Causal effectiveness of Policy Measures during the early Covid-19 Pandemic

Seminar Paper

by

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1 Introduction

During December 2019 a novel coronavirus mutation surfaced in the Chinese city Wuhan. This new virus, later coined Sars-Cov-2, quickly led to an endemic in China and only two months later to a pandemic. The virus induces a new type of disease coined COVID-19 and proved to be the first overarching pandemic in this century. Starting in February, countries all over the world introduced new and for the current generations never experienced before measures to reduce and contain the number of cases and deaths of COVID-19. Yet, to this day empiric evidence on the effectiveness of those measures are not fully analyzed. This evidence is, however, for policymaker much needed in particular when considering that most countries in the world now enter a third wave, having to cope with new mutants that proved to be more resilient than the initial virus.

In theory many of the policies introduced like social-distancing, wearing medical masks or lockdowns should contribute to a reduction in COVID-19 case and death growth but reality might impose frictions on the effectiveness of those measures. Furthermore, it is unclear whether policies that directly affect the spread of COVID-19, e.g. international travel bans, are better suited to reduce case numbers or whether policies that alter the behavior of individuals, e.g. prohibition of public gatherings of more than 5 individuals outdoors, would be more appropriate.

Although, an experimental setting is not feasible to estimate treatment effect of policies this work still tries to shed some light into the evidence of popular adopted measures and their effect on COVID-19 case and death growth. We focus here on the first wave for two reasons. Firstly, new mutants and their difference in distribution across countries might distort effects induced by policies. Secondly, one can suspect that over the course of one-year (mid 2020 – early 2021) dynamics in the population might have been introduced that call for a more differentiated approach to the estimation of those effects. For example, individuals' behavior might not be as elastic anymore due to "tiredness" of lockdowns or other policy measures.

We begin by giving a frank overview on the immense research that has been conducted on this topic and how this work can be embedded into the current research landscape. We continue in section 2.1 with the development of a (functional) causal model to adequately identify the constituents of COVID-19 case and death growth dynamics, and in section 2.2 with a approach to make this model operationalizable and give the concrete estimation procedure. In section 3 we present our data set and the imputation that has been conducted. Subsequently, we illustrate in section 4 our main findings and section 5 concludes.

This work complements current research and society since it provides further evidence on vital questions regarding the prevention of the ongoing Sars-Cov2 pandemic. As pointed out already, the current debate on which measures to implement, i.e. which measures have the highest return in terms of case growth reduction, differs from country to country and further evidence on effects is much needed when policymakers have to find the right balance between restricting the economy or the society. This work mainly complements the findings of Chernozhukov et al. (2021) who analyzed the effect of mandatory mask wearing in companies, the closure of schools or pre-schools, stay-at-home orders, and closure of non-essential businesses for US states, while also controlling for individuals behavior using Google mobility data. They conclude that mandatory masks, stay-at-home orders, and closure of non-essential business resulted in significant case reduction and increased voluntary reduction in movement of individuals, while school closures did not have the same effect. Hsiang et al. (2020) also analyzed various policy implementations and their effect but offer a broader scope by looking at six different countries, including e.g. China and Iran. They find that the implementation of the various measures resulted in a significant slow-down of the spread, with varying degree of effectivity. Moreover, Shigeoka et al. (2020) analyze the effect of mask mandates and other non-pharaceutical interventions (NPIs) in Canadas providences while also controlling for behavioral changes using Google mobility data. They find that NPIs helped significantly in reducing the spread of COVID-19 cases with an increased emphasis on mask mandates. Further evidence on the effectivity of masks to contain the spread is given by Howard et al. (2021) as well as Hou et al. (2020) who both arrive at the conclusion that Sars-Cov2 is mainly transmitted via aerosols dispelled orally and nasally from infected persons. That mask mandates can decrease the chance of infecting other individuals even if the infected person has yet not developed any symptoms, has been evidenced by He et al. (2020). Both Chernozhukov et al. (2021) as well as Shigeoka et al. (2020) factor in that changes in case growth might be largely applicable to voluntary changes in individual's behavior, and thus confirm conclusions drawn by Maloney, Taskin (2020). This factor is largely overlooked from epidemiological perspective where strong assumptions result in an immediate action of individuals even without information, see e.g. Ferguson et al. (2020). In the next section we will therefore define a causal model which is able to incorporate behavior as well as information and policy actions.

2 Causal Model and Estimation

2.1 The Causal Model

To assess whether policies have any effect on COVID-19 cases/deaths changes, as well as their magnitute, we need to develop a causal framework, i.e. identify the driving factors behind our target quantity. The origins of the framework proposed here has its roots in causal graph theory or more precisely it is formulated as a functional causal model as in Pearl (2009). Let us first denote with $Y_{i,t+\tau}$ the target variable, i.e. either changes in COVID-19 cases or changes in deaths due to COVID-19. Here, $0 < i \in n \subseteq \mathbb{N}$ is the individual identifier and $0 < t \in T \subseteq \mathbb{N}$ is the time identifier and an additive constant $0 < \tau \leq T - t$. We assume that the constituents of $Y_{i,t+\tau}$ are:

- individuals' behavior;
- state specific policies;
- and the degree of information present at the current time for all actors.

Let us denote those (vectors of) variables with $B_{i,t}, P_{i,t}$ and $I_{i,t}$[1], respectively. Furthermore, let us denote with $W_{i,t}$ state- and or time-specific confounders, e.g. number of hospital beds per 1 000 individuals for the respective country.

Firstly, we start by exploring the information variables $I_{i,t}$. These variables capture all types of information that might be related to decision making during the COVID-19 pandemic, regardless of the type of the individual, i.e. regardless of whether the person is a politician or an individual. Information includes for example the value of the target variable at time point t, nationally or internationally, but it also includes the number of tests conducted. Furthermore, it may include lags of those variables[2]. Information (variables) both influence policies and individuals' behavior alike and therefore might be understood as the most basic constituent of the causal model, influencing all variables directly or indirectly.

Secondly, we consider state specific policies $P_{i,t}$ which include for example whether a lockdown or a stay-at-home order is active for that specific country at time t. In the empirical framework we reduce similar measures to one specific identifier variable, see section 3. Policies both affect the target variable directly[3] and indirectly by influencing the behavior of individuals.

[1] For the ease of exposition we will omit the supscript T here.

[2] A more detailed explanation of the actual variables used in this study can be found in section 3.

[3] For example an international travel ban reduces the number of individuals that travel to that country and thus the number of susceptible individuals.

Thirdly, we have the behavior variables $B_{i,t}$. In an abstract sense these variables model the behavior of an individual for the given time point t, for example the frequency with which public transport is used or how often it goes to cinemas, visits friends etc. This variable is both influenced by information as well as policies and directly influences the target variable. Lastly, we have state- and or time-specific confounders $W_{i,t}$. These variables affect every other variable directly but are not directly affected by any other variable. We thus arrive at the following potential outcomes model

$$Y_{i,t+\tau} := Y_{i,t+\tau}(B_{i,t}, P_{i,t}, I_{i,t}, W_{i,t}); \tag{4}$$

$$B_{i,t} := B_{i,t}(P_{i,t}, I_{i,t}, W_{i,t}); \tag{3}$$

$$P_{i,t} := P_{i,t}(I_{i,t}, W_{i,t}); \tag{2}$$

$$I_{i,t} := I_{i,t}(W_{i,t}, Y_{i,t}, \{I_{i,t-j}\}), \qquad j = 1, \dots t-1 \tag{1}$$

Where we interprete $Y_{i,t+\tau}, B_{i,t}, P_{i,t}, I_{i,t} \in \mathcal{H}$ as arbitrary functions of the function space $\mathcal{H}$. If we propagate the system of potential outcomes backwards, we receive the timing of events.

(1) At t the information $I_{i,t}$ is determined given the confounders, previous information $\{I_{i,t-j}, j = 1, \dots t-1\}$ and the value of the target variable $Y_{i,t}$.

(2) Then, the policies $P_{i,t}$ given the confounders are determined using the information.

(3) After the policies have been set into place, the behavior of individuals $B_{i,t}$ given the confounders is determined based on the policy decisions and information.

(4) Finally, the outcome of the target variable at time point $t+\tau$ is determined by individuals' behavior, the policy decisions, and the information given the confounders. The causal model is therefore dynamic.

However, it is not feasible in practice since we cannot analyze the system of equations in a controlled experiment even if we were able to measure all variables. It is therefore important to point out that any conclusions derived from this model should be cautiously interpreted since it cannot be validated. In the next section we will focus on making this model operationalizable, state our assumptions, and give further details into the estimation process.

2.2 Estimation procedure

Let us start by imposing a restriction on the space of functions of the potential outcome model to consist only of affine linear functions, i.e. $\mathcal{H} = \{\langle a, x\rangle + b : a, x \in \mathbb{R}^d, b \in \mathbb{R}\}$. Furthermore, assume that we observe the variables $I_{i,t}, P_{i,t}, B_{i,t}Y_{i,t+\tau}$ only through some random noise, with notation $\epsilon^I_{i,t}, \epsilon^P_{i,t}, \epsilon^B_{i,t}, \epsilon^Y_{i,t}$ with $\epsilon_{i,t} \sim (0, \sigma^2_{i,t})$. Our (operationalizable) potential outcomes model is thus given by

$$
\begin{aligned}
Y_{i,t+\tau} &= \alpha^T B_{i,t} + \beta^T P_{i,t} + \gamma^T I_{i,t} + \delta^T W_{i,t} + \epsilon^Y_{i,t};\\
B_{i,t} &= \zeta^T P_{i,t} + \eta^T I_{i,t} + \kappa^T W_{i,t} + \epsilon^B_{i,t};\\
P_{i,t} &= \lambda^T I_{i,t} + \mu^T W_{i,t} + \epsilon^P_{i,t};\\
I_{i,t} &= \nu^T W_{i,t} + \xi^T Y_{i,t} + \sum_{j=1}^{t-1} \pi_j I_{i,t-j} + \epsilon^I_{i,t}.
\end{aligned}
\tag{1}
$$

To be able to identify all coefficients of this model the Rosenbaum-Rubin unconfoundedness condition (Rosenbaum, Rubin, 1983) needs to be satisfied:

$$
\begin{aligned}
[Y_{i,t+\tau}(\cdot,\cdot,\cdot) \perp\!\!\!\perp (P_{i,t}, B_{i,t}, I_{i,t})] &\mid W_{i,t}\\
[B_{i,t+\tau}(\cdot,\cdot) \perp\!\!\!\perp (P_{i,t}, I_{i,t})] &\mid W_{i,t}\\
[P_{i,t+\tau}(\cdot) \perp\!\!\!\perp (I_{i,t})] &\mid W_{i,t}.
\end{aligned}
$$

During the course of this work we assume that this condition is satisfied, however as mentioned in the previous section we cannot provide evidence that this condition is likely to hold because of the non-experimental setting and caution should be applied on drawing any conclusions from the empirical results. Finally, since we are not interested in the coefficients of the confounders and to prevent singularity issues in the estimation procedure, we apply the well-known Frisch-Waugh theorem (Frisch, Waugh, 1933) to partial out the confounders, i.e. we apply the orthogonal projection $\tilde{X} := \Pi_{W_{i,t}^{\perp\!\!\!\perp}} X := X - W_{i,t}(W_{i,t}^T W_{i,t})^{-1} W_{i,t}^T X$ from the left onto every equation. We can therefore (theoretically) estimate the treatment effect of policies and behavior on the target variable by estimating

$$
\tilde{Y}_{i,t+\tau} = a^T \tilde{B}_{i,t} + b^T \tilde{P}_{i,t} + c^T \tilde{I}_{i,t} + \epsilon^{\tilde{Y}}_{i,t}. \tag{2}
$$

This equation will be modeled in our context as a two-way error component random effects model. We decided for a random effects model since the time periods are fairly short and would lead to biased estimation when using a fixed effects estimator(Baltagi, 2005). As the following paragraph explains, it was simply not possible to use daily data and thus only weekly data were used, reducing T immensely.

There are many ways to estimate this model for example via a transformed likelihood approach (see e.g. Hsiao (2014)) or via the general method of moments (GMM). We opted for the last approach since we did not want to rely on a distribution assumption. The concrete GMM estimator is the two-step estimator from Arellano and Bond (Arellano, Bond, 1991). The estimation was carried out using the R package *pdynmc* (Fritsch et al., 2019) including weekly time dummies. However, during the estimation procedure it became imminent that daily change rates were not feasible computation wise[4]. The decision to use *pdynmc* also stems from the fact that even as we reduced the time discretization, the popular R package *plm* still had troubles estimating the coefficients in a timely manner. Although, the restriction to use only weekly datapoints might have resulted in less explanatory power due to the omitted number of data points, it does come with some advantages regarding the policies. The precise date on which a policy is imposed might not be the day on which actual execution of the policy is enforced and thus by using weekly data we account for this fact. Furthermore, since we are setting the policy date to the first Monday after the policy was announced we prevent that unintentional short-term fluctuations are interpreted as a direct causal consequence of the policy[5]. This way any effects of policies or behavior on the target variable are truly based on the state of the system just after a policy is actively enforced.

Besides our main model we also estimate the effect of policies and information on the various behavior variables in the same manner. For all estimations a second order serial correlation test, a Sargan-Hansen test on overidentifying-restrictions and a Wald test that all slope coefficients are jointly zero is deployed. Furthermore, we choose $\alpha = 0.05$ as our type-1 error tolerance level.

3 Data and Imputation

All code and the (final) data set can be found on Github. Our main reference data set is the Coronavirus data set compiled by Our World in Data (Max Roser, Hasell, 2020). It includes not only daily data on COVID-19 cases and deaths for every country in the world but also various covariates of interest, e.g. the number of total tests conducted, population density, GDP per capita, cardiovascular death rate, median age, proportion of individuals aged 65 or older or life expectancy amongst others. Furthermore, we have included the doctor density indicator provided by the OECD (OECD, 2021). Further data on daily testing was obtained through the French government (Gov., 2021), the government of Sweden (Center, 2020), and the European Centre for Disease Prevention and Control (Disease Prevention for, Control, 2021). To model behavior we use the Google mobility report which utilizes anonymized GPS data to track how often certain places are visited. There are six categories: retail

[4] For example the RAM needed for computation was on average more than 300 GB.

[5] If for example a country decided on Tuesday to close all non-essential businesses on Friday a run on those stores might occur during Tuesday to Thursday.

and recreation (Retail); grocery and pharmacy (Grocery); parks (Parks); transit stations (Transit); residential (Residential); and workplaces (Workplaces)[6]. The values for a specific weekday are calculated by comparison with a five-week median of this specific weekday. The base week is Jan 3–Feb 6 2020, hence our initial panel starts at Feb 15 2020. Figure 1 depicts the mobility trends for some selected countries of the final panel including vertical lines for the day a certain policy was enacted[7].

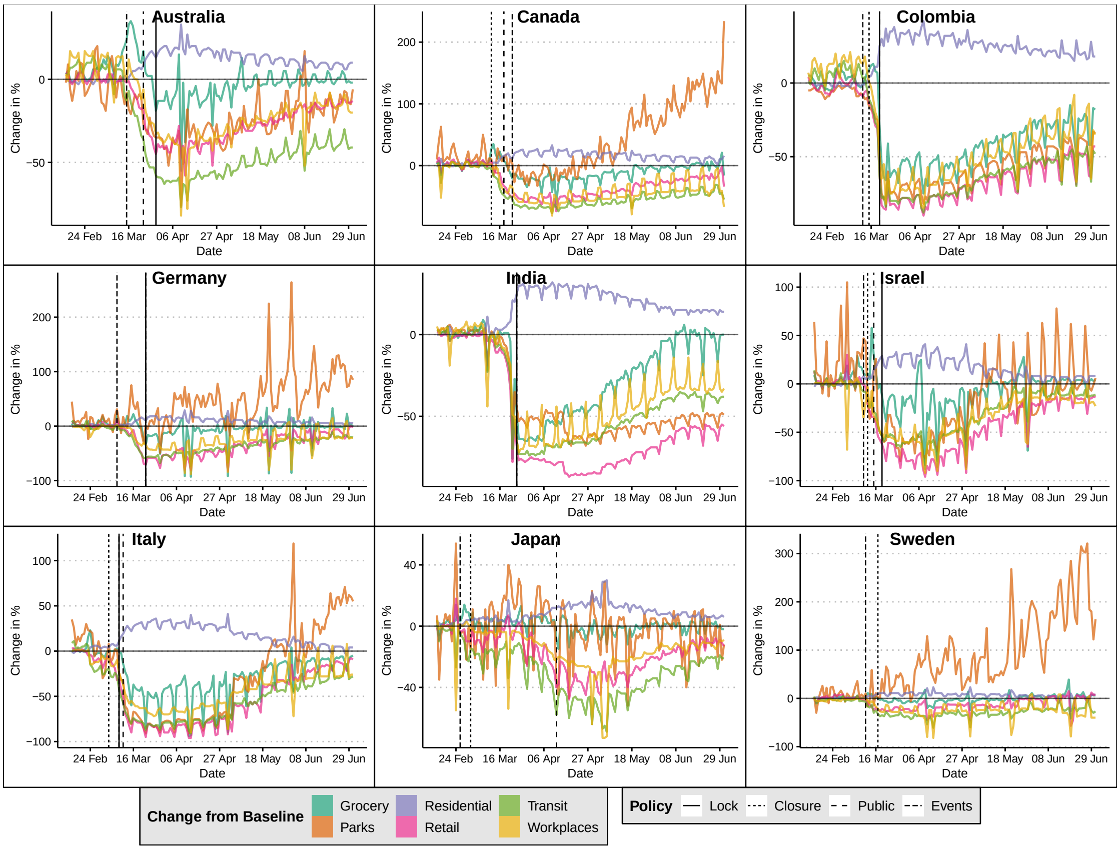


Figure 1: Mobility trends for selected countries and dates on which the policies Closure, Events, Lock and Public were enacted.

