



**UiT** Norges arktiske universitet

School of Business and Economics

**Analysis of how trust and policy stringency determine behavioral response to COVID-19**

In Europe

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## Foreword

This master marks the end of my time at UiT. Starting in 2018 with no idea what I wanted to do or if this was even the direction, I wanted to go I have now finished both a bachelor's degree and a master's degree in economics. UiT have been a great place to be a student both academically and socially. I have made friends for life that I met first day of school and along the way.

First, I would like to thank my mentor Øivind Schøyen for help both with the starting idea and brainstorming underway. Without his engagement and positive spirits, I would have not been able to keep the motivation up. This thesis has been made along the way and during discussions. To be able to just show up at the office at any time and discuss have without doubt lifted my level of understanding and the level of this paper. Thank you.

Secondly, I would like to thank my family. This have been one of the toughest years in my life in many ways. The unlimited support and calls have ensured me that I have made the right decision on starting my masters. My father for reading economic papers and podcasts to be able to discuss economical questions. My mother for pushing me that extra mile. My sister for taking my mind of everything. Finally, my boyfriend for being the daily support and comfort through it all.

And last, I just wanted to say I MADE IT and thank you.

## Abstract

Restrictions and regulations became the reality for most Europeans during the COVID-19 pandemic. Governments handled the pandemic differently and would need their population to follow the instructions sent out to handle the pandemic. This paper supposes that trust is a key to get the population to follow regulations even if the regulations are strict or to just live as before the pandemic. By running regressions for countries with high and low trust among twenty-two European countries and using stringency level and trust as dependent variables to see if this can explain change in time spent at resident and total number of covid-19 vaccinations. With this trying to identify a negative reaction in countries with low trust. The most interesting case would be the group with high stringency level and low trust. Using behavioral mechanisms, the negative reaction was confirmed for countries with low trust and high stringency.

Keywords:

COVID-19, Stringency, Trust, Behavioral mechanisms

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## Introduction

March of 2020 marks the start of what later became a global pandemic with strict regulations invading everyday life of the population. Looking back, we see that the pandemic was handled differently across European countries. Newton's third law states that every action, there is an equal and opposite reaction. What was the reaction to covid policies? Can stringent policies in some countries have caused a backlash effect? And if so, how does this relate to the trust in government? Looking at the stringency index for the country and see how the response is changing before and during the pandemic. Stringency is in this paper defined as the level of restrictions and limitation of the population. The higher stringency-index the more limitations and restrictions are put in place. Using data from twenty-two European countries to see if number of vaccines for COVID-19 and time spent at resident is dependent on the populations trust in the government and the stringency-index. The paper is trying to see if the compliance in low trusting countries is different from countries with high trust. Trying to see if the low trust lead to a negative compliance among the population.

## Behavioral mechanisms

Behavioral mechanisms can be defined as a response to an action put on you from in this case the government. This response is unconscious and observable. In this paper the action implemented will be the Covid-19 restrictions and the response will be the compliance by the population which could be observed. Predictions will be that populations that share the identity as the government will follow the regulations as recommended due to their high trust. For the populations not sharing the identity the response will be negative, meaning they will do the opposite of the recommendations from the government. This could be described as coercion resentment which is defined as the harder coercion to reduce a behavior the more increase in the same behavior.

What drives individuals to decide is either internal or external motivations. Internal motivation is when the individual makes a decision without intention or incentives to gain an external award. External motivations are when the individual's incentive is to either gain something or avoid punishment (Lennartz, 2011). For this paper the internal motivation is what is assumed when individuals make a choice of covid-19 vaccines or lockdown orders. Considering that some might take the vaccine to gain more freedom as some government used less restrictions as an external motivation to create incentives to take the vaccine.

Predictions for this paper is that countries with low trust have a negative response to stringency put on them by the government. By assuming this the predictions for high trust countries are that they have a positive response. A negative response will be that the group react in the opposite way of the intention behind the stringency. Going back to the behavioral mechanisms the response to a restriction will be an immediate and unconscious response. If the population, feel they share the identity of the government their trust is most likely high and therefore respond as the restrictions intended. For the part of the population that feel they do not share the identity of the government and will automatically respond opposite of the wanted response due to lack of trust.

