Impact of COVID 19 Pandemic on Voter Turnout: Evidence from a Comparative Study

By
Miskat Jahan
The Department of Political Science
Central European University

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Supervisor: Matthijs Bogaards

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List of Abbreviations

Abbreviation	Explanation
GDP	Gross Domestic Product
IDEA	International Institute for Democracy and Electoral Assistance
IMF	International Monetary Fund
SARS	Severe Acute Respiratory Syndrome
V-Dem	Varieties of Democracy
WHO	World Health Organization

Abstract

This MA Thesis research study has explored the influence of COVID 19 pandemic on the voter turnout rate in the Parliamentary and Presidential elections under democratic and hybrid regime from 2020 to 2021. Quantitative research has been done in this paper while voter turnout rate in the last election of the countries studied has been subtracted from the voter turnout rate in the election during the COVID 19 epidemic to know the change in voter turnout rate. Simple linear regression model has been run to get the research result. Voter turnout rate is the outcome variable while new COVID 19 cases per million in the election week have been considered as the explanatory variable. Annual GDP growth, political equality index and electoral autocracy have been controlled as the related variable. The interaction model has been employed for the better acceptance of the study result. The study findings add three points to the literature of Political Science. First, in the majority of the elections examined voter turnout has decreased. Second, with the increase of new COVID 19 cases per million in a week voter turnout decreases although the size of variance is smaller. Third, for the lower value of adjusted R^2 significant relationship of the control variables with dependent and independent variables have not been found in the study.

Keywords: *COVID 19, Voter turnout, Election, New COVID19 Cases Per Million, Annual GDP Growth, Political Equality Index and Electoral Autocracy.*

Introduction

With the end of the cold war in the twentieth-century democracy became a popular state principle while autocratic influential states also started to follow democratic values. A large number of newly independent countries set their goal to achieve democracy. The twentieth century saw the rapid growth of democracy worldwide while the international community was more active to confirm democratic practices across the globe. The upward trend of democracy made the democracy index reliable. With the passing of time democracy has started to backslide in the twenty-first century. Failure of elite politicians, the rise of populism, lack of trust in Government, predominance of autocratic leaders, and overall decline in democratic practices have made democratization more vulnerable. International organizations as well as the affluent countries of the West are not proactive to bring democracy back which has halted the process of the flourishing of democracy. In many countries, autocrats misuse the election as their instrument to stay in power for longer periods. Manipulation, vote-rigging, threatening, etc. have become very common approaches to make the voting result in their favor. For the lack of external support, citizens cannot arrange effective demonstrations against the autocratic rulers. Although there is debate on the interdependence of the voting trend with democratic sustenance, the voter turnout rate is an important representation of democratization in a country. Voting is considered the manifestation of the core values of democracy which empowers citizens by ensuring equal participation, inclusiveness, freedom, and fulfillment of civil rights.

However, when democratic backsliding has become the trend of the decade, populism has risen as the "Zeitgeist", whole the world fights to resist the severe effects of climate change during such a critical period the outbreak of "Severe Acute Respiratory Syndrome Coronavirus 2" (SARS-

CoV-2) emerged in the world as the “Heaping of sorrow upon sorrow”. In the twenty-first century, which unprecedented phenomenon that has threatened the world mostly is the worldwide spread of the SARS-CoV-2 (COVID 19) pandemic. In 2019, COVID 19 caused by the novel Corona Virus appeared as an endemic with the symptom of pneumonia, flu, and breathing issues in China and spilled all over the world since 2020 which has caused the death of millions of people. During that time the world could not predict the devastating consequence of such a locally emerged ordinary disease caused by a virus. Within three months the severity of COVID 19, the huge infection rate, and the large number of death tolls caused by Coronavirus made World Health Organization (WHO) announce a pandemic on 12 March 2020 worldwide. The Medical Scientists unfolded in the middle of 2020 that the infection of Coronavirus spread by droplets from coughing and sneezing of the infected person and emphasized largely to use of surgical masks in the public place as well as to maintain hygiene (Ciotti et al., 2020). Within the shortest period of one year, the scientists in the developed richer countries produced and administered the vaccine among mass people from early 2021. Poor and developing countries struggled to get the vaccine produced by the developed countries although the efficacy and safety of the rapidly produced vaccines were questionable (Rosenthal & Cummings, 2021). Today after two years of the declaration still there are new cases of infection and new deaths from the infection of Coronavirus around the world. Already from December 2019 to May 2022 the number of death cases is higher than thirty lakh and the cumulative number of COVID 19 infected cases is more than fifty crores which are still rising (Worldometer, 2022). The advanced technology and medical science of the twenty-first century could not dispel the Coronavirus from the world within more than two and half years of the outbreak. Moreover, the world found it difficult to control the emergency crisis while many countries became failure to stabilize the situation for the severe resource scarcity. In the affected

countries the state actors immediately shut all the public offices, education institutions, and shopping malls down by keeping only the emergency services open for the citizens. Many states imposed a lockdown policy for a specific period to ensure social distancing and to refrain people from gathering. No domestic or international flight was running in many countries to reduce the infection rate. The terrific surge of COVID 19 hugely affected the health sector in the tainted countries while finance, education, industry, business, and politics have been impacted badly by the epidemic. Poor and developing countries faced huge financial crises and unemployment problems as the informal sector are one of the main sources of earnings in those countries. Governments had to spend more money on emergency response which lowered the GDP growth rate in many countries and created a huge deficit in the national budget of many developing countries. The regrettable matter is that state actors have been found involved with huge corruption cases in many developed and developing countries while the mass people were struggling to manage their livelihoods. It is vindicated that quick and unconditional public procurement exacerbates the discretionary power of the public officials and facilitates the officials to embezzle the public resources during the crisis period. Opportunistic political leaders and policymakers misuse their power and do corruption for financial gain (Gallego et al., 2020).

In terms of politics, democratic practices became harder amid the pandemic for the defacto provision of not gathering, not conducting assembly, and not arranging or postponing local as well as national elections in many countries. The widespread pandemic has not only taken human lives but also has made the practice of democracy more fragile and uncertain (Marzec & Neubacher, 2020). Researchers and academicians from the relevant fields have given hint about the negative impact of the COVID 19 pandemic on democracy which may accelerate the erosion of democracy where democracy has already retrogressed (Rapeli & Saikkonen, 2020). Among the various

indices, scholars and practitioners consider free, fair, and credible elections as one of the predominating indicators of good democratic practice. For the severe contagious characteristic of coronavirus, a large number of countries decided to postpone their national and subnational elections due to COVID 19 which is not a good sign for the continuity of democracy. Furthermore, a large number of countries arranged national and local elections during the different waves of the pandemic. Analyzing voter turnout during the pandemic would show the effect of COVID 19 on democracy largely.

Based on this backdrop, in my MA thesis, I have shed light on the change in voter turnout rate during the COVID 19 pandemic in the specific pursued countries and tried to correlate the voting rate with explanatory and control variables. Firstly, I tested the voter turnout rate in the Parliamentary and Presidential elections before and during the pandemic to sort out the trend of voting in the studied countries. Secondly, I have analyzed the impact of the COVID 19 pandemic on the voter turnout rate in the national (parliamentary and presidential) elections under democratic and hybrid regimes across the world from 2020 to 2021. In the next step, I explored the relation of the voter turnout amid the epidemic with control variables as such political inequality, regime type, and annual GDP growth rate under the democratic and hybrid regimes. Finally, I have experimented with the shift of the voter turnout rate before the pandemic with other control variables. By following the deductive reasoning it is hypothesized that the voter turnout rate has decreased amid the pandemic which signals the risk for democracy in the studied countries. The assumption of interdependence of voter turnout rate with the control variables has been also hypothesized. Statistical analysis has been done to make the research more authentic, rigorous and evidence based.

In Chapter 1, the rationale of the study and theoretical framework has been narrated. Relevant existing literature has been reviewed in Chapter 2 to identify the gaps and to make an overview of the study topic. In Chapter 3 of methodology and research design, the methods, tools of analysis, and the study design have been described. Statistical models, data, and the variables have been explained in this chapter. Results of the statistical analysis have been highlighted in Chapter 4 whereas the interpretation of the study findings has been focused on in Chapter 5. Overall discussion on the study has been incorporated in the concluding part.

Chapter 1: Theoretical Framework

1.1 Rationale for the Study

Problem identification and unlocking the justification of the study is an important milestone of an acceptable research study. In my MA thesis research, I will focus on the voter turnout rate in the selected countries during the unprecedented COVID 19 pandemic from early 2020 to 2021. Voting, an institutionalized form of political behavior, is one of the most studied topics in the literature of Political Science discipline in the contemporary period. As an important pillar of the democratic system, the voting behavior of the citizens describes the state of democracy in a country. The voter turnout rate indicates the interest of citizens to select candidates as well as to participate in the decision-making process. In 1981 Political Scientist Thomas E. Cavanagh indicated the decreasing trend of voter turnout around the world and mentioned the importance of voters' presence in a democratic country which shows that the downward voting trend is not a new phenomenon in the current world (Cavanagh, 1981). Lutz & Marsh referred to other scholars as such Lijphart, Barber, and Pateman in their study and narrated that the Government cannot be legitimate and the election cannot confirm inclusiveness without ensuring the participation of voters in a country (Lutz & Marsh, 2007). The disinterest of the citizens in voting signals political digression which can threaten the democratic practice. Many scholars studied the factors behind lower voter turnout rates while Jackman concluded in his study that constitutional arrangement, political institutions, and electoral law incentivize citizens to vote for the political candidates (Jackman, 1987). Though low voter turnout has made the scholars worried for many years, still in recent periods it has become a common trend in many countries that accelerates the democratic decline. Election in a democratic country fails to ensure a legitimate regime without the unprompted presence of the majority of the voters. However, holding elections amid the newly

spread outbreak of COVID 19 has become harder since 2020 while voter participation in the election seems more uncertain for the super infectious nature of the outbreak. Based on the above backdrop, this empirical study will explore the voter turnout rate in the national Parliamentary and Presidential elections under democratic regimes worldwide from 2020 to 2021. It will be investigated how new cases per million impacted the voter turnout rate in the countries studied. Significant variables such as political equality index, electoral status, GDP annual growth rate, etc. will be controlled to make the study more viable and justified. In addition, the study will compare the voter turnout rate amid the COVID 19 pandemic with the voter turnout in the previous year's election in the selected countries to find out the trend of voter participation in the national election. This thesis study would be the maiden research work that will shed light on the correlation of the voter turnout rate with newly identified aggregated cases in the week of the national election. The research result of this thesis would unfold the picturesque status of the voting in the democratic countries during the pandemic which will motivate the scholars to do more research works to correct the state actors of the affected countries to ascertain the maximum participation of the voters to the upcoming national election. This thesis study contributes to the

existing literature in several ways. First, it offers a comprehensive analysis of voter turnout during the pandemic COVID 19 across the world. Second, it proves the hypothesis that confirms the lowering of voters' presence amid the crisis period. Thirdly, it compares the voting before and during a pandemic which finds out the potential confounding factor behind the low voter turnout rate.

1.1 Theoretical framework

The massive outbreak of COVID 19 since 2020 has not only created severe health or economic crisis but also has hindered the political practices as such elections, procession, meetings, etc. Amid the pandemic, many countries postponed their national election while others decided to arrange the election to uphold the spirit of democracy or to restore power. The Economist reported in-person voting in the Presidential Election of 2020 in the USA has had a statistically significant impact on the drastic spread of coronavirus in the country (The Economist, 2021). It seems difficult to many state actors to create balance by taking the right decision to hold or postpone elections and arranging referendum amid the pandemic (Council of Europe, 2020). According to the report of the International Institute for Democracy and Electoral Assistance (IDEA), the national election has been postponed in 42 countries while 130 countries held the national election or referendum during the pandemic period (Asplund, 2022). How the contagious characteristic of coronavirus influences the voters to vote that is a matter of analysis in this paper. A very recently published article shows that voter turnout is lower in the municipal election in Spain where there are more COVID cases (Fernandez-Navia et al., 2021). UNDP regional report also showed the decreasing direction of electoral participation in several countries of Latin America and the Caribbean during the pandemic (Lopez-Calva, 2021). By assessing the local government elections in 2020 in Italy, Italian authors found out that the voter turnout rate decreased by 0.5 % while the elderly death rate due to COVID 19 increased by 1% irrespective of gender difference (Picchio & Santolini, 2021). This thesis study is, to the best of my knowledge, the first to explore the impact of COVID 19 on the voter turnout in the countries across the globe that conducted national elections during the pandemic age under the democratic and hybrid regimes. Many scholars already have predicted the decay of democratic status in the fragile states in the post-COVID world (Rapeli & Saikkonen,

2020). Findings of this empirical research will point out the voting trend in the studied countries which would suggest the continuity of democratic flow based on voters' presence in the election amid the pandemic. The relationship of voter turnout with other variables determines the influential factors to motivate the citizens to vote in the national election. For instance, in the case of the relationship of voting with political inequality, the study will follow the deductive reasoning model to prove the hypothesis. Herbert Tungsten, a Swedish Political Scientist, developed the theory of the 'law of dispersion' in 1937 which theorized that "the lower the level of voter turnout, the higher the level of inequality in political participation" (Tingsten, 1937 in Persson et al., 2013). Many theorists found the coincidence between voter turnout and the socio-economic inequality in the case of many countries (Bartle et al., 2017). In the thesis paper, I will test this theory and prove the hypothesis by statistical analysis. How lower voter turnout amid the COVID 19 pandemic relates to the status of the political equality, annual GDP growth, and regime type under the democratic and hybrid regimes that will be untangled in this evidence-based rigorous study.