The mobility trends mostly indicate already a voluntary reduction of visits to populated (public) places before a certain policy had been decided[8]. This justifies the use of Google mobility data as the behavioral component in our causal model. Finally, our final panel goes from the Feb 18 2020 to Oct 26 2020 and thus captures all of the first wave of COVID-19. After all data had been merged, 30 countries remained in the panel[9]. However, during the

[6]More details for each category can be found here.

[7]Note that the dates displayed in the plot are not the final weekly shifted dates. Also we do not display all policy categories in the plot.

[8]Interestingly, many countries show an increasing trend to go to parks after measures were enacted, which might suggest that individuals in part visited parks as a complement to visiting other (now closed) places.

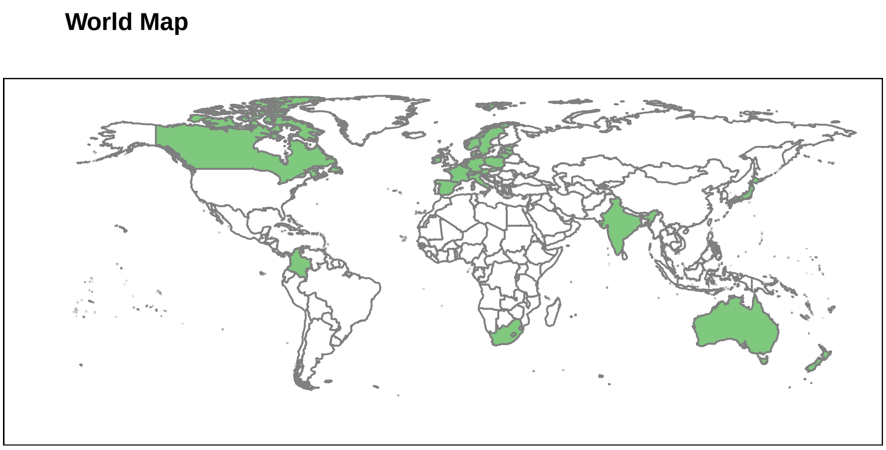
[9]This number had not been obtained by choice but rather by the union of the countries in the various

research on the policies three countries were dropped. Hungary and Mexico were removed because of data quality issues[10]. Finally, we decided to omit the United States, partly because of the controversial thoughts communicated by then president Mr. Trump which are in part contradicting the communication issued by the CDC, but mostly because a large part of restriction that were imposed were enacted on a state-level and defining an universal start and end date is difficult at best. The reason that we omit the United states on this basis and no other country that is federally organized is that states in the US states differ by a large amount in population and other socio-cultural characteristics that a homogeneity assumption on the states' response to the COVID-19 pandemic is probably violated. We did however, exclude Canada in one specification because of those concerns. This left us with the following list of countries: Australia, Austria, Belgium, Canada, Colombia, Denmark, Estonia, France, Germany, India, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Luxembourg, New Zealand, Norway, Poland, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, and United Kingdom. A visualization of this selection is depicted in figure 2 as well as the number of countries per continent.

To capture the various policies, we define eight categories, namely: *Closure*, which captures the date (primary) schools were closed; *Distance*, which applies if a country introduced social distancing measures for outdoor spaces, e.g. prohibited the gathering of more than 5 people outdoors; *Events*, which is equal to one if a country prohibited public gatherings of more than 200 individuals; *Lock*, if a lockdown or stay-at-home order was imposed; *Mask* refers to enacting a mask mandate; *Public* reflects the closure of non-essential businesses, like cinemas, bars, and restaurants; *Travel*, if an international travel ban was issued; and *Visit*, if the government prohibited the gathering of more than 5 people from different households at one's home. The start and end dates have been obtained through various government sites or newspaper articles and a detailed list of the sources can be found in the Data folder on Github. A summary of the start and end dates of the categories can be found in table 1 and figure 3 depicts the adoption of those measures over time in our panel. We have to stress that this categorization does not capture the complete spectrum of measures that were enacted by the countries in our sample. Furthermore, the severity of the measures might differ

data sources.

[10] Mexico's president, Mr. Obrador, publicly downplayed the virus and with his actions casted serious doubts on the accuracy of the recorded number of cases and deaths, plus no national measures were imposed during the first wave. Mr. Orban declared on Mar 30 that he will rule by decree which implies an entanglement of political interests and pandemic measures thus rendering them not purely aimed at reducing case growth.



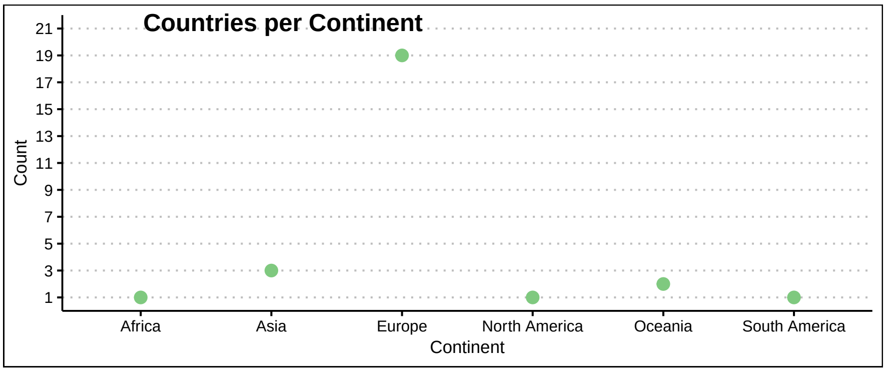


Figure 2: Upper panel: World map, countries in final data set are colored in green. Lower panel: Number of countries in final data set by continent.

Type of Measure	Start Date Earliest	Start Date Ultimate	Start Date Median	End Date Earliest	End Date Ultimate	End Date Median	No. of Countries
Closure	02 Mar	24 Mar	13 Mar	15 Apr	01 Nov	25 May	26
Distance	08 Mar	04 May	19 Mar	11 Jan	01 Nov	01 Nov	27
Events	26 Feb	24 Mar	13 Mar	10 May	01 Nov	01 Nov	27
Lock	09 Mar	30 Mar	18 Mar	14 Apr	01 Sep	04 May	23
Mask	15 Mar	29 Oct	29 May	14 May	01 Nov	01 Nov	24
Public	11 Mar	12 Apr	15 Mar	14 Apr	01 Sep	18 May	26
Travel	13 Mar	10 May	17 Mar	13 Apr	01 Nov	15 Jun	25
Visit	08 Mar	29 Mar	19 Mar	14 Apr	01 Nov	28 May	25

Table 1: Summary statistics of end and start dates of measures. Year is always 2020. No. of countries means the number of countries in the final panel that adopted a policy from this category.

for different countries even though they are categorized in the same manner. For example, Japan did not force all restaurants to close but rather advised them to do so and if they did

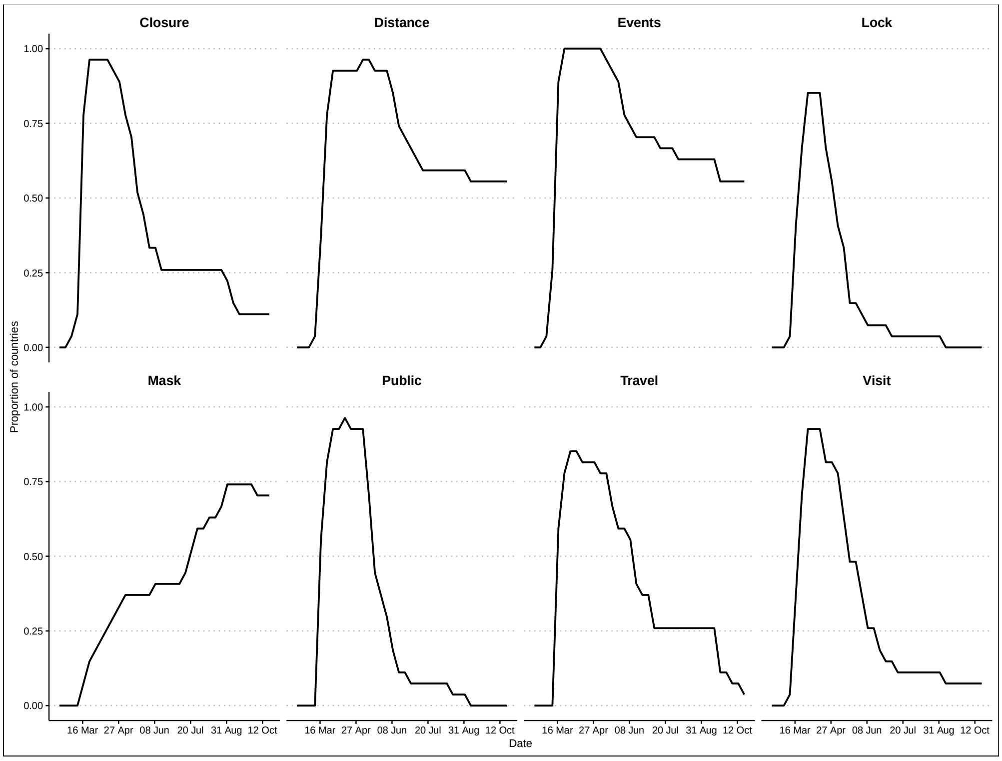


Figure 3: Proportion of policy adoption of countries in panel over time. Note that weekly data was used to calculate the proportions to better represents the actual data used.

indeed close, they would be compensated by the government. On the other hand, Italy even restricted the movement outside of households in some regions[11]. We therefore also estimate a different specification containing only European and non-European countries to justify the homogeneity assumption on the treatments (policies).

Finally, we have decided to use 7-day percentage change rates for COVID-19 cases as target variable, as well as a 14-day percentage change rate for deaths due to COVID-19. The reason for the different time-periods being that on average infections are usually discovered when the first symptoms develop which takes on average 5-15 days. The time an infected individual then dies due to the disease then takes at least 5-10 days as well. We have to admit, that a time period of 14 and 21 days as in Chernozhukov et al. (2021) might fit better with the average time periods above but we reckoned that one (weekly) observation more for all countries might be more advantageous than a more accurate time lag, especially when considering that we only used weekly data.

The reason for not using log differences as in most other studies (Chernozhukov et al., 2021, Hsiang et al., 2020) is that the interpretation of log differences as a percentage change relies

[11] For example inhabitant in the region of Bergamo were not allowed to travel outside a 100 m radius around their residence without a state issued permit.

on a Taylor approximation which requires the ratio of the two values being close to one. We calculated that the mean approximation error for a 7-day percentage change and log differences exceeds 30%. We therefore opted for the more accurate calculation via percentage changes[12]. The popular epidemiological SIR-model also does not rely on logarithmic differences (see e.g. Brauer (2019)). Figure 4 depicts the change rates for COVID-19 cases and deaths for some selected countries in our panel. Vertical lines again depict some policies and their respective enactment date.

Finally, we want to mention some imputations we have applied to the original data set.

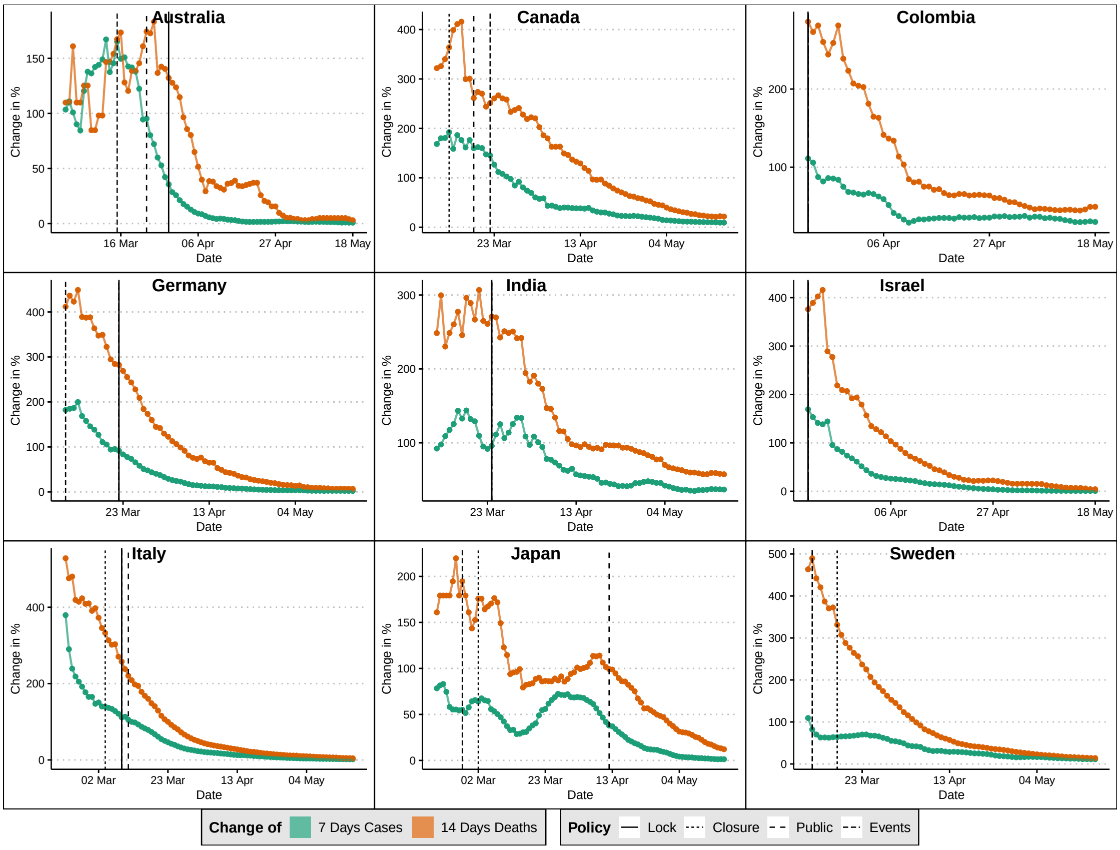


Figure 4: 7-day and 14-day change rates in COVID-19 cases and deaths respectively for selected countries in panel. Vertical lines depict the date a policy of the type Closure, Events, Lock and Public was enacted in the respective country.

Most of the data did not contain any missing observations except the variable that captures the number of total tests conducted and the mobility variable for parks. The former had a massive issue at the beginning of the timeseries most probably because countries needed to develop facilities to record numbers on that at the beginning of the pandemic. This re-

[12] A comparison of 7-day log differences as dependent variable and the respective percentage change also resulted in large differences in estimates.

sulted in the first two to three weeks in our panel to contain missing observations on testing data even though cases were already discovered at that time. We employed a 14-day reverse rolling mean to impute the missing daily total test numbers. Using non missing data we calculated that the mean approximation error for the number of tests using this imputation method is about 7%. However, some countries, namely Poland, Spain and Australia also had some significant numbers of missing observations that cannot be explained by the initial need to develop recording facilities. We imputed those values by the same method, however we exclude thus countries in one specification due to this reason. Furthermore, total test data in Spain and Germany were only available on a weekly basis. France's data was completely missing and was collected through the French government (Gov., 2021). Finally, Luxembourg, Estonia and Slovenia had numerous missing observations on the Park variable which were imputed in the same manner. To account for this, we excluded those countries in a different specification. In the next section we will begin by analyzing our empirical results.

4 Empirical Analysis

Let us begin our analysis with a word on our phrasing and what we will interpret. Firstly, we want to mention again that we chose the type-1 error acceptance rate to be $\alpha = 0.05$ when speaking about significance. Secondly, we will only focus on significant estimates and want to point out that the sign and size of estimated coefficient might be misleading if the coefficient does not meet our significance level when testing whether it is statistically different from zero using a Z-score test. We begin by the two-step GMM estimates for case growth with behavior variables which can be found in table 2. Note that we also provide tables with full regression results, e.g. the coefficients of the time dummies, in the appendix. We find that in the specification with all countries the estimates for the coefficients of Transit, Events and Distance are negative and significant which confirms that reducing the ability of individuals to gather in small spaces reduces indeed the case growth. However, our results suggest that lockdowns have a significant positive effect on case growth. This might be because lockdowns were last resort measures that were already preceded by other measures reducing the individual effect of a lockdown. Also, its effect could be masked if those measure were enacted in the same week as other distance related measures, since a lockdown combines most of those aspects or just enforces them stronger. Furthermore, our results confirm that increasing testing facilities lead to a positive increase in case growth due to more infections being detected.