In 2020 a study was done in the United States of America where they compared compliance across the different police counties and how trust played a role in the response of the population (Bargain & Aminjonov, 2020). The study concluded that trust in the government was an important factor when looking at the population's compliance, and especially under crisis. In the study they have also looked for compliance and trust in government in Europe which indicated that there was higher compliance in the higher trust countries. It is important

to mention that this study was done in May of 2020. Two months into the pandemic some countries were still in their first lockdown and before the vaccine came. To see if the conclusion from 2020 is the same in 2023 as we now have more information about the long-term effect of the stringency on mobility.

A paper done by Øivind Schøyen done in 2019 looks on the willingness of parents to resist the state's identity on to their children based on the state's identity (Schøyen, 2021). Once the government have chosen a coercion level to implement their identity the parents will chose how much to invest for their children to share their non-state identity. The coercion from the government could be so sufficient that some parents with non-state identity would have a positive reaction and not invest in their children maintaining a non-state identity.

This paper is wanting to look at the consequences of a negative reaction to coercion. Schøyen use a model built around the premise that the size of the non-state identity group and the government recognize coercion resentment. The model then shows how when the size of the non-state group reduces their possibility and ability to fight the state identity decreases.

Even if the behavioral mechanisms are defined as unconscious in the case of COVID-19 and in this paper some choices most likely will be conscious. During the pandemic some countries made different regulations for vaccinated and non-vaccinated. This would give incentives for some individuals to take the vaccine where the desire for a more normal life weights more than principals and their normal behavioral mechanisms.



## Data Sources

Data used in this paper will represent the three different variables Compliance, Stringency and Trust. The data used for trust and compliance in this paper is from the same source as the paper by (Bargain & Aminjonov, 2020) in the paper “Trust and Compliance to Public Health Policies in Times of COVID-19”. Trust data is from European Social Survey (ESS) which was a survey done in 2016. The stringency index is composed originally by (Mathieu et al., 2020) and will be used as the base for this paper. Under will follow a more descriptive section about the data used.

Countries that were selected for this paper is based on the participants in the European Social Survey as this was the data with the fewest participating countries. Compliance data and the stringency index does both contain data from all European countries, so these have been limited to fit the trust data from ESS. Countries included in this paper is as follows:

- Austria (AT)
- Belgium (BE)
- Czechia (CZ)
- Estonia (EE)
- Finland (FI)
- France (FR)
- Germany (DE)
- Hungary (HU)
- Ireland (IL)
- Israel (IE)
- Italy (IT)
- Lithuania (LT)
- Netherlands (NL)
- Norway (NO)
- Poland (PL)
- Portugal (PT)
- Russia (RU)
- Slovenia (SI)
- Spain (ES)
- Sweden (SE)
- Switzerland (CH)
- United Kingdom (GB)

## Trust

The trust data is based on a survey done by ESS in the period of August 2016 – December 2017. The survey is done across European countries and try to understand the changes in behavior among European populations (Fitzgerald, 2017). One of the variables from the survey is “Trust in parties” where the participants have answered on a scale from 0-10 on their trust in the political parties in their country where ten is full trust and zero is no trust.

Answers with value 88 or 66 correspond to “Don’t know” or “Don’t want to answer” and is filtered out as they are not relevant to this paper. Under the distribution between the answers for each country. Countries are named with their country code and show the frequency on answers to how much trust each person have in their government. The number of respondents will vary across the different countries.

