benchmark because this study is very similar to that of Chong and Olivera (2005). Chong and Olivera (2005) conduct their analysis from 1960 to 2000. Though this study is not an exact replica, I wanted to update their information and find similar relationships between voter turnout and economic inequality. Therefore, I start this analysis on the year they left off on, 2000. I would like to include the most data that is possible, so I conduct this study from 2000 to 2021.

I use the international Institute for Democracy and Electoral Assistance database (IDEA, 2021) to analyze voter turnout in both parliamentary and presidential elections. To quantify voter turnout, I separate turnout rate in legislative elections and presidential elections. Conventional wisdom states that turnout is higher in presidential elections than in legislative elections (IDEA, 2021; Ljiphart, 1996), so I analyze the effects of both types of elections on income distributions. In order to avoid a spurious relationship between income inequality and the type of election, I separate the turnout rates of these two types of elections.

Dependent Variable

To study the dependent variable, I use each country's Gini coefficient as measured by the Standardized World Income Inequality Database (Solt, 2019). A Gini coefficient measures the income distribution of a country. Coefficients are usually measured on a scale from 0 to 1, though sometimes researchers scale coefficients on a 0 to 100 scale. In the Gini Index, 1 (or 100) represents complete inequality while 0 represents complete equality. The Gini coefficient is an internationally accepted measure of inequality among political scientists and has been used by

countless researchers (Chong & Olivera, 2005; Carey & Horiuchi, 2017). In their study of compulsory voting laws in Venezuela, Carey and Horiuchi (2017) use the standard Gini coefficient as measured by the SWIID to quantify income distributions. They analyze the relationship between compulsory voting laws in Venezuela and income inequality. I use the same database to measure income. Carey Horiuchi's (2017) study is essentially the individual level study of the same research question presented here. Therefore, it is logical to measure income inequality by Gini Index, and to use the SWIID (Solt, 2019) to obtain the Gini coefficients of Latin American countries. One might argue that since Gini coefficients are not a continuous variable, this measure of income inequality violates the assumptions of ordinary least squares. However, there are infinite possibilities for Gini coefficients between 1 and 0, so this is not a serious violation of OLS and does not significantly impact my study.

Control Variables

The literature that has preceded this research is a useful framework along which I can discover effective control variables and understand the theoretical framework of this research. The articles by Lijphart (1996), Chong and Olivera (2005), Boulding and Holzner (2021) and Carey and Horiuchi (2017) triangulate around this research question and illustrate the gap in our knowledge of the effects of voter turnout on income inequality in Latin America. These articles prove that this research question is worth asking, and that there is a need for the answers discovered here. The other articles explored in this literature review are useful because they identify the methodology and the types of variables I can use to avoid spurious relationships in the data.

There are multiple independent variables as control variables in this study. I found control variables by examining the controls other researchers use in similar studies. Since education is a determinant of voter turnout (Chong & Olivera, 2005), I use education as measured by years of schooling as a control variable. I use the mean years of schooling data from the Human Development Index. This variable is defined by the HDI as the “average number of years of education received by people ages 25 and older, converted from education attainment levels using official durations of each level.” (Human Development Report, 2019).

I measure the change in income inequality throughout this study, so I also establish GDP in 2000 (initial GDP) as a control variable. To obtain this data I use the Latin America GDP dataset from the World Bank (World Bank, 2020b). Chong and Olivera (2005) and Carey and Horiuchi (2017) both use initial GDP as a control variable in their respective studies.

The degree of inflation in a certain country also influences income inequality. When inflation rises, the poor are always left worse off because they do not have many anti-inflationary safety nets to fall back on in general, but especially not in Latin America (Gasparini & Lustig, 2011). Therefore, degree of inflation is a control variable as well. Inflation is recoded from a numerical variable to a categorical one. I categorize inflation rates into three categories: high inflation, low inflation, medium inflation. Since this is only a control variable, it is not necessary to examine each individual inflation rate in detail. Inflation is a categorical variable – the inflation rates do not have to be overly specific; I just need to account for the effect of inflation which is possible (and simpler) with categorical variables. I use the inflation dataset from the World Bank to obtain the relevant data (World Bank, 2020a).

The final control variable is degree of democracy. Democracy is a necessary condition for the independent variable to have its proper effect on the dependent variable. Sufficient

democracy ensures that the political measures and candidates citizens vote for will be enacted and elected. In North Korea, for example, there is no democracy. Therefore, it does not matter how many poor people vote for measures that will increase their wealth. Since the country does not have political accountability, these measures will never be enacted. Remmer (1993) finds that secure and competitive elections increase voter turnout. Failing to measure democracy would be a surefire way to ensure inaccurate results. Therefore, there is justification to using this variable as a control. I use the Varieties of Democracy (2022) dataset to measure democracy.