When looking at Europe, we see that amongst other things the coefficient for the lagged

Covariate	Specification			
	All	Europe	Non-Europe	Reduced
lag(% change Cases, 7)	-0.0383 (0.0466)	-0.0581* (0.0274)	0.2257 (0.19)	-0.0462 (0.0604)
lag(Retail, 7)	0.0099 (0.0167)	-0.0479** (0.0156)	-0.0169 (0.0171)	0.068 (0.0479)
lag(Grocery, 7)	0.0157 (0.012)	-0.1304*** (0.027)	0.0174* (0.0076)	0.0229 (0.0205)
lag(Parks, 7)	0.0253 (0.0245)	-0.0146 (0.0092)	0.0087 (0.0093)	0.0161 (0.0415)
lag(Transit, 7)	-0.0874** (0.0335)	-0.0613*** (0.0111)	0.0281 (0.0223)	0.0267 (0.0334)
lag(Workplaces, 7)	0.0406 (0.0224)	-0.0576** (0.0192)	0.0442 (0.0502)	0.0027 (0.019)
lag(Residential, 7)	0.0117 (0.0115)	-0.0377*** (0.0074)	3e-04 (0.0068)	-0.1078* (0.0525)
lag(Events, 7)	-0.0876** (0.033)	0.0111*** (0.0017)	0.0126 (0.0113)	0.031 (0.0477)
lag(Travel, 7)	0.0016 (0.0142)	-0.0424* (0.0165)	0.0116** (0.0042)	0.0018 (0.011)
lag(Distance, 7)	-0.0707* (0.0297)	0.0499*** (0.0028)	0.013 (0.013)	-0.0084 (0.0084)
lag(Public, 7)	0.016 (0.0192)	-0.0882*** (0.0178)	0.0716 (0.0395)	-0.0532 (0.0822)
lag(Lock, 7)	0.0294* (0.0139)	0.1562*** (0.0202)	-0.0268 (0.0368)	0.0167* (0.0081)
lag(Closure, 7)	0.0056 (0.0069)	0.0368** (0.0128)	-0.0075 (0.0061)	0.02 (0.0883)
lag(Visit, 7)	0.0171 (0.0129)	0.0678*** (0.0147)	-0.043 (0.0364)	0.0067 (0.0384)
lag(Mask, 7)	0.0026 (0.0039)	0.0011 (0.0102)	-0.0039 (0.0054)	0.0032 (0.0189)
lag(% Change Tests, 7)	0.0928** (0.0309)	0.0875*** (0.0206)	-0.0308* (0.0143)	-0.01 (0.0535)
lag(Total No. Deaths, 7)	0.0113 (0.0108)	0.1336*** (0.035)	-0.0202 (0.0229)	0.0109 (0.0655)
With Behavior variables:	Yes	Yes	Yes	Yes

Table 2: Reduced results of two-step GMM estimation of policy, behavior and information on % change in COVID-19 cases. Specifications are: All: All countries in sample; Europe: All European countries in sample; Non-Europe: All non-European countries in sample; Reduced: All countries except Canada, Poland, Spain, Luxembourg, Estonia, Slovenia, and Australia.
Windmeijer corrected standard errors in parenthesis.
***: $p < 0.001$; **: $p < 0.01$; *: $p < 0.05$

dependent variable is negative and significant which might be explained by the fact that a sudden increase in cases results in stronger measures which in turn reduce case growth[13]. Again, the coefficients of Transit and Public confirm that reducing the space in which individuals can gather lead to a reduction in case growth. The estimate for Residential is also significant and negative which makes sense since the more individuals spend time at home, the less likely they are to get infected or infect others. Additionally, the coefficients for Grocery and Workplaces are both negative and significant. The former might be explained by the fact that individuals did not significantly reduce their mobility regarding essential businesses but since other measures were active the change in cases is not fully decoupled from this mobility.

[13]This makes especially sense when considering that we only use weekly data.

Also, it might indicate that grocery or pharmacies are not places were the transmission risk is high. This might also be true for the Workplaces. The coefficient of Events is positive and significant, which might be explained by the fact that many European countries prohibited large events relatively early, often before the "peak" in cases occurred. The significant coefficient for Closure might indicate that school closures either have an adversarial effect on case growth[14] or it might be attributed to the fact that in Europe many countries closed schools (at least) a week before their government issued a national lockdown and further measures. That the coefficient of Visit is positive and significant could be attributed to the fact that policymakers might asses that cases grow because of individuals meeting with friends and families at home, but if this not the case then a restriction on this issue would not lead to reduction in cases which in turn would result in our analysis as a positive attribution to case growth. However, it does seem odd that the coefficient for Retail is negative and significant which we cannot explain. Finally, since the European Union is strongly connected via the Schengen treaty it does make sense that the coefficient for Travel is negative and significant. When looking at the eight countries in our sample that are not in Europe we have to keep in mind that the socio-cultural differences in those countries differ by a large amount as well as the heterogeneity in terms of policy enforcement, rendering a comparison with the Europe specification possibly inadequate. Thus, it does make sense that the coefficient for Grocery is significant and positive, even though this would be the opposite of the coefficient for the Europe specification. Additionally, its absolute size is relatively small indicating only a minor positive effect on case growth which might imply that grocery stores in Non-European countries provide a higher transmission risk. The coefficient of Travel might indicate in this specification that individuals might skip travel abroad but still go on vacation in their countries[15] which in turn increases case growth.

Finally, regarding the "Reduced" specification one might apply the same reasoning regarding the coefficients of Residential and Lock as for "All" and "Europe. If we exclude the behavior variables from this model, as in table 3, we see that for the specification with all countries the coefficient for Closure now becomes significant and negative, which implies that the effect of school closures might be overlaid by changes in behavior rather than the actual school closure. When looking at only European countries we see that the coefficient for Lock now becomes negative which again hints at the fact that a lockdown is a measure of last resort

[14]As an example that school closure might even have no negative effects on case growth consider Disease Prevention for, Control (2020).

[15]Instead of staying at home as the European specification might suggest.

Covariate	Specification			
	All	Europe	Non-Europe	Reduced
lag(% change Cases, 7)	0.0356 (0.0821)	-0.0926 (0.0502)	0.1313 (0.1786)	0.0487 (0.1011)
lag(Events, 7)	-1.2849 (0.8396)	-0.436 (0.4041)	0.2152 (0.5057)	0.0531 (0.3476)
lag(Travel, 7)	0.8006 (0.7205)	-0.991*** (0.2574)	-0.3598 (0.5317)	-0.4168*** (0.1246)
lag(Distance, 7)	-1.0101* (0.41)	-0.1649 (0.1238)	0.0126 (0.5658)	0.0531 (0.3476)
lag(Public, 7)	0.1294 (0.3478)	-0.2337 (0.1985)	-0.3598 (0.5317)	-0.7383 (0.4416)
lag(Lock, 7)	0.8006 (0.7205)	-0.6345* (0.3156)	1.3679 (1.2108)	-0.7747** (0.2927)
lag(Closure, 7)	-2.1576* (1.0912)	-1.0615*** (0.3096)	-1.0021 (0.9736)	0.0744 (0.52)
lag(Visit, 7)	0.4928 (0.6999)	-0.436 (0.4041)	-0.4061 (0.4969)	-0.3254 (0.2958)
lag(Mask, 7)	-1.5832 (1.014)	-1.0615*** (0.3096)	-0.1012 (0.1217)	0.0531 (0.3476)
lag(% Change Tests, 7)	0.3514 (1.0348)	-0.2011 (0.3017)	-0.8219 (0.7318)	-0.0617 (0.3489)
lag(Total No. Deaths, 7)	0.1294 (0.3478)	-0.2145 (0.1729)	-0.2442 (0.1819)	0.0744 (0.52)
With Behavior variables:	Yes	Yes	Yes	Yes

Table 3: Reduced results of two-step GMM estimation of policy and information on % change in COVID-19 cases. Specifications are: All: All countries in sample; Europe: All European countries in sample; Non-Europe: All non-European countries in sample; Reduced: All countries except Canada, Poland, Spain, Luxembourg, Estonia, Slovenia, and Australia.
Windmeijer corrected standard errors in parenthesis.
***: $p < 0.001$; **: $p < 0.01$; *: $p < 0.05$

and that individuals might already react before a lockdown is issued and voluntarily reduce their mobility. Also, Masks are now significant. This might be partly explained by the fact that mandatory masks mandates were issued earlier in Europe than in other countries in our sample and that masks lead to more awareness regarding social-distancing for individuals. For non-European countries in our sample no coefficients are significant when excluding the behavior variables. This might again be explained by large socio-cultural differences that change the way policies affect individuals' behavior. For the reduced variant we find a similar significance in coefficients as in Europe, except the effect of masks. This might indicate yet again that Non-European and European countries suffer indifferences regarding the way policies affect behavior.

The results for the two-step GMM estimation with the 14-day lagged dependent variable being changes in deaths due to COVID-19 can be found in table 4. If we look at all countries in our panel we find that the sign of the coefficient for Closure is positive and significant, which might be explained by the fact that households where both parents are employed, children are often given to grandparents which are at higher risk of dying due to COVID-19.

Covariate	Specification			
	All	Europe	Non-Europe	Reduced
lag(% change Deaths, 14)	0.3127*** (0.0761)	0.3373*** (0.0856)	-0.0314 (0.0257)	0.2305* (0.1024)
lag(Retail, 14)	0.006 (0.012)	-0.2624* (0.1267)	-0.042 (0.0322)	-0.1115 (0.1029)
lag(Grocery, 14)	-0.0226 (0.0216)	-0.1953 (0.1277)	-0.0345 (0.0246)	-0.0362 (0.0321)
lag(Parks, 14)	-0.0202 (0.0108)	-0.1673 (0.1763)	-0.0584 (0.0408)	0.0147 (0.1113)
lag(Transit, 14)	0.0014 (0.0208)	-0.1309 (0.0878)	0.0456 (0.0361)	-0.0467 (0.0705)
lag(Workplaces, 14)	0.0046 (0.0212)	0.1847 (0.1036)	0.0341 (0.0293)	0.0668 (0.1172)
lag(Residential, 14)	0.011 (0.0153)	0.1322 (0.1119)	0.0394* (0.0201)	0.0335 (0.0593)
lag(Events, 14)	-0.0137 (0.0215)	0.0015 (0.0733)	0.0284 (0.0213)	0.0421 (0.1465)
lag(Travel, 14)	0.0015 (0.0142)	0.1979* (0.0838)	0.0163 (0.009)	0.0268 (0.0162)
lag(Distance, 14)	0.0069 (0.0172)	-0.1217 (0.1092)	0.0439 (0.0361)	0.0201 (0.018)
lag(Public, 14)	0.0102 (0.0245)	-0.0343 (0.0893)	0.1181 (0.0994)	0.0829 (0.1365)
lag(Lock, 14)	0.012 (0.0132)	0.0808 (0.0613)	-0.0733 (0.0547)	-0.0229 (0.0352)
lag(Closure, 14)	0.0091* (0.0037)	0.1873 (0.115)	0.0142 (0.0191)	-0.1055 (0.1477)
lag(Visit, 14)	0.0077 (0.0274)	0.029 (0.0555)	-0.0066 (0.0144)	0.0319 (0.03)
lag(Mask, 14)	-0.0056 (0.0095)	-0.1503* (0.0641)	-0.0117 (0.0127)	-0.0221 (0.0563)
lag(% Change Tests, 14)	-0.0087 (0.0316)	0.1882 (0.1274)	-0.0588 (0.0528)	0.0801 (0.1436)
lag(Total No. Cases, 14)	0.0215 (0.0198)	0.0503 (0.159)	-0.0249 (0.026)	-0.0513 (0.1202)
With Behavior variables:	No	No	No	No

Table 4: Reduced results of two-step GMM estimation of policy, behavior and information on % change in COVID-19 deaths. Specifications are: All: All countries in sample; Europe: All European countries in sample; Non-Europe: All non-European countries in sample; Reduced: All countries except Canada, Poland, Spain, Luxembourg, Estonia, Slovenia, and Australia.
Windmeijer corrected standard errors in parenthesis.
***: $p < 0.001$; **: $p < 0.01$; *: $p < 0.05$

Furthermore, the coefficient for Travel is significant and the reason for it being positive might again be explained by the fact that many individuals that do not belong to any risk group would have gone abroad for vacation are now staying at home instead, resulting in a higher transmission risk for the risk groups. The coefficient for Mask is significant and negative which implies that masks do reduce the transmission risk for individuals that belong to a risk group.

When looking at non-European countries we find that the coefficient for Residential is positive and significant, which might stem from the fact that individuals that belong to a risk group would have stayed at home anyway and thus the coefficient might not be able to explain death growth adequately. It might also be in part explained by the argument applied to the results of the Closure variable for all countries. In the reduced specification only the lag of dependent variable is significant and positive, which makes sense regarding that changes in death growth in the previous period result in changes in the current period with the same sign. The results for the model without the behavior variables can be found in the appendix in table 6, however, we have no significant values to report.

Finally, we also estimated the effect of policies and information on the behavior variables,

	Behavior Variable		
Covariate	Retail	Grocery	Parks
lag(Y, 7)	0.9576*** (0.1694)	-0.0979 (0.2563)	-0.8047 (0.5614)
lag(Events, 7)	-1.2819 (1.344)	-13.09** (4.5028)	-7.2988 (4.1807)
lag(Travel, 7)	-5.4899 (2.9455)	-1.9122 (1.7394)	0.0862 (3.8707)
lag(Distance, 7)	-14.2879*** (3.9876)	-14.8498* (5.9586)	71.8282 (3.1847)
lag(Public, 7)	-8.2629** (3.1236)	1.3313 (1.6937)	3.9955 (2.8465)
lag(Lock, 7)	-5.4899 (2.9455)	-1.9122 (1.7394)	0.0862 (3.8707)
lag(Closure, 7)	-2.2187 (1.1773)	-22.2124*** (6.4852)	36.6154 (5.6413)
lag(Visit, 7)	1.886 (3.0192)	-4.7844 (3.7413)	-29.579 (1.5578)
lag(Mask, 7)	0.4687 (2.3642)	8.4424 (5.9356)	141.5088** (3.2166)
lag(% Change Tests, 7)	-16.2182*** (4.2719)	-13.9729* (5.9673)	43.3096 (6.5407)
lag(Total No. Deaths, 7)	-8.2629** (3.1236)	1.3313 (1.6937)	3.9955 (2.8465)
lag(Total No. Cases, 7)	-5.4899 (2.9455)	-1.9122 (1.7394)	0.0862 (3.8707)
Covariate	Transit	Workplaces	Residential
lag(Y, 7)	-1.1693* (0.5614)	-0.8068 (0.6301)	-0.0044 (0.3332)
lag(Events, 7)	-13.0946** (4.1807)	-7.5975* (3.338)	1.3645 (0.7663)
lag(Travel, 7)	-10.2261** (3.8707)	-10.1569 (5.1878)	3.1159* (1.3021)
lag(Distance, 7)	-11.623*** (3.1847)	-5.6193 (5.1513)	4.9803*** (1.4364)
lag(Public, 7)	-8.854** (2.8465)	-8.9394 (4.7118)	3.879* (1.614)
lag(Lock, 7)	-10.2261** (3.8707)	-10.1569 (5.1878)	3.1159* (1.3021)
lag(Closure, 7)	-18.8345*** (5.6413)	-12.8215 (7.4874)	2.7744* (1.216)
lag(Visit, 7)	1.7208 (1.5578)	5.7001 (5.0141)	1.8466 (1.5682)
lag(Mask, 7)	-7.9926* (3.2166)	-6.3032 (4.7261)	1.2575 (0.6488)
lag(% Change Tests, 7)	-25.3028*** (6.5407)	-22.3621* (9.099)	7.1327*** (1.8496)
lag(Total No. Deaths, 7)	-8.854** (2.8465)	-8.9394 (4.7118)	3.879* (1.614)
lag(Total No. Cases, 7)	-10.2261** (3.8707)	-10.1569 (5.1878)	3.1159* (1.3021)

Table 5: Reduced results of two-step GMM estimation of policy and information on behavior, i.e. mobility for all countries. Y is the respective dependent variable indicated by the column header.

Windmeijer corrected standard errors in parenthesis.