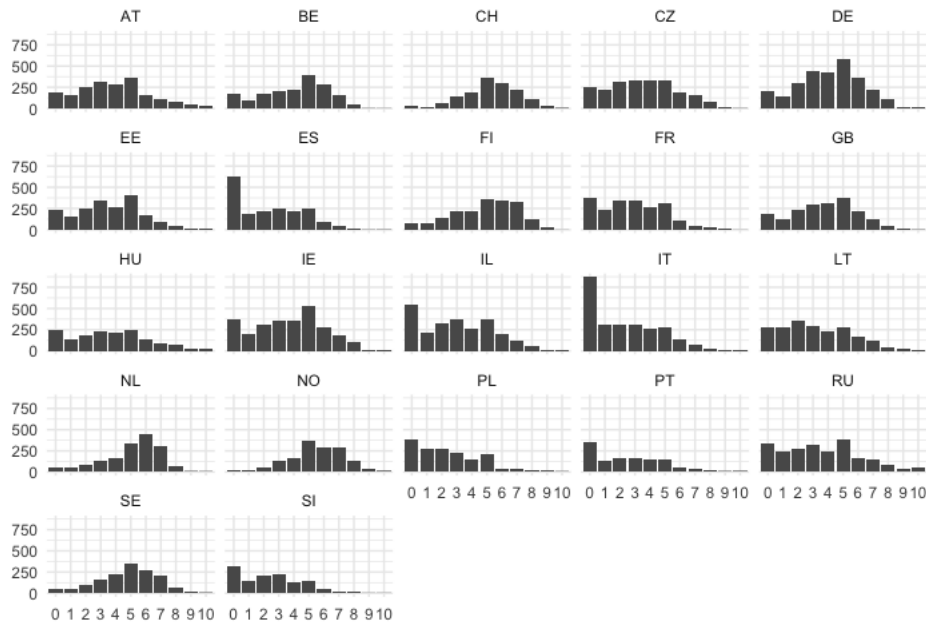


Figure 1: Frequency of trust level

Figure 1 show the distribution between the answers in the population in each country. The number of responders per country will vary. In reality the trust distribution could be different but assuming this data show a trend in each country and show how the majority feel.

In Figure 1 a few countries stand out with a high level of no trust at all. Spain, Israel, Italy, and Portugal differ from the other as the most common answer is no trust at all. Looking at the mean of the countries answer they are not surprisingly also some of the countries with the lowest mean. This paper is wanting to look at high and low trust and therefore need to separate the mentioned countries in high and low trust. For this paper I choose to find the mean of all answers and then find the mean for each country. Those countries with a higher mean than the total mean is classified as high trust and those with a lower value is low trust. Table 1 show what countries is considered as high and low trust. The mean for all answers 3,66 and countries with higher mean is classified as high trust and below is low trust.

Table 1: High and low trust

High	Low
Austria	Czechia
Belgium	Estonia
Switzerland	Spain
Germany	France
Finland	Hungary
United Kingdom	Ireland
Israel	Italy
Netherlands	Lithuania
Norway	Poland
Sweden	Portugal
	Russia
	Slovenia

## Compliance

The compliance data is as mentioned from Google's rapport on Covid-19<sup>1</sup>. This is the same data used for Google maps and will show how individuals spend their times between retail stores, grocery/pharmacy, transit stations, workplace and residential. Measured with 0 as the basic value and an increase in time/number of visits will show as a positive value and decrease time/number of visits will have a negative value. In this data it will also show number of vaccinations in each country per day. Vaccination is measured per day where one vaccine is one observation and the number per day is the sum of total vaccines for the whole pandemic. To cross check and see that the effect is not only based on the vaccination we will use the time spent in the resident as a dependent variable as well. Assuming more time was spent in residents with the lockdown orders in place.

The identification in the data is the country the individual is located in. I have from this chosen twenty-two countries based on the participating countries from ESS. Since this is individual data that is reported from the government in each country the numbers can have some inaccuracy and not be 100% truthful for different reasons.

## Stringency index

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<sup>1</sup> <https://www.google.com/covid19/mobility/>

Our world in data have computed an index on the stringency in policies across the world. The index data is based on the Oxford COVID-19 Government Response Tracker. Showing how the different governments policies changes during the pandemic. From this data our world in data have made an index from nine measures often used during Covid-19 such as vaccine policy, testing policy, contact tracing and face covering. Adding the score of all the variables is a scale from 0-100 where zero is no stringency and one hundred is all restrictions is mandatory or implemented by a law.

