Vulnerability or resilience? Small states dealing with COVID-19: An analysis of the effect of state size on the vulnerability and resilience of a European state during the COVID-19 pandemic.

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Vulnerability or resilience? Small states dealing with COVID-19

An analysis of the effect of state size on the vulnerability and resilience of a European state during the COVID-19 pandemic.

Bachelor Thesis – Small States in World Politics

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1 Introduction

The novel coronavirus (COVID-19) has resulted in a pandemic that has impacted the whole world. The UNDP claims that "it has the potential to create devastating social, economic and political effects that will leave deep and longstanding scars" (2021). External threats, like the COVID-19 pandemic, pose an immense challenge to states and their coping mechanisms. Governments are put up with the difficult task of making tough decisions: implementing a lockdown, closing shops and businesses, and putting the economy under pressure for the sake of wellbeing, or keep everything open but possibly face a high death rate and let the infection spread. Some states have had to cope with a high number of infected persons, while other states have been able to keep the number of contaminations at a minimum.

This thesis focuses on the impact of the size of a state on its vulnerability and resilience to the COVID-19 pandemic. More specifically, the vulnerability and resilience framework poses that small states are more vulnerable and more resilient in dealing with external shocks than larger states (Briguglio, 2014). On the one hand, small states are more vulnerable due to their openness, dependency, and islandness or remoteness (Sutton & Payne, 1993). These inherent features make small states more exposed to external shocks than larger states (Briguglio 1995; Cooper & Shaw, 2009; Handel, 1990). On the other hand, small states have greater resilience due their ability to adapt and reshape, a high level of state intervention, democratic consensus, democratic corporatism, and the creation of a niche market (Briguglio 2014; Briguglio et al., 2008a; Cooper & Shaw, 2009; Katzenstein, 1985).

This thesis aims to find out whether the vulnerability and resilience framework can explain how small states have endured the COVID-19 crisis. This is important because in the field of international relations, academics have mostly focused on conventional threats. However, the COVID-19 pandemic is not a conventional threat, but rather a very new threat. On the one hand, the conventional idea of international relations surrounds the threats coming from other, often larger, states. On the other hand, environmental security, human security, and new threats like terrorism have become increasingly important topics on the global security agenda. Given that the COVID-19 pandemic has been a transnational issue that presents a new existential threat to states, it makes for an interesting case to gain more insight in how small states are impacted by external shocks, and the ways they handle these shocks.

The thesis starts with a research framework that reviews the literature on the vulnerability and resilience framework, and the literature on new threats. Following, the research question and hypotheses are presented. Next, the thesis conceptualizes small state, vulnerability, and resilience, and presents how the concepts will be measured in the remainder of the thesis. Then, the justification for the choice of research design is presented, as well as for the method of analysis. Thereafter, the quantitative and qualitative analyses are conducted. Finally, the concluding remarks will mark the end of the thesis.

2 Research Framework

The small state literature is divided into several debates, which includes the debate on the vulnerability and resilience of small states. The debate discusses the (in)ability of small states to handle external shocks. It builds on the vulnerability and resilience framework presented by Briguglio et al. (2008a). This thesis recognizes that the vulnerability and resilience framework is originally based on the economy of small states. However, the framework is also used in the disaster field and therefore will be used accordingly in this thesis (Pasteur, 2011). Now, the arguments presented by this literature will be discussed.

2.1 Vulnerability

The literature presents the argument that small states are more vulnerable than larger states due to their inherent characteristics of being open, dependent, or being a (remote) island (Sutton & Payne, 1993). These intrinsic characteristics of small states make them vulnerable to external shocks (Armstrong & Read, 2004). They will be addressed one by one.

2.1.1 Openness

One of the characteristics that makes small state vulnerable is their high degree of openness to the international system, because this increases the possibility that a state will be affected by external shocks (Katzenstein, 1985). Openness is an intrinsic feature of an economy, but it is primarily influenced by: 1) the size of the domestic market of a state, which influences the exports-to-GDP ratio; and 2) the available resources in a state, as well as its ability to effectively generate the goods and services needed to meet its aggregate demand, which influences the imports-to-GDP ratio (Briguglio et al., 2008b). States with narrow domestic markets have little choice but to depend on exports, while those with few natural resources are predominantly reliant on imports (Briguglio et al., 2008b). While the openness to international trade may be argued to be a source of strength, this does not negate the fact that by engaging more in international trade, a state exposes itself to a greater degree of shocks over which it has very little control (Briguglio et al., 2008a).

Apart from the economic aspects, the penetrability of the political system and the permeability of the social system attribute to the openness of a state (Sutton & Payne, 1993, p. 582). The penetrability of the political system is manifested by the vulnerability to external pressure, manipulation, and penetration. For example, small states often lack expertise and therefore have to bring that expertise in from abroad. As a result, small states are reliant on foreign countries for the assessment of a possible external threat. When an external threat, like the COVID-19 pandemic, occurs, a larger state has its own data and knowledge, while a small state relies on the information provided from abroad (Commonwealth Secretariat, 1997, p. 9).

2.1.2 Dependency

Another characteristic that makes small states vulnerable to external threats is their dependence on, for example, other states, international trade, strategic imports, or aid. The dependence on a limited number of exports raises the risks related to the absence of diversification, and therefore increases vulnerability (Briguglio et al., 2008a). Also, the reliance on strategic imports exposes the economy to shocks regarding the availability and costs of the imports (Briguglio et al., 2008a). Moreover, a high level of dependency is also illustrated in the aid received by a small state. According to Sutton and Payne, "too much dependence on aid discourages national savings, forces the recipients to use foreign technologies and skills, and favours the donor in determining the development priorities" (1993, p. 590). Furthermore, the dependency on aid of small states exposes them to unwanted changes in the international system which can jeopardize their privileged status (Sutton & Payne, 1993).

Apart from the economic vulnerability mentioned, dependency also influences the vulnerability of a country to external threats and disasters. For example, the small state's dependency on development aid from another country (Sutton & Payne, 1993). This may result in decreasing incentives to provide preventive measures, and eventually could result in a higher death rate from natural disasters (Rashcky & Schwindt, 2009, p. 15). Thus, during the COVID-19 crisis, small states could have been more vulnerable due to their dependency on foreign aid.

2.1.3 Islandness / Remoteness

A third characteristic that makes small states vulnerable is islandness or remoteness. Even though these are essentially two different concepts, they result in similar problems including significant economic and administrative costs (Sutton & Payne, p. 583). These costs stem from the high per-unit transport costs, the uncertainties of supply, and the large stockpiles (Briguglio, 1995). Small states often tend to require small and fragmented cargoes, which leads to high per-unit costs (Briguglio, 1995). Also, because of their smallness, states are often excluded from important transport routes which creates delays and limits the possibility for small states to take advantage of technologically advanced means of transportation (Briguglio, 1995). The islandness and remoteness of states results in time delays and unreliability, which causes an uncertainty in provision. This uncertainty in provision then results in enterprises keeping large stocks to meet sudden changes in demand, which brings additional costs of production, tied-up capital, and rent for warehousing (Briguglio, 1995).

Islandness also has non-economic effects on the vulnerability of small states to external threats through a reduced resilience and increased exposure (Campbell, 2009). The reduced resilience is apparent in food security, settlement security, and cooperation. Regarding food security, there are less resistant crops, food preservation is rarely practiced, and there is an increase in monocropping (Campbell, 2009, p. 93). Concerning settlement security, there is an increase in non-traditional buildings, materials that are being used are imported, and people relocate to coastal locations (Campbell, 2009, p. 93). As for cooperation, inter-island linkages have been weakened, traditional cooperation is declining, there is a market economy, and emigration makes the islands increasingly dependent on remittances from emigrants (Campbell, 2009, p. 93). The increased exposure can be observed through an increase in populations, an increase in urbanisation, an increase in infrastructure, the growth of tourism, the increase of material assets, and environmental change (Campbell, 2009, p. 93).