***: $p < 0.001$; **: $p < 0.01$; *: $p < 0.05$

the results of which can found in table 5. We see that when having Retail as our dependent variables our analysis confirms that the policies enacted work as intended, with the closure of non-essential businesses being significant and negative as well as the introduction of social-distance measures. Interestingly, the effect of social-distance measures seem to outweigh the effect of closing non-essential businesses implying that already the introduction of such measures lead to voluntary change in behavior. The same can be said for the mobility regarding groceries and pharmacies. However, it seems like school closures result in a massive decrease of mobility to such places which could be attributed to the fact that most parents order groceries from home instead of physically going to supermarkets due to time constraints because they have to take care of their children after schools have been closed. Additionally, it seems like our visual evidence regarding the movement to parks cannot be confirmed. It seems like only masks have a significant positive effect on visiting parks, albeit (at least) an order of magnitude higher than the other estimates. This might be explained by the fact that mask mandates were introduced at a time where most measures were already relaxed but many leisure activities were still not permitted. With Transit being the dependent variable we see that almost all measures reduced movement via public transport implying that individuals restricted their movement voluntarily as a reaction on further measures, even though they might not directly impact the ability to travel via public transit. For Workplaces as dependent variable we see mixed results. Only the coefficient for Events is significant and has a negative sign which might, however, be also attributed to the fact that individuals who work in an industry affected by this measure just were not allowed to work. This implies that the measures applied during the first wave would need to be expanded to adequately reduce the movements to workplaces which long have been suspected by scientist to be a place with high transmission risk. However as noted earlier, our results are not able to confirm this, but note that our model does also not explicitly aim at answering this question. The results also imply that home office has not been taking up by companies as a reaction to the measures enacted, which might be worthwhile for policymakers to explore. Finally, in the model where Residential is the dependent variable nothing unexpected is unveiled by the results. However, it does confirm that measures aimed at reducing movement outside individuals' home are effective in doing so, with for example social-distancing measures being significant. Furthermore, it seems that the information on change rate in deaths due to COVID-19 have a stronger negative effect on individuals' mobility in general than the information on case change rate. This validates to some extend our causal model in the sense of information influencing behavior with deaths clearly being more influencial in voluntary behavior change then mere case growth.

When looking at the tests that were carried out, all second order serial correlation and Sagan-Hansen- tests could not be rejected to the significance level $\alpha = 0.05$. This implies that inference is valid based on standard errors and that we did not use irrelevant moment conditions. Additionally, the Wald-test that all slope coefficients are jointly zero was rejected all the time with type-1 error tolerance $\alpha = 0.05$.

5 Conclusions

In this paper we developed a causal model to estimate the effect of eight different policy categories, e.g. mask mandates and social-distance measures, on COVID-19 cases and deaths. Our causal model is based on a timed potential outcome model with three important type of variables, namely information, behavior, and policy. We use Google mobility data to model the behavior of individuals and past values of the dependent variable and overall COVID-19 deaths/cases as information variables. This results in a dynamic panel model which we estimated using the two-step general moments estimator proposed by Arellano, Bond (1991). We used 7-day and 14-day change rates of COVID-19 cases and deaths as dependent variable and developed a panel with 27 countries, with a focus of European and non-European countries during estimation. Additionally, we estimated the direct effect of policies on individuals' behavior.

We find that social-distance measures work as intended, reducing case growth significantly. The same can be said for the closure of non-essential businesses. However, we cannot find convincing results on lockdowns and travel bans which do not show a consistent significant positive or negative effect. In contrast we find that prohibition of (potentially) populated events has a significant negative effect on case growth, however, due to those enactments being mostly at the beginning of the pandemic their full potential might by underrated. Mask mandates seem to have a negative effect, both on case growth as well as death growth, however, this seems to be only true for countries that adopted such measures early on. School closures seem not to consistently affect death or case growth in either way. Regarding the movement of individuals, we find that employers are not incentivized through policies to pick up home office as a standard which implies that the spectrum of possible policies probably need to be extended to increase working from home. Furthermore, we find that policies more strongly reduce cases and deaths indirectly by altering the behavior of individuals than directly. This in turn implies that a more understandable (for the individual) communication of policy goals have a greater impact than the measures itself. This is in particular true for countries where individuals put high trust and confidence in their government. Finally, we cannot find a single specific measure that significantly reduces the number of deaths due to COVID-19 regardless of country specifics most probably because measures are not tailored at reducing death growth in the first place but rather reduce the number of infection, equally considering individuals of risk and non-risk groups.

Our research shows, that more empirical work needs to be done to analyze the effectiveness of specific policies in isolation and which measures better reduce the mobility regarding workplaces.

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A Appendix

	Specification			
Covariate	All	Europe	Non-Europe	Reduced
lag(% change Deaths, 14)	0.2254 (0.1182)	0.3973 (0.2495)	-0.5388 (0.6113)	-0.1466 (0.353)
lag(Events, 14)	1.3065 (5.0713)	1.8222 (1.1031)	-0.0115 (0.3367)	-2.4976 (2.3976)
lag(Travel, 14)	-0.6109 (4.5606)	4.1444 (7.9853)	-0.5661 (0.4981)	-0.5498 (5.5014)
lag(Distance, 14)	-0.6248 (1.3753)	-0.6997 (2.8287)	-0.0738 (0.226)	-2.4976 (2.3976)
lag(Public, 14)	-0.1548 (2.345)	-0.5671 (1.938)	-0.5661 (0.4981)	-2.489 (8.592)
lag(Lock, 14)	-0.6109 (4.5606)	-1.27 (6.1718)	0.9299 (0.7423)	6.5351 (7.5947)
lag(Closure, 14)	0.5558 (4.8122)	-1.1457 (4.6329)	0.3217 (0.478)	-2.3841 (2.0284)
lag(Visit, 14)	-1.2276 (1.4079)	1.8222 (1.1031)	0.2161 (0.1776)	-2.8764 (2.4049)
lag(Mask, 14)	-0.8742 (1.3161)	-1.1457 (4.6329)	0.0972 (0.124)	-2.4976 (2.3976)
lag(% Change Tests, 14)	-1.4266 (4.9138)	-1.2064 (3.4506)	0.1282 (0.2927)	2.9756 (2.7436)
lag(Total No. Cases, 14)	-0.1548 (2.345)	-1.9064 (4.9029)	0.0546 (0.103)	-2.3841 (2.0284)
With Behavior variables:	No	No	No	No

Table 6: Reduced results of two-step GMM estimation of policy and information on % change in COVID-19 deaths Specifications are: All: All countries in sample; Europe: All European countries in sample; Non-Europe: All non-European countries in sample; Reduced: All countries except Canada, Poland, Spain, Luxembourg, Estonia, Slovenia, and Australia.

Windmeijer corrected standard errors in parenthesis.

***: $p < 0.001$; **: $p < 0.01$; *: $p < 0.05$

	Estimate	Std.Err*	Z-stat. value	p-value
lag(% change Cases, 7)	-0.0383	0.0466	-0.823	0.4105
lag(Retail, 7)	0.0099	0.0167	0.592	0.5538
lag(Grocery, 7)	0.0157	0.012	1.308	0.1909
lag(Parks, 7)	0.0253	0.0245	1.031	0.3025
lag(Transit, 7)	-0.0874	0.0335	-2.612	0.009
lag(Workplaces, 7)	0.0406	0.0224	1.807	0.0708
lag(Residential, 7)	0.0117	0.0115	1.018	0.3087
lag(Events, 7)	-0.0876	0.033	-2.657	0.0079
lag(Travel, 7)	0.0016	0.0142	0.116	0.9076
lag(Distance, 7)	-0.0707	0.0297	-2.383	0.0172
lag(Public, 7)	0.016	0.0192	0.83	0.4065
lag(Lock, 7)	0.0294	0.0139	2.115	0.0344
lag(Closure, 7)	0.0056	0.0069	0.817	0.4139
lag(Visit, 7)	0.0171	0.0129	1.332	0.1829
lag(Mask, 7)	0.0026	0.0039	0.668	0.5041
lag(% Change Tests, 7)	0.0928	0.0309	2.999	0.0027
lag(Total No. Deaths, 7)	0.0113	0.0108	1.051	0.2933
lag(Total No. Deaths, 14)	0.0218	0.013	1.681	0.0928
Week 12 Dummy	-0.0954	0.0425	-2.246	0.0247
Week 13 Dummy	0.067	0.0505	1.327	0.1845
Week 14 Dummy	-0.0892	0.1355	-0.659	0.5099
Week 15 Dummy	0.0942	0.073	1.289	0.1974
Week 16 Dummy	0.0284	0.1186	0.24	0.8103
Week 17 Dummy	-0.011	0.0202	-0.547	0.5844
Week 18 Dummy	0.17	0.1359	1.251	0.2109
Week 19 Dummy	-0.1482	0.0994	-1.491	0.136
Week 20 Dummy	-0.1639	0.1075	-1.524	0.1275
Week 21 Dummy	0.1365	0.0541	2.52	0.0117
Week 22 Dummy	-0.0602	0.0417	-1.442	0.1493
Week 23 Dummy	0.0291	0.0878	0.331	0.7406
Week 24 Dummy	0.007	0.0417	0.169	0.8658
Week 25 Dummy	-0.1784	0.1695	-1.052	0.2928
Week 26 Dummy	0.2426	0.0967	2.51	0.0121
Week 27 Dummy	-0.0295	0.1138	-0.259	0.7956
Week 28 Dummy	-0.0408	0.0684	-0.597	0.5505
Week 29 Dummy	0.1161	0.1567	0.741	0.4587
Week 30 Dummy	-0.0127	0.0886	-0.144	0.8855
Week 31 Dummy	0.107	0.1876	0.57	0.5687
Week 32 Dummy	-0.2186	0.2059	-1.062	0.2882
Week 33 Dummy	0.1015	0.1368	0.742	0.4581
Week 34 Dummy	-0.0164	0.0348	-0.472	0.6369
Week 35 Dummy	-0.1144	0.1747	-0.655	0.5125
Week 36 Dummy	-0.0965	0.0851	-1.134	0.2568
Week 37 Dummy	0.1121	0.0495	2.264	0.0236
Week 38 Dummy	0.0885	0.0761	1.163	0.2448
Week 39 Dummy	-0.0979	0.109	-0.898	0.3692
Week 40 Dummy	0.1784	0.0785	2.271	0.0232
Week 41 Dummy	-0.0873	0.0535	-1.632	0.1027
Week 42 Dummy	-0.1245	0.0471	-2.642	0.0082
	Test statistic	p-value		
Wald test**	384.3393	0		
Hansen's J-Test	6.145	1		
2nd Order Autocor. Test	-0.2823	0.7777		

Table 7: Results of two-step GMM estimation of policy, behavior and information on % change in COVID-19 cases for all countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag...change.Cases..7.	0.0356	0.0821	0.433	0.665
lag.Events..7.	-1.2849	0.8396	-1.53	0.126
lag.Travel..7.	0.8006	0.7205	1.111	0.2666
lag.Distance..7.	-1.0101	0.41	-2.463	0.0138
lag.Public..7.	0.1294	0.3478	0.372	0.7099
lag.Lock..7.	0.8006	0.7205	1.111	0.2666
lag.Closure..7.	-2.1576	1.0912	-1.977	0.048
lag.Visit..7.	0.4928	0.6999	0.704	0.4814
lag.Mask..7.	-1.5832	1.014	-1.561	0.1185
lag...Change.Tests..7.	0.3514	1.0348	0.34	0.7339
lag.Total.No..Deaths..7.	0.1294	0.3478	0.372	0.7099
lag.Total.No..Deaths..14.	0.8006	0.7205	1.111	0.2666
Week.18.Dummy	-0.4492	0.3955	-1.136	0.256
Week.19.Dummy	0.6711	0.3854	1.742	0.0815
Week.20.Dummy	-0.1169	0.4534	-0.258	0.7964
Week.21.Dummy	-0.4428	0.4101	-1.08	0.2801
Week.22.Dummy	-0.6813	0.5507	-1.237	0.2161
Week.23.Dummy	-0.6194	0.4194	-1.477	0.1397
Week.24.Dummy	-0.5491	0.8958	-0.613	0.5399
Week.25.Dummy	-0.7604	0.5506	-1.381	0.1673
Week.26.Dummy	0.3411	0.3519	0.969	0.3326
Week.27.Dummy	0.8728	1.0356	0.843	0.3992
Week.28.Dummy	1.7325	1.1026	1.571	0.1162
Week.29.Dummy	2.0017	0.9999	2.002	0.0453
Week.30.Dummy	-2.4461	1.5001	-1.631	0.1029
Week.31.Dummy	-1.4091	0.8393	-1.679	0.0931
Week.32.Dummy	1.7297	1.5979	1.082	0.2792
Week.33.Dummy	-0.8364	1.3917	-0.601	0.5478
Week.34.Dummy	1.0053	0.9302	1.081	0.2797
Week.35.Dummy	-1.2365	1.2659	-0.977	0.3286
Week.36.Dummy	-0.1581	0.4831	-0.327	0.7437
Week.37.Dummy	1.0194	0.7944	1.283	0.1995
Week.38.Dummy	-0.6785	0.4055	-1.673	0.0943
Week.39.Dummy	1.6822	1.2112	1.389	0.1648
Week.40.Dummy	-0.8205	0.3908	-2.1	0.0357
Week.41.Dummy	-1.267	0.8756	-1.447	0.1479
Week.42.Dummy	-0.6503	0.5671	-1.147	0.2514
Week.test_stat_header.Dummy	-0.8798	0.8655	-1.017	0.3092
Week.test_results_mod_1_slope.Dummy	0.9131	0.9057	1.008	0.3134
Week.test_results_mod_1_hansen.Dummy	0.975	0.6985	1.396	0.1627
Week.test_results_mod_1_serial_cor.Dummy	0.8193	0.4822	1.699	0.0893
Week.NA.Dummy	-0.0465	0.1914	-0.243	0.808
Week.NA.Dummy.1	0.6359	0.3862	1.646	0.0998
	Test statistic	p-value		
Wald.test..	147.4138	0		
Hansen.s.J.Test	2.195	1		
2nd.Order.Autocor..Test	-1.0246	0.3055		

Table 8: Results of two-step GMM estimation of policy and information on % change in COVID-19 cases for all countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(% change Cases, 7)	-0.0581	0.0274	-2.12	0.034
lag(Retail, 7)	-0.0479	0.0156	-3.076	0.0021
lag(Grocery, 7)	-0.1304	0.027	-4.838	0
lag(Parks, 7)	-0.0146	0.0092	-1.586	0.1127
lag(Transit, 7)	-0.0613	0.0111	-5.495	0
lag(Workplaces, 7)	-0.0576	0.0192	-2.994	0.0027
lag(Residential, 7)	-0.0377	0.0074	-5.089	0
lag(Events, 7)	0.0111	0.0017	6.512	0
lag(Travel, 7)	-0.0424	0.0165	-2.576	0.01
lag(Distance, 7)	0.0499	0.0028	17.874	0
lag(Public, 7)	-0.0882	0.0178	-4.968	0
lag(Lock, 7)	0.1562	0.0202	7.725	0
lag(Closure, 7)	0.0368	0.0128	2.879	0.004
lag(Visit, 7)	0.0678	0.0147	4.599	0
lag(Mask, 7)	0.0011	0.0102	0.109	0.9132
lag(% Change Tests, 7)	0.0875	0.0206	4.243	0
lag(Total No. Deaths, 7)	0.1336	0.035	3.822	1e-04
lag(Total No. Deaths, 14)	-0.1159	0.0144	-8.044	0
Week 12 Dummy	-0.0057	9e-04	-6.388	0
Week 13 Dummy	0.0381	0.0058	6.511	0
Week 14 Dummy	0.0028	0.0046	0.602	0.5472
Week 15 Dummy	-0.0253	0.0093	-2.736	0.0062
Week 16 Dummy	-0.0252	0.0053	-4.787	0
Week 17 Dummy	0.0581	0.0158	3.69	2e-04
Week 18 Dummy	-0.019	0.0069	-2.769	0.0056
Week 19 Dummy	-0.0208	0.0042	-4.963	0
Week 20 Dummy	-0.0085	0.003	-2.836	0.0046
Week 21 Dummy	-0.0076	0.0063	-1.196	0.2317
Week 22 Dummy	-0.0289	0.0031	-9.368	0
Week 23 Dummy	0.0151	0.0021	7.095	0
Week 24 Dummy	0.0504	0.0127	3.959	1e-04
Week 25 Dummy	0.0047	0.003	1.582	0.1136
Week 26 Dummy	0.0159	0.0029	5.422	0
Week 27 Dummy	-0.0145	0.0017	-8.531	0
Week 28 Dummy	-0.0185	0.0022	-8.623	0
Week 29 Dummy	-0.0111	0.0037	-3.016	0.0026
Week 30 Dummy	-0.0122	0.0013	-9.69	0
Week 31 Dummy	0.011	0.0022	5.071	0
Week 32 Dummy	0.0028	0.0029	0.964	0.335
Week 33 Dummy	0.0029	0.0099	0.295	0.768
Week 34 Dummy	-0.0258	0.0038	-6.743	0
Week 35 Dummy	0.0532	0.0065	8.128	0
Week 36 Dummy	-0.0233	0.0022	-10.495	0
Week 37 Dummy	-0.0428	0.0065	-6.57	0
Week 38 Dummy	-0.009	0.0031	-2.926	0.0034
Week 39 Dummy	0.0664	0.0131	5.053	0
Week 40 Dummy	-0.0713	0.0111	-6.432	0
Week 41 Dummy	0.0411	0.003	13.735	0
Week 42 Dummy	-0.0101	0.002	-5.055	0
	Test statistic	p-value		
Wald test**	655.1603	0		
Hansen's J-Test	5.3191	1		
2nd Order Autocor. Test	1.8175	0.0691		

