The Bridge Tank
26 Place de la Bourse – Palais Brongniart
75 002 Paris – FRANCE

SPECIAL REPORT

APRIL 2020 | POLICY

FLATTENING THE CURVE
A pan-European comparative analysis of the COVID-19 outbreak

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This report compares the outbreak of COVID-19 across ten major European countries and identifies the best and worst performing countries in Europe, and the reasons behind their respective performance in flattening the curve.

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KEY POINTS

- Greece is the best performing country in Europe, followed by Czechia (the Czech Republic) and Romania. Thanks to early and strict containment measures, they have successfully managed to flatten the curve and slow down the spread of the virus
- The contrast between Greece – which suspended public events and closed schools even before the first 100 cases were detected, and Spain – which took similar decisions at a much later stage of the epidemic – is particularly striking.
- Italy, Spain, France, UK, The Netherlands and Belgium are the most severely hit by the outbreak and have struggled to flatten the curve efficiently. This is mostly explained by the delay in implementing proper lockdown and social distancing measures. France could soon overtake Italy, and UK is still witnessing an increase of the number of confirmed cases and deaths.
- Germany seems to be an outlier. Though its lockdown measures have been implemented relatively later and not fully, the number of deaths has not reached the levels met by its neighbours but is still progressing quickly in relative terms.

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EXECUTIVE SUMMARY

- This report is a pan-European analysis of Europe's ten largest countries by population and how they have dealt with their COVID-19 outbreaks.
- The most important criteria for successfully flattening the curve and reducing the spread of the virus have been early sustained lockdowns.
- Greece is controlling the spread the most effectively in Europe. It implemented full locked down very early on and has slowed the pace of the outbreak substantially. Czechia also locked down early and has seen similarly positive results, though less pronounced.
- Germany locked down relatively late and therefore has a high number of cases, but the severity of its outbreak seems relatively curtailed and the country has a relatively low mortality rate. There is room for the situation to worsen, particularly as the healthcare system, while well equipped, is facing staff shortages. The Netherlands, which like Germany has only implemented a partial lockdown, is seeing large numbers of cases and deaths.
- The longest running outbreaks are France and Italy. Of these Italy is substantially more serious so far, but France has a worrying steep upward trajectory which suggests it could over-take Italy as the most serious outbreak.
- Spain has the most severe outbreak in Europe when adjusted for population size. This can only partly be explained by how much longer their outbreak has been going on for compared to most other countries. The main driver seems to have been the government's failure to lock down the country early enough.
- Despite media focus on how testing can help reduce deaths, there is not much correlation between high testing rates and having fewer deaths or cases per capita, as some commentators have suggested. The examples of Italy, which has tested the most in Europe, and Germany, which has tested the second most, demonstrate this, as each country has vastly different experiences of COVID-19. Meanwhile the best performing countries include Greece and Romania, who have tested the least.

METHODOLOGY

We have chosen to compare the 10 largest European countries by population. This covers countries with a combined population of nearly four hundred million people, representing around two-thirds of the population of Europe. The countries selected were:

Germany
United Kingdom
France
Italy
Spain
Romania
Netherlands
Belgium
Czech Republic (Czechia)
Greece

Note that we have excluded Poland and Ukraine despite their population sizes, owing to serious concerns about the accuracy of their data.[1] [2]

We have largely used data from Our World In Data, a project which is affiliated with the University of Oxford, UK. In limited cases we have used data provided by Worldometer, where the relevant data was only available there. Worldometer base their data on World Health Organisation surveys, while Our World In Data use data from the European Centre for Disease Control & Prevention,[3] a European Union agency. The data was accessed on Monday 13th April 2020.