Stringency is computed from the different regions or areas within a country and used the region with highest stringency for the country variable per date. This might lead to some countries having a higher value than the average in the country that day. If only one region has a very high stringency that day the whole country is registered with that value. Another effect of this is how the graph for Portugal looks. This is the result of the stringency going up and down with small values every day in a short period.

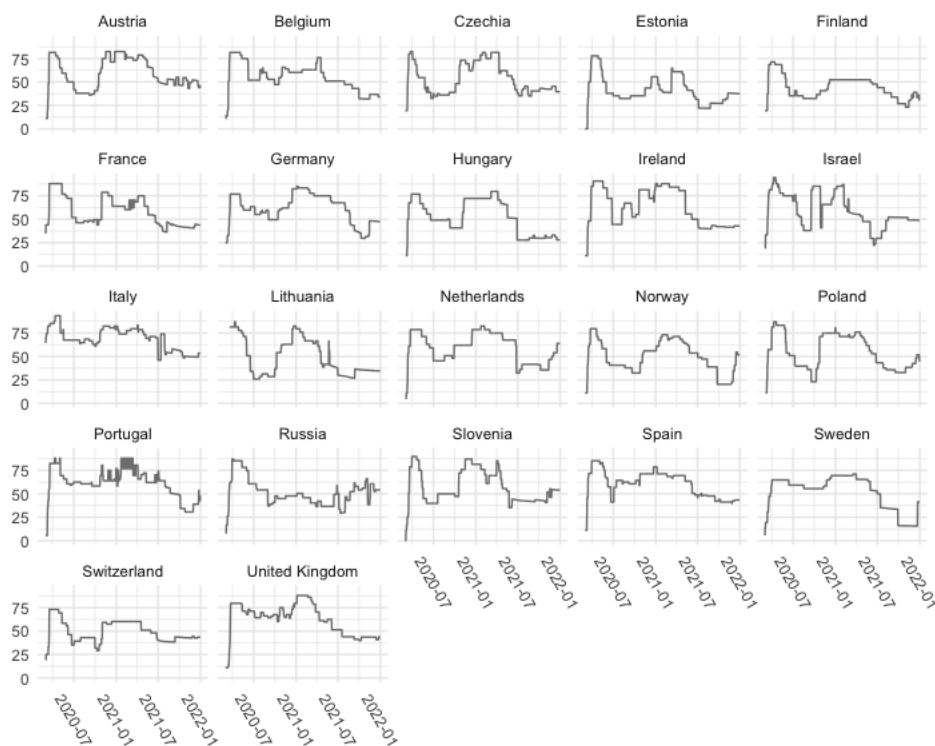


Figure 2: Stringency index 01.03.20- 13.12.21

In the Figure 2 the stringency based on all categories is presented in the period from March 1<sup>st</sup>, 2020 – December 31<sup>st</sup>, 2021. It shows how the stringency level in each country is per day. The development of stringency varies across the countries. Where you can see Sweden had a very consistent stringency index throughout the period compared to Israel especially who

started at a very high level of stringency indicating most measures were put in place immediately. After some time, Israel reduces their stringency level towards the end of 2020 beginning of 2021, before the level was increased again. While Sweden had a relatively high level of stringency, and This will show the handling of the pandemic in a general view and more how hard in general.

To select high and low stringency groups the mean of all observations in the period of March 1<sup>st</sup>, 2020, until December 31<sup>st</sup>, 2021, was used. The mean across all countries is 42.31, and countries with a stringency above this is classified in this paper as high stringency. Some countries may be considered high stringency on some days and on others low stringency due to high variation through the period.