Table 9: Results of two-step GMM estimation of policy, behavior and information on % change in COVID-19 cases for all European countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag...change.Cases..7.	-0.0926	0.0502	-1.846	0.0649
lag.Events..7.	-0.436	0.4041	-1.079	0.2806
lag.Travel..7.	-0.991	0.2574	-3.85	1e-04
lag.Distance..7.	-0.1649	0.1238	-1.332	0.1829
lag.Public..7.	-0.2337	0.1985	-1.177	0.2392
lag.Lock..7.	-0.6345	0.3156	-2.011	0.0443
lag.Closure..7.	-1.0615	0.3096	-3.428	6e-04
lag.Visit..7.	-0.436	0.4041	-1.079	0.2806
lag.Mask..7.	-1.0615	0.3096	-3.428	6e-04
lag...Change.Tests..7.	-0.2011	0.3017	-0.667	0.5048
lag.Total.No..Deaths..7.	-0.2145	0.1729	-1.241	0.2146
lag.Total.No..Deaths..14.	-0.436	0.4041	-1.079	0.2806
Week.18.Dummy	-0.6256	0.2903	-2.155	0.0312
Week.19.Dummy	0.8622	0.262	3.291	0.001
Week.20.Dummy	0.2239	0.0542	4.132	0
Week.21.Dummy	-0.0276	0.0731	-0.377	0.7062
Week.22.Dummy	-0.2342	0.1371	-1.708	0.0876
Week.23.Dummy	-0.2268	0.2099	-1.081	0.2797
Week.24.Dummy	-0.2738	0.1836	-1.492	0.1357
Week.25.Dummy	-0.5218	0.3268	-1.597	0.1103
Week.26.Dummy	0.0332	0.2826	0.118	0.9061
Week.27.Dummy	-0.0826	0.4063	-0.203	0.8391
Week.28.Dummy	-0.2986	0.4238	-0.705	0.4808
Week.29.Dummy	0.3316	0.8697	0.381	0.7032
Week.30.Dummy	0.0551	0.1782	0.309	0.7573
Week.31.Dummy	-0.0417	0.1596	-0.261	0.7941
Week.32.Dummy	-0.0234	0.3698	-0.063	0.9498
Week.33.Dummy	-0.141	0.1611	-0.875	0.3816
Week.34.Dummy	0.1317	0.2257	0.584	0.5592
Week.35.Dummy	-0.1359	0.282	-0.482	0.6298
Week.36.Dummy	-0.1731	0.0912	-1.899	0.0576
Week.37.Dummy	0.1837	0.1502	1.223	0.2213
Week.38.Dummy	-0.0065	0.1739	-0.037	0.9705
Week.39.Dummy	0.1321	0.1563	0.845	0.3981
Week.40.Dummy	-0.0538	0.2441	-0.22	0.8259
Week.41.Dummy	-0.2052	0.2616	-0.784	0.433
Week.42.Dummy	0.1015	0.1385	0.733	0.4636
Week.test_stat_header.Dummy	-0.3523	0.076	-4.632	0
Week.test_results_mod_2_slope.Dummy	0.1086	0.2812	0.386	0.6995
Week.test_results_mod_2_hansen.Dummy	0.0316	0.0269	1.172	0.2412
Week.test_results_mod_2_serial_cor.Dummy	0.0216	0.0348	0.621	0.5346
Week.NA.Dummy	-0.0344	0.1572	-0.219	0.8266
Week.NA.Dummy.1	0.1797	0.061	2.945	0.0032
	Test statistic	p-value		
Wald.test..	182.8778	0		
Hansen.s.J.Test	2.8556	1		
2nd.Order.Autocor..Test	0.6441	0.5195		

Table 10: Results of two-step GMM estimation of policy and information on % change in COVID-19 cases for all European countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(% change Cases, 7)	0.2257	0.19	1.188	0.2348
lag(Retail, 7)	-0.0169	0.0171	-0.987	0.3236
lag(Grocery, 7)	0.0174	0.0076	2.289	0.0221
lag(Parks, 7)	0.0087	0.0093	0.933	0.3508
lag(Transit, 7)	0.0281	0.0223	1.259	0.208
lag(Workplaces, 7)	0.0442	0.0502	0.88	0.3789
lag(Residential, 7)	3e-04	0.0068	0.037	0.9705
lag(Events, 7)	0.0126	0.0113	1.117	0.264
lag(Travel, 7)	0.0116	0.0042	2.774	0.0055
lag(Distance, 7)	0.013	0.013	1.003	0.3159
lag(Public, 7)	0.0716	0.0395	1.812	0.07
lag(Lock, 7)	-0.0268	0.0368	-0.727	0.4672
lag(Closure, 7)	-0.0075	0.0061	-1.222	0.2217
lag(Visit, 7)	-0.043	0.0364	-1.182	0.2372
lag(Mask, 7)	-0.0039	0.0054	-0.723	0.4697
lag(% Change Tests, 7)	-0.0308	0.0143	-2.149	0.0316
lag(Total No. Deaths, 7)	-0.0202	0.0229	-0.884	0.3767
lag(Total No. Deaths, 14)	-0.026	0.0189	-1.375	0.1691
Week 12 Dummy	0.0047	0.0029	1.614	0.1065
Week 13 Dummy	-0.0021	0.0011	-1.946	0.0516
Week 14 Dummy	0.0029	0.0018	1.574	0.1155
Week 15 Dummy	-0.0052	0.0039	-1.312	0.1895
Week 16 Dummy	0.0022	0.0022	1.044	0.2965
Week 17 Dummy	-4e-04	7e-04	-0.591	0.5545
Week 18 Dummy	6e-04	9e-04	0.591	0.5545
Week 19 Dummy	0.0023	0.0015	1.539	0.1238
Week 20 Dummy	-0.0036	0.003	-1.206	0.2278
Week 21 Dummy	0.0027	0.0027	1.004	0.3154
Week 22 Dummy	-0.001	0.0012	-0.791	0.4289
Week 23 Dummy	-1e-04	3e-04	-0.258	0.7964
Week 24 Dummy	2e-04	6e-04	0.321	0.7482
Week 25 Dummy	6e-04	5e-04	1.308	0.1909
Week 26 Dummy	-8e-04	7e-04	-1.091	0.2753
Week 27 Dummy	6e-04	4e-04	1.452	0.1465
Week 28 Dummy	-9e-04	6e-04	-1.443	0.149
Week 29 Dummy	-0.0019	0.0016	-1.172	0.2412
Week 30 Dummy	0.002	0.0019	1.105	0.2692
Week 31 Dummy	-5e-04	9e-04	-0.524	0.6003
Week 32 Dummy	-0.0017	0.0011	-1.481	0.1386
Week 33 Dummy	0.0027	0.002	1.381	0.1673
Week 34 Dummy	3e-04	6e-04	0.394	0.6936
Week 35 Dummy	-9e-04	9e-04	-0.99	0.3222
Week 36 Dummy	0.0011	0.001	1.177	0.2392
Week 37 Dummy	-0.0015	0.0014	-1.09	0.2757
Week 38 Dummy	0.0018	0.0018	0.999	0.3178
Week 39 Dummy	-2e-04	4e-04	-0.511	0.6093
Week 40 Dummy	-4e-04	8e-04	-0.473	0.6362
Week 41 Dummy	-0.0025	0.0019	-1.287	0.1981
Week 42 Dummy	0.0013	0.0012	1.12	0.2627
	Test statistic	p-value		
Wald test**	213.8066	0		
Hansen's J-Test	0	1		
2nd Order Autocor. Test	-0.7604	0.447		

Table 11: Results of two-step GMM estimation of policy, behavior and information on % change in COVID-19 cases for all non-European countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag...change.Cases..7.	0.1313	0.1786	0.735	0.4623
lag.Events..7.	0.2152	0.5057	0.426	0.6701
lag.Travel..7.	-0.3598	0.5317	-0.677	0.4984
lag.Distance..7.	0.0126	0.5658	0.022	0.9824
lag.Public..7.	-0.3598	0.5317	-0.677	0.4984
lag.Lock..7.	1.3679	1.2108	1.13	0.2585
lag.Closure..7.	0	0	1.152	0.2493
lag.Visit..7.	-0.4061	0.4969	-0.817	0.4139
lag.Mask..7.	-0.1012	0.1217	-0.831	0.406
lag...Change.Tests..7.	-0.1012	0.1217	-0.831	0.406
lag.Total.No..Deaths..7.	-0.1012	0.1217	-0.831	0.406
lag.Total.No..Deaths..14.	-0.1012	0.1217	-0.831	0.406
Week.18.Dummy	2.0847	1.1221	1.858	0.0632
Week.19.Dummy	0.3724	0.2732	1.363	0.1729
Week.20.Dummy	0.6255	0.3023	2.069	0.0386
Week.21.Dummy	-0.1162	0.1646	-0.706	0.4802
Week.22.Dummy	-1.4983	0.8315	-1.802	0.0716
Week.23.Dummy	1.4291	1.7029	0.839	0.4015
Week.24.Dummy	-0.6901	0.7594	-0.909	0.3634
Week.25.Dummy	0.397	0.3265	1.216	0.224
Week.26.Dummy	-1.377	1.5726	-0.876	0.381
Week.27.Dummy	1.0727	1.3809	0.777	0.4372
Week.28.Dummy	-0.932	1.3232	-0.704	0.4814
Week.29.Dummy	0.3107	0.5663	0.549	0.583
Week.30.Dummy	-0.5868	0.7338	-0.8	0.4237
Week.31.Dummy	1.0713	1.2427	0.862	0.3887
Week.32.Dummy	0.0276	0.1644	0.168	0.8666
Week.33.Dummy	-0.8087	0.9989	-0.81	0.4179
Week.34.Dummy	-0.5974	0.7207	-0.829	0.4071
Week.35.Dummy	1.2709	1.4399	0.883	0.3772
Week.36.Dummy	-0.1621	0.2522	-0.643	0.5202
Week.37.Dummy	-0.1365	0.2883	-0.474	0.6355
Week.38.Dummy	0.1472	0.2364	0.623	0.5333
Week.39.Dummy	0.3027	0.2928	1.034	0.3011
Week.40.Dummy	0.1027	0.1946	0.528	0.5975
Week.41.Dummy	-0.4577	0.5476	-0.836	0.4032
Week.42.Dummy	0.0625	0.0987	0.634	0.5261
Week.test_stat_header.Dummy	0.0734	0.1197	0.613	0.5399
Week.test_results_mod_3_slope.Dummy	-0.0554	0.0573	-0.966	0.334
Week.test_results_mod_3_hansen.Dummy	0.0514	0.7252	0.071	0.9434
Week.test_results_mod_3_serial_cor.Dummy	0.4903	0.7668	0.639	0.5228
Week.NA.Dummy	-0.0684	0.0524	-1.305	0.1919
Week.NA.Dummy.1	-0.3081	0.3104	-0.993	0.3207
	Test statistic	p-value		
Wald.test..	171.3675	0		
Hansen.s.J.Test	0	1		
2nd.Order.Autocor..Test	0.4591	0.6461		

Table 12: Results of two-step GMM estimation of policy and information on % change in COVID-19 cases for all non-European countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(% change Cases, 7)	-0.0462	0.0604	-0.765	0.4443
lag(Retail, 7)	0.068	0.0479	1.419	0.1559
lag(Grocery, 7)	0.0229	0.0205	1.113	0.2657
lag(Parks, 7)	0.0161	0.0415	0.387	0.6988
lag(Transit, 7)	0.0267	0.0334	0.798	0.4249
lag(Workplaces, 7)	0.0027	0.019	0.143	0.8863
lag(Residential, 7)	-0.1078	0.0525	-2.054	0.04
lag(Events, 7)	0.031	0.0477	0.65	0.5157
lag(Travel, 7)	0.0018	0.011	0.16	0.8729
lag(Distance, 7)	-0.0084	0.0084	-0.99	0.3222
lag(Public, 7)	-0.0532	0.0822	-0.647	0.5176
lag(Lock, 7)	0.0167	0.0081	2.071	0.0384
lag(Closure, 7)	0.02	0.0883	0.226	0.8212
lag(Visit, 7)	0.0067	0.0384	0.174	0.8619
lag(Mask, 7)	0.0032	0.0189	0.17	0.865
lag(% Change Tests, 7)	-0.01	0.0535	-0.188	0.8509
lag(Total No. Deaths, 7)	0.0109	0.0655	0.166	0.8682
lag(Total No. Deaths, 14)	-0.0063	0.0131	-0.479	0.6319
Week 12 Dummy	-0.0015	0.0111	-0.133	0.8942
Week 13 Dummy	0.001	0.0046	0.218	0.8274
Week 14 Dummy	0.0106	0.0055	1.93	0.0536
Week 15 Dummy	-0.0167	0.0137	-1.223	0.2213
Week 16 Dummy	-4e-04	0.0047	-0.089	0.9291
Week 17 Dummy	0.0083	0.0144	0.572	0.5673
Week 18 Dummy	0.0046	0.0048	0.953	0.3406
Week 19 Dummy	-0.0029	0.0036	-0.804	0.4214
Week 20 Dummy	-0.0034	0.0081	-0.414	0.6789
Week 21 Dummy	0.0043	0.0176	0.243	0.808
Week 22 Dummy	0.0024	0.0132	0.182	0.8556
Week 23 Dummy	-0.009	0.005	-1.801	0.0717
Week 24 Dummy	-9e-04	0.0102	-0.093	0.9259
Week 25 Dummy	-1e-04	0.0125	-0.007	0.9944
Week 26 Dummy	3e-04	0.0141	0.024	0.9808
Week 27 Dummy	-0.0036	0.0071	-0.5	0.6171
Week 28 Dummy	-0.0027	0.005	-0.545	0.5858
Week 29 Dummy	0.0065	0.0062	1.053	0.2923
Week 30 Dummy	0.0034	0.006	0.562	0.5741
Week 31 Dummy	0.0033	0.0055	0.604	0.5458
Week 32 Dummy	-0.0078	0.0167	-0.467	0.6405
Week 33 Dummy	-4e-04	0.0126	-0.03	0.9761
Week 34 Dummy	0.0071	0.0186	0.383	0.7017
Week 35 Dummy	-0.0015	0.0216	-0.071	0.9434
Week 36 Dummy	-0.0081	0.0061	-1.336	0.1815
Week 37 Dummy	0.0036	0.0202	0.177	0.8595
Week 38 Dummy	6e-04	0.008	0.081	0.9354
Week 39 Dummy	0.0024	0.0061	0.388	0.698
Week 40 Dummy	-0.0099	0.0118	-0.832	0.4054
Week 41 Dummy	0.0091	0.0117	0.776	0.4377
Week 42 Dummy	-0.0016	0.014	-0.111	0.9116
	Test statistic	p-value		
Wald test**	259.6812	0		
Hansen's J-Test	3.2623	1		
2nd Order Autocor. Test	-0.5976	0.5501		

Table 13: Results of two-step GMM estimation of policy, behavior and information on % change in COVID-19 cases for all countries except: Canada, Poland, Spain, Luxembourg, Estonia, Slovenia, and Australia. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag...change.Cases..7.	0.0487	0.1011	0.481	0.6305
lag.Events..7.	0.0531	0.3476	0.153	0.8784
lag.Travel..7.	-0.4168	0.1246	-3.346	8e-04
lag.Distance..7.	0.0531	0.3476	0.153	0.8784
lag.Public..7.	-0.7383	0.4416	-1.672	0.0945
lag.Lock..7.	-0.7747	0.2927	-2.647	0.0081
lag.Closure..7.	0.0744	0.52	0.143	0.8863
lag.Visit..7.	-0.3254	0.2958	-1.1	0.2713
lag.Mask..7.	0.0531	0.3476	0.153	0.8784
lag...Change.Tests..7.	-0.0617	0.3489	-0.177	0.8595
lag.Total.No..Deaths..7.	0.0744	0.52	0.143	0.8863
lag.Total.No..Deaths..14.	0	NaN	NaN	NaN
Week.18.Dummy	0.0213	0.2467	0.086	0.9315
Week.19.Dummy	0.3784	0.0932	4.06	0
Week.20.Dummy	0.1987	0.1628	1.22	0.2225
Week.21.Dummy	-0.169	0.1577	-1.072	0.2837
Week.22.Dummy	-0.673	0.3321	-2.027	0.0427
Week.23.Dummy	0.1883	0.3396	0.554	0.5796
Week.24.Dummy	0.1172	0.4131	0.284	0.7764
Week.25.Dummy	0.2368	0.3627	0.653	0.5138
Week.26.Dummy	-1.0156	0.8844	-1.148	0.251
Week.27.Dummy	0.4734	0.4559	1.038	0.2993
Week.28.Dummy	0.1819	0.3081	0.591	0.5545
Week.29.Dummy	0.434	1.0716	0.405	0.6855
Week.30.Dummy	0.1246	0.5213	0.239	0.8111
Week.31.Dummy	-0.4116	0.7724	-0.533	0.594
Week.32.Dummy	0.3928	0.5617	0.699	0.4846
Week.33.Dummy	-0.0495	0.3857	-0.128	0.8982
Week.34.Dummy	0.2094	0.1725	1.214	0.2248
Week.35.Dummy	-0.4354	0.7715	-0.564	0.5728
Week.36.Dummy	-0.0134	0.4115	-0.033	0.9737
Week.37.Dummy	0.0145	0.645	0.022	0.9824
Week.38.Dummy	-0.6205	0.7941	-0.781	0.4348
Week.39.Dummy	0.4401	0.3368	1.307	0.1912
Week.40.Dummy	0.0164	0.1324	0.124	0.9013
Week.41.Dummy	-0.5462	0.4247	-1.286	0.1984
Week.42.Dummy	0.4178	0.5791	0.721	0.4709
Week.test_stat_header.Dummy	0.2554	0.7003	0.365	0.7151
Week.test_results_mod_4_slope.Dummy	-0.9201	0.7316	-1.258	0.2084
Week.test_results_mod_4_hansen.Dummy	-0.011	0.249	-0.044	0.9649
Week.test_results_mod_4_serial_cor.Dummy	-0.2592	0.1903	-1.362	0.1732
Week.NA.Dummy	0.7409	0.5547	1.336	0.1815
Week.NA.Dummy.1	0.3571	0.2472	1.444	0.1487
	Test statistic	p-value		
Wald.test..	78.5681	0		
Hansen.s.J.Test	1.8873	1		
2nd.Order.Autocor..Test	0.0537	0.9572		