In this research study unit of analysis will be the elections that have been conducted at the national level from 2020 to 2021 during the pandemic era. Based on the data from IDEA, I will apply the "small N scale" where the number of observations is 90 Parliamentary as well as Presidential elections in 70 countries across the world which arranged national election during the mentioned period. Voter turnout rate will be the outcome variable while the aggregated infection rate during the week of the election will be considered as the explanatory variable in the first regression model. Before running the regression models voter turnout rate during the pandemic will be compared with the turnout rate in the last election before the spread of COVID 19. Several variables based on the literature review such as the democracy index, and the annual GDP growth rate of the studied countries would be controlled to find out the confounding factors to make the

study more authentic and to avoid the common pitfalls. When I will run the first regression model, a negative significant coefficient would support my hypothesis of lower voter turnout amid the COVID 19 compared to the previous year's voter turnout. On the other hand, if I get a positive coefficient, that would be against my hypothesis. However, several regression models will be run by controlling other above-mentioned variables. One separate regression model will be created where the change in voter turnout rate would be the dependent variable and new cases per million will be the independent variable while other significant variables will be controlled. I will consider both parliamentarian and presidential national elections under the democratic and hybrid regime to balance the size of the observations and for the internal validity. I will explore relevant journals, books, research reports, and websites to manage the secondary data. Data sets uploaded by different organizations such as International Institute for Democracy and Electoral Assistance, World Bank, V-Dem, etc. will be explored to get the relevant data.

Chapter 2: Literature Review to Understand the State of the Topic

Relevant literature has been reviewed in this section to understand the state of the study topic and to identify the existing gap in the literature. In the literature of Political Science, voter turnout has been studied with importance to signify the indicators of democracy as the state principle.

2.1 Voter Turnout

Voting has been studied by many scholars as to the indication of the performance of the political institutions as well as the manifestation of the political culture in a respective country. Voter turnout has been defined as the counting of the participation of the voting-age population in the election in a country. It is convenient to consider the voting age population rather than the registered voters to calculate the voter turnout ratio as registration is not required in many countries (Geys, 2006). Voter turnout is a momentous exponent of the peoples' participation and consent by which political equality of the citizens to the state affairs is ensured. Legitimacy and the acceptance of democratic regimes are largely dependent on the massive turnout in the elections in any country. A long-ago political scientist Schumpeter identified the competitive struggle for the people's vote as an important means of democracy (Schumpeter & Swedberg, 2014). Voting is considered one of the important civil rights of the citizens by which they elect the state actors. A fair and inclusive election is one of the most important indicators of democratic governance. Political Scientist Andre Blais connoted in his article that for the first time in 1982 Powell identified the participation of voters in the election as one of the significant indications of democratic practice (Blais, 2006). Equal access of the citizens to voting spawns political equality and inclusiveness which are two major features of not only democracy but also good governance. Citizens' support for the

Government remains unheard when equal access to voting is not ensured and the voter turnout lowers. Despite having a legal basis the Government becomes illegitimate if the majority of voters do not participate in the poll. In the case of studying recent electoral politics, we will come to know that autocrat or authoritarian leaders trust the institutions to manipulate the election and to be in power for a longer period (Lust-Okar, 2006). When vote-rigging, threatening, manipulation, etc. have become very common affairs in many countries, it is also noticeable that citizens avoid voting for the autocratic politicians. Citizens' avoidance is one of the key issues which makes the voter turnout lower in recent times. A downward trend of turnout in the national elections has become a common phenomenon in the last century (Lutz & Marsh, 2007). Lijphart identified the serious problem of low voter turnout as the "unresolved dilemma of democracy" which restricts massive political participation and causes unequal political influence on the society (Lijphart, 1997). Literature shows that education status, socio-economic condition, per capita income, rural or urban residence, party cues, voting system, corruption index, etc. all influences the voter turnout in a state (Paskert, 2014). Scholars pointed out that the provision of mandatory voting, electoral competitiveness, and the demographic profile as such size of the country, and poverty rate determines the voters' presence in the election (Blais, 2006).

However, the pernicious and very infectious nature of Novel Coronavirus has made voting more difficult amid the COVID 19 epidemic. Research studies on the impact of COVID 19 on the elections around the world are scant though there is a possibility of a lower turnout rate during the pandemic which is not a good sign for democratization.

2.2 COVID 19 pandemic

Despite the enormous technological transformation and development in the medical sector, science could not make any anticipation of the foray of one of the most infectious diseases COVID 19 in 2019. The world was not well-prepared to fight against such a contagious epidemic and many countries needed foreign aid to manage the crisis period. In the twenty-first century, the emergence and outbreak of COVID 19 as the pandemic has become the most pressing global issue which has badly impacted the majority of the countries in the world. "Severe acute respiratory syndrome coronavirus 2 (SARS-CoV- 2)" was firstly found in Wuhan, China in December 2019 which later spread across the world, and within less than six months the infected number of people crossed 4,806,299 as well as caused more than 3,18,599 deaths around the world (Ciotti et al., 2020). To reduce the infection rate Governments imposed a lockdown policy in many countries to make people maintain social distance. Education institutions were closed for a longer time and hospitals became overcrowded with the COVID 19 patients while poor countries were suffering the most to manage the health crisis for the lack of sufficient resources. Many countries faced economic recession and severe unemployment rise which created socio-economic instability. Politics is not out of the hit of COVID 19 pandemic about eighty countries adjourned the national and subnational elections due to the pandemic and one hundred thirty countries held elections at the national level (Asplund, 2022). Political Scientists and Academicians predicted the possibility of jeopardy to democratic practice amid the pandemic. Postponing election, imposing lockdown without citizens' consent, implementing vaccination by force, etc. has made the deterioration of democratization (Amat et al., 2020 in Fernandez-Navia et al., 2021). This thesis study conducts an empirical analysis to clarify the impact of COVID 19 on the voter turnout rate during the pandemic.

2.3 Political Equality

Political equality is the core topic of democracy which renders the equal participation of citizens in the state's decisions. Scholars and pundits determined equal access to voting as the core quintessence of political equality. Jonathan W. Still found the insufficiency of the existing literature on political equality and theorized six criteria "Universal Equal Suffrage, Equal Shares, Equal Probabilities, Anonymity, Majority Rule, and Proportional Group Representation" to define political equality comprehensively (Still, 1981). A higher index of political equality confirms the accessible voting and higher voter turnout rate in a country. Equal political participation facilitates citizens to inform the representatives about their status, demands, and preferences by providing equal opportunity to all the citizens irrespective of class, caste, age, or color. Citizens make the politicians accountable by creating pressure to respond to their just demands while equality of participation is confirmed by the state (Verba, 2001). Under the democratic regimes, voters not only get equal rights to express their opinion but also enjoy the equal chances to elect their representatives if political equality is assured (Bartle et al., 2017). Citizens become empowered by getting equal rights to express their opinion and turn interested to choose their representatives by voting. The subsistence of equal participation ascertains inclusion of the communities and well distribution of resources which is one of the main implications of democracy. The quality of political equality and popular sovereignty define the quality of democracy in a country (Wolbrecht et al., 2005). Oppositely, to the lack of political equality voters cannot share their demands and do not enjoy their freedom of expression which makes them indifferent to voting and generates de-democratization in a state. Demonstrations against the ruler in power may be taken place by the deprived citizens as they do not get an equal share of the state's resources. Moreover, lower electoral participation caused by social, economic, and political inequalities indicates the de-

legitimization of the regime (Czesnik, 2006). Many theorists came forward by proposing that in most cases economic inequality influences the voter turnout which shapes the political equality in a country. By contrast, it has been also argued that economic, social, and political inequalities are not mutually exclusive while these are interdependent (Cole, 2018). Egalitarian democracy can be one of the indicators to measure the political equality index which would also include the status of electoral integrity in a state.

2.4 Electoral Autocracy

The trend of free, fair, and credible elections not only demonstrates the transparency of the incumbent Government but also motivates citizens to vote for the candidates voluntarily. Recent studies show that the existence of electoral integrity which is closely linked with political equality has as an important factor to motivate citizens to vote for the candidate of their choice (Birch, 2010). In many cases, citizens refrain from voting under the autocratic regimes from the feeling of disappointment and disagreement. Oppositely, often voters participate in the poll to vote against the autocratic leaders and to bring democracy back in a country where the countries have the provision of compulsory voting. Rent-seeking leaders target illiterate or less literate voters to buy their vote by offering them illegal favors (Blaydes, 2006). Access and desire to vote largely depend on the status of the regime type and the ruling criteria of the incumbent Government. Previous studies on electoral politics unfold that autocratic leaders offer patronage to the electors and take their support to restore their power. The rulers compel citizens to vote for them in exchange for incentives such as monetary gain, jobs, impunity, and other materialistic gains (Coma & Morgenbesser, 2020). In the majority of the cases, autocratic Governments show off the upward trend of voters' participation in the national and subnational elections arranged under the autocrat regimes which in a real sense they again by associating their clientelist approach.

However, several countries as such Germany, Thailand, and New Zealand handled the pandemic swiftly while for the ineffective and opportunistic leadership many countries are at risk of huge socio-economic inequality and a decline in democracy. Overall, COVID 19 has revealed the historical internal cleavages of the countries while the rulers in power became more interested to disband the democratic norms to restore their power rather than strengthening the social cohesion during the crisis (Kurlantzick, 2021). Declining socioeconomic conditions and increased political inequality have become a matter of concern for the future of democracy. Studying the elections under autocratic regimes in the democratic countries amid the COVID 19 would help to understand the current status of democracy.

2.5 Annual growth rate of Gross Domestic Product

Gross Domestic Product (GDP) growth is a common economic indicator to classify any country based on its economic performance. Generally, annual GDP is defined as the monetary value of all public and private products and services produced within a country in a year (Fernando, 2022). GDP growth rate is calculated based on the value of the yearly or quarterly trade surplus of a country. Many scholars tried to correlate the rate of voter turnout with economic development although ambiguity is still there. Several Political Scientists found a positive relationship between annual GDP growth with the voting trend while voter turnout increases in the richer countries. By contrast, many researchers concluded that lower economic growth motivates citizens to participate in the polls and to vote against the Government because of redressing their grievances (Blais, 2006). The role of annual GDP growth to influence voter turnout varies depending on other political, institutional, and social factors. It can be said that the relationship between voter turnout and annual GDP growth is still unsettled. This study will analyze the role of the annual GDP

growth rate to determine the voters' presence amid COVID 19 pandemic and also during the last election in the studied countries.

Chapter 3: Methodology and Research Design

World Health Organization (WHO) declared the COVID 19 outbreak a "Public Health Emergency of International Concern" on 30th January 2020 and pandemic on 12th March while there were already more than 1,00,000 confirmed COVID 19 cases and more than 5000 people died from the infection of newly prevalent coronavirus in Europe (World Health Organization, 2020). The unanticipated pandemic has caused more than six million deaths since 2020 which is the deadliest passing previous epidemics in the world's history. During the pandemic, not only emerging and developing economies faced recession but also the advanced economies are in crisis. After the Great Depression, the global recession caused by COVID 19 pandemic has tremendously affected the lives and livelihoods of human beings (International Monetary Fund, 2020). The world has been confronting immense challenges in the health, education as well as financial sectors since 2020 which has not been recovered still. It is needless to say that politics is not the worst impact of the COVID 19 pandemic. Particularly, the election which has been considered one of the important indicators of democratization has been disrupted by the epidemic. Many countries postponed national elections while a large number of countries arranged elections during the pandemic period. The American Democracy Philosopher Robert A. Dahl defined equal and effective voting opportunity as one of the major criteria of democracy (Shapiro, 2015). It is momentous to analyze how the long-lasting COVID 19 pandemic has affected voting in many countries which would add new literature to the study of Political Science. This thesis will analyze the relationship between voter turnout in the democratic and hybrid regimes from 2020 to 2021with and the new cases of COVID 19.