## Overview

This paper will try to see if there has been a negative effect on the number of vaccines when the country has a high stringency and a low trust level. Since the first dose of vaccine is registered in the data on December 21<sup>st</sup> in ,2020, in Switzerland. This will be considered day one in regressions with total number of vaccines as dependent variable. As mentioned in the section for behavior mechanisms there are different incentives to take the vaccine. Even with low trust the population might want to take the vaccine as this in some cases let you move more freely.

To make sure the egoistic incentives do not interrupt the results we will also check the effect using the time spent in residence as a dependent variable. Moving over to the analysis this will be done in sections based on the independent variables: The four combinations are:

1. High stringency and high trust
2. Low stringency and high trust
3. High stringency and low trust
4. Low stringency and low trust

## Analysis

To be able to analyze the data the necessary steps to make the data fit for the regression and what this paper is trying to research without any disturbing variables. The regression used for this paper is as follows.

$$Y = \beta_0 + \beta_{H,L}Stringency + \beta_{H,L}Trust + \beta_3(Stringency * Trust)$$

Where the Y will represent first number of vaccinations done per day and then number of hours spent in resident in the period March 1<sup>st</sup>, 2020, to December 31<sup>st</sup>, 2021. By using both total vaccinations and time spent at resident the whole period is covered in the analysis. Since the first vaccine according to the data was set on December 21<sup>st</sup>, 2020 in Switzerland. For beta one and two H and L represent high and low values of stringency and trust variables.

In this paper I have chosen to do 4 regressions to minimize the risk of disturbed or wrong results. That is why both trust and stringency is separated in high and low. If stringency and or trust is combined to one data frame the results will not show if it is the high or low levels that influence the independent variables.

### High Stringency and High Trust

For a country implementing high stringency the wanted situation is to have a high trust among the population. As assumed in the behavior mechanisms if the population have high trust in the government they tend to follow as they have a common factor. For this paper having high trust indicate that the population will trust the government to handle COVID-19 the best way. The regression for this section will be:

$$Y = \beta_0 + \beta_HStringency + \beta_HTrust + \beta_3(Stringency * Trust)$$

First running this regression with time spent at the resident in the period March 1<sup>st</sup>, 2020 – December 31<sup>st</sup>, 2021, as dependent variable.

```

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)      6.913359   0.423067  16.341  <2e-16 ***
stringency_index_high  0.009811   0.006201   1.582   0.114
Trust_in_parties_high -0.029447   0.037298  -0.789   0.430
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 6.444 on 6036 degrees of freedom
Multiple R-squared:  0.00049, Adjusted R-squared:  0.0001588
F-statistic: 1.479 on 2 and 6036 DF, p-value: 0.2279

```

Figure 3: Results of high stringency and high trust with time in resident as dependent variable

The result of the regression with time spent in the resident show that the intercept is 6.913 telling us this is the number of hours spent at home if the stringency and trust is zero. For the stringency the regression shows a positive relationship however looking at the p-value of 0.114 indicating it is not statistically significant. Moving to the trust variable and seeing a negative relationship saying that is the trust increase the time spent at resident will decrease. Also, this finding is not significant due to the p-value is >0.05 which is considered as the limit of significance. Even with a not significant result we could not rule out that there is a relationship between the dependent variable and the independent variable.

What the results of this regression show that this data does not fit regression. The R-squared values confirms this by indicating that the independent variables explain only a very small fraction of the variance in the dependent variable.

Moving on to the regression using the sum of total number of vaccines per day as dependent variable.

```

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)      79653397   2393578  33.278  <2e-16 ***
stringency_index_high_vacc -956934    35354 -27.067  <2e-16 ***
Trust_in_parties_high      301218    207022   1.455   0.146
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 31780000 on 4621 degrees of freedom
Multiple R-squared:  0.1381, Adjusted R-squared:  0.1377
F-statistic: 370.2 on 2 and 4621 DF, p-value: < 2.2e-16

```

Figure 4: Results of high stringency and high trust with total vaccines as dependent variable

Since the number of vaccines per day is the sum of vaccines during the whole period the intercept value would be relatively high. Starting with the stringency index there is a negative relationship to the dependent variable. This means that when there is an increase in the stringency there will be a decrease in the total number of vaccines. For trust there is a positive relationship indicating once the trust increase so will the total number of vaccines. This supports the theory that once the population trust the government, they will follow their recommendations. The positive result is marginally significant. This means that some of the vaccinations could be explained by increased trust, and some is just by chance.