Temporal Considerations

Since the effects of voter turnout are not immediate, I incorporate temporal considerations into my model. I measure each of the independent variables and the dependent variable every year for every country in Latin America. By breaking out my measurements into different years, I can examine the long-term effects of voter turnout on income equality. Another way to account for temporal considerations in the model is by using a lag. The more lags one uses in a study, the less likely they are to get statistically significant results. However, I only use one lag in this study. Initially I wanted to lag the data by one, two, and five years, but when I lagged the data by anything more than a year there were not enough datapoints in the voter turnout dataset to run a regression. Therefore, I lag the data by only one year. If I were able to recreate this study, I would likely widen my time span to include more data points so I would be able to add multiple lags to my data, ensuring more time-accurate results.

This methodology and research design has been effective at gaining a clearer picture of the reality of voter turnout and inequality in Latin America. In the next section I explore and

explain the results of the regression. I also introduce potential reasons that I did not find a statistically significant relationship between the two variables.

Results

I find no statistically significant relationship between voter turnout and income inequality. To examine this relationship, I make a multivariate regression. The following table demonstrates the estimates of coefficients for the various independent variables in this model.

Voter Turnout and Income Inequality with Control Variables and Lag

<i>Predictors</i>	No Lag		1 Year Lag	
	<i>Estimates</i>	<i>p</i>	<i>Estimates</i>	<i>p</i>
Voter Turnout	-4.09	0.475	-1.09	0.562
Voter Turnout with Lag	-0.88	0.874		
GDP	0.00	0.341	0.00	0.091
Inflation	0.14	0.326	0.03	0.515
Education	0.17	0.551	-0.32	0.081
Year	-0.37	<0.001	-0.26	<0.001
Observations	61		148	
R ² / R ² adjusted	0.407 / 0.341		0.279 / 0.254	

The bolded values are values that's p-value is below 0.05 – the threshold for statistical significance. The only statistically significant values are the intercepts and the year. This is likely because of the prevalence of missing datapoints in the dataset for voter turnout.

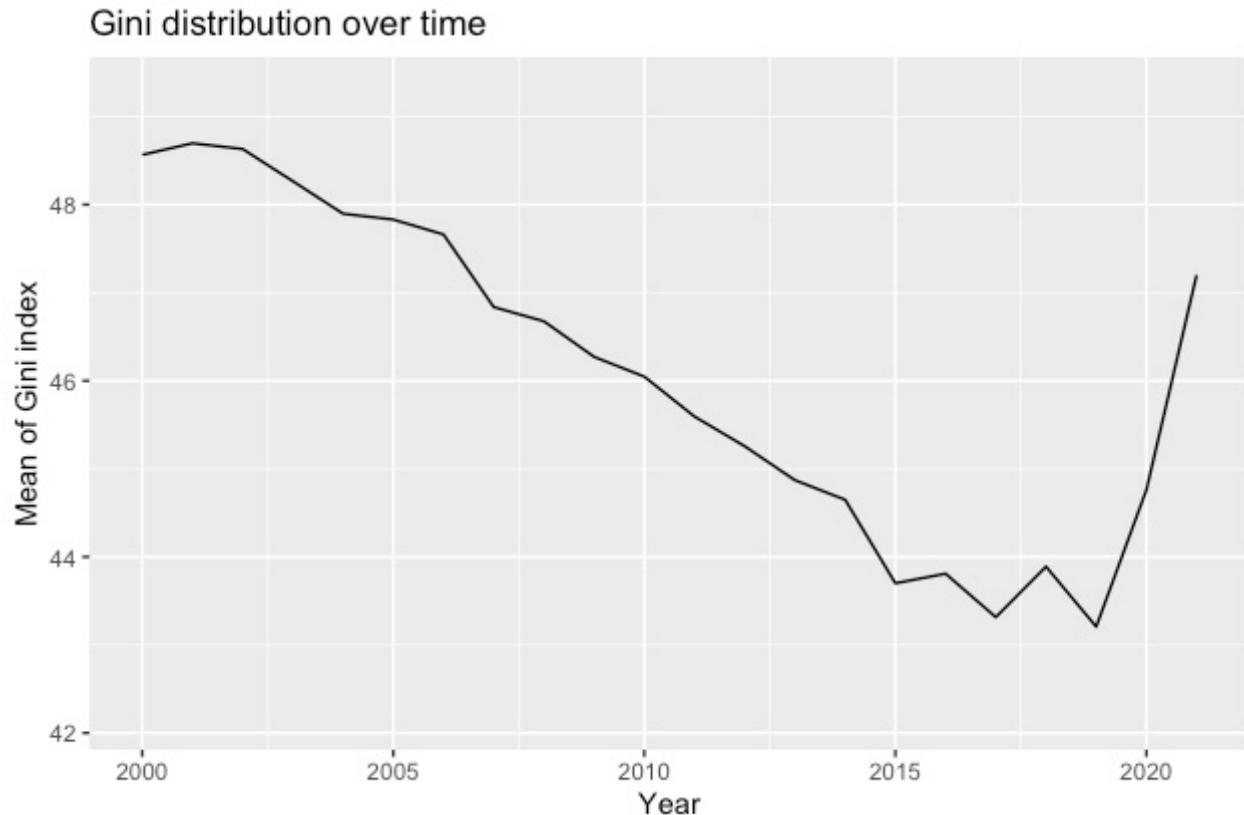
The columns demonstrate the data that are lagged by one year compared to the data with no lag. In the “no lag” column, I found that for a one percent increase in the rate of voter turnout, the Gini coefficient is expected to decrease by 4.09 points. When I introduce the one