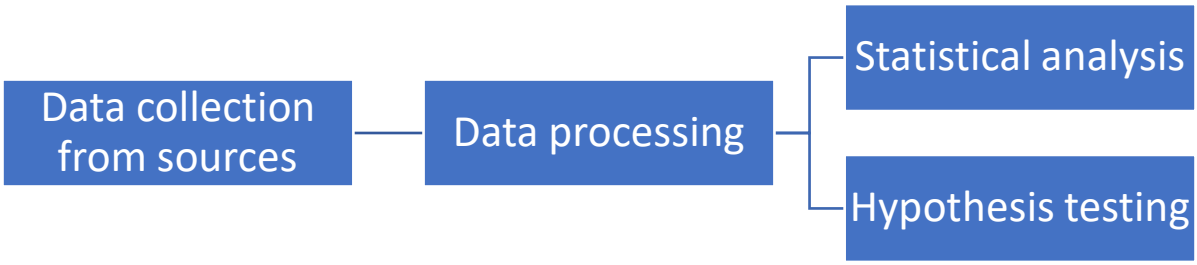

Figure 1 Research design of the study.

3.1 Methods

To get authentic research results and to analyze quantitative data I will apply statistical modeling. R as the popular statistical programming language will be used to handle the data set and to create the statistical models and graphs. Correlation between the dependent and independent variables will be computed by using bivariate regression in R (Imai, 2017). One variable would be predicted from another variable by the bivariate regression analysis. The following model will be followed to conduct the regression placidly:

$$Y= a + bX$$

Here, Y will be considered as the dependent variable and X has been labeled as the explanatory variable while a and b will be the intercept and slope of the model. Intercept a and slope b both are called coefficients which makes the regression analysis complete and the regression line steeper. I will add e as the possible error to the equation to tackle the probable errors of the model. The appropriate model by including errors would be:

$$Y= a+bX+e$$

In the regression model, e will show the residual or error which will imply the deviation of the observations from the linear relationship. The intercept a computes the average of Y when X is zero while the slope b represents the average increase or decrease in Y when X changes by one unit (Imai, 2017). Several variables will be controlled to sort out the confounding factors in the model. Through the R2 function, the variance of the regression model will be found. The thesis will be a comparative study based on the data of the new cases per million and voting turnout among the selected 90 national elections in 70 countries.

The statistical bivariate analysis will be done to verify the relationship between the variables. A simple scatterplot will be created where one variable would be plotted against another variable to show the numerical representation of the relationship between dependent and independent

variables. The scatter plot will reveal the intensity of the correlation of the variables and will indicate the best-fitted line that intersects the common scores of variables (Sandilands, 2014).

Pearson R statistical test will be conducted to validate the correlation coefficient which will confirm the stiffness and relationship between dependent and independent variables. The test result will return a specific value of correlation coefficient between -1 and 1 while the value of -1 would suggest a strong negative relationship between the variables and the value of 1 correlation coefficient signifies a strong positive relationship between the variables (Ly et al., 2018).

The formula of Pearson's Correlation Coefficient is (Thakur, 2022):

$$\mathbf{r} = \frac{\mathbf{n}(\sum \mathbf{xy}) - (\sum \mathbf{x})(\sum \mathbf{y})}{\sqrt{[\mathbf{n}\sum \mathbf{x^2} - (\sum \mathbf{x})^2][\mathbf{n}\sum \mathbf{y^2} - (\sum \mathbf{y})^2]}}$$

Here,

r = Pearson Coefficient,

n = number of observations,

$\sum x$ = summation of the explanatory variable x

$\sum y$ = summation of the dependent variable y

If the value of the correlation coefficient is 0, then the test represents no relationship between the independent and dependent variable. The voter turnout rate amid COVID 19 will be compared with the voter turnout rate in the previous national elections in the selected countries under the democratic regime. All the statistical analysis will be conducted to find out and validate the correlation between explanatory and outcome variables.

3.2 Data Processing

In this study, necessary cross-sectional data have been collected from different online authentic sources to create the expected dataset. The latest "Worldwide Voter Turnout" dataset has been

downloaded from the website of the International Institute for Democracy and Electoral Assistance (IDEA) to get the data on voter turnout in the selected years. Data about the voter turnout in the most recent elections, voting criteria, etc. have been extracted from this dataset. "V-Dem Democracy Indices Dataset Version 12" has been collected from the website of Varieties of Democracy (V-Dem). This latest version of the data set includes extensive democracy ratings of the countries based on about 483 V-Dem indicators and indices. Data on regime type and electoral criteria of the countries have been sorted out from this dataset. The data set of "V-Dem Varieties of Democracy", published in March 2022 has been downloaded from the same Varieties of Democracy (V-Dem) website to get the data of "Egalitarian Democracy Index" to calculate the index of Political Inequality. The complete updated "COVID-19 dataset" has been downloaded from the website of Our World in Data.

Firstly, I downloaded all the essential datasets from the respective websites and extracted the necessary data from the datasets. Then the eligible data were merged to create the potential dataset to analyze in the study. Dataset has been attached to Appendix 1. Data on the 90 national elections in 70 countries from 2020 to 2021 has been included in the final dataset. Data on the new cases per million in a week has been aggregated to get the data on the new COVID cases per million in the week of the election. In the countries where elections take place in two rounds, the date of the second round of election has been added to the dataset. Based on the democracy indices regime type and electoral criteria of the countries have been identified. Countries with liberal democracy, electoral democracy, and electoral autocracy have been added to the dataset where the latest national parliamentary or presidential elections were held from 2020 to 2021 during the COVID 19 pandemic. The electoral autocracy of the countries has been coded as followings:

1 = Electoral Autocracy

0 = Not Electoral Autocracy

3.3 Variables

Variable is a conventional and operable property in the literature of statistics that is mainly used to prove the logic of any argument by statistical analysis. Variable is the logical grouping of attributes that are mainly the characteristics and qualities of an object with different values. Variable can be outcome and explanatory while the outcome variable is affected by the explanatory or independent variable (Kaur, 2013). The variable setting is an important task to make the statistical analysis rigorous and evidence-based.

Based on the backdrop, in this study primarily one outcome and one explanatory variable have been fixed to do the statistical analysis and develop the arguments of the thesis. New cases per million during the election week in the Parliamentary and Presidential elections in the selected 70 countries is the explanatory variable while the voter turnout rate in the latest election is the outcome variable. As the rapid growth of COVID cases indicates the failure of state actors to tackle the COVID 19 pandemic, it is more significant to consider the new cases per million during the election week as the independent variable which can influence the dependent variable voter turnout rate during the pandemic.

In addition, controlling relevant variables with the explanatory and outcome variable is an important approach to quantitative research in the literature of Political Science. The control variable helps to find out causality between the dependent and independent variables which makes the study more reliable (Hünermund & Louw, 2020). Many scholars found it is as the efficiency of the regression analysis model to incorporate the controlling of the possible effect of other

variables (Sundell, n.d.). In this thesis study, several relatable variables will be controlled which can affect both the predictor and outcome variables.

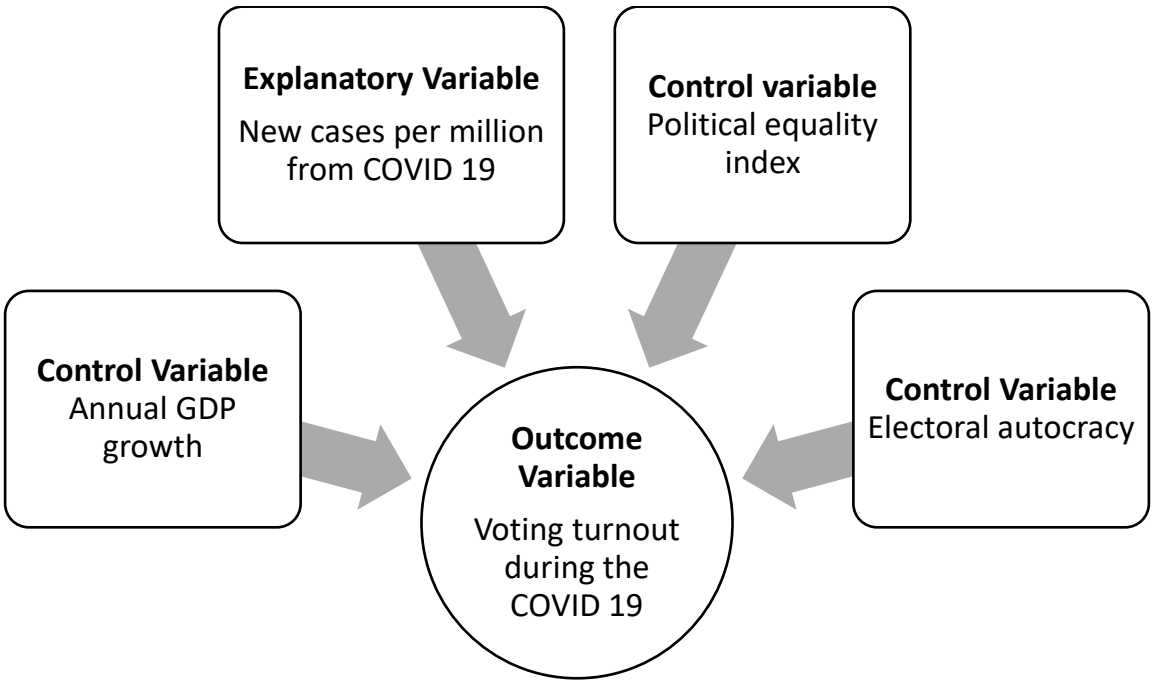

Figure 2 Proposed dependent, independent and control variables

From the review of literature, it has been found that the voting behavior of the citizens can be affected by the status of economic development in a country while affluent countries managed the COVID situation more effectively through their huge emergency spending which can motivate voters to participate the election during the pandemic. In addition, in the countries where the count of political equality index is good, voters are more likely to vote and the COVID situation has been well controlled there as leaders in the countries with higher rank of egalitarian democracy are less opportunistic as well as more transparent rather than corrupted. Literature shows that voter turnout is impacted by the intimidation, clientelism, and autocratic behavior of the state leader in the

countries where there is electoral autocracy (Coma & Morgenbesser, 2020). On the other hand, the response to the COVID pandemic cannot be fully determined based on democracy or autocracy in a country. Many democratic countries underperformed to tackle the epidemic and several autocratic Governments did well to control the spread (Kleinfeld, 2020). Controlling the pandemic effectively by autocratic leaders can influence voters to take part in the national election. However, the specified control variables are the annual growth rate of Gross Domestic Products (GDP) (gdp_growth), political inequality index (egalitarian democracy index) (v2x_egaldem), and electoral autocracy (Electoral_autocracy) which have been controlled to testify to the confounding factors and to ensure the internal validity of the study.

To examine the conditional relationship of the independent and dependent variables employing the interaction model is an accepted approach in the studies of Political Science. Exercising the interaction between two variables confirms the accuracy of the hypothesis of any research study (Brambor et al., 2006). The interaction model has been incorporated in this thesis study to verify the conditionality of the effect of new COVID cases per million with the political equality index. Another interaction has been done with the independent variable new cases per million with the control variable electoral autocracy to find out the dependence of the effect of the explanatory variable on electoral autocracy.

3.4 Research Question

Generally setting a research question clarifies the main objectives of a study. Specific research question helps to make the study more constructive and well-formed. Setting questions is very important to do the following research activities accordingly in a study. Without structured questions, no research study can get a significant result. Considering the main objectives of this

thesis study, a specific research question has been formulated to make the thesis original and more viable. Broader research questions are:

i) Has voter turnout decreased during the COVID 19 pandemic around the world?

3.5 Hypotheses

In research, the study hypothesis signifies the rationality of the study by setting the assumptions to examine. Relevant previous research works help to fix the hypothesis to make the study more credible. A broader research question guides making the hypothesis accordingly. Based on the review of literature and research objectives of this study the specific hypotheses of this thesis study are:

H1: It has been hypothesized that the voter turnout rate has lowered amid the outbreak of the COVID 19 pandemic.

Mismanagement of the crisis period and the deteriorated socioeconomic status during the COVID 19 pandemic can motivate the citizens not to vote. In addition, as the novel Coronavirus is very contagious and COVID 19 spreads by close contact with the affected person, it is assumed that people avoided voting to keep them safe from the infection. Voter turnout rate during the pandemic has been compared with the last year's election in the studied countries to find out the trend of voting. Change in the voting trend has been calculated separately in the Parliamentary and Presidential elections.

H2: COVID 19 pandemic has affected the voter turnout rate negatively in elections since 2020 under democratic and hybrid regimes.