We preface our analysis with two important warnings. Firstly, no country in Europe fully understands the extent to which COVID-19 has taken hold of their population. The countries which have tested the most people in Europe, Italy and Germany, have tested only 1.73% and 1.57% of their populations respectively. Some countries like Romania (0.35%) or Greece (0.42%) have tested far fewer. Therefore, understanding the extent of a COVID-19 outbreak in any particular country based on their confirmed cases alone is challenging, and can even be misleading. For that reason, we have

[1] https://texty.org.ua/articles/100689/skilky-naspravdi-hvoryh-na-COVID-19-v-ukrayini/
[2] https://poznan.wyborcza.pl/poznan/7,36001,25847476,jak-epidemia-maleje-w-liczbach.html & https://poznan.wyborcza.pl/poznan/7,36001,25834069,ciemna-liczba-ofiar-wirusa.html
[3] https://ourworldindata.org/COVID-sources-comparison

mostly focused on the doubling rate, as well as on data which looks at the number of deaths, rather than confirmed cases.

Secondly, we must acknowledge that there are problems with the death statistics too – mainly because fatalities at home or in elderly care facilities might be under-counted. However, the margins of error concerning the death statistics seem to be dramatically less substantial than data on the numbers of cases. Moreover, the potential underestimation of the number of COVID-19 related deaths seem to be relatively similar in most countries, therefore reducing the impact on our comparative analysis.

Finally, our focus on doubling rates with regards deaths and confirmed cases, which is further elaborated below, is at the heart of our analysis. Doubling rates are the fairest way of testing a country's progress and also comparing one country with another, because they rely on datasets generated within the constraints of each country's testing regimes.

CONTENTS

This study is presented in two chapters. Chapter One is a quantitative analysis which studies outbreaks in each country by cases and deaths per capita, as well as adjusting for how long the outbreak has been going on for within each country. We then focus on the doubling rate, which is the amount of days it takes for the number of cases or deaths to double in a country. The use of the doubling rate is a key measure as it mitigates the statistical impact of each country having different surveillance regimes for detecting cases. We have looked at the doubling rate in weekly increments as each outbreak develops.

In Chapter Two, we undertake a qualitative review to begin to explain why certain countries have been outperforming others. This takes into account a country's starting position, the readiness of their healthcare system, advantages conferred by the virus outbreak beginning later than in other countries, the demographics of the population, and in some cases geographical or other advantages uniquely possessed by particular countries. It then looks at the speed at which lock-downs were introduced, the terms under which they are enforced and the areas of society which they cover. It also looks at testing regimes and other forms of surveillance which have assisted countries, in certain circumstances though not all, deal with their outbreaks, and whether the absence of testing may also have exacerbated the outbreaks.

We are particularly interested in countries which have managed to limit the spread of the outbreak through early measures and 'flatten the curve' through efficient policy decision. We have chosen indicators which explain this in the most effective way possible.

For background, "flattening the curve" is a strategy adopted by most countries around the world to reduce the peak of their outbreak so that it can be more easily managed by their healthcare systems.

CHAPTER ONE – WHO HAS FLATTENED THE CURVE?

1.1 Where We Stand

The scale and severity of each COVID-19 outbreak varies significantly across the European countries we have surveyed. As of 13th April, Greece had the lowest occurrence in Europe, with just 2145 confirmed cases and 99 deaths (see Figure 1). The most seriously affected countries are Spain, with 170,099 confirmed cases and 17,756 deaths, and Italy, with 159,516 confirmed cases, and 20,465 deaths.