year lag, a one percent increase in the rate of voter turnout is expected to be followed by a 1.09 point decrease in Gini coefficient. When a lag is introduced, Gini coefficient is predicted to fall less than without a lag. This is promising information for future researchers, as it is evidence that with more lags, one may get a result in accordance with the established literature. However, the Varieties of Democracy (2022) dataset I use to obtain values for voter turnout in presidential and parliamentary elections is missing many datapoints for voter turnout. Therefore, I could only lag the data by one year. The table below is a summary of the descriptive statistics of the dataset to compare Gini coefficient with voter turnout rate.

Min.	1 st Qu.	Median	Mean	3 rd Q.	Max.	NA's
35.90	44.00	46.30	46.34	49.40	54.00	307

The minimum and maximum are both values greater than 1 (the maximum Gini coefficient) because instead of a 0 to 1 scale, the SWIID (Solt, 2019) dataset codes Gini coefficients on a scale from 0 to 100. The SWIID dataset defines Gini coefficient as “household disposable (post-tax, post-transfer) income, using Luxembourg Income Study data as the standard” (Solt, 2019).

I came across an interesting result when I graphed the mean Gini coefficient as the dependent variable with time as the independent variable. The results are shown in the following graph.



Around 2018 and 2019 the mean Gini coefficient spikes then drops suddenly. Then, it rises sharply into 2020 and 2021. This is surprising not only because of the sharp drops and increases, but also because of the recent COVID-19 pandemic. Bull and Rivera (2021) and Mein (2020) explain that pandemics, especially the COVID-19 pandemic, has increased inequality, especially amongst low-income people. This unexpected finding would be an interesting topic of future study.

Explanation of Results

Though there is no statistically significant relationship between the variables, these results are just as interesting as if there were a positive or negative relationship. One of the reasons for the lack of relationship might be a potential confounding variable that is interacting

with voter turnout. Boulding and Holzner (2021) find that one of the reasons for high voter turnout in Latin America is high engagement in community organizations. If voter turnout is high in this region of the world because of an abundance of community organizations, it could be that Latin Americans vote for the candidates they are persuaded to vote for by their organization, instead of the candidate that would increase their economic standing. Boulding and Holzer (2021) state that the abundance of community organizations is an anomaly in Latin America, and therefore, this variable must be considered when studying voter turnout in this region.

Though Carey and Horiuchi's (2017) study seems to predict a relationship between turnout and inequality in the analysis, there is one key difference between the two studies. Carey and Horiuchi (2017) study *compulsory* voting in Venezuela, while I measure *all* voter turnout. This is the same difference between this study and Chong and Olivera's (2005) global compulsory voting and inequality study. There may be another confounding variable that leads people to vote differently when they are enticed by their government than when they choose to vote.

In further studies it would be interesting to examine this relationship. Is there a difference between how people vote in compulsory voting systems and in non-compulsory voting systems? Latin America is a good area of study to examine this question because it has the highest concentration of compulsory voting countries (Chong and Olivera, 2005). One might compare the results of elections in compulsory voting countries with the results in non-compulsory voting countries and examine if there is a difference in the policies enacted.

Another potential reason for the lack of relationship between the independent and dependent variable is the recent COVID-19 pandemic. The global pandemic broke out in 2020 and shook the world to its core – especially Latin America. Today, in 2022, the world is still

trying to recover from the millions of lost lives and adapt to a radical change in the world we thought we knew so well. The pandemic could be another confounding variable that affects *both* inequality *and* turnout. It is easily imaginable that less people felt safe in 2020 and 2021 going to the polls and risking infection from this virus than before the pandemic. Therefore, voter turnout may have decreased in these years. The biggest effect of the COVID-19 pandemic on these two variables, however, was likely on inequality. There is some evidence that inequality increases as a result of pandemics (Bull & Rivera, 2021; Mein, 2020). In fact, “The Economic Commission for Latin America and the Caribbean (ECLAC) reports that the pandemic could cause a variation in the Gini inequality index of more than 3 percentage points in some countries, while the number of people living in poverty will increase by 4.4 percentage points (28.7 million more people) to 34.7% of the region’s population” (Bull & Rivera, 2021). If the pandemic affects the outcome variable, inequality by Gini Index, then the effects of the pandemic create a spurious relationship in the data. Since this global tragedy is so recent, it is difficult to isolate the effects of the pandemic and to find literature about its social, political, and economic effects. The effect of the pandemic on income inequality in Latin America is another interesting question for future researchers. Since Latin America had high rates of inequality before the pandemic (Morley, 2001), it would be interesting to conduct a comparative study between countries with economic inequality pre-pandemic and post-pandemic. Though the true effects of inequality need years to become evident, it will be an interesting question to investigate in the far future.