However, in the case of a pandemic, like COVID-19, islandness can also be an advantage (Boyd & Wilson, 2020). Islands are identified as the ideal refuges in a pandemic scenario due to their isolation and inaccessibility (Turchin & Green, 2019). Though, there are some specific features that an effective refuge has to possess (Boyd & Wilson, 2020, p. 232). For example, a larger population, a greater distance from the nearest landmass, the food self-sufficiency, and a high Political Stability Index Score (Boyd & Wilson, 2020, p. 232). Boyd and Wilson find that out of all the island nations studied, Australia, New Zealand and Iceland are most likely to be an effective refuge. Nevertheless, all other islands deemed to be ineffective (2020, p. 238).

2.2 Resilience

Thus, the literature argues that small states are vulnerable, but it is also argued that small states have greater resilience than has been found before (Cooper & Shaw, 2009). Resilience is the ability of a state to absorb the effect of an external shock and counter act the harmful effects of a shock. So, resilience reduces the risk of a state being harmed by external shocks (Briguglio, 2014). There are different ways for small states to absorb and counter act these shocks, which will now be discussed.

2.2.1 Democratic Corporatism

First, one way to be resilient is to develop democratic corporatism, which is a combination of ideological consensus, centralized politics, and complicated agreements between leaders, minorities, and bureaucrats (Katzenstein, 1985). This democratic corporatism involves the heavy cooperation between unions and the state, which includes a high level of state intervention that can compensate the risks of the openness of a state (Katzenstein, 1985). During the COVID-19 pandemic, a high level of state intervention and cooperation between the state and unions increases a small state's resilience.

2.2.2 Democratic Consensus

Second, democratic consensus is often present in small states, and it can make them very flexible. This flexibility can be used in their advantage as a strategy for economic development. Moreover, democratic consensus makes small states flexible because through this consensus they are able to make decisions very quickly. In times of a pandemic, this flexibility may come in very handy to react quickly to disasters and therefore increase the resilience of small states.

2.2.3 Adaptive Nature of Resilience

Third, a small state can be resilient through the adaptive nature of resilience itself. While vulnerability is an imposed condition which constrains small states, resilience is adaptive and allows for resistance and reshaping (Cooper & Shaw, 2009). For example, in geopolitical terms, small states had significant influence in the bipolar world due to their numbers (Cooper & Shaw, 2009, p.2). Moreover, in functional terms, small states that are more successful often follow diplomatic approaches that are similar to the diplomacy associated with larger states (Cooper & Shaw, 2009, p. 2).

2.2.4 Improving Coping Capability

Last, small states can be resilient by way of improving their coping capability (Briguglio et al., 2008a). This is because resilience can be measured through coping capability. The coping ability of a state involves "the policy-induced measures that enable an economy to withstand external shocks" (Briguglio, 2014, p. 3). According to Briguglio et al. (2008a) these policy measures include the macroeconomic stability, market flexibility, political governance and institutions, social development, and environmental management. The coping capability indicates how well a state has addressed issues to improve society's resilience and how well those issues have been implemented. (Disaster Risk Management Knowledge Centre, 2021b).

If a small state's coping capability is sufficient, that may increase its resilience during the COVID-19 pandemic.

2.3 New Threats: COVID-19

The general idea of international relations theory focuses on threats coming from other, often larger, states. However, a shift in security thinking took place after the Cold War (Buzan, 1997). The traditional way of thinking about security focused on the military capabilities of states, but after the Cold War, there was an emergence of new threats (Hoffman, 1996). Issues like terrorism, environmental security, and human security were becoming increasingly important topics on the global security agenda (Krahmann, 2005). Another important new threat is that of a pandemic. However, because pandemics have not occurred frequently in the recent past, it has not been studied in-depth. Therefore, it is unclear whether the developed theories also apply to a new threat like the COVID-19 pandemic. Moreover, the COVID-19 pandemic is so recent, that is the perfect case to test the vulnerability and resilience framework.

3 Research Puzzle and Hypotheses

Taking into account the vulnerability and resilience framework and the literature about new threats, it is clear that small states are subject to the very new threat of COVID-19. However, the literature emphasizes the vulnerability of small states to an external threat, but also their resilience in coping with this kind of threat. The following research question arises: *To what extent has the size of states affected their vulnerability to the COVID-19 pandemic, and their resilience in addressing it?*

This thesis aims to test the small state vulnerability and resilience theory by looking at the impact of the COVID-19 pandemic. The literature emphasizes that small states can be vulnerable and resilient, but it is unclear whether that is the case during a pandemic. Therefore, this thesis seeks to find out whether state size matters when looking at the vulnerability and resilience of states.

Considering the ideas and theories the literature provides, the following hypotheses can be formulated. First, the hypotheses regarding the vulnerability of small states:

> H_0: There is no relationship between state size and the number of COVID-19 cases as a percentage of the population of a state.
>
> H_1: Small states have a higher number of COVID-19 cases as a percentage of the population of a state than larger states.
>
> H_2: Small states have a lower number of COVID-19 cases as a percentage of the population of a state than larger states.

Second, the hypotheses regarding the resilience of small states:

> H_3: There is no relationship between state size and the number of COVID-19 vaccinations administered as a percentage of the population of a state.
>
> H_4: Small states have administered a higher number of COVID-19 vaccinations as a percentage of the population of a state than larger states.
>
> H_5: Small states have administered a lower number of COVID-19 vaccinations as a percentage of the population of a state than larger states.

4 Conceptualization and Operationalization

The central concepts of this thesis are small states, vulnerability, and resilience. Small states is a concept that is heavily debated by the academic community, this means that there is no widely accepted definition of a small state (Crowards, 2002). Multiple variables can be used to determine the size of a state, for example population, territory, or military capabilities. As many other publications in the field of comparative political science have done, this thesis conceptualizes the smallness of a state on the basis of population size (Veenendaal & Corbett, 2015, p. 529). In the small state literature, many different population thresholds have been used to define the small state category, and these have been largely arbitrary in nature (Veenendaal, 2014, p. 1). This thesis sets a population threshold of 1.5 million, based on the World Bank (2021) definition, which results in a group of ten small states out of the 45 European states that have been included in the analysis.

The concept of vulnerability is derived from Easter, who argues that the vulnerability of states is “their exposure to economic, environmental, political and social shocks, over which they have little, if any, control” (1999, p. 403). The vulnerability of states is operationalized through the measurement of the cumulative number of COVID-19 cases as a percentage of the population until the date of the world’s first vaccination against COVID-19. The number of COVID-19 cases is chosen, instead of number of COVID-19 deaths, because it is difficult to control for the effectiveness of the health care system which can be a determining factor in the total number of COVID-19 deaths.

The concept of resilience is derived from Briguglio who argues that resilience is the ability of a state to absorb the effect of an external shock and counter act the harmful effects of a shock (2014, p. 6). The resilience of states is operationalized through the measurement of the cumulative number of COVID-19 vaccinations as a share of the population up until the last numbers available during the time of the analysis of this research. The number of COVID-19 vaccinations is chosen because this shows the capability of states to counter act the harmful effects of the shock. This thesis acknowledges that the number of COVID-19 vaccinations administered can be misinterpreted as some of the vaccines need two doses to be effective. In this thesis, the number of doses administered does not account for the vaccinations that need two doses to be effective.