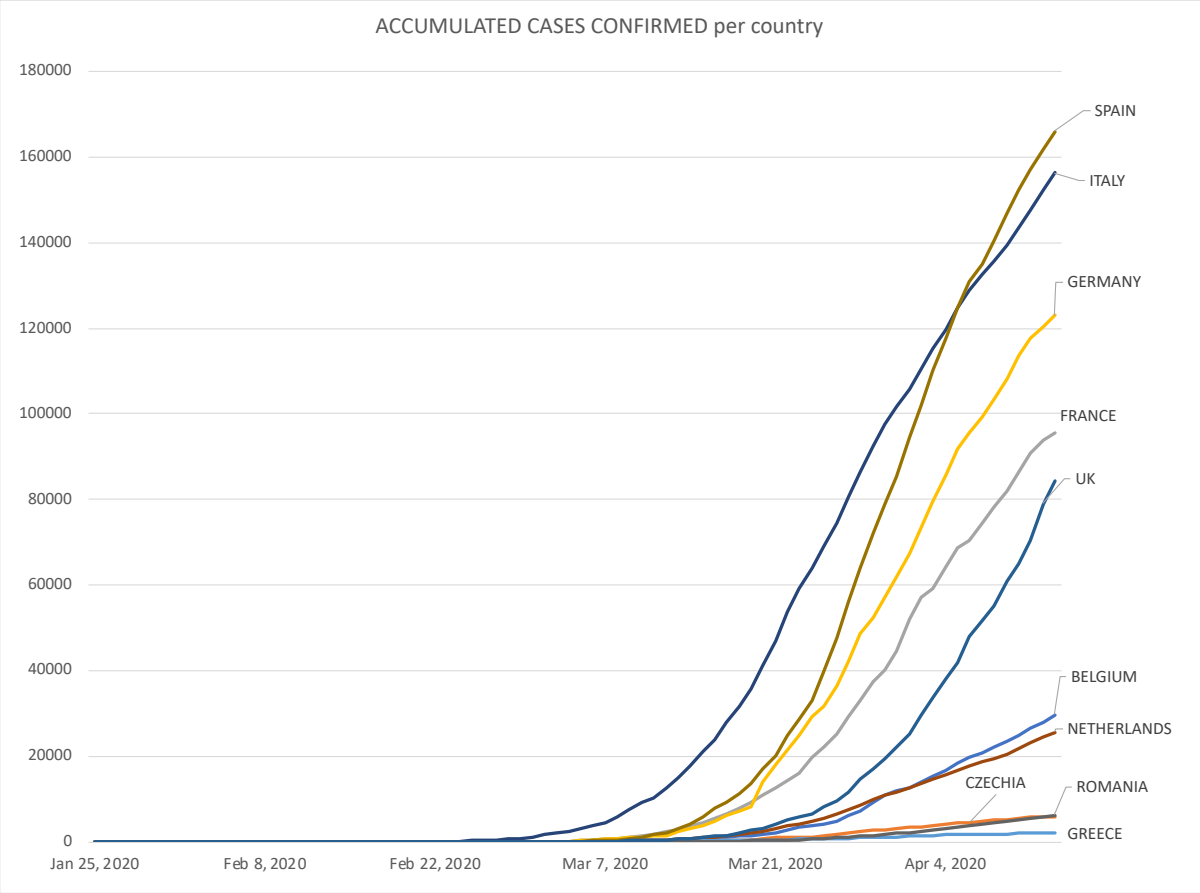

Figure 1

When adjusting for population (see below, figure 2), Spain remains the worst affected country, with 3638 confirmed cases per million followed by Belgium with slightly more than 2639 per million and Italy with slightly more than 2638 per million people.