The lack of a relationship between voter turnout and income inequality is more interesting than if there were a negative or positive relationship between these variables. This result opens the door to limitless opportunities for future research and has done nothing but increase my interest in this topic. Future researchers might investigate the different effects of

compulsory and non-compulsory voting systems on inequality based on the results of this study.

Future researchers also might investigate the effects of the COVID-19 pandemic on inequality.

The results of this study are interesting because they increase the possibilities for questions to be asked in this field.

Conclusion

I started this research asking what causes income inequality. This is a huge and general question that researchers have investigated for centuries and will likely continue to investigate for years to come. However, my experience as an undergraduate political science student has given me the necessary tools to investigate this question empirically. I have learned to narrow questions like this down into specific cases that one can easily study using data analyses. Therefore, I have narrowed my research question down to my final question: What is the effect of voter turnout on income inequality in Latin America? I discover the answer to this question by relying on the research of other political scientists, specifically that of Lijphart (1996), Chong and Olivera (2005), Boulding and Holzner (2021), and Carey and Horiuchi (2017).

The theory that powers the initial argument relies on Lijphart's 1996 Presidential Address to the American Political Science Association. In this address, Lijphart (1996) finds that when voter turnout in the United States increases, it is because more people in low economic statuses turn out to vote. Therefore, I reason that these people now showing up to vote will vote for measures to increase economic equality between themselves and upper classes. The alternative hypothesis of this study is that voter turnout has a negative impact on economic inequality.

I also rely on studies by Carey and Horiuchi (2017) and Chong and Olivera (2005). Carey and Horiuchi examine the same research question as mine on an individual level of analysis in Venezuela. They find a relationship between compulsory voting status (high voter turnout) and economic inequality. Chong and Olivera study a similar research question. Instead of an individual level of analysis, they study voting and inequality on a global level. Chong and Olivera (2005) find that in 91 countries with compulsory voting (high voter turnout) economic

inequality decreases. The arguments of these researchers powers the practical side of this argument as they were able to find a link between turnout and inequality.

Using these authors' works as references, I am able to critically decide on proper research techniques that I use to answer my question. I use voter turnout in legislative and presidential elections (Varieties of Democracy, 2020) as the main independent variable. The other independent variables I use as controls are education (Human Development Reports, 2019), GDP (World Bank, 2020b), degree of inflation (World Bank, 2020a), and degree of democracy (IDEA, 2021). These variables isolate the effects of voter turnout on income inequality. I measure the dependent variable by using Gini coefficients for every Latin American country for each year since 2000 (Solt, 2019).

Using these methodological techniques, I create a multivariate ordinary least squares regression to find that there is no statistically significant relationship between voter turnout and inequality in Latin America from 2000 to present. Therefore, I fail to reject the null hypothesis. This result, however, is interesting because it introduces the possibility for further research on this topic.