5 Research Design and Research Methods

This thesis will use a mixed-methods design to obtain maximum analytic leverage. Following Lieberman (2005), a nested analysis is chosen as a mixed-method strategy. A nested analysis combines a statistical analysis of a broad sample of cases with a detailed study of one or more of the cases in the sample (Lieberman, 2005). So, the case(s) examined in the qualitative analysis are selected based on the outcomes of the quantitative analysis. This design has been chosen because this thesis wants to find out whether there is a relation between state size and the vulnerability for, and resilience against, the COVID-19 pandemic. As a statistical analysis does not give any reasons or causes for the possible correlation, an in-depth case study will be conducted to explore the possible reasons for this correlation and whether causality is present.

The quantitative analysis makes use of the data found on ourworldindata.org, which is one of the world's largest statistics portals, includes statistics on all European states, and has statistics on both the COVID-19 cases as well as the COVID-19 vaccinations. The data found on the website have been combined in a table (Appendix A). Regarding the data on the cumulative number of COVID-19 cases, December 7, 2020, is used as the final date as December 8, 2020, is the day on which the first person in the world received a COVID-19 vaccination (BBC, 2020). Therefore, this dates as the first possible moment for states to have obtained the vaccine, and the first possible moment to start measuring the resilience of states. Regarding the data on the cumulative number of COVID-19 vaccinations, the most recently available data during the time of this thesis is used, which is updated throughout the writing of this thesis.

To determine whether there is a relationship between the population size of countries and the number of COVID-19 cases and vaccinations, a simple linear regression will be performed. The population size of the states is the independent variable and the number of COVID-19 cases and vaccinations as a share of the population are the dependent variables. First, the relationship between population size and the cumulative number of COVID-19 cases as a percentage of the population will be ascertained. Then, the relationship between population size and the number of COVID-19 vaccinations as a percentage of the population will be established.

As this thesis is primarily interested in the difference between small and large states, the independent variable is converted into a categorial variable. There are two categories, one category includes all the small states with a population with a maximum of 1.5 million, and the second category includes all the larger states with a population of more than 1.5 million. This means that this analysis includes ten small states, and 35 larger states. The rest of the variables are interval variables measured in percentages (Halperin & Heath, 2017). Moreover, this thesis checked for confounding variables. The following variables are included: islandness, population density, and EU membership.

Regarding the hypotheses, to establish whether there is a relationship between state size and vulnerability, and state size and resilience, there has to be a statistically significant Pearson correlation. H_0 and H_3 will be rejected if the p-value is less than 0.05 (Halperin & Heath, 2017). After that, a simple linear regression is performed to establish the kind of relationship between the independent variable and dependent variables.

After the quantitative analysis, the qualitative analysis will be conducted. The selected case will be analyzed according to the research method of process-tracing. Process tracing involves the analysis of a case over a specific time. Newspapers and online articles will be used to trace the processes. This thesis acknowledges that newspapers may be affiliated to a specific political party that resembles the government or the opposition. To overcome this bias, the articles found in these political affiliated newspapers are checked to see whether they are also published in other newspapers.

As this thesis aims to find out how small states have dealt with the COVID-19 crisis, it is important to see how they have responded to the pandemic over time. In this thesis, two specific time frames are chosen to analyze. The first timeframe is when the vulnerability can be observed, which is around the first confirmed COVID-19 cases of the small state. The second timeframe is when the resilience can be noticed, which is around the time the small state receives its COVID-19 vaccines. This thesis will analyze the selected case according to the patterns observed in the literature to see whether these patterns can be observed in the selected case. If these patterns can be observed, the theory can be confirmed. However, when the case shows different patterns, the theory may be challenged. In the end, this should shed a light on why this small state has been vulnerable and/or resilient in dealing with the COVID-19 pandemic.

6 Quantitative Data Analysis

6.1 Simple Linear Regressions

To establish whether and to what extent the independent variable and control variables have an effect on the dependent variables, simple regressions are conducted. First, the independent variable SmallState and the control variables are tested against the COVID-19 cases as a share of the population on May 4, 2021. Table 1 shows that the independent variable and not one of the control variables have a significant result. Moreover, the first model only explains 8.6% of the variation of the dependent variable and the F value is insignificant (Appendix B). This means that the COVID-19 cases as a share of the population was not affected by state size or any of the other independent variables. To be sure, the population size in numbers has been checked for, but these results were also insignificant (Appendix B).

Table 1: Simple Linear Regression COVID-19 cases as share of population

	Model 1	**Model 2**	**Model 3**	**Model 4**
(Constant)	2.590***	2.998***	2.906***	3.116***
	(0.286)	(0.273)	(0.268)	(0.415)
SmallState	1.219			
	(0.608)			
Island		-1.233		
		(0.819)		
Population Density			-8.526E-8	
			(0.000)	
EU Membership				-0.426
				(0.535)
R^2	0.086	0.050	0.015	0.015
Adjusted R^2	0.064	0.028	-0.008	-0.008
N	45	45	45	45

Note: OLS regression coefficients with standard errors in brackets.
*** p <0.001, ** p < 0.01, * p <0.05

Second, the independent variable SmallState and the control variables are tested against the number of COVID-19 vaccinations administered as a share of the population on May 4, 2021 (Table 2). Table 2 shows that both SmallState and Island have a significant positive effect on the COVID-19 vaccinations as share of the population. The other control variables give insignificant results again, and therefore can be discarded. Moreover, the R^2 value is still quite low, as the first model explains the variation in the dependent variable the best, but still only 10.8%. However, the F-value is significant for SmallState and Island which means that the independent variables have an influence on the dependent variable (Appendix C). The first model tells us that when a large state has a VaccinationRate of 21.541, a small state has an increase in VaccinationRate of 11.761. Additionally, when a state is an island, it has a VaccinationRate of 37.515, while a non-island state has a VaccinationRate of 22.484. Moreover, it was also checked whether a SmallState that is an Island could explain the VaccinationRate, but these results were also insignificant (Appendix C).

Table 2: Simple Linear Regression COVID-19 vaccinations as share of population

	Model 1	**Model 2**	**Model 3**	**Model 4**
(Constant)	21.541***	22.484***	24.659***	23.090***
	(2.436)	(2.288)	(2.293)	(3.589)
SmallState	11.761*			
	(5.167)			
Island		15.031*		
		(6.863)		
Population Density			-9.566E-7	
			(0.000)	
EU Membership				1.773
				(4.634)
R^2	0.108	0.100	0.026	0.003
Adjusted R^2	0.087	0.079	0.003	-0.020
N	45	45	45	45

Note: OLS regression coefficients with standard errors in brackets.

*** p <0.001, ** p < 0.01, * p <0.05

6.2 Interpretation

In short, the quantitative analysis finds that state size does not have a significant effect on the COVID-19 cases, but it does have a significant effect on the COVID-19 vaccinations. Regarding the cases, an explanation may be that the pandemic came as a surprise to all states, so being a small state is not necessarily an advantage or disadvantage. Regarding the vaccinations, there is a little more strategy involved. For example, the European Union posed a European strategy to combat the COVID-19 pandemic and the European Commission has given four conditional marketing authorizations so far for the vaccines developed by BioNTech and Pfizer, Moderna, AstraZeneca, and Janssen (European Commission, 2020). However, Montenegro and San Marino have been using the Russian Sputnik V vaccine to start a mass vaccination (Reuters, 2021; Reuters Staff, 2021).