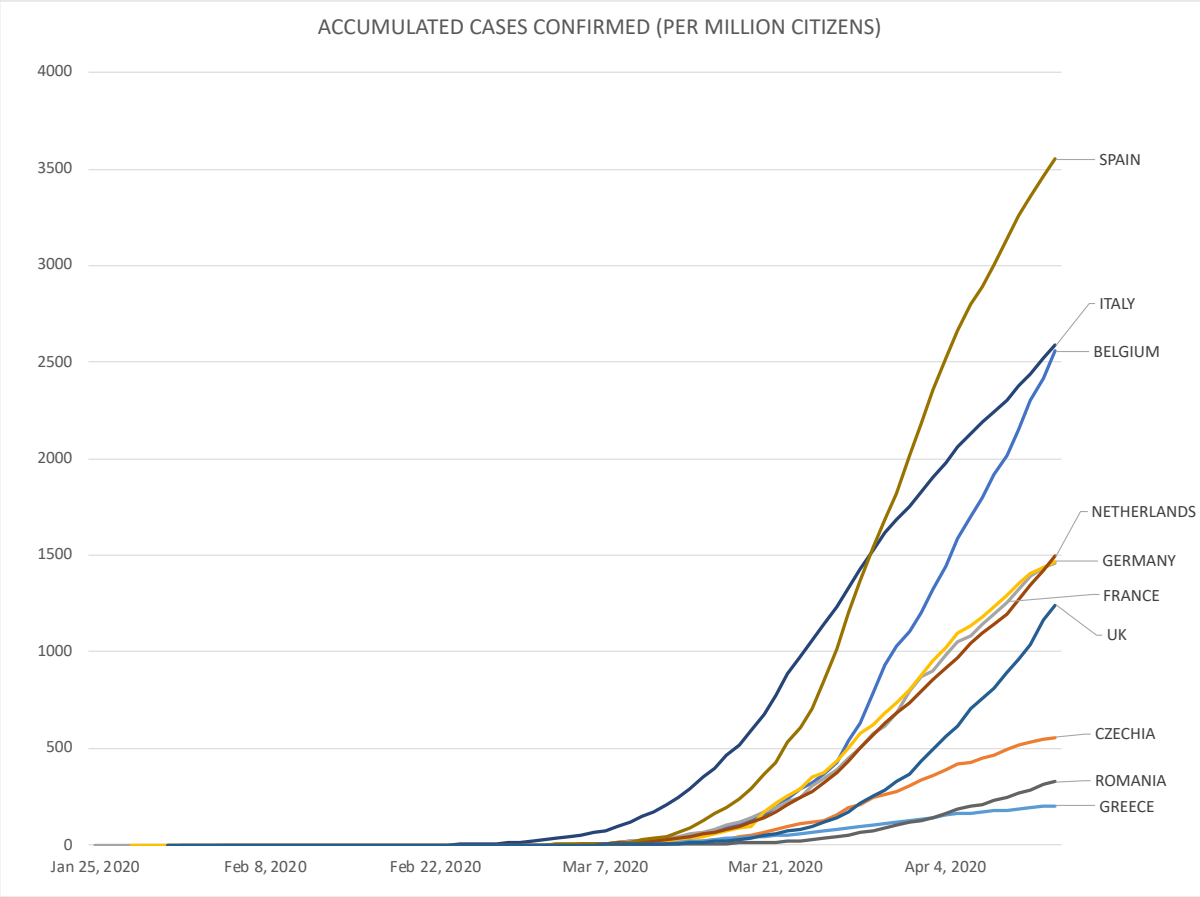

Figure 2

1.2 Dynamics since country outbreaks

Outbreaks have been running for between 4 and 6 weeks, with the start of the outbreak being measured once the first 100 cases have been detected.[4]

The table below (Figure 3) gives an overview of mortality rates (the percentage of cases that have resulted in death) and the proportion of cases which have resulted in the patient requiring critical care The countries with the highest mortality rates are also the countries which have, in general, also suffered the most severe and longest running outbreaks.

The statistics shown in Figure 3 are as a proportion of detected cases, so are dependent on the extent to which countries are testing. Reported mortality rates for Italy, UK, Netherlands, Spain, Belgium and France appear particularly high – the reasons for this are explored in Chapter Two. Note also that several countries have

[4] We have kept our primary marker for the start of each outbreak as time since 1st 100 cases were detected, but we also re-tested our data based on time since the 1st 50 cases were detected. We found it did not affect the overall results of our survey. We have decided to use 1st from 100 cases in all cases in order to maintain uniformity.

not been counting fatalities in care homes within their official daily death counts, which would push their deaths per capita significantly upwards were they to be included (in France, a third[5] of all COVID-19 deaths have come from care homes, while a preliminary investigation by *Sky News* in the UK estimated that the number of uncounted deaths in the UK could amount to 'thousands') [6] [7].