This data has a p-value  $<2e-16$  indication is it statistically significant. For the independent variable trust there is a positive relationship but with not a statistically significant result. For this regression both the interception and independent variable of stringency is statistically significant. The models overall fit is statistically significant, indicating that the independent variables collectively have a significant impact on the dependent variable with a p-value of  $<2.2e-16$ . R-squared tells us that approximately 13.81% of the variance in the dependent variable is explained by the independent variables. In combination the p-value and r-squared indicate that the independent variables could explain the change in the dependent variable.

From this we could predict that time spent at the resident during the pandemic not necessary are dependent on the trust or the stringency of the government. Drawing a conclusion from the first regression is not possible due to the lack of statistical significance. Referring to the behavioral mechanisms once the different regulations for vaccinated and non-vaccinated was introduced some might have taken the vaccine just to be able to live more like before the pandemic. Or the negative relationship could be explained as once the stringency increased the population did not see a reason to take a vaccine as it would not change the restrictions. One note to take is also that for most countries the highest level of stringency was before a vaccine was introduced. The lust to live with no regulations could be a factor why once the stringency reduces the number of vaccine increases.

### Low Stringency and High Trust

This group stand out from the previous as they did not implement many or any COVID-19 regulations. Countries in this group trust their government and their actions against the pandemic even if there are few or non. Special for this group is that the population have high trust and we predict they will not change much of their behavior during the pandemic.

Here the regression will look like:



$$Y = \beta_0 + \beta_L \text{Stringency} + \beta_H \text{Trust} + \beta_3 (\text{Stringency} * \text{Trust})$$

Starting by running the regression with the time spent at resident as the dependent variable.

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	6.381148	0.611946	10.428	<2e-16 ***
stringency_index_low	0.013015	0.016450	0.791	0.429
Trust_in_parties_high	0.007796	0.054383	0.143	0.886

---  
 Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 7.707 on 3858 degrees of freedom  
 Multiple R-squared: 0.0001674, Adjusted R-squared: -0.0003509  
 F-statistic: 0.3231 on 2 and 3858 DF, p-value: 0.724

Figure 5: Result with low stringency and high trust with time spent at resident as dependent variable.

When looking at the output from the regression and looking at the p-values only statistically significant value are the intercept. From this we read that if there are a change in one of the independent variables it is most likely by chance if also the dependent variable is moving in the same direction. Stringency and trust do not explain the change in time spent at home when the stringency is low, and the trust is high. The lack of significance is confirmed by r-squared value showing only 0.16% of the variance is explained by the independent variables. Time spent at resident changes could be explained by other factors not considered for this master thesis or the population did lose their trust during the pandemic, and self-isolated.

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-11743879	4762609	-2.466	0.0138 *
stringency_index_low_vacc	999412	126891	7.876	5.9e-15 ***
Trust_in_parties_high	-244602	327549	-0.747	0.4553

---  
 Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 32100000 on 1740 degrees of freedom  
 Multiple R-squared: 0.03488, Adjusted R-squared: 0.03377  
 F-statistic: 31.44 on 2 and 1740 DF, p-value: 3.867e-14

Figure 6: Results of low stringency and high trust with number of vaccines as dependent variable.

When using the total number of vaccines as the dependent variable the result tells that there is a significant positive relationship between the stringency and the dependent variable. For the trust variable there is not significantly enough to say there is a negative relationship between the independent and dependent variable. F-statistic show how the data fit the model with a p-

value less than 0.05. The model's overall fit is statistically significant, indicating that the independent variable stringency contributes significantly to explaining the variance in the dependent variable. R-squared confirms this as 3.49% of the variance in the total number of vaccines.