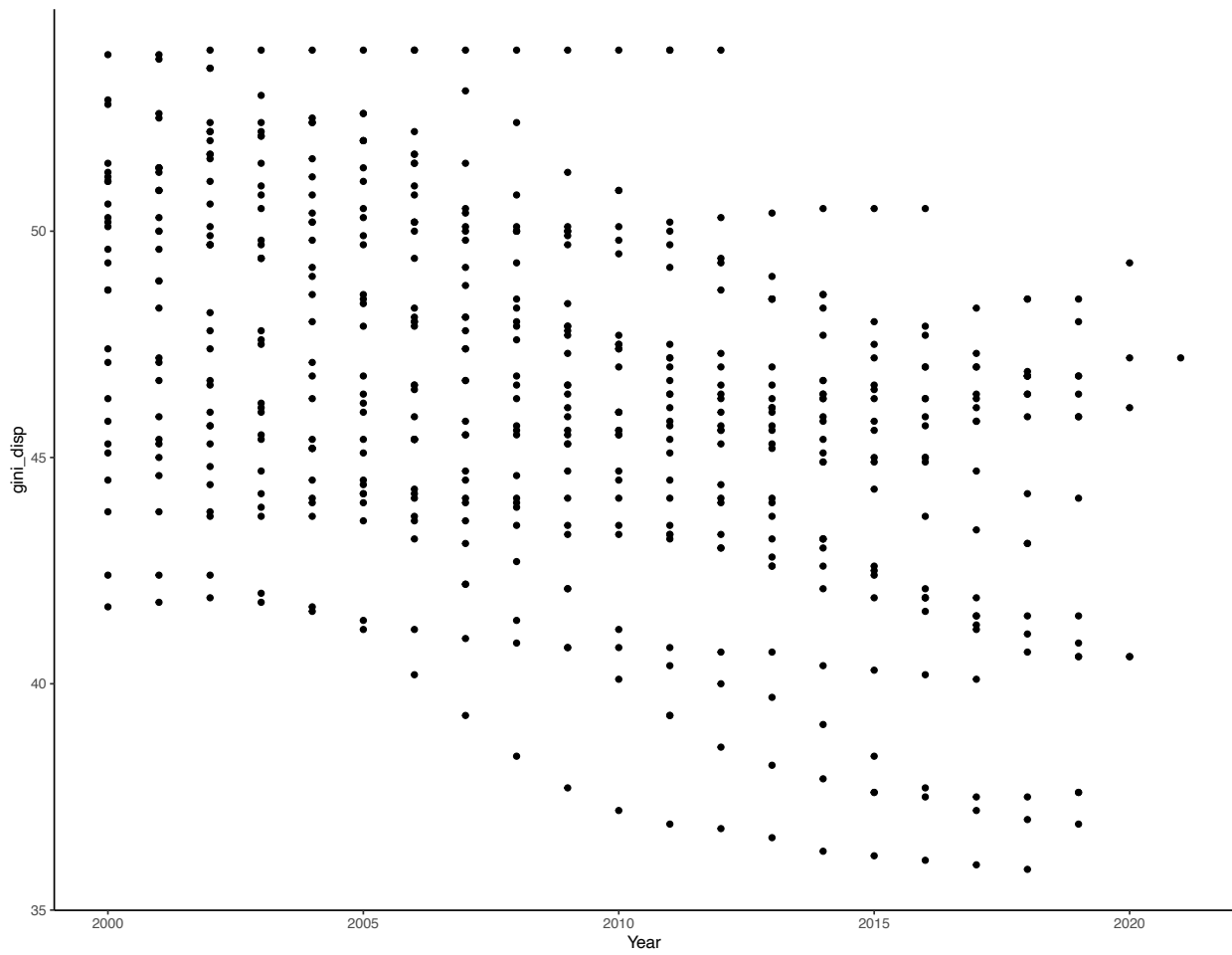
Future researchers may try to replicate this study using voter turnout data with more datapoints. They also may try to replicate this study by expanding the time window for these results. If one were to study the effect of voter turnout on income inequality not from 2000 to present, but instead from 1960 to present, they may have more success in obtaining more datapoints with which to measure voter turnout. This would also allow one to place more than one year lag on the data to see the effects of voter turnout more accurately on inequality as they are affected by time. I recommend future researchers looking to replicate this study to lag their data by one, two, five, and ten years to get an accurate picture of the effects of time.

Another area for future research is to analyze the differences in economic inequality between Latin American countries with compulsory and non-compulsory voting systems. Carey and Horiuchi (2017) and Chong and Olivera (2005) analyze almost the same question as me but on different levels of analysis and with only countries with compulsory voting systems. I may have gotten different results than these two studies because of the confounding effects of compulsory voting on income distribution. Therefore, there may be an interesting difference in the effects of a compulsory voting system and a non-compulsory voting system.