Table 14: Results of two-step GMM estimation of policy and information on % change in COVID-19 cases for all countries except: Canada, Poland, Spain, Luxembourg, Estonia, Slovenia, and Australia. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(% change Deaths, 14)	0.3127	0.0761	4.109	0
lag(Retail, 14)	0.006	0.012	0.504	0.6143
lag(Grocery, 14)	-0.0226	0.0216	-1.047	0.2951
lag(Parks, 14)	-0.0202	0.0108	-1.878	0.0604
lag(Transit, 14)	0.0014	0.0208	0.067	0.9466
lag(Workplaces, 14)	0.0046	0.0212	0.215	0.8298
lag(Residential, 14)	0.011	0.0153	0.722	0.4703
lag(Events, 14)	-0.0137	0.0215	-0.635	0.5254
lag(Travel, 14)	0.0015	0.0142	0.107	0.9148
lag(Distance, 14)	0.0069	0.0172	0.403	0.6869
lag(Public, 14)	0.0102	0.0245	0.417	0.6767
lag(Lock, 14)	0.012	0.0132	0.907	0.3644
lag(Closure, 14)	0.0091	0.0037	2.465	0.0137
lag(Visit, 14)	0.0077	0.0274	0.28	0.7795
lag(Mask, 14)	-0.0056	0.0095	-0.598	0.5498
lag(% Change Tests, 14)	-0.0087	0.0316	-0.275	0.7833
lag(Total No. Cases, 14)	0.0215	0.0198	1.089	0.2762
Week 12 Dummy	0.017	0.012	1.409	0.1588
Week 13 Dummy	0.0295	0.042	0.702	0.4827
Week 14 Dummy	0.1258	0.133	0.946	0.3442
Week 15 Dummy	-0.3583	0.2487	-1.44	0.1499
Week 16 Dummy	0.079	0.0661	1.194	0.2325
Week 17 Dummy	0.1507	0.0956	1.577	0.1148
Week 18 Dummy	0.0393	0.1438	0.274	0.7841
Week 19 Dummy	-0.0395	0.1273	-0.31	0.7566
Week 20 Dummy	0.0215	0.0728	0.296	0.7672
Week 21 Dummy	-0.0401	0.0328	-1.222	0.2217
Week 22 Dummy	0.0304	0.0678	0.449	0.6534
Week 23 Dummy	-0.0151	0.061	-0.248	0.8041
Week 24 Dummy	-0.0451	0.0594	-0.76	0.4472
Week 25 Dummy	-0.0632	0.0539	-1.173	0.2408
Week 26 Dummy	0.0967	0.0784	1.233	0.2176
Week 27 Dummy	-0.032	0.0259	-1.238	0.2157
Week 28 Dummy	-0.0142	0.0522	-0.272	0.7856
Week 29 Dummy	-0.0186	0.0579	-0.322	0.7474
Week 30 Dummy	-0.0657	0.0654	-1.004	0.3154
Week 31 Dummy	0.0631	0.1388	0.454	0.6498
Week 32 Dummy	0.1103	0.0764	1.444	0.1487
Week 33 Dummy	-0.0719	0.0669	-1.074	0.2828
Week 34 Dummy	0.0678	0.105	0.645	0.5189
Week 35 Dummy	-0.1121	0.0653	-1.717	0.086
Week 36 Dummy	0.0528	0.0567	0.93	0.3524
Week 37 Dummy	0.0082	0.0516	0.159	0.8737
Week 38 Dummy	-0.0185	0.0399	-0.464	0.6427
Week 39 Dummy	0.1816	0.1277	1.421	0.1553
Week 40 Dummy	-0.1912	0.1269	-1.507	0.1318
Week 41 Dummy	-0.0074	0.0512	-0.145	0.8847
Week 42 Dummy	0.0374	0.0378	0.99	0.3222
	Test statistic	p-value		
Wald test**	1351.462	0		
Hansen's J-Test	1.9758	1		
2nd Order Autocor. Test	1.3358	0.1816		

Table 15: Results of two-step GMM estimation of policy, behavior and information on % change in COVID-19 deaths for all countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(% change Deaths, 14)	0.2254	0.1182	1.906	0.0566
lag(Events, 14)	1.3065	5.0713	0.258	0.7964
lag(Travel, 14)	-0.6109	4.5606	-0.134	0.8934
lag(Distance, 14)	-0.6248	1.3753	-0.454	0.6498
lag(Public, 14)	-0.1548	2.345	-0.066	0.9474
lag(Lock, 14)	-0.6109	4.5606	-0.134	0.8934
lag(Closure, 14)	0.5558	4.8122	0.115	0.9084
lag(Visit, 14)	-1.2276	1.4079	-0.872	0.3832
lag(Mask, 14)	-0.8742	1.3161	-0.664	0.5067
lag(% Change Tests, 14)	-1.4266	4.9138	-0.29	0.7718
lag(Total No. Cases, 14)	-0.1548	2.345	-0.066	0.9474
Week 12 Dummy	-0.8158	1.3343	-0.611	0.5412
Week 13 Dummy	-0.4561	2.2584	-0.202	0.8399
Week 14 Dummy	-1.2296	2.3556	-0.522	0.6017
Week 15 Dummy	-1.5703	2.4588	-0.639	0.5228
Week 16 Dummy	-1.7435	2.041	-0.854	0.3931
Week 17 Dummy	-1.2691	2.0161	-0.629	0.5294
Week 18 Dummy	2.7022	2.7787	0.972	0.331
Week 19 Dummy	3.5292	2.6046	1.355	0.1754
Week 20 Dummy	0.593	3.9415	0.15	0.8808
Week 21 Dummy	0.7507	1.5806	0.475	0.6348
Week 22 Dummy	4.0503	6.3235	0.641	0.5215
Week 23 Dummy	0.4657	1.2588	0.37	0.7114
Week 24 Dummy	-1.9234	6.0365	-0.319	0.7497
Week 25 Dummy	-1.6628	7.1926	-0.231	0.8173
Week 26 Dummy	-2.6809	4.775	-0.561	0.5748
Week 27 Dummy	2.8569	5.2713	0.542	0.5878
Week 28 Dummy	-3.6398	3.8455	-0.947	0.3436
Week 29 Dummy	-2.3004	2.0549	-1.119	0.2631
Week 30 Dummy	-5.9205	10.0135	-0.591	0.5545
Week 31 Dummy	-0.7478	3.0876	-0.242	0.8088
Week 32 Dummy	10.3873	12.8299	0.81	0.4179
Week 33 Dummy	-0.5083	2.7791	-0.183	0.8548
Week 34 Dummy	-5.489	7.7935	-0.704	0.4814
Week 35 Dummy	8.6181	8.5651	1.006	0.3144
Week 36 Dummy	-1.1082	4.4591	-0.249	0.8034
Week 37 Dummy	0.2826	0.5047	0.56	0.5755
Week 38 Dummy	-2.8604	1.9733	-1.45	0.1471
Week 39 Dummy	-8.4267	6.825	-1.235	0.2168
Week 40 Dummy	-4.9211	6.901	-0.713	0.4758
Week 41 Dummy	5.3334	4.9703	1.073	0.2833
Week 42 Dummy	8.2776	6.1698	1.342	0.1796
	Test statistic	p-value		
Wald test**	307.4551	0		
Hansen's J-Test	0.5846	1		
2nd Order Autocor. Test	-0.6044	0.5455		

Table 16: Results of two-step GMM estimation of policy and information on % change in COVID-19 deaths for all countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(% change Deaths, 14)	0.3373	0.0856	3.938	1e-04
lag(Retail, 14)	-0.2624	0.1267	-2.07	0.0384
lag(Grocery, 14)	-0.1953	0.1277	-1.53	0.126
lag(Parks, 14)	-0.1673	0.1763	-0.949	0.3426
lag(Transit, 14)	-0.1309	0.0878	-1.49	0.1362
lag(Workplaces, 14)	0.1847	0.1036	1.782	0.0747
lag(Residential, 14)	0.1322	0.1119	1.182	0.2372
lag(Events, 14)	0.0015	0.0733	0.021	0.9832
lag(Travel, 14)	0.1979	0.0838	2.363	0.0181
lag(Distance, 14)	-0.1217	0.1092	-1.115	0.2648
lag(Public, 14)	-0.0343	0.0893	-0.384	0.701
lag(Lock, 14)	0.0808	0.0613	1.317	0.1878
lag(Closure, 14)	0.1873	0.115	1.629	0.1033
lag(Visit, 14)	0.029	0.0555	0.524	0.6003
lag(Mask, 14)	-0.1503	0.0641	-2.346	0.019
lag(% Change Tests, 14)	0.1882	0.1274	1.477	0.1397
lag(Total No. Cases, 14)	0.0503	0.159	0.316	0.752
Week 12 Dummy	0.0144	0.0141	1.024	0.3058
Week 13 Dummy	-0.0152	0.0691	-0.22	0.8259
Week 14 Dummy	0.2149	0.2704	0.795	0.4266
Week 15 Dummy	-0.1033	0.1039	-0.994	0.3202
Week 16 Dummy	-0.1156	0.0625	-1.849	0.0645
Week 17 Dummy	0.0017	0.0807	0.021	0.9832
Week 18 Dummy	-0.0111	0.012	-0.927	0.3539
Week 19 Dummy	0.0012	0.012	0.103	0.918
Week 20 Dummy	0.0197	0.0655	0.301	0.7634
Week 21 Dummy	0.0014	0.0387	0.037	0.9705
Week 22 Dummy	-0.0083	0.0444	-0.188	0.8509
Week 23 Dummy	0.0352	0.0157	2.249	0.0245
Week 24 Dummy	-0.0064	0.0129	-0.494	0.6213
Week 25 Dummy	-0.0302	0.055	-0.55	0.5823
Week 26 Dummy	0.049	0.0861	0.569	0.5694
Week 27 Dummy	-0.048	0.0798	-0.601	0.5478
Week 28 Dummy	0.0222	0.0322	0.689	0.4908
Week 29 Dummy	0.0075	0.0299	0.251	0.8018
Week 30 Dummy	-0.0145	0.0076	-1.893	0.0584
Week 31 Dummy	-0.0095	0.0273	-0.349	0.7271
Week 32 Dummy	0.0544	0.1002	0.543	0.5871
Week 33 Dummy	-0.039	0.0816	-0.478	0.6326
Week 34 Dummy	-0.0188	0.0213	-0.88	0.3789
Week 35 Dummy	-0.018	0.0565	-0.319	0.7497
Week 36 Dummy	-0.0111	0.0114	-0.975	0.3296
Week 37 Dummy	0.0456	0.0346	1.317	0.1878
Week 38 Dummy	0.016	0.0205	0.78	0.4354
Week 39 Dummy	0.0065	0.0425	0.153	0.8784
Week 40 Dummy	-0.052	0.063	-0.825	0.4094
Week 41 Dummy	0.0097	0.0188	0.513	0.608
Week 42 Dummy	0.0219	0.0372	0.588	0.5565
	Test statistic	p-value		
Wald test**	1114.0962	0		
Hansen's J-Test	0.4609	1		
2nd Order Autocor. Test	0.5296	0.5964		

Table 17: Results of two-step GMM estimation of policy, behavior and information on % change in COVID-19 deaths for European countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(% change Deaths, 14)	0.3973	0.2495	1.592	0.1114
lag(Events, 14)	1.8222	1.1031	1.652	0.0985
lag(Travel, 14)	4.1444	7.9853	0.519	0.6038
lag(Distance, 14)	-0.6997	2.8287	-0.247	0.8049
lag(Public, 14)	-0.5671	1.938	-0.293	0.7695
lag(Lock, 14)	-1.27	6.1718	-0.206	0.8368
lag(Closure, 14)	-1.1457	4.6329	-0.247	0.8049
lag(Visit, 14)	1.8222	1.1031	1.652	0.0985
lag(Mask, 14)	-1.1457	4.6329	-0.247	0.8049
lag(% Change Tests, 14)	-1.2064	3.4506	-0.35	0.7263
lag(Total No. Cases, 14)	-1.9064	4.9029	-0.389	0.6973
Week 12 Dummy	-2.9678	4.761	-0.623	0.5333
Week 13 Dummy	-0.2523	3.3648	-0.075	0.9402
Week 14 Dummy	-0.5625	4.0312	-0.14	0.8887
Week 15 Dummy	-0.7493	4.3376	-0.173	0.8626
Week 16 Dummy	-0.6121	1.7008	-0.36	0.7188
Week 17 Dummy	-0.1416	1.5015	-0.094	0.9251
Week 18 Dummy	2.5665	4.1518	0.618	0.5366
Week 19 Dummy	2.562	2.9594	0.866	0.3865
Week 20 Dummy	-3.5104	8.9092	-0.394	0.6936
Week 21 Dummy	1.1525	2.5437	0.453	0.6506
Week 22 Dummy	0.8308	6.9747	0.119	0.9053
Week 23 Dummy	-3.1899	5.9788	-0.534	0.5933
Week 24 Dummy	1.1393	10.1916	0.112	0.9108
Week 25 Dummy	-0.4393	12.3066	-0.036	0.9713
Week 26 Dummy	2.1022	4.3248	0.486	0.627
Week 27 Dummy	-0.7453	4.2056	-0.177	0.8595
Week 28 Dummy	-0.7175	3.4731	-0.207	0.836
Week 29 Dummy	-0.1063	3.7705	-0.028	0.9777
Week 30 Dummy	3.2989	3.3006	0.999	0.3178
Week 31 Dummy	-0.9977	4.3858	-0.227	0.8204
Week 32 Dummy	5.4844	12.2764	0.447	0.6549
Week 33 Dummy	0.2273	5.9627	0.038	0.9697
Week 34 Dummy	-8.0147	9.8956	-0.81	0.4179
Week 35 Dummy	2.934	4.0593	0.723	0.4697
Week 36 Dummy	0.2245	4.1147	0.055	0.9561
Week 37 Dummy	-0.7306	8.3549	-0.087	0.9307
Week 38 Dummy	-3.0227	6.3884	-0.473	0.6362
Week 39 Dummy	-0.3465	3.8648	-0.09	0.9283
Week 40 Dummy	6.4183	7.0622	0.909	0.3634
Week 41 Dummy	-0.9958	2.674	-0.372	0.7099
Week 42 Dummy	-1.9839	4.34	-0.457	0.6477
	Test statistic	p-value		
Wald test**	188.9502	0		
Hansen's J-Test	0	1		
2nd Order Autocor. Test	-0.3219	0.7475		