Aggregated information on the number of the newly affected cases of COVID 19 can make voters not go to the crowded voting center to avoid the risk of infection by the Coronavirus. The regression analysis has been done to find out the correlation between voter turnout in the latest elections under the democratic and hybrid regimes and the new cases per million of COVID 19 during the week of the election in the selected countries. A Scatter plot has been created to clarify the magnitude of the relationship of the variables.

H3: Voter turnout rate would be impacted by the control variables as such political inequality, regime type, and GDP of the selected countries.

Previous studies show that a lower political equality index spawns lower voter turnout while citizens can be interested to vote when the score of political equality rises. Under the democratic and hybrid regime when state leaders control the voting, voters can boycott elections as a demonstration against the autocratic ruler. Regression will be done by controlling the variables of political equality, regime type, and GDP of the selected countries to identify the relationship between voter turnout with control variables. Confounding factors can be found in this regression analysis.

Chapter 4: Results of Statistical Analysis

From the IDEA dataset, it has been found that about 130 countries have arranged the national election amid the COVID 19 pandemic. From these 130 countries, 90 national parliamentary and presidential elections from 2020 to 2021 in 70 countries with democracy and hybrid regimes have been sorted out to analyze statistically. Different statistical analyses have been done to examine the hypotheses rightly.

4.1 Comparison of Voter Turnout rate

The voter turnout rate in the election during the pandemic and the last election before the epidemic COVID 19 in the selected countries have been collected from the IDEA dataset. Table 1 has been compiled by accumulating data from collected data sets. By using the formula of subtraction in excel the data on the voting before the pandemic has been subtracted from the data on voting during the pandemic. Findings of the calculation have been mentioned in the following table:

Table 1 Selected countries and elections during the COVID 19 pandemic

Country	Regime type	Election type	Election Year during pandemic	Voter Turnout (%)	Last election year before pandemic	Voter turnout before pandemic	Change in voting
Belarus	1	Presidential	2020	84.28	2015	87.22	-2.94
Bolivia	1	Presidential	2020	88.42	2014	91.86	32.14
Bolivia	1	Parliamentary	2020	88.42	2019	88.47	-0.05
Burkina Faso	2	Presidential	2020	50.79	2015	60	-9.21
Burkina Faso	2	Parliamentary	2020	50.7	2015	60.13	-9.43
Burundi	1	Parliamentary	2020	87.31	2015	74.32	12.99
Burundi	1	Presidential	2020	87.71	2015	73.44	14.27
Central African Republic	1	Presidential	2020	35.25	2016	59.01	-23.76
Croatia	2	Parliamentary	2020	46.9	2016	52.59	-5.69
Dominican Republic	2	Parliamentary	2020	55.18	2016	67.77	-12.59
Dominican Republic	2	Presidential	2020	55.29	2016	69.6	-14.31
Egypt	1	Parliamentary	2020	29.07	2015	28.27	0.8
Georgia	2	Parliamentary	2020	56.11	2016	51.94	4.17
Ghana	3	Presidential	2020	78.89	2016	68.62	10.27
Ghana	3	Parliamentary	2020	77.83	2016	67.55	10.28
Guinea	1	Parliamentary	2020	58.04	2013	63.53	-5.49
Guinea	1	Presidential	2020	78.88	2015	68.36	10.52
Iceland	3	Presidential	2020	66.92	2016	75.67	-8.75
Israel	3	Parliamentary	2020	71.52	2019	69.83	1.69
Ivory Coast	1	Presidential	2020	53.9	2015	52.86	1.04
Jamaica	2	Parliamentary	2020	37.85	2016	48.37	-10.52
Kyrgyzstan	1	Parliamentary	2020	56.2	2020	56.2	0
Lithuania	2	Parliamentary	2020	47.8	2016	50.64	-2.84
Malawi	2	Presidential	2020	64.81	2019	74.44	-9.63
Mali	1	Parliamentary	2020	35.58	2013	38.5	-2.92
Mongolia	2	Parliamentary	2020	73.64	2016	73.58	0.06
Montenegro	1	Parliamentary	2020	76.65	2016	73.41	3.24
New Zealand	3	Parliamentary	2020	82.24	2017	79.75	2.49

Niger	2	Parliamentary	2020	76.96	2016	66.27	10.69
Poland	2	Presidential	2020	68.18	2015	55.34	12.84
Romania	2	Parliamentary	2020	31.84	2016	37.79	-5.95
Serbia	1	Parliamentary	2020	48.93	2016	56.07	-7.14
Seychelles	3	Presidential	2020	88.45	2015	90.06	-1.61
Seychelles	3	Parliamentary	2020	88.4	2016	87.5	0.9
Singapore	1	Parliamentary	2020	95.81	2015	93.7	2.11
Sri Lanka	2	Parliamentary	2020	75.89	2015	77.66	-1.77
Suriname	2	Parliamentary	2020	71.57	2015	75.32	-3.75
Taiwan	3	Parliamentary	2020	74.86	2016	66.25	8.61
Taiwan	3	Presidential	2020	74.9	2016	66.27	8.63
Tajikistan	1	Presidential	2020	85.34	2013	90.16	-4.82
Trinidad and Tobago	3	Parliamentary	2020	58.04	2015	66.84	-8.8
Venezuela	1	Parliamentary	2020	30.09	2015	73.76	-43.67
Albania	1	Parliamentary	2021	46.32	2017	46.76	-0.44
Algeria	1	Parliamentary	2021	23.03	2017	37.09	-14.06
Argentina	2	Parliamentary	2021	71.51	2019	80.94	-9.43
Armenia	2	Parliamentary	2021	49.39	2018	48.63	0.76
Benin	1	Presidential	2021	50.63	2016	66.13	-15.5
Bulgaria	2	Presidential	2021	38.7	2016	56.28	-17.58
Bulgaria	2	Parliamentary	2021	49.11	2017	53.85	-4.74
Canada	3	Parliamentary	2021	62.25	2019	67.65	-5.4
Cap Verde	2	Parliamentary	2021	57.46	2016	65.93	-8.47
Cap Verde	2	Presidential	2021	47.96	2016	35.48	12.48
Chile	3	Parliamentary	2021	47.04	2017	46.53	0.51
Chile	3	Presidential	2021	55.64	2017	46.7	8.94
Cyprus	3	Parliamentary	2021	65.72	2016	66.74	-1.02
Czech Republic	2	Parliamentary	2021	65.39	2017	60.84	4.55
Djibouti	1	Presidential	2021	76.44	2016	69.26	7.18
Ecuador	2	Parliamentary	2021	81	2017	81.74	-0.74
Ecuador	2	Presidential	2021	80.99	2017	81.69	-0.7
El Salvador	1	Parliamentary	2021	44.96	2018	47.96	-3
Ethiopia	1	Parliamentary	2021	93.64	2015	93.22	0.42
Gambia	1	Presidential	2021	89.34	2016	59.35	29.99
Germany	3	Parliamentary	2021	76.58	2017	76.15	0.43
Honduras	1	Parliamentary	2021	NA	2017	59.49	
Honduras	1	Presidential	2021	69.09	2017	57.52	11.57
Iceland	3	Parliamentary	2021	80.09	2017	81.2	-1.11
Iraq	1	Parliamentary	2021	43.54	2016	60.09	-16.55
Israel	3	Parliamentary	2021	67.44	2020	71.52	-4.08

Ivory Coast	1	Parliamentary	2021	37.88	2016	34.1	3.78
Japan	3	Parliamentary	2021	55.97	2014	52.66	3.31
Kazakhstan	1	Parliamentary	2021	63.25	2016	77.1	-13.85
Kosovo	2	Parliamentary	2021	48.84	2019	43.2	5.64
Kyrgyzstan	1	Presidential	2021	39.16	2017	56.32	-17.16
Kyrgyzstan	1	Parliamentary	2021	34.94	2020	56.2	-21.26
Mexico	2	Parliamentary	2021	52.66	2018	63.21	-10.55
Mongolia	2	Presidential	2021	59.35	2017	68.27	-8.92
Netherlands	3	Parliamentary	2021	78.71	2017	81.93	-3.22
Nicaragua	1	Parliamentary	2021	65.24	2016	63.54	1.7
Nicaragua	1	Presidential	2021	65.26	2016	65.63	-0.37
Niger	2	Presidential	2021	62.91	2020	69.68	-6.77
Norway	3	Parliamentary	2021	77.16	2017	78.22	-1.06
Peru	2	Parliamentary	2021	70.08	2020	74.07	-3.99
Peru	2	Presidential	2021	74.57	2016	80.09	-5.52
Portugal	2	Presidential	2021	39.24	2016	48.7	-9.46
Sao Tome and Principe	2	Presidential	2021	67.76	2016	64.31	3.45
Uganda	1	Parliamentary	2021	55.23	2016	67.61	-12.38
Uganda	1	Presidential	2021	59.35	2016	67.61	-8.26
Zambia	1	Presidential	2021	70.61	2016	56.45	14.16
Zambia	1	Parliamentary	2021	70.3	2016	56.03	14.27
United States	3	Presidential	2020	70.75	2016	65.44	5.31

In the above table data of countries, election type, election years amid the COVID 19 pandemic, the last election years, and the voter turnout rate in the respected election years have been added. The voter turnout rate in the national elections before the pandemic and during the pandemic has been compared to show the trend of voting in the selected countries.

With the data of change in voter turnout and selected countries line graph has been created in excel to visualize the whole change in the pattern of voting. The following line graph shows the sum of changes in the voter turnout before and during COVID 19. Figure 3 indicates the overall

changes in the voters' presence in the Parliamentary and Presidential elections in the studied countries. For technical reasons, all the studied countries could not be accommodated in the graph.

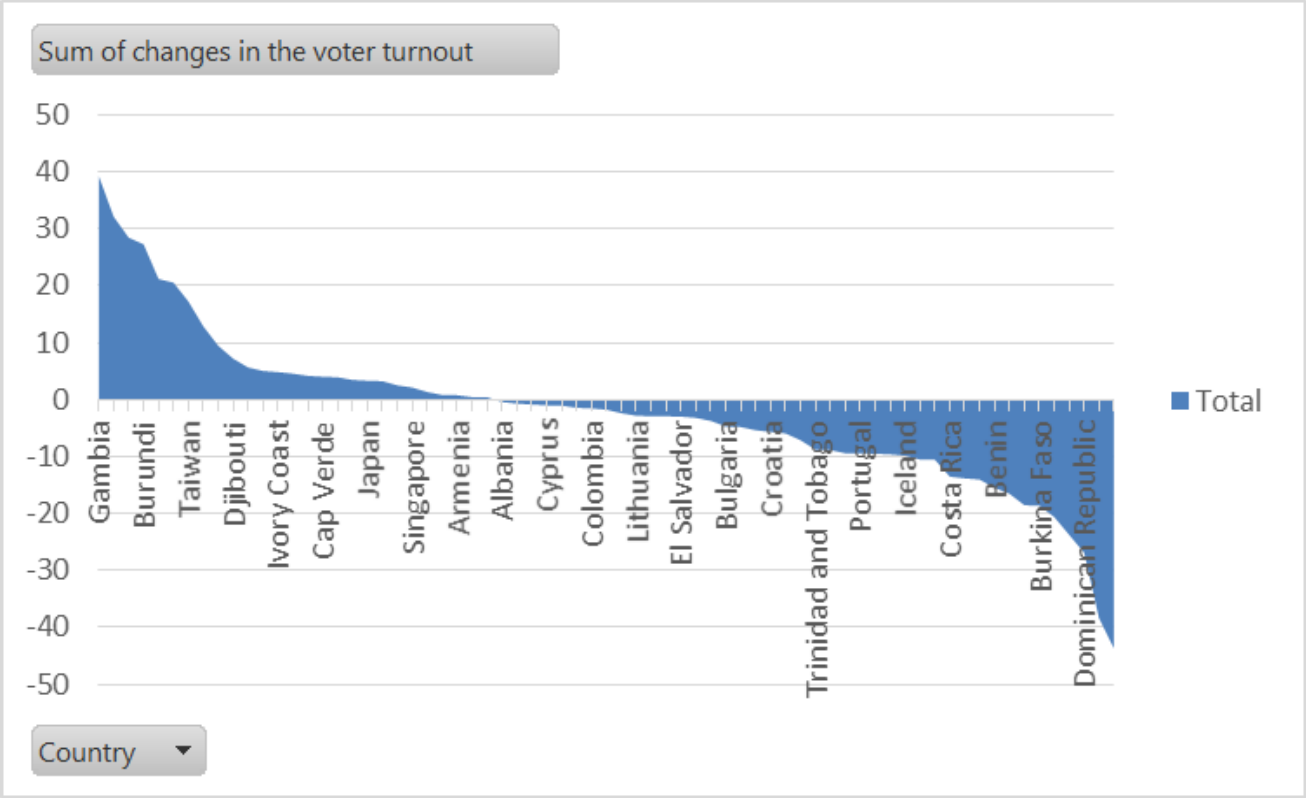

Figure 3 Comparison of voter turnout before and during COVID 19

The following Figure 4 is clarifying that majority of the elections held during the pandemic period were Parliamentary elections. Voter turnout rate decreased rapidly in the Parliamentary elections during the COVID 19 period than in the previous election. For instance, the line graph signifies that the voter turnout rate decreased by more than 40 percent than the previous election in Uganda. In the case of the Parliamentary elections in some countries as such Burundi, Ghana, Niger, etc. voter turnout rate has increased from the last election.