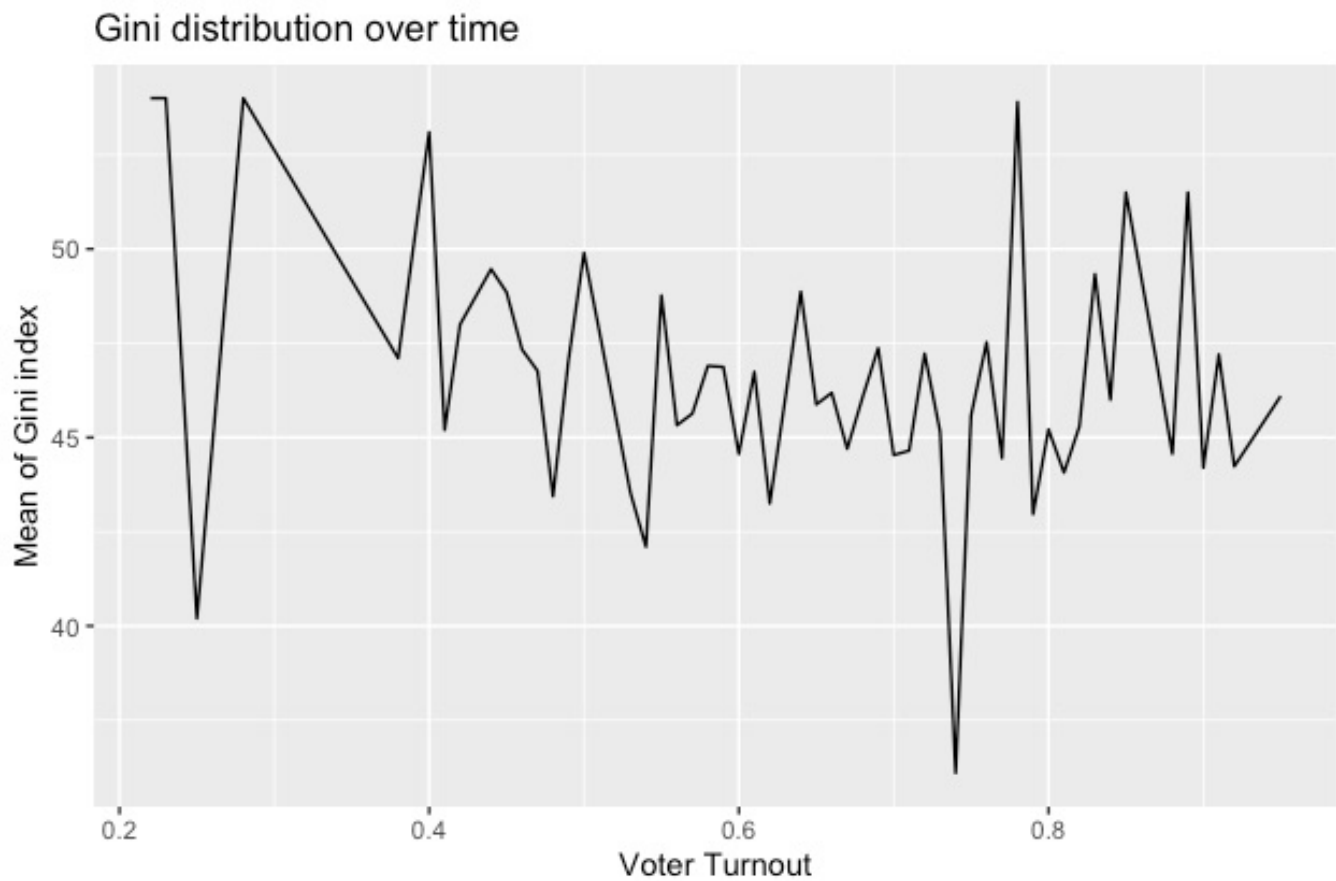
A final area for future research may be the effects of the COVID-19 pandemic on income inequality. This may be a confounding variable that influences the dependent variable of this study in the last two years of data. The COVID-19 pandemic may have undone years of progress on inequality in Latin America (Bull & Rivera, 2021). Therefore, it would be interesting to measure only the effects of the pandemic on inequality in about a decade when the effects of the pandemic become evident.

Though this research has only been done by me, an undergrad, it nonetheless carries serious implications for the future of Latin American voting and inequality. Future research should consider the lack of relationship between turnout and inequality when studying Latin America.

Appendix A



Appendix B



Appendix C



Bibliography

- Aldrich, J. H. (1993). Rational Choice and Turnout. *American Journal of Political Science*, 37(1), 246. <https://doi.org/10.2307/2111531>
- Atkinson, M. D., & Fowler, A. (n.d.). *Social Capital and Voter Turnout: Evidence from Saint's Day Fiestas in Mexico*. 19.
- Benedicte Bull & Francisco Robles Rivera. (2021). COVID-19, elites and the future political economy of inequality reduction in Latin America. *CEPAL Review*, 2020(132), 77–91. <https://doi.org/10.18356/16840348-2020-132-5>
- Birdsall, N., Graham, C., Sabot, R. H., & Inter-American Development Bank (Eds.). (1998). *Beyond tradeoffs: Market reforms and equitable growth in Latin America*. Inter-American Development Bank: Brookings Institution Press.
- Boulding, C., & Holzner, C. A. (2020). Community Organizations and Latin America's Poorest Citizens: Voting, Protesting, and Contacting Government. *Latin American Politics and Society*, 62(4), 98–125. <https://doi.org/10.1017/lap.2020.17>
- Carey, J. M., & Horiuchi, Y. (2017). Compulsory Voting and Income Inequality: Evidence for Lijphart's Proposition from Venezuela. *Latin American Politics and Society*, 59(2), 122–144. <https://doi.org/10.1111/laps.12021>
- Carreras, M., & Castañeda-Angarita, N. (2014). Who Votes in Latin America? A Test of Three Theoretical Perspectives. *Comparative Political Studies*, 47(8), 1079–1104. <https://doi.org/10.1177/0010414013488558>

Cepaluni, G., & Hidalgo, F. D. (2016). Compulsory Voting Can Increase Political Inequality: Evidence from Brazil. *Political Analysis*, 24(2), 273–280.