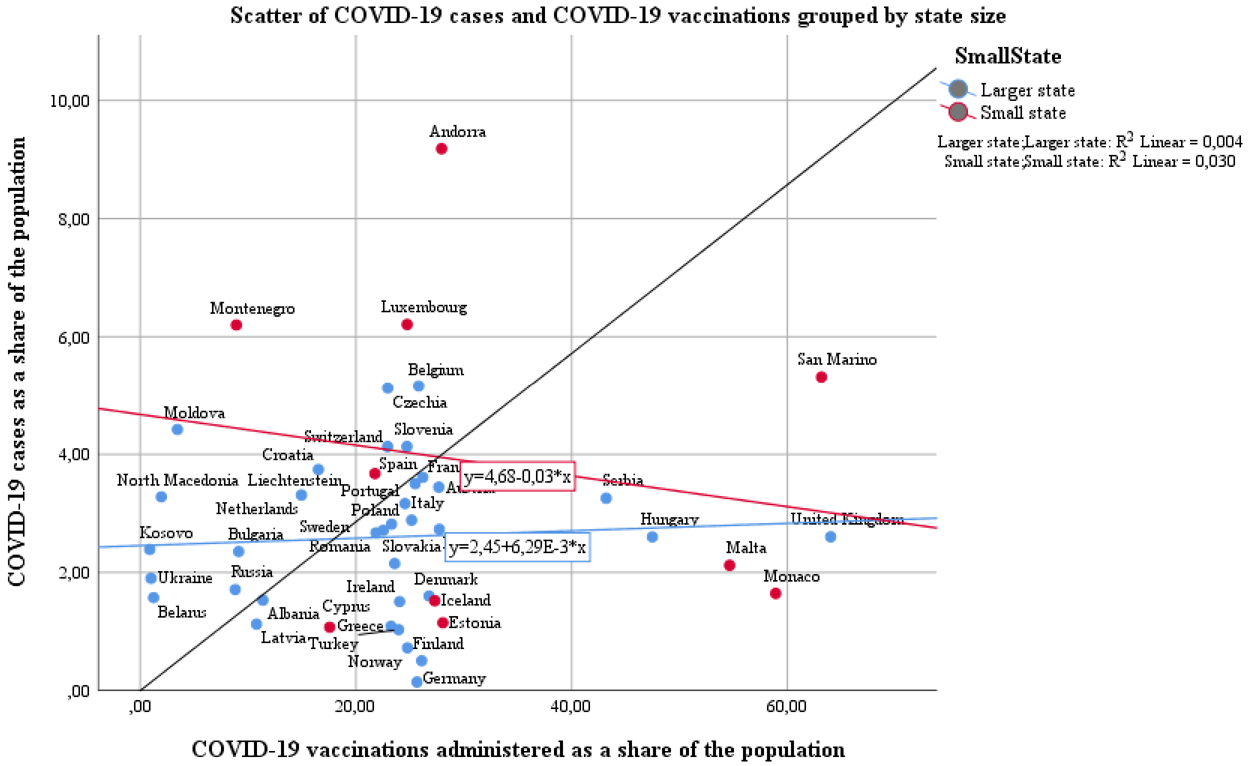
Regarding the six hypotheses of this thesis, and taking the quantitative analysis into account, H_0 can be accepted. It states that there is no relationship between state size and the number of COVID-19 cases of a state, which is supported by the first model. Because the H_0 has been accepted, the H_1 and H_2 are rejected as H_1 is that small states have been more vulnerable to COVID-19 than larger states, and H_2 is that small states have been less vulnerable to COVID-19 than larger states. Moreover, H_3 can be rejected, because there is a relationship between state size and the number of COVID-19 vaccinations administered in a state. Specifically, small states have administered more COVID-19 vaccinations than larger states. Therefore, H_4 can be accepted and H_5 has to be rejected.

6.3 Case Selection

When conducting a nested analysis, there is rarely a perfect case selection strategy for the qualitative case study (Lieberman, 2005). Rather, there is a range of alternatives and choices that the quantitative analysis may narrow down significantly. Importantly, there should be determined whether the results of the quantitative analysis are robust and satisfactory (Lieberman, 2005). R^2 can explain the robustness of a model, but there is no consensus on the robustness of a particular R^2 (Lieberman, 2005). As the R^2 statistics in the quantitative analysis have been identified as low, the robustness of the model is estimated quite low. However, the findings are deemed to be very satisfactory, so the qualitative analysis will be oriented toward model testing (Lieberman, 2005). In the model-testing qualitative analysis the goal is to further test the robustness of the finding, because the statistical results are seldomly adequate evidence of a theoretical model's reliability.

Selecting a case can be done randomly or deliberately, but in almost all cases the deliberate selection is the most appropriate strategy (Lieberman, 2005). Therefore, the case for the model-testing qualitative analysis will be chosen deliberately and because of a scholar's personal reasons and interests (Lieberman, 2005, p. 447). Moreover, when choosing the model-testing approach, the case-selection has to be "on-the-line" only. The scatterplot presented in Graph 1 gives an overview of the cases plotted against the dependent variables on the two axes with COVID-19 cases on the y-axis and the COVID-19 vaccinations on the x-axis (Graph 1). The red dots represent small states, and the blue dots represent larger states. As this thesis is interested in small states, one of the red dots closes to the red line will be selected to provide as a case study for the qualitative analysis. Of all the small states in Graph 1, Liechtenstein is the case that is closest to the line. However, it does not present an interesting or special case as it lies within a group of larger states. After Liechtenstein, Malta is the case that is closest to the line, which represents an interesting case as it a special case compared to the other cases. As can be seen in Graph 1, Malta has not been very vulnerable and has been very resilient compared to the other European states during the COVID-19 pandemic. This is different from what was expected based on the vulnerability and resilience framework. It will be interesting to examine whether the patterns discussed in the theoretical framework can be observed in Malta.

Graph 1: Scatter plot of COVID-19 cases by COVID-19 vaccinations grouped by state



7 Qualitative Data Analysis

The aim of this qualitative analysis is to examine how Malta has been affected by the outbreak of the COVID-19 pandemic, and to analyze how the government and other relevant actors have reacted to the outbreak. This thesis will use a process tracing approach and content analysis to examine if the patterns observed in the theoretical framework can be observed in Malta. As newspapers will be used to analyze whether these patterns can be observed, it is important to note that Malta's newspapers are often biased by their party affiliation. For example, MaltaToday is affiliated with the government party, the Labour Party, and the Times of Malta is affiliated with the Nationalist Party (Eurotopics, n.d.; MaltaToday, n.d.). The newspaper articles used in the qualitative analysis have been checked for bias by assuring that other newspapers have reported the same news.

Through the process tracing approach and the content analysis, the vulnerability and resilience framework is tested through the very new case of the COVID-19 pandemic. First, some general information on the case of Malta will be presented. Then, the first timeframe will be analyzed through the assessment of the vulnerability of Malta according to the characteristics that have been identified to make small states vulnerable. These characteristics are openness, dependency, and islandness. Thereafter, the second timeframe will be analyzed through the assessment of Malta's resilience based on the characteristics that have been identified as making small states resilient, namely democratic corporatism, democratic consensus, and coping capability. Finally, a short summary of the findings will be presented.

7.1 The Case: Malta

The Republic of Malta is a Mediterranean island country in Southern Europe that consists of an archipelago. It has a population of around 500,000 and covers a land area of 316 km^2. On the December 7, 2020, the day before the first COVID-19 vaccination in the world was administered, Malta had suffered almost 11,000 COVID-19 cases (Our World in Data, 2021). This is about 2% of the population, which is less than an average of 2.9% of all the European cases analyzed in the quantitative analysis. On May 4, 2021, there were administered almost 280,000 COVID-19 vaccinations, which constitutes over 50% of the population (Our World in Data, 2021). This is significantly more than the average of 24.1% among all the European cases assessed in the quantitative analysis.