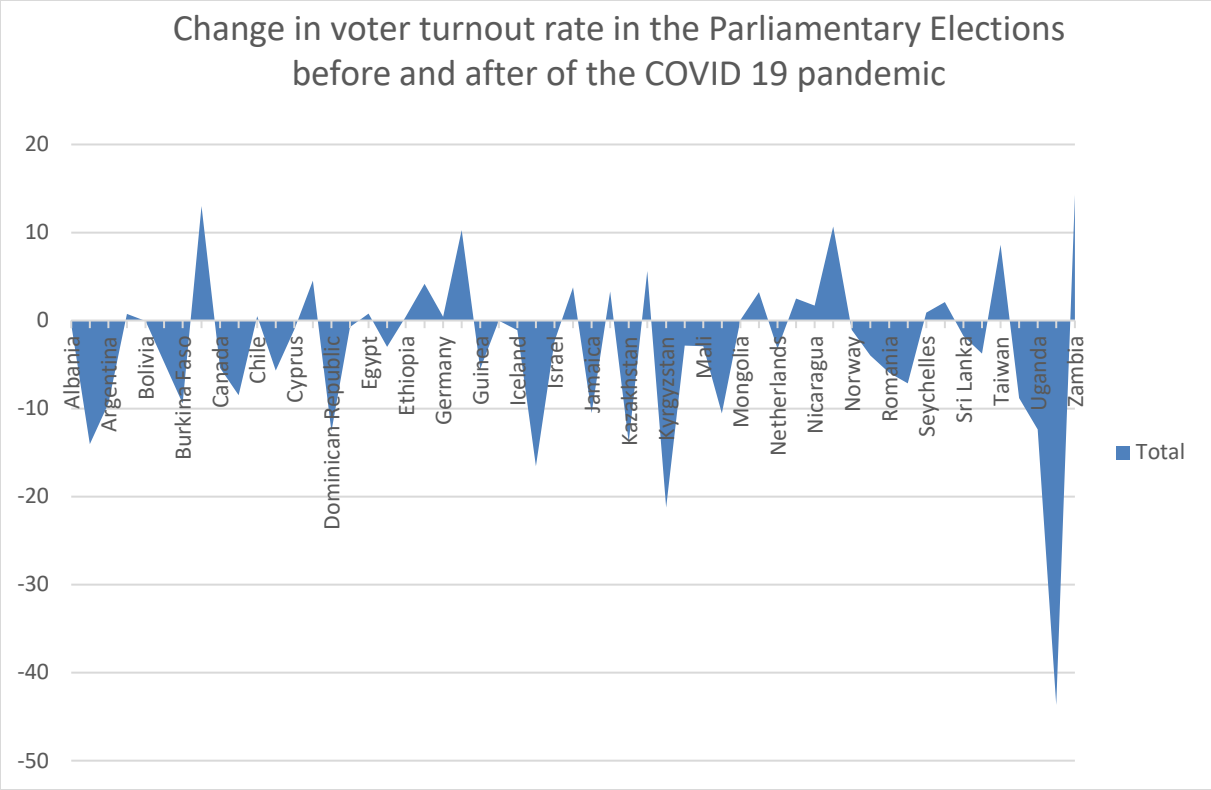

Figure 4 Comparison of voter turnout before and after COVID 19 in the Parliamentary elections.

On the other hand, thirty two countries (Figure 5) arranged Presidential election amid the COVID 19 pandemic where voters' presence is lower in the majority countries. For instance, voters' presence has decreased sharply in Central African Republic, Kyrgyzstan, Bulgaria etc. countries. In several countries as such Zambia, Honduras, Poland, USA etc. voter turnout rate increased in the Presidential elections during the pandemic.

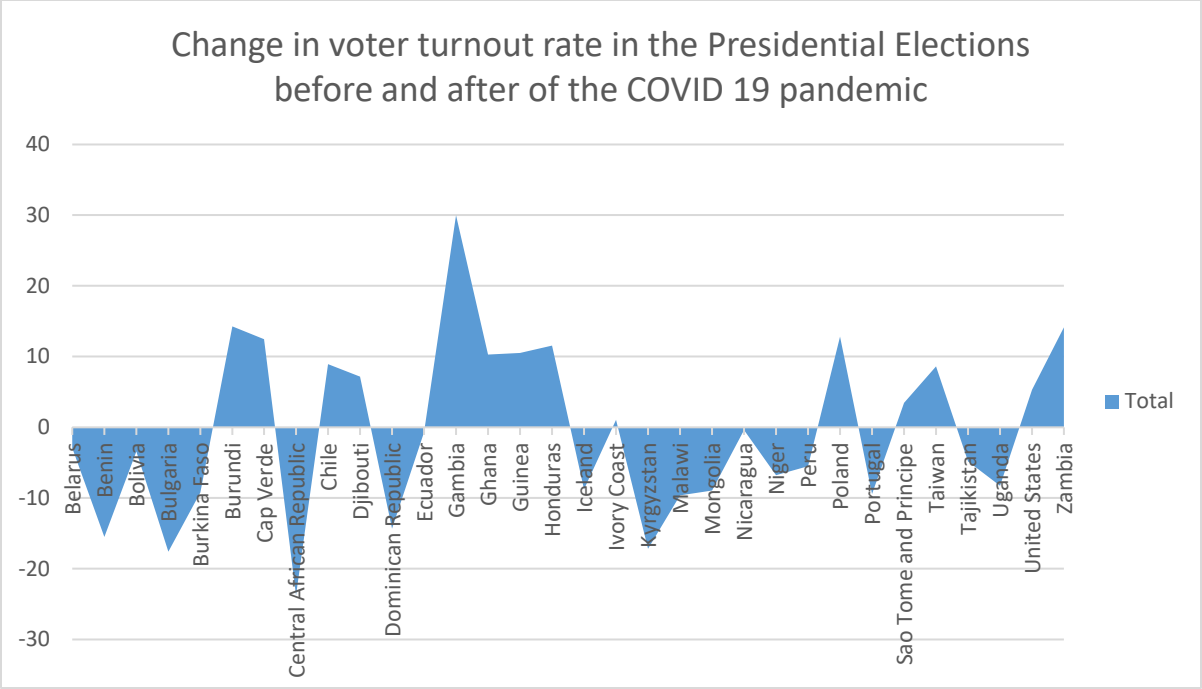

Figure 5 Comparison of voter turnout before and after COVID 19 in the Presidential elections.

It is evident from the above calculation that voter turnout lowered in the majority of the studied countries while turnout also increased in few countries. In case of many countries voters' participation decreased sharply and in other countries the participation reduced slightly. For instance, voter turnout decreased -43.67 percentage in the parliamentary election in December, 2020 in Venezuela while in case of Uganda, Central African Republic, Dominican Republic and Kyrgyzstan voter turnout fell above -20 percentage. Oppositely, voter turnout increased 32.09 percentage in the national election held in October, 2020 in Bolivia. Statistics shows that voter turnout declined in 42 studied countries while the turnout increased gradually in 28 countries. The rapid downward trend of voting signifies this study to conduct research to explore the most possible factors behind the lower voter turnout rate amid the unanticipated COVID 19 epidemic.

4.2 Bivariate Analysis by Scatter Plot

For the statistical calculation R has been used as the programming language in this study. The function “bar plot ( )” has been employed to make the following bar plot where the data on the voter turnout amid pandemic has been used. The bar plot in Figure 6 notifies the distribution of the voter turnout rate from 2020 to 2021 in the selected countries. The figure has pointed out the downward trend of voting in the studied countries amid the COVID 19 epidemic.

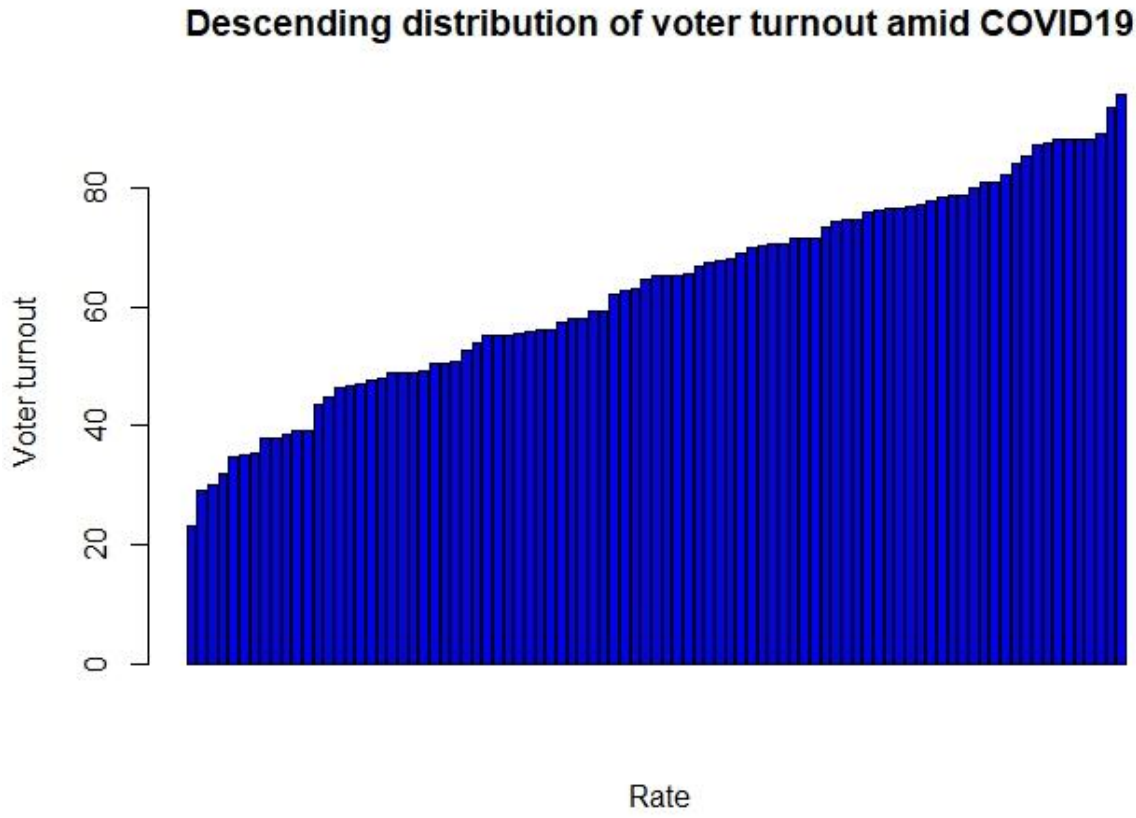

Figure 6 Distribution of voter turnout rate during COVID 19.

The bar plot indicates the descending order of the voter turnout rate in the studied elections where the highest voters’ presence is in Singapore and the lowest turnout is noticeable in the Parliamentary election in Algeria.