Table 18: Results of two-step GMM estimation of policy and information on % change in COVID-19 deaths for European countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(% change Deaths, 14)	-0.0314	0.0257	-1.218	0.2232
lag(Retail, 14)	-0.042	0.0322	-1.305	0.1919
lag(Grocery, 14)	-0.0345	0.0246	-1.405	0.16
lag(Parks, 14)	-0.0584	0.0408	-1.432	0.1521
lag(Transit, 14)	0.0456	0.0361	1.264	0.2062
lag(Workplaces, 14)	0.0341	0.0293	1.162	0.2452
lag(Residential, 14)	0.0394	0.0201	1.961	0.0499
lag(Events, 14)	0.0284	0.0213	1.334	0.1822
lag(Travel, 14)	0.0163	0.009	1.815	0.0695
lag(Distance, 14)	0.0439	0.0361	1.215	0.2244
lag(Public, 14)	0.1181	0.0994	1.188	0.2348
lag(Lock, 14)	-0.0733	0.0547	-1.341	0.1799
lag(Closure, 14)	0.0142	0.0191	0.743	0.4575
lag(Visit, 14)	-0.0066	0.0144	-0.456	0.6484
lag(Mask, 14)	-0.0117	0.0127	-0.916	0.3597
lag(% Change Tests, 14)	-0.0588	0.0528	-1.113	0.2657
lag(Total No. Cases, 14)	-0.0249	0.026	-0.956	0.3391
Week 12 Dummy	0.0059	0.005	1.187	0.2352
Week 13 Dummy	-8e-04	0.001	-0.801	0.4231
Week 14 Dummy	0.0061	0.0049	1.245	0.2131
Week 15 Dummy	-0.0116	0.0096	-1.207	0.2274
Week 16 Dummy	0.0082	0.0067	1.229	0.2191
Week 17 Dummy	-0.0054	0.004	-1.333	0.1825
Week 18 Dummy	0.0047	0.0038	1.236	0.2165
Week 19 Dummy	-0.0034	0.0028	-1.201	0.2298
Week 20 Dummy	0.0017	0.0014	1.213	0.2251
Week 21 Dummy	-0.0022	0.0017	-1.309	0.1905
Week 22 Dummy	0.005	0.004	1.246	0.2128
Week 23 Dummy	-0.0042	0.0033	-1.245	0.2131
Week 24 Dummy	6e-04	4e-04	1.428	0.1533
Week 25 Dummy	5e-04	5e-04	1.078	0.281
Week 26 Dummy	2e-04	3e-04	0.7	0.4839
Week 27 Dummy	-2e-04	2e-04	-0.664	0.5067
Week 28 Dummy	-0.0012	0.001	-1.169	0.2424
Week 29 Dummy	0.0014	0.0012	1.127	0.2597
Week 30 Dummy	-0.0017	0.0013	-1.32	0.1868
Week 31 Dummy	0.0018	0.0013	1.371	0.1704
Week 32 Dummy	-0.0041	0.0031	-1.313	0.1892
Week 33 Dummy	0.0026	0.0019	1.356	0.1751
Week 34 Dummy	0.0025	0.0019	1.282	0.1998
Week 35 Dummy	-0.0016	0.0012	-1.362	0.1732
Week 36 Dummy	3e-04	1e-04	1.87	0.0615
Week 37 Dummy	-0.003	0.0023	-1.297	0.1946
Week 38 Dummy	0.005	0.004	1.248	0.212
Week 39 Dummy	-0.0014	0.0013	-1.125	0.2606
Week 40 Dummy	-0.0026	0.002	-1.3	0.1936
Week 41 Dummy	0.0014	0.0011	1.272	0.2034
Week 42 Dummy	4e-04	3e-04	1.043	0.297
	Test statistic	p-value		
Wald test**	161.281	0		
Hansen's J-Test	0	1		
2nd Order Autocor. Test	-0.8074	0.4194		

Table 19: Results of two-step GMM estimation of policy, behavior and information on % change in COVID-19 deaths for non-European countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(% change Deaths, 14)	-0.5388	0.6113	-0.881	0.3783
lag(Events, 14)	-0.0115	0.3367	-0.034	0.9729
lag(Travel, 14)	-0.5661	0.4981	-1.137	0.2555
lag(Distance, 14)	-0.0738	0.226	-0.327	0.7437
lag(Public, 14)	-0.5661	0.4981	-1.137	0.2555
lag(Lock, 14)	0.9299	0.7423	1.253	0.2102
lag(Closure, 14)	0	0	-9.558	0
lag(Visit, 14)	0.2161	0.1776	1.216	0.224
lag(Mask, 14)	0.0972	0.124	0.784	0.433
lag(% Change Tests, 14)	0.0972	0.124	0.784	0.433
lag(Total No. Cases, 14)	0.0972	0.124	0.784	0.433
Week 12 Dummy	0.7248	0.671	1.08	0.2801
Week 13 Dummy	0.4923	0.3303	1.49	0.1362
Week 14 Dummy	0.1333	0.2173	0.613	0.5399
Week 15 Dummy	-0.2251	0.5035	-0.447	0.6549
Week 16 Dummy	0.0192	0.2099	0.092	0.9267
Week 17 Dummy	-0.5736	0.545	-1.053	0.2923
Week 18 Dummy	0.1359	0.3221	0.422	0.673
Week 19 Dummy	0.3105	0.3057	1.016	0.3096
Week 20 Dummy	-0.6342	0.7638	-0.83	0.4065
Week 21 Dummy	0.3302	0.3703	0.892	0.3724
Week 22 Dummy	0.2166	0.122	1.776	0.0757
Week 23 Dummy	0.0109	0.3193	0.034	0.9729
Week 24 Dummy	-0.404	0.56	-0.721	0.4709
Week 25 Dummy	0.0147	0.1564	0.094	0.9251
Week 26 Dummy	0.3817	0.7109	0.537	0.5913
Week 27 Dummy	-0.2762	0.6337	-0.436	0.6628
Week 28 Dummy	0.1944	0.3815	0.51	0.61
Week 29 Dummy	-0.1543	0.561	-0.275	0.7833
Week 30 Dummy	0.066	0.4715	0.14	0.8887
Week 31 Dummy	-0.106	0.3393	-0.313	0.7543
Week 32 Dummy	0.0528	0.3183	0.166	0.8682
Week 33 Dummy	-0.1148	0.2777	-0.414	0.6789
Week 34 Dummy	0.0802	0.0775	1.035	0.3007
Week 35 Dummy	0.0716	0.2764	0.259	0.7956
Week 36 Dummy	-0.2059	0.296	-0.696	0.4864
Week 37 Dummy	0.1928	0.2206	0.874	0.3821
Week 38 Dummy	-0.1278	0.254	-0.503	0.615
Week 39 Dummy	0.2159	0.2224	0.971	0.3316
Week 40 Dummy	-0.1697	0.1818	-0.934	0.3503
Week 41 Dummy	-0.0648	0.1886	-0.343	0.7316
Week 42 Dummy	0.0635	0.2105	0.302	0.7627
	Test statistic	p-value		
Wald test**	6.4092	0.8447		
Hansen's J-Test	0	1		
2nd Order Autocor. Test	-1.0633	0.2877		

Table 20: Results of two-step GMM estimation of policy and information on % change in COVID-19 deaths for non-European countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(% change Deaths, 14)	0.2305	0.1024	2.25	0.0244
lag(Retail, 14)	-0.1115	0.1029	-1.084	0.2784
lag(Grocery, 14)	-0.0362	0.0321	-1.128	0.2593
lag(Parks, 14)	0.0147	0.1113	0.132	0.895
lag(Transit, 14)	-0.0467	0.0705	-0.662	0.508
lag(Workplaces, 14)	0.0668	0.1172	0.57	0.5687
lag(Residential, 14)	0.0335	0.0593	0.565	0.5721
lag(Events, 14)	0.0421	0.1465	0.288	0.7734
lag(Travel, 14)	0.0268	0.0162	1.657	0.0975
lag(Distance, 14)	0.0201	0.018	1.118	0.2636
lag(Public, 14)	0.0829	0.1365	0.607	0.5438
lag(Lock, 14)	-0.0229	0.0352	-0.649	0.5163
lag(Closure, 14)	-0.1055	0.1477	-0.714	0.4752
lag(Visit, 14)	0.0319	0.03	1.062	0.2882
lag(Mask, 14)	-0.0221	0.0563	-0.393	0.6943
lag(% Change Tests, 14)	0.0801	0.1436	0.558	0.5768
lag(Total No. Cases, 14)	-0.0513	0.1202	-0.427	0.6694
Week 12 Dummy	-0.0288	0.0487	-0.591	0.5545
Week 13 Dummy	0.085	0.0899	0.946	0.3442
Week 14 Dummy	0.183	0.1487	1.231	0.2183
Week 15 Dummy	-0.3557	0.3148	-1.13	0.2585
Week 16 Dummy	-0.0589	0.0407	-1.448	0.1476
Week 17 Dummy	0.1472	0.1265	1.164	0.2444
Week 18 Dummy	0.1495	0.1588	0.942	0.3462
Week 19 Dummy	-0.1791	0.1743	-1.028	0.304
Week 20 Dummy	0.0989	0.0868	1.139	0.2547
Week 21 Dummy	-0.0168	0.0312	-0.539	0.5899
Week 22 Dummy	0.0091	0.0068	1.341	0.1799
Week 23 Dummy	-0.0675	0.0825	-0.818	0.4134
Week 24 Dummy	0.0765	0.1033	0.741	0.4587
Week 25 Dummy	-0.1547	0.1714	-0.903	0.3665
Week 26 Dummy	0.0584	0.0725	0.805	0.4208
Week 27 Dummy	0.0315	0.0278	1.131	0.2581
Week 28 Dummy	0.001	0.0115	0.086	0.9315
Week 29 Dummy	-0.0597	0.0585	-1.02	0.3077
Week 30 Dummy	0.0704	0.0671	1.048	0.2946
Week 31 Dummy	-0.009	0.011	-0.816	0.4145
Week 32 Dummy	0.1524	0.1325	1.151	0.2497
Week 33 Dummy	-0.2585	0.242	-1.068	0.2855
Week 34 Dummy	0.1025	0.0967	1.06	0.2891
Week 35 Dummy	0.0193	0.0197	0.979	0.3276
Week 36 Dummy	0.0129	0.0333	0.387	0.6988
Week 37 Dummy	0.0127	0.0151	0.845	0.3981
Week 38 Dummy	-0.0994	0.1021	-0.974	0.3301
Week 39 Dummy	0.1512	0.1532	0.987	0.3236
Week 40 Dummy	-0.1087	0.1144	-0.95	0.3421
Week 41 Dummy	-0.0128	0.0176	-0.73	0.4654
Week 42 Dummy	0.0347	0.0484	0.717	0.4734
	Test statistic	p-value		
Wald test**	746.7606	0		
Hansen's J-Test	0.7803	1		
2nd Order Autocor. Test	1.517	0.1293		

Table 21: Results of two-step GMM estimation of policy, behavior and information on % change in COVID-19 deaths all countries except: Canada, Poland, Spain, Luxembourg, Estonia, Slovenia, and Australia. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(% change Deaths, 14)	-0.1466	0.353	-0.415	0.6781
lag(Events, 14)	-2.4976	2.3976	-1.042	0.2974
lag(Travel, 14)	-0.5498	5.5014	-0.1	0.9203
lag(Distance, 14)	-2.4976	2.3976	-1.042	0.2974
lag(Public, 14)	-2.489	8.592	-0.29	0.7718
lag(Lock, 14)	6.5351	7.5947	0.86	0.3898
lag(Closure, 14)	-2.3841	2.0284	-1.175	0.24
lag(Visit, 14)	-2.8764	2.4049	-1.196	0.2317
lag(Mask, 14)	-2.4976	2.3976	-1.042	0.2974
lag(% Change Tests, 14)	2.9756	2.7436	1.085	0.2779
lag(Total No. Cases, 14)	-2.3841	2.0284	-1.175	0.24
Week 12 Dummy	0.1135	1.9029	0.06	0.9522
Week 13 Dummy	0.3788	0.4969	0.762	0.4461
Week 14 Dummy	1.6222	2.0435	0.794	0.4272
Week 15 Dummy	0.0675	1.9577	0.034	0.9729
Week 16 Dummy	-0.7125	2.356	-0.302	0.7627
Week 17 Dummy	-1.9788	3.8721	-0.511	0.6093
Week 18 Dummy	-4.1336	4.4159	-0.936	0.3493
Week 19 Dummy	1.6747	2.7351	0.612	0.5405
Week 20 Dummy	0.5928	4.0705	0.146	0.8839
Week 21 Dummy	0.2435	7.1465	0.034	0.9729
Week 22 Dummy	5.1076	5.1101	1	0.3173
Week 23 Dummy	-3.6445	6.3556	-0.573	0.5666
Week 24 Dummy	-3.2892	2.3485	-1.401	0.1612
Week 25 Dummy	-0.7344	4.067	-0.181	0.8564
Week 26 Dummy	5.0212	6.1986	0.81	0.4179
Week 27 Dummy	-2.1276	4.3588	-0.488	0.6256
Week 28 Dummy	-0.1653	1.3893	-0.119	0.9053
Week 29 Dummy	-2.0298	7.4336	-0.273	0.7848
Week 30 Dummy	4.75	6.7861	0.7	0.4839
Week 31 Dummy	-3.9649	9.3636	-0.423	0.6723
Week 32 Dummy	2.659	3.3182	0.801	0.4231
Week 33 Dummy	0.3908	1.21	0.323	0.7467
Week 34 Dummy	-3.1375	7.2482	-0.433	0.665
Week 35 Dummy	-4.8754	5.4086	-0.901	0.3676
Week 36 Dummy	9.7538	13.3101	0.733	0.4636
Week 37 Dummy	-1.9125	1.8166	-1.053	0.2923
Week 38 Dummy	6.9792	13.5063	0.517	0.6052
Week 39 Dummy	-7.7271	6.5351	-1.182	0.2372
Week 40 Dummy	-6.3539	11.0009	-0.578	0.5633
Week 41 Dummy	1.0883	4.1858	0.26	0.7949
Week 42 Dummy	3.96	8.7161	0.454	0.6498
	Test statistic	p-value		
Wald test**	37.329	1e-04		
Hansen's J-Test	0	1		
2nd Order Autocor. Test	0.5291	0.5967		

Table 22: Results of two-step GMM estimation of policy and information on % change in COVID-19 deaths all countries except: Canada, Poland, Spain, Luxembourg, Estonia, Slovenia, and Australia. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(Retail, 7)	0.9576	0.1694	5.652	0
lag(Events, 7)	-1.2819	1.344	-0.954	0.3401
lag(Travel, 7)	-5.4899	2.9455	-1.864	0.0623
lag(Distance, 7)	-14.2879	3.9876	-3.583	3e-04
lag(Public, 7)	-8.2629	3.1236	-2.645	0.0082
lag(Lock, 7)	-5.4899	2.9455	-1.864	0.0623
lag(Closure, 7)	-2.2187	1.1773	-1.885	0.0594
lag(Visit, 7)	1.886	3.0192	0.625	0.532
lag(Mask, 7)	0.4687	2.3642	0.198	0.843
lag(% Change Tests, 7)	-16.2182	4.2719	-3.796	1e-04
lag(Total No. Deaths, 7)	-8.2629	3.1236	-2.645	0.0082
lag(Total No. Cases, 7)	-5.4899	2.9455	-1.864	0.0623
Week 12 Dummy	-10.7283	2.1196	-5.061	0
Week 13 Dummy	2.7729	1.4634	1.895	0.0581
Week 14 Dummy	1.5322	2.715	0.564	0.5728
Week 15 Dummy	-11.0918	2.7729	-4	1e-04
Week 16 Dummy	0.8687	1.6686	0.521	0.6024
Week 17 Dummy	1.652	2.4477	0.675	0.4997
Week 18 Dummy	1.8035	2.1039	0.857	0.3914
Week 19 Dummy	-1.2369	1.5286	-0.809	0.4185
Week 20 Dummy	1.4806	2.5074	0.591	0.5545
Week 21 Dummy	0.9368	1.6267	0.576	0.5646
Week 22 Dummy	-6.6593	2.5731	-2.588	0.0097
Week 23 Dummy	-5.0327	2.1652	-2.324	0.0201
Week 24 Dummy	-2.6554	1.9567	-1.357	0.1748
Week 25 Dummy	-0.6141	2.6286	-0.234	0.815
Week 26 Dummy	6.0926	2.8421	2.144	0.032
Week 27 Dummy	11.2594	2.9446	3.824	1e-04
Week 28 Dummy	0.7775	2.0754	0.375	0.7077
Week 29 Dummy	2.6963	1.9323	1.395	0.163
Week 30 Dummy	-4.6943	1.5856	-2.961	0.0031
Week 31 Dummy	-4.513	2.3063	-1.957	0.0504
Week 32 Dummy	1.0654	1.7199	0.619	0.5359
Week 33 Dummy	-10.9353	2.848	-3.84	1e-04
Week 34 Dummy	-2.3731	1.2072	-1.966	0.0493
Week 35 Dummy	4.6455	2.4933	1.863	0.0625
Week 36 Dummy	4.377	2.7571	1.588	0.1123
Week 37 Dummy	7.1877	2.1101	3.406	7e-04
Week 38 Dummy	1.1265	1.4084	0.8	0.4237
Week 39 Dummy	-5.9699	1.3161	-4.536	0
Week 40 Dummy	1.7965	1.3172	1.364	0.1726
Week 41 Dummy	1.5832	1.5437	1.026	0.3049
Week 42 Dummy	-3.3685	2.1751	-1.549	0.1214
	Test statistic	p-value		
Wald test**	65.3166	0		
Hansen's J-Test	0	1		
2nd Order Autocor. Test	3.3669	8e-04		