7.2 Malta: Vulnerability

The theory suggests that small states are vulnerable due to their openness, dependency, and islandness. However, Malta has been less vulnerable than the average larger state (Appendix D). Therefore, this first part of the qualitative analysis aims to find out if the characteristics introduced by the theory can be observed in the case of Malta during the first timeframe of the COVID-19 pandemic. For Malta, this is from January 2020 until December 2020.

7.2.1 Openness

First, the openness will be discussed. The vulnerability and resilience framework argues that small states are vulnerable because they are unable to acquire expertise and knowledge themselves, and therefore have to bring in information from foreign countries. In the case of COVID-19 and Malta, the theory thus suggests that Malta would not have been able to know about the initial critical issues and risks surrounding the COVID-19 outbreak in Wuhan. However, the Head of the Department of Public Health at the University of Malta, Neville Calleja, argues that Malta benefited from the pre-existing contact with the medical staff and experts fighting the virus in China (Farrugia, 2020). He says that the WHO facilitated a phone call with his counterparts in Wuhan to discuss the situation, which happened very early in the process. This meeting is deemed vital in helping the Maltese realize what they would be dealing with, while during that time the rest of Europe was just getting used to the presence of the epidemic (Farrugia, 2020). Moreover, Calleja argues that having a Maltese public health specialist stationed at the WHO office in China was also beneficial (Farrugia, 2020). Thus, even though the vulnerability and resilience framework argues that openness is a disadvantage for small states, the openness of Malta has been an advantage regarding the fight against the COVID-19 pandemic

7.2.2 Dependency

Second, the dependency will be examined. The theory suggests that due to the development aid small states often receive, there is a decreased incentive to provide preventive measures. However, Malta has been characterized as a developed country since the last decade of the twentieth century (European Environment Agency, 2015). Moreover, it even has been giving aid to other countries, even though it is a small state (Ministry for Foreign Affairs Malta, p.8). This means that Malta is not dependent on any other country and should be able to take preventive measures to the COVID-19 pandemic. Based on press releases published by the Office of the Deputy Prime Minister and the Ministry for Health of Malta, it is possible to conclude that Malta has been taking preventive measures (Office of the Deputy Prime Minister and the Ministry of Health, 2020a; Office of the Deputy Prime Minister and the Ministry of Health, 2020b; Office of the Deputy Prime Minister and the Ministry of Health, 2020c). Thus, Malta successfully and independently provided preventive measures during the COVID-19 pandemic.

7.2.3 Islandness

Third, the effect of islandness will be analyzed. The vulnerability and resilience framework claims that when a small state is an island, this reduces its resilience and increases the exposure and vulnerability of the small state. However, Boyd and Wilson argue that being an island can also be an advantage in the case of a pandemic. Islands have been identified as suitable refuges during a pandemic due to their isolation and inaccessibility (Turchin, 2016). The study of Boyd and Wilson shows that Malta does not classify as an effective refuge because it has low food self-sufficiency, low energy self-sufficiency, it is relatively close to mainland, and has a relatively low GDP per capita (2020, p. 235). These characteristics have all been deemed necessary for an island to be an effective refuge during a pandemic.

During the COVID-19 pandemic, the relatively short distance to the mainland is an important characteristic. As Malta’s closest neighbour, Italy, has been the first country in Europe to be hit by the pandemic, this resulted in panic on the island (Cuschieri, 2020). However, being a small island state with few borders was an advantage during this time according to Calleja (Farrugia, 2020). It was easier to track people coming into the country, testing them, and then impose measures like a mandatory self-quarantine (Cuschieri, 2020). Moreover, it was also easier to ban people from travelling to highly affected countries like Italy, China, Switzerland, Germany, France, and Spain (Times of Malta, 2020a; Department of Information of Malta, 2020). This may suggest that being an island does not necessarily make Malta more vulnerable, and it may even be an advantage during the COVID-19 pandemic.

7.3 Malta: Resilience

The theory suggests that small states are resilient because of the presence of democratic corporatism, the presence of a democratic consensus, and the coping capability of small states. The quantitative analysis shows that Malta has been among the four most resilient European states fighting the COVID-19 pandemic. This second part of the qualitative analysis seeks to find out if the characteristics introduced by the theory can be observed in the case of Malta during the second time frame of the COVID-19 pandemic. For Malta, this is from December 2020 until the most recent numbers on the vaccination rate, which were obtained in May 2021.

7.3.1 Democratic Corporatism

First, the presence of democratic corporatism will be examined. Democratic corporatism can be seen in the heavy cooperation between unions and the state, including a high level of state intervention. Malta lacks corporatist structures due to its highly polarized politics (Cini, 2002). However, the government has intervened effectively during the COVID-19 crisis by closing schools and universities until the end of the school year within two weeks of the first COVID-19 case in Malta and by prohibiting public group gatherings (Sansone, 2020a; Sansone & Azzokardi, 2020). Brauner et al. (2021) assessed the effectiveness of non-pharmaceutical interventions by categorizing the intervention effect sizes as small, moderate, or large, corresponding to the median reductions in the reproduction number *R*. The assessment showed that closing schools and universities is largely effective, as well as the limiting of gatherings to ten people or less (Brauner et al., 2021, p. 3). Thus, even though Malta lacks democratic corporatism, the high level of state interventions have been effective in increasing the resilience of Malta.

7.3.2 Democratic Consensus

Second, the presence of democratic consensus will be analyzed. Malta has a two-party system where the two main parties account for almost 99% of the votes. In the 2017 national elections, the Labour Party obtained 55% of the votes and the Nationalist Party obtained 44% of the votes (Electoral Commission Malta, 2017). The party system influences and is influenced by the strong political polarization of Maltese society. The highly centralized structure of the political system influences the stakes of the political game during election time, which creates political tendencies and hence helps to ‘purify’ the two-party system (Cini, 2009). Moreover, the socio-cultural cleavages, which resulted in the formation of the two main political parties at the end of the 19th and the early 20th century, contribute to polarization (Cini, 2009). Additionally, Malta’s independence from the United Kingdom in the 1960s served as a trigger for the creation of the two-party structure that continues to exist today (Cini, 2009). In order to optimize their votes, the two parties have successfully created differences based on earlier cleavages and societal divisions. This resulted in a high voter turnout and a high degree of particle party participation (Cini, 2009).

These findings suggest that democratic consensus is absent in Malta, which would mean that decisions take a lot of time to make and flexibility and resilience decrease. During the COVID-19 pandemic, a lot of struggle between the government and the opposition can be observed. For example, opposition leader Adrian Delia called for an urgent debate on the latest developments of the COVID-19 pandemic on March 12, 2020. However, deputy prime minister Chris Fearne claimed there was no need for an urgent debate (Times of Malta, 2020b). Moreover, on November 6, 2020, opposition leader Bernard Grech said that the government is only interested in money and is ignoring the consequences of the pandemic on the vulnerable (Sansone, 2020b). Grech challenged prime minister Robert Abela's claim that the COVID-19 situation was under control, claiming that the government's goal of achieving a balance between the economy and health had failed on both fronts (Sansone, 2020b). He went on to say that wellbeing is not given enough priority, and that the vulnerable people are suffering as a result (Sansone, 2020b). More recently, on March 2, 2021, the struggle became visible again when the opposition members of parliament criticized the government's handling of the pandemic again as daily infections continued to rise (Sansone, 2021). These examples show that democratic consensus is absent in Malta, which means it has not been contributing to the increased resilience of Malta during the COVID-19 pandemic.