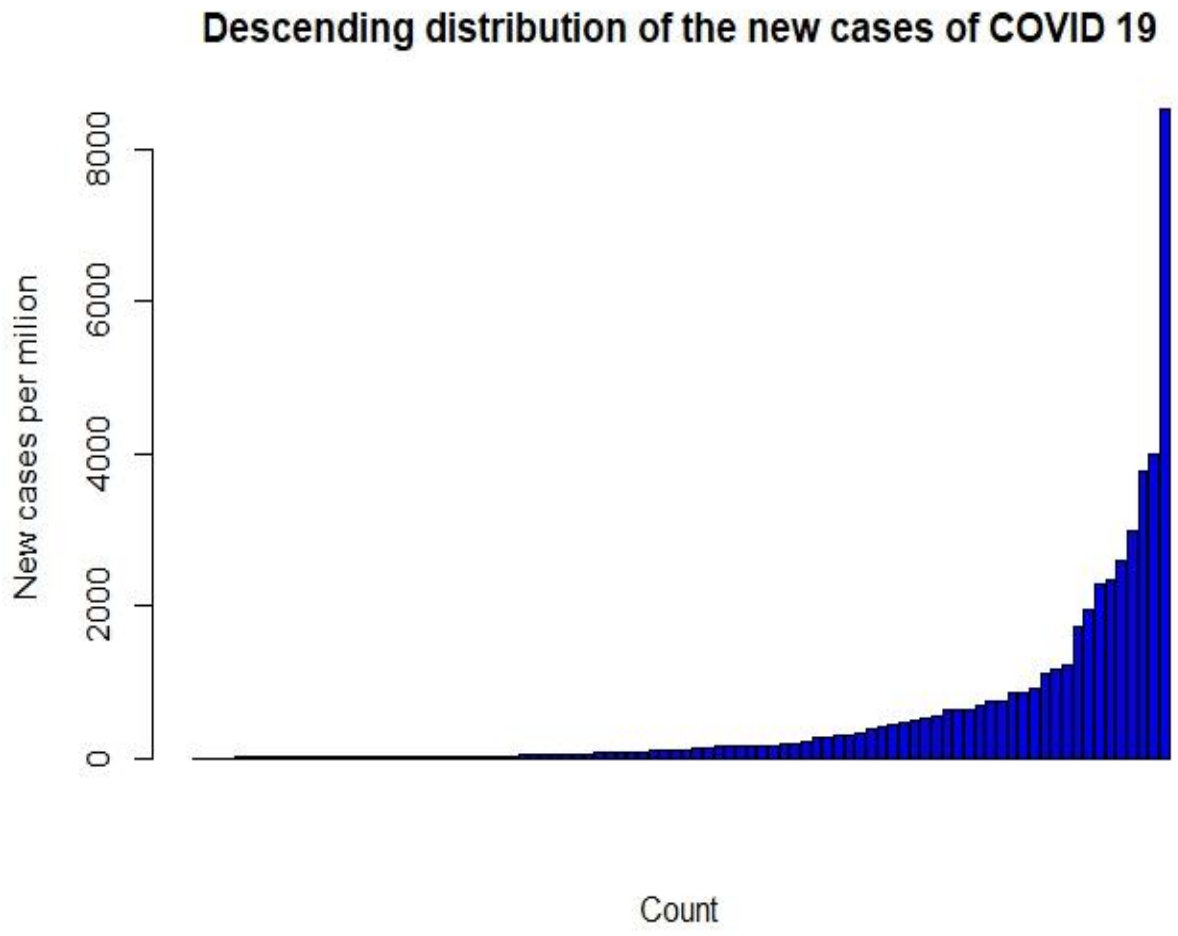

Figure 7 Distribution of the new COVID cases.

The above bar plot has been created by administering similar "bar plot ()" function in R. The plot in Figure 7 is indicating the distribution of the number of new COVID cases in the studied countries since 2020 to 2021. The highest number of new cases during the study period is 8512 in Portugal and lowest number of infection from COVID 19 is 0 in several countries as such Singapore, Sri Lanka, Taiwan etc.

By using "plot ()" function in R the following scatter plot has been done to visualize the correlation between voter turnout rate and new COVID cases per million. Bivariate analysis has

been illustrated by the scatterplot where the number of new cases per million as the explanatory variable has been inserted to the x axis and the voter turnout rate amid the COVID 19 as the outcome variable has been put on the y axis. The function of logarithm "log (variable+1)" has been employed to get the smoothed data of the new COVID cases per million during the election week in the selected countries. Simple liner regression line has been added to the plot by using "abline ()" function during plotting. The regression line with green color is indicating the downward slope of the correlation between the predictor and response variables.

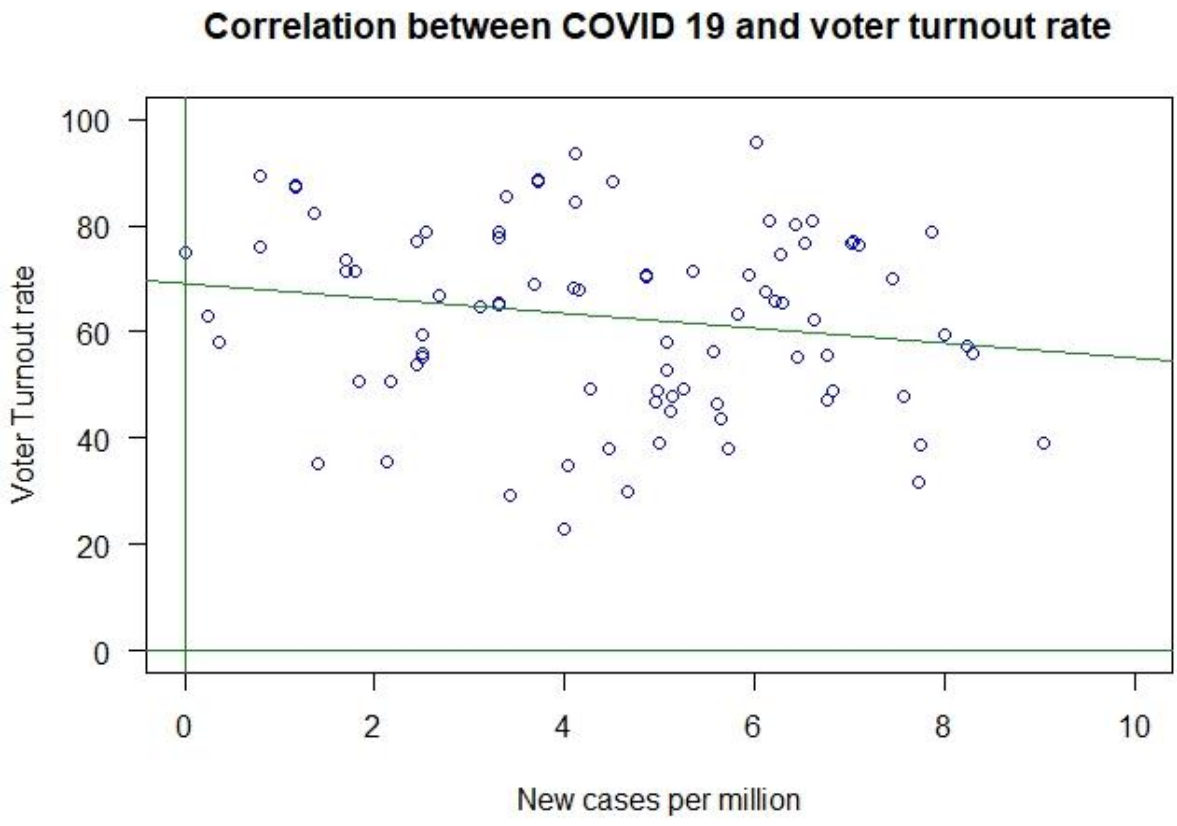

Figure 8 Correlation between the new COVID cases and voter turnout rate.

The scatter plot in Figure 8 shows that the voter turnout rate increases when the number of new COVID cases are lower. By contrast, when COVID cases increases, the voters' presence

decreases. If we notice to the quadrants of the plot we can visualize the diminutive trend of voter turnout while the number of COVID cases arises. Several number of countries are noticeable in the plot as the outliers. The outlier country cases show that when the number of cases increases the voter turnout also increases then. From the scatter plot it is understandable that the voter turnout rate is negatively impacted by the increase of the COVID cases.

4.3 Regression Analysis

To do the regression analysis "lm ()" function has been exercised in R. Simple linear regression analysis has been done with ninety observations where Y stands for the voter turnout rate as the dependent variable and X is for the number of new COVID cases per million as the independent variable. "stargazer::stargazer ()" function has been used to accumulate the result of regression in one table. The following regression model in Figure 9 is showing the negative relation between voter turnout rate and the new deaths per million from COVID 19. Output of the regression analysis has been narrated below in the table:

Regression Analysis

	Dependent variable:
	Voter turnout rate during COVID 19
Intercept	64.328***
	(1.982)
New cases of COVID 19	-0.003*
	(0.002)
Observations	89
R^2	0.033
Adjusted R^2	0.022
Residual Std. Error	16.973 (df = 87)
F Statistic	2.956* (df = 1; 87)
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 9 Regression analysis between the dependent and independent variables.

The first model in Figure 9 indicates that when new cases of COVID 19 is zero then the voter turnout rate becomes 64.328. When the number of newly infected cases increases by 1 in number per million in a week then the voters' presence decreases -0.003 percentage points. Overall, the calculation shows that the estimated intercept is 64.328 while the estimated slope is -0.003. The regression model clearly shows the negativity between the voter turnout and the infection rate by the coronavirus. Strong F statistics value in this model confirms the correlation between the predictor and response variables. On the other hand value of adjusted r square notifies to the analysis of lower variance in the model.

Based on the “Pearson Method”, correlation between the outcome and predictor variables has been calculated by the “cor ()” function in R. The result of the correlation function is -0.1812653 which sharply proves that voter turnout is negatively correlated with the number of new cases during the national election week in the studied countries.

Regression Analysis

	Dependent variable:
	Voter turnout rate during COVID 19
Intercept	61.398***
	(8.605)
New cases per million	-0.004**
	(0.002)
GDP growth	0.041
	(0.244)
Political Equality Index	8.975
	(14.895)
Electoral Autocracy	-1.343
	(6.261)
Observations	89
R^2	0.052
Adjusted R^2	0.007
Residual Std. Error	17.100 (df = 84)
F Statistic	1.159 (df = 4; 84)
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 10 Regression analysis of the dependent, independent and control variables.

In the second model (Figure 10), possible variables from the literature such as annual GDP growth, egalitarian democracy index and regime type have been controlled to make the regression result more reliable. The regression result shows that when new cases of COVID 19, GDP growth rate, egalitarian democracy index is zero and electoral autocracy is not imposed then the voter turnout rate is 61.398 and voter turnout decreases -0.004 percentage points with the 1 identified new COVID cases per million in a week. The above aggregated regression model shows that under the electoral autocracy the voter turnout remains -1.343. Voter turnout increases 4.1 percentage with the increase of 1% in GDP growth rate. Similarly, when egalitarian democracy index increases by one unit then voter turnout increases 8.975. The simple linear regression model shows the negative correlation between the voter turnout rate and the new cases per million amid COVID 19 which confirms that voter turnout rate has been affected negatively by the continuous rise of the number of newly identified cases of COVID 19. Nevertheless, the low score of adjusted r square makes the regression result weaker to explain. Coefficients of the controlled variables are also not statistically significant to consider.

Interaction between the independent and control variable has been explored to find out the conditional effect of the other variable. Although non-linear effect of other variables on the independent variable cannot be justified by the interaction model, a large number of Social Scientists administer interaction model to get the conditional effect of other variables on the independent and dependent variables (Hainmueller et al., 2019). As simple linear regression has been run in this study, interaction model has applied to validate the study findings. The following regression table is notifying the interaction between the independent variable new COVID cases per million and the control variable egalitarian democracy index.

Regression Analysis

	Dependent variable:
	Voter turnout rate during COVID 19
Intercept	59.800***
	(4.390)
New cases	-0.003
	(0.007)
Political equality index	11.376
	(9.424)
new_case_c:pol_iq_c	-0.001
	(0.011)
Observations	89
R^2	0.050
Adjusted R^2	0.016
Residual Std. Error	17.020 (df = 85)
F Statistic	1.488 (df = 3; 85)
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 11 Interaction between new COVID cases and political equality index.

The value of interaction between the two variables is -0.001 which means that one unit increase in new cases and egalitarian democracy index lowers voter turnout .1 percentage. Low score of adjusted R^2 does not validate this model.

Regression Analysis

	Dependent variable:
	Voter turnout rate during COVID 19
Intercept	66.587***
	(2.648)
New cases	-0.004**
	(0.002)
Electoral autocracy	-6.879
	(4.171)
new_case_c:reg_c	0.016
	(0.011)
Observations	89
R^2	0.071
Adjusted R^2	0.039
Residual Std. Error	16.826 (df = 85)
F Statistic	2.181* (df = 3; 85)
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 12 Interaction between new COVID cases and regime type.

The interaction between new COVID cases and electoral autocracy in the above Figure 12 shows that for the increase of 1 new cases per million in a week voter turnout rate remains 0.016 under electoral autocracy. In case of the election under autocracy voter turnout rate decreases -6.879. This model has also low score of adjusted R^2 which does not suggest to accept the model.

In the Figure 13 regression has been done between dependent and independent variables in case of the Presidential elections. This regression model shows significant result where voter turnout rate in the Presidential elections is 68.748 when the number of new COVID cases is 0. With the increase of 1 new case per million in a week voter turnout rate decreases -0.004 percentage points. Value of the adjusted R^2 is 0.127 which indicates that the independent variable explain 12.7 percentage variation of the dependent variable in case of the Presidential election.

Regression Analysis

	Dependent variable:
	Voter turnout rate during COVID 19 in Presidential Election
Intercept	68.748^{***}
	(2.806)
New cases per million	-0.004^{**}
	(0.002)
Observations	32
R^2	0.155
Adjusted R^2	0.127
Residual Std. Error	14.864 (df = 30)
F Statistic	5.520^{**} (df = 1; 30)
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 13 Regression analysis between the dependent and independent variables in the Presidential Elections.