Table 23: Results of two-step GMM estimation of policy and information on the frequency of visiting retail stores and recreation places for all countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(Grocery, 7)	-0.0979	0.2563	-0.382	0.7025
lag(Events, 7)	-13.09	4.5028	-2.907	0.0036
lag(Travel, 7)	-1.9122	1.7394	-1.099	0.2718
lag(Distance, 7)	-14.8498	5.9586	-2.492	0.0127
lag(Public, 7)	1.3313	1.6937	0.786	0.4319
lag(Lock, 7)	-1.9122	1.7394	-1.099	0.2718
lag(Closure, 7)	-22.2124	6.4852	-3.425	6e-04
lag(Visit, 7)	-4.7844	3.7413	-1.279	0.2009
lag(Mask, 7)	8.4424	5.9356	1.422	0.155
lag(% Change Tests, 7)	-13.9729	5.9673	-2.342	0.0192
lag(Total No. Deaths, 7)	1.3313	1.6937	0.786	0.4319
lag(Total No. Cases, 7)	-1.9122	1.7394	-1.099	0.2718
Week 12 Dummy	-12.0607	4.7644	-2.531	0.0114
Week 13 Dummy	-3.2435	2.5614	-1.266	0.2055
Week 14 Dummy	-12.8294	8.1021	-1.583	0.1134
Week 15 Dummy	-19.3086	6.6639	-2.897	0.0038
Week 16 Dummy	-9.2599	3.6018	-2.571	0.0101
Week 17 Dummy	-6.8442	2.3641	-2.895	0.0038
Week 18 Dummy	-2.8323	3.5916	-0.789	0.4301
Week 19 Dummy	10.588	4.5575	2.323	0.0202
Week 20 Dummy	21.5175	5.7929	3.714	2e-04
Week 21 Dummy	9.1224	2.9461	3.096	0.002
Week 22 Dummy	5.3169	2.1157	2.513	0.012
Week 23 Dummy	6.071	1.9939	3.045	0.0023
Week 24 Dummy	0.6577	2.392	0.275	0.7833
Week 25 Dummy	-1.1631	2.6607	-0.437	0.6621
Week 26 Dummy	-2.2486	1.8466	-1.218	0.2232
Week 27 Dummy	-1.148	2.0718	-0.554	0.5796
Week 28 Dummy	0.8197	3.1446	0.261	0.7941
Week 29 Dummy	-6.4031	4.3266	-1.48	0.1389
Week 30 Dummy	-6.3168	2.5576	-2.47	0.0135
Week 31 Dummy	1.9711	3.5998	0.548	0.5837
Week 32 Dummy	12.7442	6.4486	1.976	0.0482
Week 33 Dummy	1.1615	1.6135	0.72	0.4715
Week 34 Dummy	5.8857	2.7243	2.16	0.0308
Week 35 Dummy	7.9712	4.5257	1.761	0.0782
Week 36 Dummy	4.9686	4.4775	1.11	0.267
Week 37 Dummy	-1.9083	1.3441	-1.42	0.1556
Week 38 Dummy	-6.8473	3.5009	-1.956	0.0505
Week 39 Dummy	1.7642	2.2378	0.788	0.4307
Week 40 Dummy	0.4018	2.8439	0.141	0.8879
Week 41 Dummy	-5.5202	2.2448	-2.459	0.0139
Week 42 Dummy	-7.0005	2.6867	-2.606	0.0092
	Test statistic	p-value		
Wald test**	67.4821	0		
Hansen's J-Test	0	1		
2nd Order Autocor. Test	0.787	0.4313		

Table 24: Results of two-step GMM estimation of policy and information on the frequency of visiting grocery stores and pharmacies for all countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(Parks, 7)	-0.8047	0.6256	-1.286	0.1984
lag(Events, 7)	-7.2988	24.4092	-0.299	0.7649
lag(Travel, 7)	0.0862	12.665	0.007	0.9944
lag(Distance, 7)	71.8282	53.629	1.339	0.1806
lag(Public, 7)	3.9955	23.5014	0.17	0.865
lag(Lock, 7)	0.0862	12.665	0.007	0.9944
lag(Closure, 7)	36.6154	28.6883	1.276	0.202
lag(Visit, 7)	-29.579	24.6464	-1.2	0.2301
lag(Mask, 7)	141.5088	49.0475	2.885	0.0039
lag(% Change Tests, 7)	43.3096	23.6452	1.832	0.0669
lag(Total No. Deaths, 7)	3.9955	23.5014	0.17	0.865
lag(Total No. Cases, 7)	0.0862	12.665	0.007	0.9944
Week 12 Dummy	43.2235	16.4522	2.627	0.0086
Week 13 Dummy	-3.9093	29.8828	-0.131	0.8958
Week 14 Dummy	3.9942	42.5741	0.094	0.9251
Week 15 Dummy	-24.2136	109.1137	-0.222	0.8243
Week 16 Dummy	56.191	66.9984	0.839	0.4015
Week 17 Dummy	-5.6412	73.782	-0.076	0.9394
Week 18 Dummy	15.605	63.4734	0.246	0.8057
Week 19 Dummy	14.9329	40.7893	0.366	0.7144
Week 20 Dummy	-20.3436	21.6832	-0.938	0.3482
Week 21 Dummy	-43.9141	47.9458	-0.916	0.3597
Week 22 Dummy	-14.8848	55.3424	-0.269	0.7879
Week 23 Dummy	-3.6109	58.3384	-0.062	0.9506
Week 24 Dummy	29.8271	39.2801	0.759	0.4479
Week 25 Dummy	37.9777	25.9018	1.466	0.1426
Week 26 Dummy	6.2968	85.9943	0.073	0.9418
Week 27 Dummy	-31.553	37.2519	-0.847	0.397
Week 28 Dummy	-46.3332	40.018	-1.158	0.2469
Week 29 Dummy	-34.6624	31.1705	-1.112	0.2661
Week 30 Dummy	16.6091	24.6205	0.675	0.4997
Week 31 Dummy	34.4434	22.3408	1.542	0.1231
Week 32 Dummy	41.7938	24.7509	1.689	0.0912
Week 33 Dummy	100.0577	39.3841	2.541	0.0111
Week 34 Dummy	39.6975	23.9971	1.654	0.0981
Week 35 Dummy	-7.8181	23.4926	-0.333	0.7391
Week 36 Dummy	-11.0579	42.9767	-0.257	0.7972
Week 37 Dummy	3.3876	41.44	0.082	0.9346
Week 38 Dummy	-11.3628	23.6825	-0.48	0.6312
Week 39 Dummy	50.2277	27.84	1.804	0.0712
Week 40 Dummy	-41.7033	23.9061	-1.744	0.0812
Week 41 Dummy	-69.3478	39.5188	-1.755	0.0793
Week 42 Dummy	-80.5991	22.6337	-3.561	4e-04
	Test statistic	p-value		
Wald test**	48.5574	0		
Hansen's J-Test	0	1		
2nd Order Autocor. Test	-0.0673	0.9463		

Table 25: Results of two-step GMM estimation of policy and information on the frequency of visiting parks for all countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(Workplaces, 7)	-0.0044	0.3332	-0.013	0.9896
lag(Events, 7)	1.3645	0.7663	1.781	0.0749
lag(Travel, 7)	3.1159	1.3021	2.393	0.0167
lag(Distance, 7)	4.9803	1.4364	3.467	5e-04
lag(Public, 7)	3.879	1.614	2.403	0.0163
lag(Lock, 7)	3.1159	1.3021	2.393	0.0167
lag(Closure, 7)	2.7744	1.216	2.282	0.0225
lag(Visit, 7)	1.8466	1.5682	1.178	0.2388
lag(Mask, 7)	1.2575	0.6488	1.938	0.0526
lag(% Change Tests, 7)	7.1327	1.8496	3.856	1e-04
lag(Total No. Deaths, 7)	3.879	1.614	2.403	0.0163
lag(Total No. Cases, 7)	3.1159	1.3021	2.393	0.0167
Week 12 Dummy	4.0168	0.9768	4.112	0
Week 13 Dummy	-0.7631	0.6349	-1.202	0.2294
Week 14 Dummy	1.8496	0.9645	1.918	0.0551
Week 15 Dummy	3.0508	1.3926	2.191	0.0284
Week 16 Dummy	0.6496	1.2248	0.53	0.5961
Week 17 Dummy	-0.2288	0.3995	-0.573	0.5666
Week 18 Dummy	1.4743	0.9175	1.607	0.108
Week 19 Dummy	-0.4479	0.9321	-0.481	0.6305
Week 20 Dummy	-2.81	1.0269	-2.736	0.0062
Week 21 Dummy	-1.4099	0.5448	-2.588	0.0097
Week 22 Dummy	0.0451	0.3902	0.116	0.9076
Week 23 Dummy	1.1667	0.4599	2.537	0.0112
Week 24 Dummy	1.2871	0.7964	1.616	0.1061
Week 25 Dummy	0.5402	0.8552	0.632	0.5274
Week 26 Dummy	0.4289	0.8043	0.533	0.594
Week 27 Dummy	-0.5253	0.5269	-0.997	0.3188
Week 28 Dummy	-2.4605	0.9965	-2.469	0.0136
Week 29 Dummy	-0.2171	0.5208	-0.417	0.6767
Week 30 Dummy	-0.0941	0.9005	-0.105	0.9164
Week 31 Dummy	0.2542	1.0155	0.25	0.8026
Week 32 Dummy	-0.8261	0.992	-0.833	0.4048
Week 33 Dummy	3.2319	1.1626	2.78	0.0054
Week 34 Dummy	0.9252	0.5949	1.555	0.12
Week 35 Dummy	0.6243	0.5489	1.138	0.2551
Week 36 Dummy	-1.21	0.4586	-2.638	0.0083
Week 37 Dummy	-2.1847	0.8065	-2.709	0.0068
Week 38 Dummy	-1.0928	0.8297	-1.317	0.1878
Week 39 Dummy	1.2698	0.4262	2.979	0.0029
Week 40 Dummy	-0.7362	0.4208	-1.749	0.0803
Week 41 Dummy	-0.0704	0.2427	-0.29	0.7718
Week 42 Dummy	1.3952	0.5233	2.666	0.0077
	Test statistic	p-value		
Wald test**	59.9595	0		
Hansen's J-Test	0	1		
2nd Order Autocor. Test	1.9382	0.0526		

Table 26: Results of two-step GMM estimation of policy and information on the frequency of staying at residential areas for all countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(Transit, 7)	-1.1693	0.5614	-2.083	0.0372
lag(Events, 7)	-13.0946	4.1807	-3.132	0.0017
lag(Travel, 7)	-10.2261	3.8707	-2.642	0.0082
lag(Distance, 7)	-11.623	3.1847	-3.65	3e-04
lag(Public, 7)	-8.854	2.8465	-3.11	0.0019
lag(Lock, 7)	-10.2261	3.8707	-2.642	0.0082
lag(Closure, 7)	-18.8345	5.6413	-3.339	8e-04
lag(Visit, 7)	1.7208	1.5578	1.105	0.2692
lag(Mask, 7)	-7.9926	3.2166	-2.485	0.013
lag(% Change Tests, 7)	-25.3028	6.5407	-3.869	1e-04
lag(Total No. Deaths, 7)	-8.854	2.8465	-3.11	0.0019
lag(Total No. Cases, 7)	-10.2261	3.8707	-2.642	0.0082
Week 12 Dummy	-15.0767	3.1631	-4.766	0
Week 13 Dummy	-1.3721	1.627	-0.843	0.3992
Week 14 Dummy	1.5742	1.7426	0.903	0.3665
Week 15 Dummy	-10.746	2.8757	-3.737	2e-04
Week 16 Dummy	-13.5597	4.9169	-2.758	0.0058
Week 17 Dummy	-6.8953	2.2201	-3.106	0.0019
Week 18 Dummy	-6.1825	1.4843	-4.165	0
Week 19 Dummy	2.0167	1.1312	1.783	0.0746
Week 20 Dummy	16.3301	4.8559	3.363	8e-04
Week 21 Dummy	5.7398	1.7447	3.29	0.001
Week 22 Dummy	-2.4184	1.8664	-1.296	0.195
Week 23 Dummy	-0.0146	1.2328	-0.012	0.9904
Week 24 Dummy	-0.8179	1.469	-0.557	0.5775
Week 25 Dummy	3.1923	1.8938	1.686	0.0918
Week 26 Dummy	5.5637	2.098	2.652	0.008
Week 27 Dummy	6.5789	2.4705	2.663	0.0077
Week 28 Dummy	2.7314	2.1128	1.293	0.196
Week 29 Dummy	2.5729	1.6095	1.599	0.1098
Week 30 Dummy	-0.4095	1.5186	-0.27	0.7872
Week 31 Dummy	-1.5481	1.2687	-1.22	0.2225
Week 32 Dummy	1.1177	0.8261	1.353	0.1761
Week 33 Dummy	-9.4747	3.0341	-3.123	0.0018
Week 34 Dummy	-9.9576	2.852	-3.491	5e-04
Week 35 Dummy	-7.6516	2.179	-3.511	4e-04
Week 36 Dummy	-2.175	1.9317	-1.126	0.2602
Week 37 Dummy	6.3364	2.4837	2.551	0.0107
Week 38 Dummy	11.4763	3.7241	3.082	0.0021
Week 39 Dummy	0.5441	1.3552	0.402	0.6877
Week 40 Dummy	0.0565	1.5382	0.037	0.9705
Week 41 Dummy	1.0374	1.4399	0.72	0.4715
Week 42 Dummy	-3.8715	2.102	-1.842	0.0655
	Test statistic	p-value		
Wald test**	84.8791	0		
Hansen's J-Test	0	1		
2nd Order Autocor. Test	0.8371	0.4025		

Table 27: Results of two-step GMM estimation of policy and information on the frequency of using public transit for all countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.

	Estimate	Std.Err*	Z-stat. value	p-value
lag(Workplaces, 7)	-0.8068	0.6301	-1.28	0.2006
lag(Events, 7)	-7.5975	3.338	-2.276	0.0228
lag(Travel, 7)	-10.1569	5.1878	-1.958	0.0502
lag(Distance, 7)	-5.6193	5.1513	-1.091	0.2753
lag(Public, 7)	-8.9394	4.7118	-1.897	0.0578
lag(Lock, 7)	-10.1569	5.1878	-1.958	0.0502
lag(Closure, 7)	-12.8215	7.4874	-1.712	0.0869
lag(Visit, 7)	5.7001	5.0141	1.137	0.2555
lag(Mask, 7)	-6.3032	4.7261	-1.334	0.1822
lag(% Change Tests, 7)	-22.3621	9.099	-2.458	0.014
lag(Total No. Deaths, 7)	-8.9394	4.7118	-1.897	0.0578
lag(Total No. Cases, 7)	-10.1569	5.1878	-1.958	0.0502
Week 12 Dummy	-12.2052	4.1595	-2.934	0.0034
Week 13 Dummy	-1.2175	1.8616	-0.654	0.5131
Week 14 Dummy	0.123	2.445	0.05	0.9601
Week 15 Dummy	-14.5857	7.1937	-2.028	0.0426
Week 16 Dummy	-15.3476	12.2706	-1.251	0.2109
Week 17 Dummy	-6.1208	3.0641	-1.998	0.0457
Week 18 Dummy	-2.2335	1.968	-1.135	0.2564
Week 19 Dummy	7.468	4.3748	1.707	0.0878
Week 20 Dummy	19.0925	11.8936	1.605	0.1085
Week 21 Dummy	5.2241	4.7426	1.102	0.2705
Week 22 Dummy	-3.1694	2.8035	-1.131	0.2581
Week 23 Dummy	1.1523	1.9387	0.594	0.5525
Week 24 Dummy	4.4608	3.1214	1.429	0.153
Week 25 Dummy	4.0102	3.9525	1.015	0.3101
Week 26 Dummy	3.2478	2.6915	1.207	0.2274
Week 27 Dummy	2.3302	2.0151	1.156	0.2477
Week 28 Dummy	1.2657	2.2122	0.572	0.5673
Week 29 Dummy	3.4297	3.0383	1.129	0.2589
Week 30 Dummy	1.9401	3.6134	0.537	0.5913
Week 31 Dummy	-1.1717	1.6795	-0.698	0.4852
Week 32 Dummy	-3.3124	2.211	-1.498	0.1341
Week 33 Dummy	-9.2278	3.7731	-2.446	0.0144
Week 34 Dummy	-7.6381	3.1673	-2.412	0.0159
Week 35 Dummy	-3.7171	4.5074	-0.825	0.4094
Week 36 Dummy	-0.4804	5.3188	-0.09	0.9283
Week 37 Dummy	3.2128	3.2654	0.984	0.3251
Week 38 Dummy	4.9615	2.6935	1.842	0.0655
Week 39 Dummy	-0.6742	3.0528	-0.221	0.8251
Week 40 Dummy	-0.9755	1.2477	-0.782	0.4342
Week 41 Dummy	-1.7224	1.4077	-1.224	0.221
Week 42 Dummy	-0.4816	2.3768	-0.203	0.8391
	Test statistic	p-value		
Wald test**	77.5567	0		
Hansen's J-Test	0	1		
2nd Order Autocor. Test	-0.694	0.4877		

Table 28: Results of two-step GMM estimation of policy and information on the frequency of traveling to workplaces for all countries. *Windmeijer corrected standard errors. ** Wald test that all slope coefficents are jointly zero.