7.3.3 Coping Capability

Third, the coping capability of Malta will be discussed. The Index for Risk Management (INFORM) is a global risk assessment conducted by the Inter-Agency Standing Committee Reference Group on Risk, Early Warning and Preparedness and the European Commission (Disaster Risk Management Knowledge Centre, 2021a). Hazard and exposure, vulnerability and lack of coping capacity are the three dimensions of the INFORM dataset. Lack of coping capacity is divided into two categories: institutional and infrastructure. The institutional category measures the presence of Disaster Risk Reduction (DDR) programs that often address mitigation and preparedness or the early warning process. The infrastructure category measures the capacity for emergence response and recovery. On a scale of zero to ten on the lack of coping capacity, Malta scores 3.9 on the institutional category and 0.6 on the infrastructure category (Disaster Risk Management Knowledge Centre, 2021a). This means that in total Malta scores 2.4 out of ten, which means that Malta categorizes as very low lack of coping capacity. Thus, the presence of adequate coping capability could have led to an increased resilience of Malta during the COVID-19 pandemic.

Besides democratic corporatism, democratic consensus and coping capability, Calleja argues that the smallness of the Maltese nation and health care system gave Malta the opportunity and flexibility to adapt quicker (Farrugia, 2020). He claims that timeliness is the most important factor here, and Malta therefore managed to contain the outbreak well (Farrugia, 2020).

7.4 Findings

To recapitalize, Malta could have been more vulnerable due to its islandness, but that was refuted by Calleja (Farrugia, 2020). Moreover, openness and dependency have not influenced its vulnerability to the COVID-19 pandemic. Regarding Malta's resilience, democratic corporatism and democratic consensus are not present which would suggest that Malta is not very resilient. However, government interventions are effective, decisions were made very quickly, and Malta has a high coping capability which all result in an increased resilience. These findings can be fitted within a model of causal inference (Figure 1).

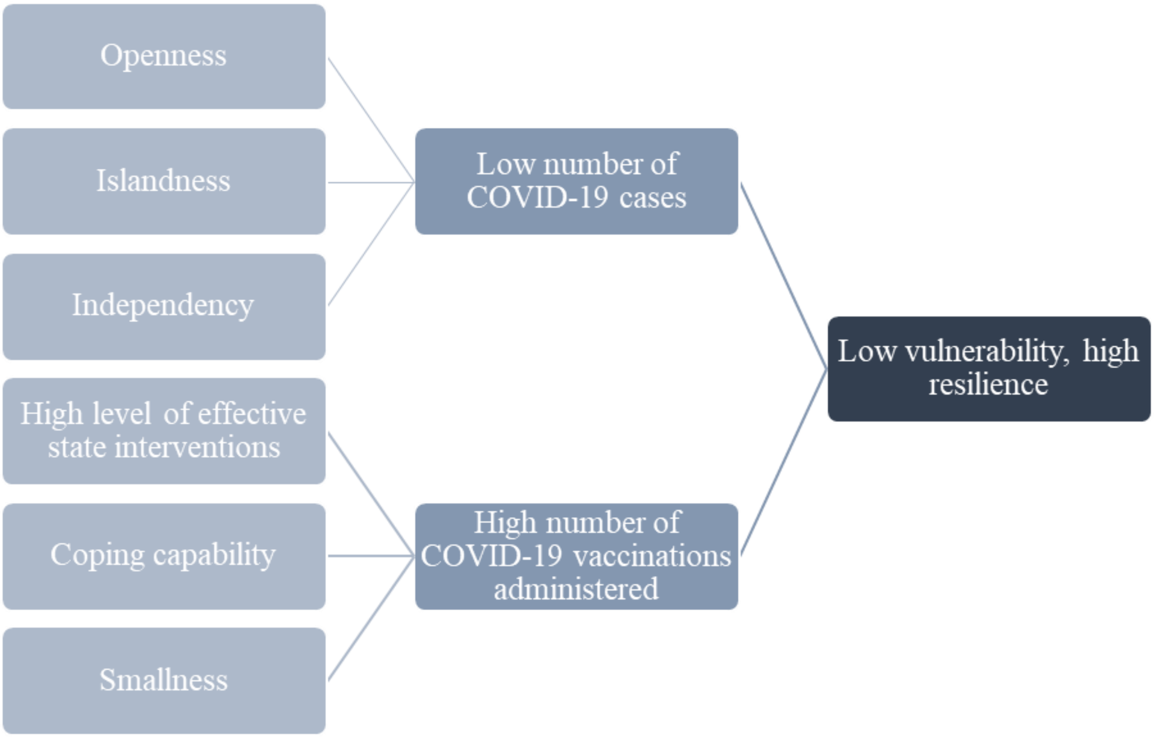
7.4.1 Findings and the Hypotheses

Regarding the six hypotheses of this thesis, and taking the qualitative analysis into account, H0 can be rejected as there is a relationship between state size and the number of COVID-19 cases. The case study of Malta shows that, during the COVID-19 pandemic, the small state has not been very vulnerable and has suffered few cases due to its openness, independency, and islandness. Therefore, H1 is rejected and H2 is accepted as H2 states that small states have a lower number of COVID-19 cases as a percentage of the population than larger states. Moreover, H3 can be rejected, as there is a relationship between state size and the number of COVID-19 vaccinations administered in a state. The case study of Malta shows that, during the COVID-19 pandemic, the small states has been very resilient and has administered many vaccinations. This is a result of its effective state interventions, high coping capability, and smallness. Thus, H4 is accepted and H5 is rejected as H4 states that small states have administered a higher number of COVID-19 vaccinations as a percentage of the population than larger states.

7.4.2 Findings and the Vulnerability and Resilience Framework

The vulnerability and resilience framework argues that openness, dependency, and islandness makes small states vulnerable. However, this qualitative analysis has shown that in the case of Malta during the COVID-19 pandemic openness and islandness actually can be an advantage in being more resilient. Moreover, the vulnerability and resilience framework argues that democratic corporatism, democratic consensus, and the coping capability of small states makes them more resilient. The case study of Malta has shown that democratic corporatism and democratic consensus are not necessary for a small state to be resilient. However, coping capability and smallness do increase the resilience of a small state.

Figure 1: Causal inference for Malta's vulnerability and resilience measured in COVID-19 cases and vaccinations during the COVID-19 pandemic.



8 Conclusion

This thesis has examined whether the vulnerability and resilience framework can be applied to the new threat of the COVID-19 pandemic. The aim was to answer the following research question: *To what extent has the size of states affected their vulnerability to the COVID-19 pandemic, and their resilience in addressing it?* The existing literature claims that small states are both vulnerable and resilient, so to find out whether this also applies in the case of the COVID-19 pandemic, a nested analysis has been performed.

The quantitative analysis included 45 European states and showed that state size had no significant effect on the number of COVID-19 cases as a share of the population. This resulted in the acceptance of the H_0, which stated that there is no relationship between state size and the number of COVID-19 cases in small states. Because H_0 was accepted, H_1 and H_2 were instantly rejected. However, the quantitative analysis also showed that state size indeed has an effect on the number of COVID-19 vaccinations administered in small states. It demonstrated that when a state is a small state, the vaccination rate is almost 12%-point higher than in larger states. Also, when a state is an island, this increases the resilience of a state during the COVID-19 pandemic with over 15%-point. This resulted in the acceptance of H_4, which stated that small states have administered more COVID-19 vaccinations than larger states. Therefore, H_3 and H_5 could be rejected.