<https://doi.org/10.1093/pan/mpw004>

Cermeño, R., Grier, R., & Grier, K. (2010). Elections, exchange rates and reform in Latin America. *Journal of Development Economics*, 92(2), 166–174.

<https://doi.org/10.1016/j.jdeveco.2009.03.002>

Chong, A., & Olivera, M. (2005). On Compulsory Voting and Income Inequality in a Cross-Section of Countries. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.1818733>

Daude, C., & Fernández-Arias, E. (n.d.). *On the Role of Productivity and Factor Accumulation in Economic Development in Latin America*.

Djupe, P., & Claassen, R. L. (2018). *The Evangelical Crackup?: The Future of the Evangelical-Republican Coalition (Religious Engagement in Democratic Politics)* (1st ed.). Temple University Press.

Economic Commission for Latin America and the Caribbean (ECLAC). (2021, March 4).

Pandemic Prompts Rise in Poverty to Levels Unprecedented in Recent Decades and Sharply Affects Inequality and Employment | Press Release | Economic Commission for Latin America and the Caribbean [Press release].

<https://www.cepal.org/en/pressreleases/pandemic-prompts-rise-poverty-levels-unprecedented-recent-decades-and-sharply-affects>

Eurostat. (2019). *Living conditions in Europe - income distribution and income inequality - Statistics Explained*. Retrieved February 20, 2022, from

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Living_conditions_in_Europe_-

[_income_distribution_and_income_inequality&oldid=481137#:~:text=In%202019%20the%20Gini%20coefficient,in%20Bulgaria%20Lithuania%20and%20Latvia.](#)

Finnegan, W. (2002). *FRONTLINE/WORLD . Bolivia - Leasing the Rain . The Story* | PBS. PBS.

Retrieved March 11, 2022, from

<https://www.pbs.org/frontlineworld/stories/bolivia/thestory.html>

Fleming, D.J., & Cowen, J.M. (2012). Secondary Analysis – A Program Evaluation of School Vouchers in Milwaukee. In E. S. Smith & A. Malici (Eds.), *Political Science Research in Practice* (pp. 111-132). Routledge.

Fornos, C. A., Power, T. J., & Garand, J. C. (2004). Explaining Voter Turnout in Latin America, 1980 to 2000. *Comparative Political Studies*, 37(8), 909–940.

<https://doi.org/10.1177/0010414004267981>

Frank A. Farris. (2010). The Gini Index and Measures of Inequality. *The American*

Mathematical Monthly, 117(10), 851. <https://doi.org/10.4169/000298910x523344>

García, A. I. L. (2018). Economic remittances, temporary migration and voter turnout in Mexico.

Migration Studies, 6(1), 20–52. <https://doi.org/10.1093/migration/mnx023>

Gasparini, L., & Lustig, N. (2011). *The Rise and Fall of Income Inequality in Latin America*.

Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199571048.013.0027>

Gindling, T. H., & Trejos, J. D. (2013). The distribution of income in Central America. In D.

Sánchez-Ancochea & S. Martí i Puig (Eds.), *Handbook of Central American Governance*

(1st ed., pp. 75–94). Routledge. <https://doi.org/10.4324/9780203073148-5>

Heath, O. (2009). Economic crisis, party system change, and the dynamics of class voting in

Venezuela, 1973–2003. *Electoral Studies*, 28(3), 467–479.

<https://doi.org/10.1016/j.electstud.2009.06.001>

- Hipsher, P. L. (1996). Democratization and the Decline of Urban Social Movements in Chile and Spain. *Comparative Politics*, 28(3), 273. <https://doi.org/10.2307/422208>
- Human Development Reports. (2019). *Human Development Reports* [Average number of years of education received by people ages 25 and older, converted from education attainment levels using official durations of each level.]. UNESCO Institute for Statistics (2020), Barro and Lee (2018), ICF Macro Demographic and Health Surveys, UNICEF Multiple Indicator Cluster Surveys and OECD (2019b). <https://hdr.undp.org/en/indicators/103006>
- Institute for Democracy and Electoral Assistance (IDEA). (2021, December 10). *Voter Turnout Database Codebook*. IDEA. Retrieved February 22, 2022, from <https://www.idea.int/publications/catalogue/voter-turnout-database-codebook>
- Lijphart, A. J. (2021). *Unequal Participation: Democracy's Unresolved Dilemma*. 15.
- Madrid, R. (2005). Ethnic Cleavages and Electoral Volatility in Latin America. *Comparative Politics*, 38(1), 1. <https://doi.org/10.2307/20072910>
- Maldonado, A. (2011). *Compulsory Voting and the Decision to Vote*. 10.
- Mein, S. A. (2020). COVID-19 and Health Disparities: The Reality of “the Great Equalizer.” *Journal of General Internal Medicine*, 35(8), 2439–2440. <https://doi.org/10.1007/s11606-020-05880-5>
- Mondak, J. J., Canache, D., Seligson, M. A., & Hibbing, M. V. (2011). The Participatory Personality: Evidence from Latin America. *British Journal of Political Science*, 41(1), 211–221. <https://doi.org/10.1017/S000712341000027X>
- Monroe, K. R., & Maher, K. H. (1995). Psychology and Rational Actor Theory. *Political Psychology*, 16(1), 1. <https://doi.org/10.2307/3791447>