Going back to the theory this results support what was assumed. When the trust is high, and the stringency is low the total number of vaccines will be low. If the group experience an increase in stringency, there will also be an increase in the total number of vaccines due to the positive relationship.

### High Stringency and low Trust

Countries experiencing high stringency and where the government have a low trust in the population is the group, we expect to have a negative reaction to the stringency. If a government impose higher and higher level of stringency to try control the pandemic a population with low trust might not agree with this policy. With this agreement in place there might be a negative reaction of the stringency level.

Described in the behavioral mechanisms this negative reaction will come as a result of the natural and unconscious response of the individuals. For this situation the regression will look like

$$Y = \beta_0 + \beta_H Stringency + \beta_L Trust + \beta_3 (Stringency + Trust)$$

Running this with time spent at resident as the first dependent variable.

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	2.024328	0.418269	4.840	1.32e-06	***
stringency_index_high	0.065049	0.006198	10.495	< 2e-16	***
Trust_in_parties_low	0.067684	0.036176	1.871	0.0614	.

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 7.665 on 8688 degrees of freedom

Multiple R-squared: 0.01287, Adjusted R-squared: 0.01264

F-statistic: 56.63 on 2 and 8688 DF, p-value: < 2.2e-16

Figure 7: Result of High stringency and low trust with time in resident as dependent variable

The intercept is showing how many hour individuals is spending at resident if the stringency and the trust is equal to zero. In this regression both independent variables have a positive relationship with the dependent variable. Only difference is that only the stringency could be

considered as a statistically significant result while the trust independent variable is marginally not statistically significant with a p-value of 0.0614. Moving down to the F-statistic we could see that the overall fit is statistically significant, suggesting that the independent variables collectively have a significant impact on the dependent variable of total vaccinations. From this we see that once the stringency increases will also the number of hours spent at resident increase. The R-squared value show that 1.29% of the variance could be explained by the dependent variable. Even if this a low percentage the p-value  $< 2.2e-16$  also tells us that the data fit the model.

However, we do not have the negative result as the theory predicted. The regression tells us that if the stringency increases so will the hours spent at the resident. Once there is an increase in stringency it might be due to an increase of infected individuals and a fear among the population spread. Again, causing the population to self-isolate regardless of the government's stringency level.

Next checking if the same situation goes when the dependent variable is total number of vaccinations. Since this is a situation with high stringency of the government and the population having low trust, the expected results are a negative relationship between stringency and total number of vaccinations.

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	83321775	2290124	36.383	$< 2e-16$	***
stringency_index_high_vacc	-957544	35281	-27.140	$< 2e-16$	***
Trust_in_parties_low	-689885	206143	-3.347	0.000825	***

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 31750000 on 4621 degrees of freedom

Multiple R-squared: 0.1398, Adjusted R-squared: 0.1394

F-statistic: 375.5 on 2 and 4621 DF, p-value:  $< 2.2e-16$

*Figure 8: Result of high stringency and low trust with total vaccination as dependent variable*

As predicted, there is a negative relationship between both independent variables and the dependent variable of total vaccinations. What this means is that once there is an increase in either the stringency or the trust it will result in a decrease of number of vaccines. Looking at the p-values both results will in this regression be considered as statistically significant say that the relationship between the dependent and independent variables are not by chance but

there is a correlation. R-squared then tell that 13.99% of the variance in the dependent variable.

This is what was predicted in the theory and looking at the f-statistic also the p-value for the model tells us that the data fit the regression and gives a significant result. In other words, once the government increase their stringency to an even higher level the total number of vaccines will decrease. This could be due to the low trust the population in this group have, but it also be that since the stringency is so high the population see no reason to take the vaccine. The regulations in place could demand both vaccinated and non-vaccinated to stay home giving no incentives to take the vaccine.