The qualitative analysis examined the case of Malta to find out whether the vulnerability and resilience framework fits the state of Malta during the COVID-19 pandemic. The theory suggests that Malta is vulnerable and resilient because it is a small state. However, the quantitative analysis showed that during the COVID-19 pandemic being a small state does not increase a state's resilience. Therefore, the qualitative analysis examined how Malta reflects the vulnerability and resilience framework and the newfound results of the quantitative analysis. The in-depth analysis found that Malta has not been vulnerable due to its openness, independency and islandness. Moreover, it showed that, even though democratic corporatism and democratic consensus are absent in Malta, the small state has been very resilient because of its effective state interventions, coping capabilities and smallness. Thus, this analysis poses a challenge to the vulnerability and resilience framework as small states are not to be found vulnerable and resilient. Rather, either vulnerable or resilient.

This thesis has been limited by the novelty of the analyzed variables. As these numbers are still changing, the results of the analysis may change with them. However, based on the quantitative analysis, the results of the analysis are generalizable across all European states during the COVID-19 pandemic. It would be interesting to expand the research on the COVID-19 pandemic and the vulnerability and resilience framework. The future research should aim to further generalize the findings and find a definitive answer to whether the vulnerability and resilience framework can explain new threats, like the COVID-19 pandemic. Moreover, it will also be interesting to conduct further research at a time when the numbers are final, and the pandemic may be history. Overall, this thesis has completed its aim of giving some insight into the ways a transnational issue, that presents a very new existential threat to states, is handled by small states.

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Appendix A: Table SPSS

Country	Population	SmallState	COVID-19 cases as share of population	VaccinationRate
Albania	2854190	0,00	1,53%	11,38
Andorra	77140	1,00	9,18%	27,94
Austria	8877070	0,00	3,44%	27,68
Belarus	9466860	0,00	1,57%	1,25
Belgium	11484060	0,00	5,16%	25,82
Bulgaria	6975760	0,00	2,35%	9,13
Croatia	4067500	0,00	3,74%	16,52
Cyprus	1198580	1,00	1,07%	17,57
Czechia	10669710	0,00	5,13%	22,95
Denmark	5818550	0,00	1,60%	26,78
Estonia	1326590	1,00	1,15%	28,06
Finland	5520310	0,00	0,51%	26,10
France	67059890	0,00	3,50%	25,49
Germany	83132800	0,00	0,14%	25,66
Greece	10716320	0,00	1,09%	23,25
Hungary	9769950	0,00	2,60%	47,48
Iceland	361310	1,00	1,52%	27,31
Ireland	4941440	0,00	1,51%	24,05
Italy	60297400	0,00	2,89%	25,16
Kosovo	1812470	0,00	2,39%	0,89
Latvia	1912790	0,00	1,13%	10,79
Liechtenstein	38020	1,00	3,67%	21,76
Lithuania	2786840	0,00	2,73%	27,74
Luxembourg	619900	1,00	6,21%	24,75
Malta	502650	1,00	2,12%	54,64
Moldova	2657640	0,00	4,42%	3,45
Monaco	38960	1,00	1,65%	58,91
Montenegro	622140	1,00	6,20%	8,92
Netherlands	17332850	0,00	3,31%	14,95
North Macedonia	2083460	0,00	3,28%	1,96
Norway	5347900	0,00	0,72%	24,78
Poland	37970870	0,00	2,82%	23,30
Portugal	10269420	0,00	3,17%	24,55
Romania	19356540	0,00	2,67%	21,86
Russia	144373540	0,00	1,71%	8,81
San Marino	33860	1,00	5,32%	63,15
Serbia	6944980	0,00	3,26%	43,20
Slovakia	5454070	0,00	2,15%	23,59
Slovenia	2087950	0,00	4,13%	24,73
Spain	47076780	0,00	3,61%	26,19
Sweden	10285450	0,00	2,71%	22,53
Switzerland	8574830	0,00	4,13%	22,93
Turkey	83429620	0,00	1,03%	23,96
Ukraine	44385150	0,00	1,90%	1,01
United Kingdom	66834400	0,00	2,60%	64,01

Appendix B: SPSS Output COVID-19 cases

Simple Linear Regression: COVID-19 cases and SmallState

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SmallState[b]	.	Enter

a. Dependent Variable: COVID-19 cases as share of population

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,293[a]	,086	,064	1,69455%	2,378

a. Predictors: (Constant), SmallState

b. Dependent Variable: COVID-19 cases as share of population

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11,555	1	11,555	4,024	,051[b]
	Residual	123,475	43	2,872		
	Total	135,030	44			

a. Dependent Variable: COVID-19 cases as share of population

b. Predictors: (Constant), SmallState

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2,590	,286		9,042	,000	2,012	3,167		
	SmallState	1,219	,608	,293	2,006	,051	-,007	2,444	1,000	1,000

a. Dependent Variable: COVID-19 cases as share of population

Casewise Diagnostics[a]

Case Number	Std. Residual	COVID-19 cases as share of population	Predicted Value	Residual
2	3,172	9,18%	3,8087%	5,37460%

a. Dependent Variable: COVID-19 cases as share of population

Simple Linear Regression: COVID-19 cases and Island

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Island[b]	.	Enter

a. Dependent Variable: COVID-19 cases as share of population

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,224[a]	,050	,028	1,72720%	2,210

a. Predictors: (Constant), Island

b. Dependent Variable: COVID-19 cases as share of population

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6,752	1	6,752	2,263	,140[b]
	Residual	128,278	43	2,983		
	Total	135,030	44			

a. Dependent Variable: COVID-19 cases as share of population

b. Predictors: (Constant), Island

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2,998	,273		10,977	,000	2,447	3,548		
	Island	-1,233	,819	-,224	-1,504	,140	-2,885	,420	1,000	1,000

a. Dependent Variable: COVID-19 cases as share of population

Casewise Diagnostics[a]

Case Number	Std. Residual	COVID-19 cases as share of population	Predicted Value	Residual
2	3,581	9,18%	2,9977%	6,18565%

a. Dependent Variable: COVID-19 cases as share of population

Simple Linear Regression: COVID-19 cases and PopulationDensity

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	PopDensity[b]	.	Enter

a. Dependent Variable: COVID-19 cases as share of population

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,123[a]	,015	-,008	1,75851%	2,252

a. Predictors: (Constant), PopDensity

b. Dependent Variable: COVID-19 cases as share of population

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2,059	1	2,059	,666	,419[b]
	Residual	132,971	43	3,092		
	Total	135,030	44			

a. Dependent Variable: COVID-19 cases as share of population

b. Predictors: (Constant), PopDensity

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2,906	,268		10,847	,000	2,365	3,446		
	PopDensity	-8,526E-8	,000	-,123	-,816	,419	,000	,000	1,000	1,000

a. Dependent Variable: COVID-19 cases as share of population

Casewise Diagnostics[a]

Case Number	Std. Residual	COVID-19 cases as share of population	Predicted Value	Residual
2	3,570	9,18%	2,9057%	6,27762%

a. Dependent Variable: COVID-19 cases as share of population

Simple Linear Regression: COVID-19 cases and EUMembership

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	EUMember[b]	.	Enter

a. Dependent Variable: COVID-19 cases as share of population

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,120[a]	,015	-,008	1,75916%	2,295

a. Predictors: (Constant), EUMember

b. Dependent Variable: COVID-19 cases as share of population

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1,960	1	1,960	,633	,431[b]
	Residual	133,070	43	3,095		
	Total	135,030	44			

a. Dependent Variable: COVID-19 cases as share of population

b. Predictors: (Constant), EUMember

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	3,116	,415		7,516	,000	2,280	3,952		
	EUMember	-,426	,535	-,120	-,796	,431	-1,505	,654	1,000	1,000

a. Dependent Variable: COVID-19 cases as share of population

Casewise Diagnostics[a]