- Morley, S. A. (2001). *The Income Distribution Problem in Latin America and the Caribbean*.
UN. <https://doi.org/10.18356/e24b37c4-en>
- Norris, P., & Grömping, M. (2019). *Perceptions of Electoral Integrity, (PEI-7.0)* (V2 ed.).
Harvard Dataverse. <https://doi.org/10.7910/DVN/PDYRWL>
- Online MSW Programs. (2020, July). *What is Rational Choice Theory? - Social Work Theories & Approaches*. Retrieved November 9, 2021, from
<https://www.onlinemswprograms.com/social-work/theories/rational-choice-theory/#:%7E:text=Moving%20from%20economics%20to%20the,in%20relation%20to%20social%20exchange.>
- Remmer, K. L. (1990). Democracy and Economic Crisis: The Latin American Experience.
World Politics, 42(3), 315–335. <https://doi.org/10.2307/2010414>
- Remmer, K. L. (1991). The Political Impact of Economic Crisis in Latin America in the 1980s.
American Political Science Review, 85(3), 777–800. <https://doi.org/10.2307/1963850>
- Remmer, K. L. (1993). The Political Economy of Elections in Latin America, 1980–1991.
American Political Science Review, 87(2), 393–407. <https://doi.org/10.2307/2939049>
- Ruette, K. (n.d.). *THE LEFT-TURN OF MULTICULTURALISM: INDIGENOUS AND AFRODESCENDANT SOCIAL MOVEMENTS IN NORTHWESTERN VENEZUELA*. 24.
- Schraufnagel, S., & Sgouraki, B. (2008). VOTER TURNOUT IN CENTRAL AND SOUTH AMERICA. *The Latin Americanist*, 49(1), 39–69. <https://doi.org/10.1111/j.1557-203X.2005.tb00064.x>
- Simpser, A. (2012). Does Electoral Manipulation Discourage Voter Turnout? Evidence from Mexico. *The Journal of Politics*, 74(3), 782–795.
<https://doi.org/10.1017/S0022381612000333>

- Solt, F. (2019). *The Standardized World Income Inequality Database, Versions 8-9* (NSF, Trans.; V7 ed.). Harvard Dataverse. <https://doi.org/10.7910/DVN/LM4OWF>
- teleSUR. (2019, August 19). *Brazil's Inequality Widens, Super-Rich Hold 28% of Total Income*. News | teleSUR English. Retrieved March 7, 2022, from <https://www.telesurenglish.net/news/Brazil-Inequality-Widens-Super-Rich-Hold-28-percent-of-Total-Income-20190819-0015.html>
- Trejo, G. (n.d.). *The Ballot and the Street: An Electoral Theory of Social Protest in Autocracies*.
- Trejo. (n.d.). *Religious Competition and Ethnic Mobilization in Latin America: Why the Catholic Church Promotes Indigenous Movements in Mexico*.
- Trelles, A., & Carreras, M. (2012). Bullets and Votes: Violence and Electoral Participation in Mexico. *Journal of Politics in Latin America*, 4(2), 89–123. <https://doi.org/10.1177/1866802X1200400204>
- UCLA. (2021). *Multivariate Regression Analysis | Stata Data Analysis Examples*. MULTIVARIATE REGRESSION ANALYSIS | STATA DATA ANALYSIS EXAMPLES. Retrieved November 16, 2021, from <https://stats.idre.ucla.edu/stata/dae/multivariate-regression-analysis/>
- Varieties of Democracy. (2022, March). *V-Dem* (Version 12) [All 483 V-Dem indicators and indices + 59 other indicators from other data sources. For R users, we recommend to install our vdemdata R package which includes the most recent V-Dem dataset and some useful functions to explore the data.]. Varieties of Democracy. <https://www.v-dem.net/>
- World Bank. (2020a). *Inflation, consumer prices (annual %) - Latin America & Caribbean | Data* [Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services

that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.]. International Monetary Fund, International Financial Statistics and data files.

<https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?locations=ZJ>

World Bank. (2020b). *GDP (current US\$) - Latin America & Caribbean | Data* [GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.]. World Bank national accounts data, and OECD National Accounts data files. <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=ZJ>

Zovatto, D., & Payne, M. (2003). *Trends in Electoral Participation in Latin America*. 25.