In Figure 14, other variables have been controlled where voter turnout rate in the selected Presidential elections is negatively related with economic development and positively linked with political equality index. Adjusted R^2 value is 0.046 which is small in explaining variance.

Regression Analysis

	Dependent variable:
	Voter turnout rate during COVID 19 in Presidential Election
Intercept	66.665***
	(12.604)
New cases per million	-0.004*
	(0.002)
GDP growth	-0.158
	(0.464)
Political equality index	0.807
	(24.266)
Electoral autocracy	4.224
	(9.237)
Observations	32
R^2	0.169
Adjusted R^2	0.046
Residual Std. Error	15.539 (df = 27)
F Statistic	1.375 (df = 4; 27)
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 14 Regression analysis of the dependent, independent and control variables in the Presidential Elections.

In the Figure 15, regression has been done between voter turnout rate and new COVID cases per million in case of the Parliamentary elections. This model explains that the voter turnout rate in the Parliamentary elections is 61.328 when the number of new COVID cases is 0. When new case per million increases 1 in a week voter turnout rate decreases -0.001 percentage points. Adjusted R^2 score is -0.018 which is very small in varience.

Regression Analysis

	Dependent variable:
	Voter turnout rate during COVID 19 in Parliamentary Election
Intercept	61.328***
	(2.799)
New cases per million	-0.001
	(0.003)
Observations	56
R^2	0.001
Adjusted R^2	-0.018
Residual Std. Error	17.941 (df = 54)
F Statistic	0.040 (df = 1; 54)
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 15 Regression analysis between the dependent and independent variables in the Parliamentary Elections.

Other relevant variables have been controlled in case of the Parliamentary elections in the regression model in Figure 16. It shows that voter turnout rate is negatively impacted by the new COVID cases per million and also the annual GDP growth rate. Under the electoral autocracy voter turnout rate remains -1.788 in the Parliamentary election. Adjusted R^2 value is -0.005 which is not significant to consider.

Regression Analysis

	Dependent variable:
	Voter turnout rate during COVID 19 in Parliamentary Election
Intercept	54.190***
	(12.020)
New cases per million	-0.002
	(0.003)
GDP growth	-0.028
	(0.300)
Political equality index	19.339
	(19.864)
Electoral autocracy	-1.788
	(8.679)
Observations	56
R^2	0.068
Adjusted R^2	-0.005
Residual Std. Error	17.829 (df = 51)
F Statistic	0.930 (df = 4; 51)
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 16 Regression analysis between the dependent, independent and control variables in the Parliamentary Elections.

The following regression in Figure 17 has been done with the change in voter turnout rate and the other variables while the model shows negative status of the change in voter turnout rate when all the variables are zero. This result suggests that other variables may influence the voter turnout rate which has not been included in this study. The change becomes downward when the number of new cases of COVID 19 increases by one unit.

Regression Analysis

	Dependent variable:
	Voter turnout rate change
Intercept	-8.663
	(5.348)
New covid cases per million	-0.001
	(0.001)
GDP growth	0.232
	(0.152)
Political Equality Index	14.201
	(9.253)
Electoral Autocracy	3.830
	(3.892)
Observations	89
R^2	0.069
Adjusted R^2	0.025
Residual Std. Error	10.629 (df = 84)
F Statistic	1.568 (df = 4; 84)
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 17 Regression analysis of the change in voter turnout rate with other independent and control variables.

However, another linear regression model has been created with the variables related to the last elections in the selected countries before the COVID 19 epidemic to make the study more rigorous and evident based.

Regression Analysis

	Dependent variable:
	Voter turnout rate before COVID 19
Intercept	65.093***
	(2.344)
GDP growth before COVID 19	-0.241
	(0.420)
Political Equality Index before COVID 19	0.006
	(0.007)
Electoral Autocracy	0.837
	(3.126)
Observations	90
R^2	0.011
Adjusted R^2	-0.024
Residual Std. Error	14.534 (df = 86)
F Statistic	0.319 (df = 3; 86)
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 18 Regression analysis of voter turnout rate before the pandemic with other control variables.

The model reveals the negative relation of GDP growth rate with the voter turnout rate before COVID 19 pandemic. The simple regression analysis indicates that with the one unit increase of GDP growth the voters' presence decreases 24.6 percentage. When GDP growth rate was zero then the voter turnout rate was 65.093 in the last national election in the studied countries before the outbreak. Correlation score based on "Pearson Method" of the two variables is -0.06428972 which indicates the negative relationship of voter turnout rate with the annual GDP growth. Other variables as such egalitarian democracy index, regime type before the pandemic etc. have been controlled to make the analysis more relevant. This regression shows that when egalitarian democracy index increases by one unit then voter turnout rate increases .6 percentage. Under the electoral autocracy voter turnout rate remains 0.837.

Chapter 5 Interpretation of the study findings

5.1 Lower voter turnout rate

The statistical analysis has unfolded the lower turnout rate in the Parliamentary and Presidential elections amid COVID 19 which has endorsed hypothesis 1 (H1). This thesis study is conducted during a period when all the affected countries by the COVID 19 pandemic are facing global recession and tremendous socioeconomic stress. Democracy as one of the most popular state principles is not in good status in the current period because of the rise of populist and autocratic leaders who do not care much about the values as well as the importance of democracy. Democracy measuring institutions as such Freedom House, and V-Dem Institute also have confirmed the lower score of the global democracy index and the rising trend of democratization around the world (Rapeli & Saikkonen, 2020). As democracy has been backsliding in many countries, the epidemic became a threat to keep the democratic flow up. State actors became mostly engaged to tackle the health emergency rather than to protect citizens' rights during the pandemic period. Though the novel coronavirus made a huge health crisis, the pandemic has affected most of the state affairs as such the economy, politics, education, and overall social fabric in a state. Despite the importance of holding elections, many countries postponed the national elections which would discourage citizens to vote in the upcoming polls.

However, principally from the statistical analysis it is testified that in case of majority of the countries examined voter turnout rate has decreased from the previous election held before the COVID 19 pandemic which confirms Hypothesis 1 correctly. As already democratic practice has

been threatened in many countries, the lower voter turnout rate is a significant indicator of the deterioration of democracy worldwide. Though the literature review shows that the downward trend of voting is not the new topic, now it is more alarming for the precarious condition of democracy. The findings of this thesis study adds resource to the existing literature to spur the state actors to motivate the citizens to participate in the elections as part of the inclusive democracy.

5.2 Correlation of voter turnout rate with the new COVID cases per million

The graphical representation of the scatter plot shows the negative trend of voter turnout with the increase of death cases. The straight line in the plot indicates to the highest voters' presence in the countries where the death rate was lowest.

The result of simple linear regression between the response and predictor variables indicated the negative relation between these two variables. In addition, the correlation function based on "Pearson Method" also justifies the negative correlation between voter turnout rate and the newly identified COVID cases during the election week in the studied countries. The second hypothesis of this study also has been examined by following compatible methodology. The regression result of the predictor and outcome variables is negative while the score of adjusted r square is very low. In case of the Presidential elections the value of adjusted R2 is 0.127 which signifies the model ran between the dependent and independent variables in case of the Presidential elections. However, small score of adjusted R2 in most of the models indicates that the independent variable has not explained much in the variation of the outcome variables. To make the study more authentic it can be pointed out that the second hypothesis (H2) has proven erroneous.

5.3 Confounding factors

To make the study more rigorous several variables such as annual GDP growth rate, egalitarian democracy index as the political equality index, and electoral autocracy before and during the pandemic period have been controlled. In the regression model run with the data during the pandemic period, the result shows that voter turnout remains negative under electoral autocracy. One unit increase in the control variables as such annual GDP growth and political equality index enhances the voter turnout during the pandemic period. On the other hand, one unit increase in the annual GDP growth before the pandemic dramatically lessen the voters' presence in the selected countries while other control variables are positively related to voter turnout. Interestingly previous studies got a positive relationship between voter turnout in the national elections with the economic growth while they confirmed the non-linear relation of these two variables during the local level elections (Martins & Jose, 2013). However, the statistical finding of the regression model is not significant enough to indicate the correlation between the dependent variable and other control variables for having a low adjusted r square value in each regression model. Consequently, no potential confounding factor has been identified in the study which impacted the lower voter turnout amid the pandemic COVID 19.

Hypotheses in this study have been verified partially for the lack of significant statistical values. The addition of this study is the findings on the change in voter turnout rate across the globe in the last two years which can suggest further research on a similar topic to find out the motivation for not voting.

Limitations of the Study

Finding out accurate data and processing the data took a huge time of this study. National level Parliamentary and Presidential elections in 2022 have not been included in the thesis study for the lack of available relevant data. For the lack of data availability, the size of "N" is small in number. Different waves of the COVID 19 pandemic period have not been calculated separately to get the data of the pandemic period for the easier statistical analysis of the study. Social data as such education index, Human Development Index (HDI), etc. of the studied countries have not been analyzed as the control variables for the time constrain.

Discussion and Conclusion

COVID 19 pandemic did not come alone in 2019 while many social, economic, political, and environmental issues were making the international communities worried. Although Corona Virus appeared to cause only respiratory-related flu or influenza, over the two and half years now the cumulative death toll already has crossed more than six million (World Health Organization, 2022). It has become a great threat for human civilization to tackle the whole crisis which would take years to recover. Many poor and developing countries are struggling to make the deficit budget up as they had to spend huge money on emergency response. Every sphere of human life has been affected by the unprecedented outbreak of the COVID 19 disease. From the health sector to industries no sectors are out of the stress caused by the pandemic. Opportunities for political participation also have been squeezed for the fatal infectious nature of Coronavirus. During the spread of COVID 19, Political Scientists warned thinking about the discontinuity of the democratic practices worldwide. Based on the theoretical and empirical analysis Political Scientist Merkel uncovered that democracy is in the crisis while selective voting, unbalanced representation of the citizens from the low, middle and higher class, uncontrolled capitalism, etc. thwart the flow of democracy not in all the countries but in many countries (Merkel, 2013). Democratic deficit has been identified by many Political Scientists since the early age of the twenty-first century. Scholars admit that factors behind the democratic crisis have been changed most of which are created by the states themselves. The lack of willingness of the state actors to practice democratic values spawns democratic backsliding in a state (Ercan & Gagnon, 2014). Although democracy is at risk of the rise of populism, an increase in electoral autocracy, and a decrease in citizens' engagement, still the voters have the absolute power to dispel the autocrats and revive democracy (Kriesi, 2020). Amid COVID 19 pandemic in many countries, citizens protested against the obligatory lockdown

and arbitrary enforcement of vaccine policy to protect their civil rights which were mostly denied by majority of the sates (Zajak et al., 2021). However, Russian autocratic invasion to Ukraine in 2022 amid the COVID 19 epidemic was the last "nail in the coffin" which is completely against the democratic value.

However, to my knowledge, this study is the premier one that has intended to analyze the aggregate level data related to COVID 19 pandemic and the voter turnout in the democratic and hybrid regimes around the world. The finding of the thesis study suggests the downward trend of voter turnout rate in the majority elections studied. It has been found that voter turnout decreases with the increase of new COVID cases by 1 in number per million in a week which is more evident in the Presidential elections where the size of explained variance is good. However, despite not having significant regression results, a lower voter turnout rate during the pandemic would be a red signal for the state actors to be concerned about the future of democratization across the world. Voter turnout is an important topic in the discipline of Political Science which has been studied since the 20th century to find out the plausible factors of declining voter turnout in the national and local level elections worldwide. Absolute influential factors which deter citizens to vote have not been specified yet in the literature. Many scholars identified this as the "Voting paradox" while the universal rationality behind the voting has not been settled yet (Amrita & Peralta, 2002). Voting trends vary based on socio-economic, political, and institutional variables while every variable is interrelated. In this study explanatory and control variables have been chosen from these three criteria to experiment with their influence on the voter turnout rate. The statistical findings of the thesis study clearly show the downward trend of voting amid the pandemic period while the studied variables are not sufficiently robust to influence the voter turnout rate. Many scholars have studied different variables such as electoral competitiveness, party system, electoral outcome, type of

legislature, and type of electorate system to correlate with voter turnout while the authors did not get a consistent result of the study to point out the eligible factors of voting. The trend of voting changes from election to election, country to country for various causes (Blais, 2006). Considering the findings of this study it can be said that voter turnout is a relative matter while different factors influence voting in different ways in different countries. The thesis study can be concluded by suggesting a positive result which points out that COVID 19 has not impacted voting so much while other non-studied variables may influence voting negatively with significance. Overall, the downward trend in voting cannot be a good sign for the future of democracy.