Case Number	Std. Residual	COVID-19 cases as share of population	Predicted Value	Residual
2	3,449	9,18%	3,1163%	6,06702%

a. Dependent Variable: COVID-19 cases as share of population

Simple Linear Regression: COVID-19 cases and population

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Population[b]	.	Enter

a. Dependent Variable: COVID-19 cases as share of population

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,228[a]	,052	,030	1,72529%	2,359

a. Predictors: (Constant), Population

b. Dependent Variable: COVID-19 cases as share of population

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7,035	1	7,035	2,363	,132[b]
	Residual	127,995	43	2,977		
	Total	135,030	44			

a. Dependent Variable: COVID-19 cases as share of population

b. Predictors: (Constant), Population

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	3,106	,303		10,264	,000	2,496	3,716		
	Population	-1,333E-8	,000	-,228	-1,537	,132	,000	,000	1,000	1,000

a. Dependent Variable: COVID-19 cases as share of population

Casewise Diagnostics[a]

Case Number	Std. Residual	COVID-19 cases as share of population	Predicted Value	Residual
2	3,523	9,18%	3,1047%	6,07859%

a. Dependent Variable: COVID-19 cases as share of population

Appendix C: SPSS Output COVID-19 vaccinations

Simple Linear Regression: COVID-19 vaccinations and SmallState

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SmallState[b]	.	Enter

a. Dependent Variable: VaccinationRate

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,328[a]	,108	,087	14,40984	2,256

a. Predictors: (Constant), SmallState

b. Dependent Variable: VaccinationRate

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1075,882	1	1075,882	5,181	,028[b]
	Residual	8928,668	43	207,643		
	Total	10004,550	44			

a. Dependent Variable: VaccinationRate

b. Predictors: (Constant), SmallState

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	21,541	2,436		8,844	,000	16,629	26,453		
	SmallState	11,761	5,167	,328	2,276	,028	1,341	22,181	1,000	1,000

a. Dependent Variable: VaccinationRate

Simple Linear Regression: COVID-19 vaccinations and Island

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Island[b]	.	Enter

a. Dependent Variable: VaccinationRate

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,317[a]	,100	,079	14,46764	2,232

a. Predictors: (Constant), Island

b. Dependent Variable: VaccinationRate

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1004,113	1	1004,113	4,797	,034[b]
	Residual	9000,437	43	209,312		
	Total	10004,550	44			

a. Dependent Variable: VaccinationRate

b. Predictors: (Constant), Island

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	22,484	2,288		9,829	,000	17,871	27,097		
	Island	15,031	6,863	,317	2,190	,034	1,191	28,871	1,000	1,000

a. Dependent Variable: VaccinationRate

Simple Linear Regression: COVID-19 vaccinations and PopulationDensity

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	PopDensity[b]	.	Enter

a. Dependent Variable: VaccinationRate

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,161[a]	,026	,003	15,05445	2,089

a. Predictors: (Constant), PopDensity

b. Dependent Variable: VaccinationRate

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	259,188	1	259,188	1,144	,291[b]
	Residual	9745,362	43	226,636		
	Total	10004,550	44			

a. Dependent Variable: VaccinationRate

b. Predictors: (Constant), PopDensity

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	24,659	2,293		10,753	,000	20,034	29,284		
	PopDensity	-9,566E-7	,000	-,161	-1,069	,291	,000	,000	1,000	1,000

a. Dependent Variable: VaccinationRate

Simple Linear Regression: COVID-19 vaccinations and EUMembership

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	EUMember[b]	.	Enter

a. Dependent Variable: VaccinationRate

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,058[a]	,003	-,020	15,22742	2,162

a. Predictors: (Constant), EUMember

b. Dependent Variable: VaccinationRate

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33,952	1	33,952	,146	,704[b]
	Residual	9970,597	43	231,874		
	Total	10004,550	44			

a. Dependent Variable: VaccinationRate

b. Predictors: (Constant), EUMember

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	23,090	3,589		6,433	,000	15,852	30,329		
	EUMember	1,773	4,634	,058	,383	,704	-7,571	11,118	1,000	1,000

a. Dependent Variable: VaccinationRate

Simple Linear Regression: COVID-19 vaccinations and population

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Population[b]	.	Enter

a. Dependent Variable: VaccinationRate

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,031[a]	,001	-,022	15,24619	2,193

a. Predictors: (Constant), Population

b. Dependent Variable: VaccinationRate

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9,363	1	9,363	,040	,842[b]
	Residual	9995,187	43	232,446		
	Total	10004,550	44			

a. Dependent Variable: VaccinationRate

b. Predictors: (Constant), Population

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	24,437	2,674		9,139	,000	19,045	29,829		
	Population	-1,537E-8	,000	-,031	-,201	,842	,000	,000	1,000	1,000

a. Dependent Variable: VaccinationRate

Multiple Linear Regression: VaccinationRate and SmallState and Island

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	SmallState[b]	.	Enter
2	Island[b]	.	Enter

a. Dependent Variable: VaccinationRate

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,328[a]	,108	,087	14,40984
2	,397[b]	,157	,117	14,16725

a. Predictors: (Constant), SmallState

b. Predictors: (Constant), SmallState, Island

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1075,882	1	1075,882	5,181	,028[b]
	Residual	8928,668	43	207,643		
	Total	10004,550	44			
2	Regression	1574,683	2	787,342	3,923	,027[c]
	Residual	8429,867	42	200,711		
	Total	10004,550	44			

a. Dependent Variable: VaccinationRate

b. Predictors: (Constant), SmallState

c. Predictors: (Constant), SmallState, Island

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	21,541	2,436		8,844	,000
	SmallState	11,761	5,167	,328	2,276	,028
2	(Constant)	20,901	2,429		8,606	,000
	SmallState	9,044	5,364	,252	1,686	,099
	Island	11,187	7,096	,236	1,576	,122

a. Dependent Variable: VaccinationRate

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	20,901	2,429		8,606	,000		
	SmallState	9,044	5,364	,252	1,686	,099	,897	1,115
	Island	11,187	7,096	,236	1,576	,122	,897	1,115

a. Dependent Variable: VaccinationRate

Appendix D: SPSS Syntax and Output Average Number of COVID-19 Cases

As shown in Appendix A, the cumulative number of COVID-19 cases as a share of the population of Malta is 2.12%. The cases are filtered by state size, so only the large states can be assessed. Then the descriptive statistics of the variable of the COVID-19 cases are presented, which show that the average cumulative number of COVID-19 cases as a share of the population of larger states is 2.6%.

```
USE ALL.
COMPUTE filter_$=(SmallState = 0).
VARIABLE LABELS filter_$ 'SmallState = 0 (FILTER)'.
VALUE LABELS filter_$ 0 'Not Selected' 1 'Selected'.
FORMATS filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE.


FREQUENCIES VARIABLES=COVID19casesasshareofpopulation
  /STATISTICS=RANGE MINIMUM MAXIMUM STDDEV MEAN MEDIAN
  /FORMAT=NOTABLE
  /ORDER=ANALYSIS.
```

Statistics

COVID-19 cases as share of population

N	Valid	35
	Missing	0
Mean		2,5899%
Median		2,6722%
Std. Deviation		1,25455%
Range		5,02%
Minimum		0,14%
Maximum		5,16%