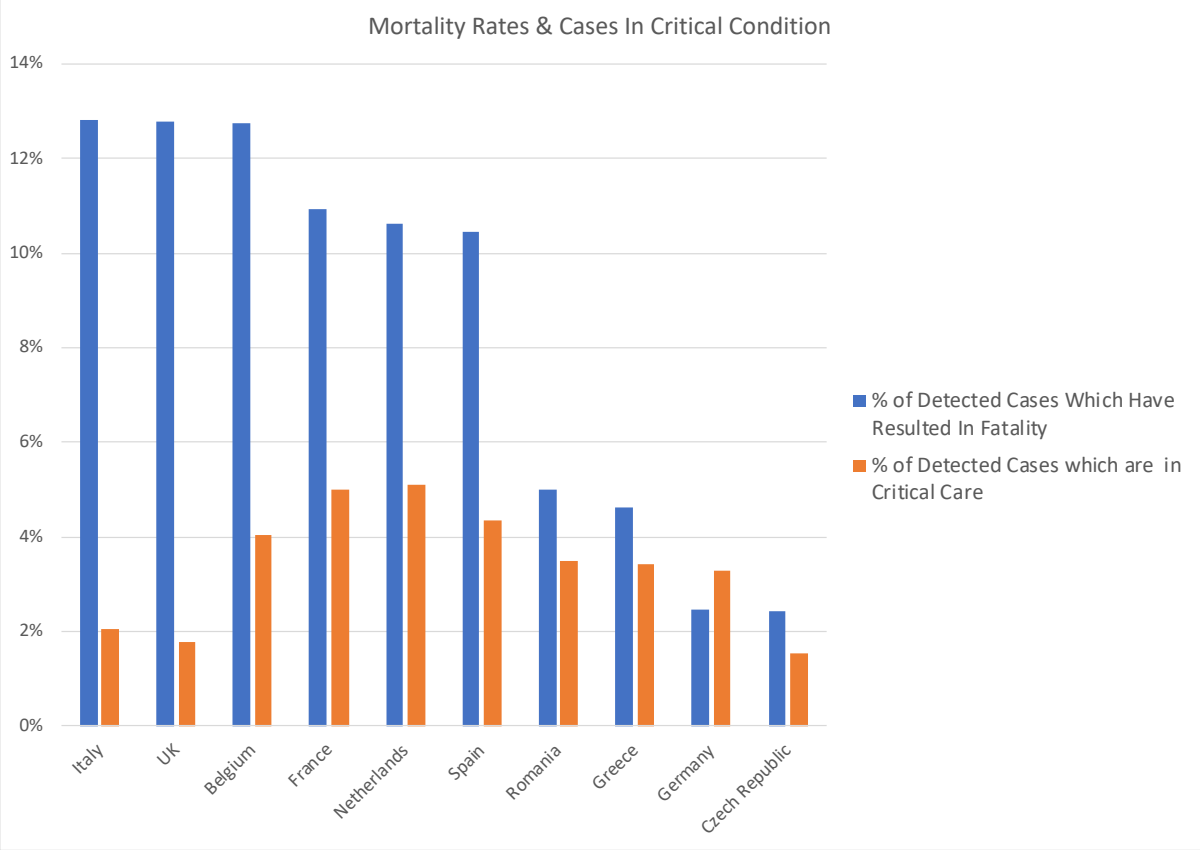

Figure 3 - COVID-19 Case Status by Country[8]

The charts below (Figure 4 and Figure 5) show rolling seven-day averages of COVID-19 related deaths per day, plotted against the number of days since the first 100 recorded cases of COVID-19 infection was recorded in each country. This allows us to understand overall trends in terms of flattening the curve, and also allows for time-lags in reporting of deaths, which are common across all the countries surveyed. There is significant disparity between those European countries which have been able to flatten the curve and those which have seen it climb significantly since their respective outbreaks began.

[5] https://www.euronews.com/2020/04/08/french-care-homes-hit-hard-as-COVID-19-deaths-mount
[6] https://news.sky.com/story/coronavirus-nurses-in-care-homes-fighting-on-a-forgotten-frontline-11972074
[7] https://www.theguardian.com/world/2020/apr/14/care-homes-coronavirus-why-we-dont-know-true-uk-death-toll
[8] Source : Worldometer deaths & critical care data.