### Low stringency and Low trust

For a situation where the trust in the population is low and the stringency is low could also result in a negative response. Governments do not find it necessary to implement any or fewer restrictions while the populations do not have trust in the government. If the population do not have trust in the government before the pandemic, we could also see that they do not trust their government reacted the correct way during the pandemic. From this we could get a negative reaction and that the population self-isolate. The regression used for this group looks will be:

$$Y = \beta_0 + \beta_L Stringency + \beta_L Trust + \beta_3 (Stringency + Trust)$$

Starting with looking at the whole period from March 1<sup>st</sup>, 2020, until December 31<sup>st</sup>, 2021, and the time spent at resident as dependent variable.

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	6.21835	0.60617	10.259	<2e-16 ***
stringency_index_low	0.01306	0.01645	0.794	0.427
Trust_in_parties_low	0.05397	0.05536	0.975	0.330

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 7.706 on 3858 degrees of freedom

Multiple R-squared: 0.0004083, Adjusted R-squared: -0.0001098

F-statistic: 0.788 on 2 and 3858 DF, p-value: 0.4548

Figure 9: Result of low stringency and low trust with time spent in resident as dependent variable.

In figure 9 we can see by all the p-values both for the independent variables and the f-statistic that the model does not fit the data based on the low R-squared values suggesting a poor fit of the model. The results are not at a statistically significant level. Reason for this misfit could either be the data or how the data have been selected and filtered in the proses of this master thesis. The only significant value is the intercept once the dependent values is at zero. If there is an increase in one of the dependent variables most likely if the time spent at home is just by chance and not related to the stringency or the trust.

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )	
(Intercept)	-15843109	4733296	-3.347	0.000834	***
stringency_index_low_vacc	1005750	126680	7.939	3.61e-15	***
Trust_in_parties_low	813797	335566	2.425	0.015403	*

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 Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 32050000 on 1740 degrees of freedom  
 Multiple R-squared: 0.03782, Adjusted R-squared: 0.03671  
 F-statistic: 34.2 on 2 and 1740 DF, p-value: 2.713e-15

*Figure 10: Result of low stringency and low trust with total number of vaccines as dependent variable*

When the stringency and the trust are at zero the total number of vaccines would intercept at a -15 843 109 which is a statistically significant number. Looking at the independent variables also here both are a statistically significant positive result between the independent and dependent variables. Looking down at the f-statistic to check if the data fit the model and p-value less than 0.05 confirms that the model fit the data and the results all together are significant. The R-squared values suggest that approx. 3.70% of the variance in the dependent variable of total vaccinations.

What could be read from this is that once the stringency increases there will also be an increase in total number of vaccines, this contradicts the theory presented that low trust would give a negative relationship. Again, when the government is introducing few or no regulations the population would take actions in their own hands and take the vaccine either way.

## Result

With significant results for all regression with total vaccinations as dependent variable the one with high stringency and low trust is the most significant. Here the result showed that both independent variables had a statistically significant level. The R-squared values of approximately 14% confirmed that close to 14% of the variance in total vaccinations is explained by the independent variables. Going back to the predictions that once the stringency level is high and the trust is low, we expected to see a negative result and using the total number of vaccines this is exactly what is shown. Once the stringency increases the total number of vaccinations reduces. Showing that the underlying behavioral mechanisms also is strong during a pandemic.

The regressions using the time spent at resident the results were not nearly as significant as with total number of vaccines. This could be due to how the data was recorded or that it in fact is no relation between the dependent variable and the independent variables. The only regression with partly significant result is the high stringency and low trust, but in this case, there is a positive relationship that contradict the theory.

To sum up the theory is confirmed by seeing a negative result for the group with high stringency and low trust. Vaccination seems to be the variable in this paper that was mostly explained by the independent variables.

## Remarks

Results of this paper are not in any way conclusive and should not be considered as facts. The goal of this paper was to try see if there was any relationship between trust and stringency and the behavior among a population in a pandemic. If I had used different variables the result might have concluded in a different way. The theory was tested and found reason to believe that there is a negative relationship between high stringency and low trust and total vaccination. This could be an interesting path to continue to study, but due to time limitations for this master this have not been done.

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