Although rule of law, freedom of speech, civil rights, accountability, transparency etc. are the core indicators of democracy, free fair election is the precondition to fulfill all the indicatives. Voting is a very important instrument for the mass people to bring back democracy worldwide. Citizens should be more participatory and active to take part in the state's decision-making process by electing the suitable candidates. Willingness of the Government and the politicians is mandatory to keep the democratic practices alive. Campaign should be introduced in the vulnerable countries to make the citizens as well as Government aware about the importance of voting to affirm the highest voter turnout in next election and to protect democracy from decay. Citizens should be more conscious about their voting right which would make the Government accountable. Election is the bridge between citizens and Government through which citizens can make the Government accountable by electing their chosen candidates and Government also can be transparent by arranging accessible peaceful election. It is high time for the Political Scientists, Practitioners and Academics to be pro-active to sustain the democratic practices in the unstable countries. The role of international community should be strengthened to promote voter turnout and the democratic practices in the countries where democracy is backsliding. More promotional

projects should be conducted by the international organizations to keep the democratic practices up and to make the citizens aware of the importance of their democratic participation as well as voting rights. Voter turnout rate can be increased by empowering the citizens with political education. Governments should be more responsive to upholding the values of democracy by facilitating equal access of the citizens to voting. More research work should be done to verify the voter turnout rate during the post-COVID 19 periods. This research would justify the trends of voter turnout and whether the trend is upward after the pandemic or not. In addition, further research can be conducted to find out the significant factors behind the lower voting trend in the democratic and hybrid regimes across the globe. A historical background study of the observation countries may help to determine the variables which influence the voting largely.

Data availability

Dataset will be available on request.

Bibliography

Amrita, D., & Peralta, S. (2002). Economic Theories of Voter Turnout. *The Economic Journal*, *112*(480).

Asplund, E. (2022). *Global overview of COVID-19: Impact on elections | International IDEA*. International IDEA. https://www.idea.int/news-media/multimedia-reports/global-overview-covid-19-impact-elections

Bartle, J., Birch, S., & Skirmuntt, M. (2017). The local roots of the participation gap: Inequality and voter turnout. *Electoral Studies*, *48*, 30–44. https://doi.org/10.1016/j.electstud.2017.05.004

Birch, S. (2010). Perceptions of electoral fairness and voter turnout. *Comparative Political Studies*, *43*(12), 1601–1622. https://doi.org/10.1177/0010414010374021

Blais, A. (2006). What affects voter turnout? *Annual Review of Political Science*, *9*, 111–125. https://doi.org/10.1146/annurev.polisci.9.070204.105121

Blaydes, L. (2006). Who Votes in Authoritarian Elections and Why ? Determinants of Voter Turnout in Contemporary Egypt. *Annual Meeting of the American Political Science Association*, *55*(4), 517–549.

Brambor, T., Clark, W. R., & Golder, M. (2006). Understanding interaction models: Improving empirical analyses. *Political Analysis*, *14*(1), 63–82. https://doi.org/10.1093/pan/mpi014

Cavanagh, T. E. (1981). Changes in American Voter Turnout , 1964-1976 Published by : The Academy of Political Science Stable URL : https://www.jstor.org/stable/2149676 Changes in

American Voter Turnout ,. *Political Science Quarterly, Vol. 96, No. 1 (Spring, 1981), Pp. 53-65*, *96*(1), 53–65.

Democratic Governance and COVID-19. (2020) *Council of Europe*, 1–42. https://www.coe.int/en/web/good-governance/covid-19-response

Ciotti, M., Ciccozzi, M., Terrinoni, A., Jiang, W. C., Wang, C. Bin, & Bernardini, S. (2020). The COVID-19 pandemic. *Critical Reviews in Clinical Laboratory Sciences*, *57*(6), 365–388. https://doi.org/10.1080/10408363.2020.1783198

Cole, W. M. (2018). Poor and powerless: Economic and political inequality in cross-national perspective, 1981–2011. *International Sociology*, *33*(3), 357–385. https://doi.org/10.1177/0268580918760430

Coma, F. M. i, & Morgenbesser, L. (2020). Election turnout in authoritarian regimes. *Electoral Studies*, *68*. https://doi.org/10.1016/j.electstud.2020.102222

Czesnik. (2006). *Czesnik, M. (2006). Voter Turnout and Democratic Legitimacy in Central Eastern Europe. Polish Sociological Review, 156, 449–470. http://www.jstor.org/stable/41274988*. *156*(156), Id, H. A. L. (2013). Un crime sans déviance : le v. https://www.jstor.org/stable/41274988

In-person voting really did accelerate covid-19's spread in America. (2021). *The Economist*. https://www.economist.com/graphic-detail/2021/07/10/in-person-voting-really-did-accelerate-covid-19s-spread-in-america

Ercan, S. A., & Gagnon, J. P. (2014). The crisis of democracy: Which crisis? Which democracy? *Democratic Theory*, *1*(2), 1–10. https://doi.org/10.3167/dt.2014.010201

Fernandez-Navia, T., Polo-Muro, E., & Tercero-Lucas, D. (2021). Too afraid to vote? The effects of COVID-19 on voting behaviour. *European Journal of Political Economy*, *69*(March), 102012. https://doi.org/10.1016/j.ejpoleco.2021.102012

Fernando, J. (2022). Gross Domestic Product (GDP) Definition. In *Investopedia*. Investopedia.

Gallego, J. A., Prem, M., & Vargas, J. F. (2020). Corruption in the Times of Pandemia. *Documentos de Trabajo.* https://doi.org/10.2139/ssrn.3600572

Geys, B. (2006). Explaining voter turnout: A review of aggregate-level research. *Electoral Studies*, *25*(4), 637–663. https://doi.org/10.1016/j.electstud.2005.09.002

Hainmueller, J., Mummolo, J., & Xu, Y. (2019). How much should we trust estimates from multiplicative interaction models? Simple tools to improve empirical practice. *Political Analysis*, *27*(2), 163-192.

Hünermund, P., & Louw, B. (2020). On the Nuisance of Control Variables in Regression Analysis. *ArXiv Preprint ArXiv:2005.10314*, *October*, 1–17. http://arxiv.org/abs/2005.10314

Imai, K. (2017). *Quantitative Social Science An Introduction*. Princeton University Press Princeton

The Great Lockdown: Worst Economic Downturn Since the Great Depression. (2020). International Monetary Fund *Blog*. https://blogs.imf.org/2020/04/14/the-great-lockdown-worst-economic-downturn-since-the-great-depression/

Jackman, R. W. (1987). Political Institutions and Voter Turnout in the Industrial Democracies. *AMERICAN POLITICAL SCIENCE REVIEW*, *81*(2).

Kaur, S. P. (2013). Variables in Research Designs. *Indian Journal of Research and Reports in Medical Sciences*, *3*(4). https://doi.org/10.1201/9781420040869.ch4

Kleinfeld, R. (2020). *Do Authoritarian or Democratic Countries Handle Pandemics Better?* Carnegie Endowment for International Peace. https://carnegieendowment.org/2020/03/31/do-authoritarian-or-democratic-countries-handle-pandemics-better-pub-81404

Kriesi, H. (2020). Is There a Crisis of Democracy in Europe? Befindet sich die Demokratie in Europa in einer Krise? *Politische Vierteljahresschrift, 61(2)*. https://doi.org/10.1007/s11615-020-00231-9

Kurlantzick, J. (2021). COVID-19 and Its Effect on Inequality and Democracy. *Council on Foreign Relations Discussion Paper, March*.

Lijphart, A. (1997). Unequal Participation : Democracy ' s Unresolved Dilemma Author (s): Arend Lijphart Source : The American Political Science Review , Vol . 91 , No . 1 (Mar ., 1997), pp . 1-14 Published by : American Political Science Association Stable URL : http://w. *The American Political Science Review*, *91*(1), 1–14. https://www.jstor.org/stable/2952255#metadata_info_tab_contents

López-Calva, L. F. (2021). The Virus and the Votes: How is COVID-19 changing voter turnout in LAC? In *UNDP Director's Blog*. https://www.latinamerica.undp.org/content/rblac/en/home/presscenter/director-s-graph-for-thought/the-virus-and-the-votes--how-is-covid-19-changing-voter-turnout-.html

Lust-Okar, E. (2006). Elections under authoritarianism: Preliminary lessons from Jordan. *Democratization*, *13*(3), 456–471. https://doi.org/10.1080/13510340600579359

Lutz, G., & Marsh, M. (2007). Introduction: Consequences of low turnout. *Electoral Studies*, *26*(3), 539–547. https://doi.org/10.1016/j.electstud.2006.10.001

Ly, A., Marsman, M., & Wagenmakers, E. J. (2018). Analytic posteriors for Pearson's correlation coefficient. *Statistica Neerlandica*, *72*(1), 4–13. https://doi.org/10.1111/stan.12111

Martins, R., & José, V. (2013). Economic performance and turnout at national and local elections. *Public Choice*, *157*(3/4), 429–448. https://doi.org/10.1007/sl

Marzec, W., & Neubacher, D. (2020). Civil society under pressure: historical legacies and current responses in Central Eastern Europe. *Journal of Contemporary Central and Eastern Europe*, *28*(1), 1–6. https://doi.org/10.1080/25739638.2020.1812931

Merkel, W. (2013). Is there a crisis of democracy? Can we answer the question? *Annual Meeting of the American Political Science Association*. https://www.researchgate.net/publication/269906448

Organization, W. H. (2022). *WHO Coronavirus (COVID-19) Dashboard | WHO Coronavirus (COVID-19) Dashboard With Vaccination Data*. WHO Coronavirus (COVID-19) Dashboard. https://covid19.who.int/

Paskert, M. J. C. U. (2014). Effects of Voting Behavior and Voter Turnout. *Senior Honors Projects. 44*. https://doi.org/10.4135/9781452240206.n149

Persson, M., Solevid, M., & Öhrvall, R. (2013). Voter turnout and political equality: Testing the "law of dispersion" in a Swedish natural experiment. *Politics*, *33*(3), 172–184. https://doi.org/10.1111/1467-9256.12012

Picchio, M., & Santolini, R. (2021). DISCUSSION PAPER SERIES The COVID-19 Pandemic ' s Effects on Voter Turnout The COVID-19 Pandemic ' s Effects on Voter Turnout. *IZA Discussion Paper*, *14241*(14241).

Politics, T. (2005). The Politics of democratic inclusion. In *Choice Reviews Online* (Vol. 43, Issue 04). https://doi.org/10.5860/choice.43-2504

Rapeli, L., & Saikkonen, I. (2020). How will the COVID-19 pandemic affect democracy? *Democratic Theory*, *7*(2), 25–32. https://doi.org/10.3167/DT.2020.070204

Rosenthal, S., & Cummings, C. L. (2021). Influence of rapid COVID-19 vaccine development on vaccine hesitancy. *Vaccine*, *39*(52), 7625–7632. https://doi.org/10.1016/j.vaccine.2021.11.014

Sandilands, D. (Dallie). (2014). Bivariate Analysis. *Encyclopedia of Quality of Life and Well-Being Research*, 416–418. https://doi.org/10.1007/978-94-007-0753-5_222

Schumpeter, J. A., & Swedberg, R. (2014). (2014). Capitalism, socialism, and democracy. In *London: Routledge*. https://doi.org/10.1016/0306-4492(75)90020-9

Shapiro, I. (2015). *Dahl-On-Democracy.pdf* (Second). Yale University Press.

Still, J. W. (1981). Political Equality and Election Systems Author (s): Jonathan W . Still Source : Ethics , Apr ., 1981 , Vol . 91 , No . 3 , Special Issue : Symposium on the Theory and Practice of Representation (Apr ., 1981), pp . 375-394 Published by : The University. *Ethics*, *91*(3), 375–394.

Sundell, A. (n.d.). *Regression analysis with control variables*. Retrieved June 8, 2022, from https://www.stathelp.se/en/regression_controls_en.html

Thakur, M. (2022). *Pearson Correlation Coefficient (Formula, Example) | Calculate Pearson R*. Https://Www.Wallstreetmojo.Com/Pearson-Correlation-Coefficient/. https://www.wallstreetmojo.com/pearson-correlation-coefficient/

Verba, S. (2001). Political Equality. What Is It? Why Do We Want It? *Review Paper for Russell Sage Foundation*, 1–92. http://www.russellsage.org/sites/all/files/u4/Verba.pdf

WHO announces COVID-19 outbreak a pandemic. (2020). https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-outbreak-a-pandemic

Worldometer. (2022). *Coronavirus Death Toll and Trends*. Worldometer. https://www.worldometers.info/coronavirus/coronavirus-death-toll/

Zajak, S., Stjepandić, K., & Steinhilper, E. (2021). Pro-migrant protest in times of COVID-19: intersectional boundary spanning and hybrid protest practices. *European Societies*, *23*(S1), S172–S183. https://doi.org/10.1080/14616696.2020.1821076