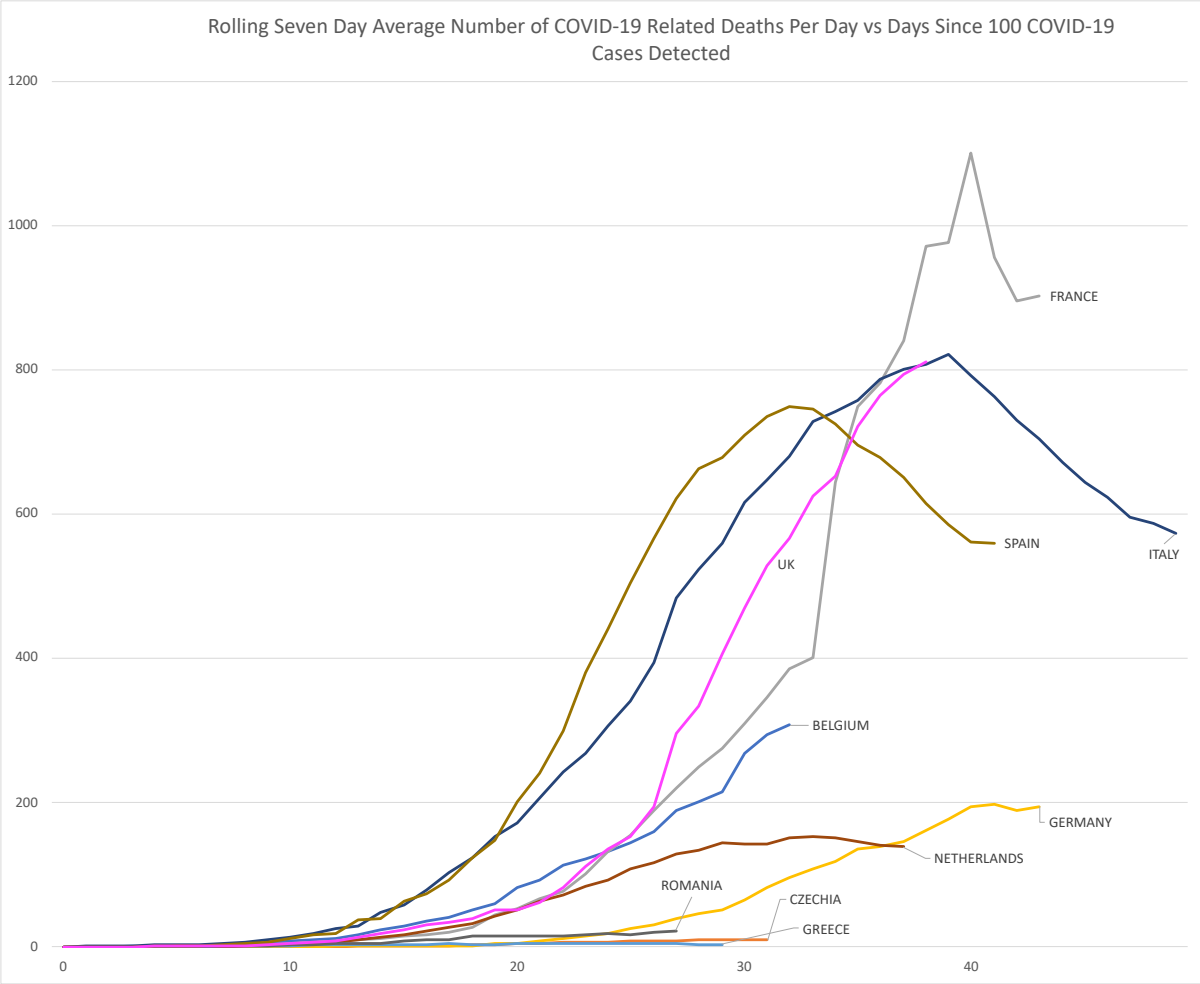

Figure 4

Figure 4 shows that Greece, Czechia and Romania remain by far the countries least affected by COVID-19, while Spain, Italy, United Kingdom, and France appear to be the worst affected. The Netherlands, Spain, France and Italy have shown signs that the first wave of the epidemic is starting to subside, with reductions in the seven-day average in recent days. Figure 4 also shows that the UK appears to be soon reaching its peak.

Meanwhile Greece has seen significantly flatter trends, approximately three weeks after reporting their first 100 confirmed cases.

Once adjusting for cases per capita, as seen in Figure 5 (below), we can see that as well as Spain, Italy, the UK and France, The Netherlands is also severely affected. All five countries also saw a rapid acceleration in numbers of deaths approximately two weeks after the start of their respective outbreaks.

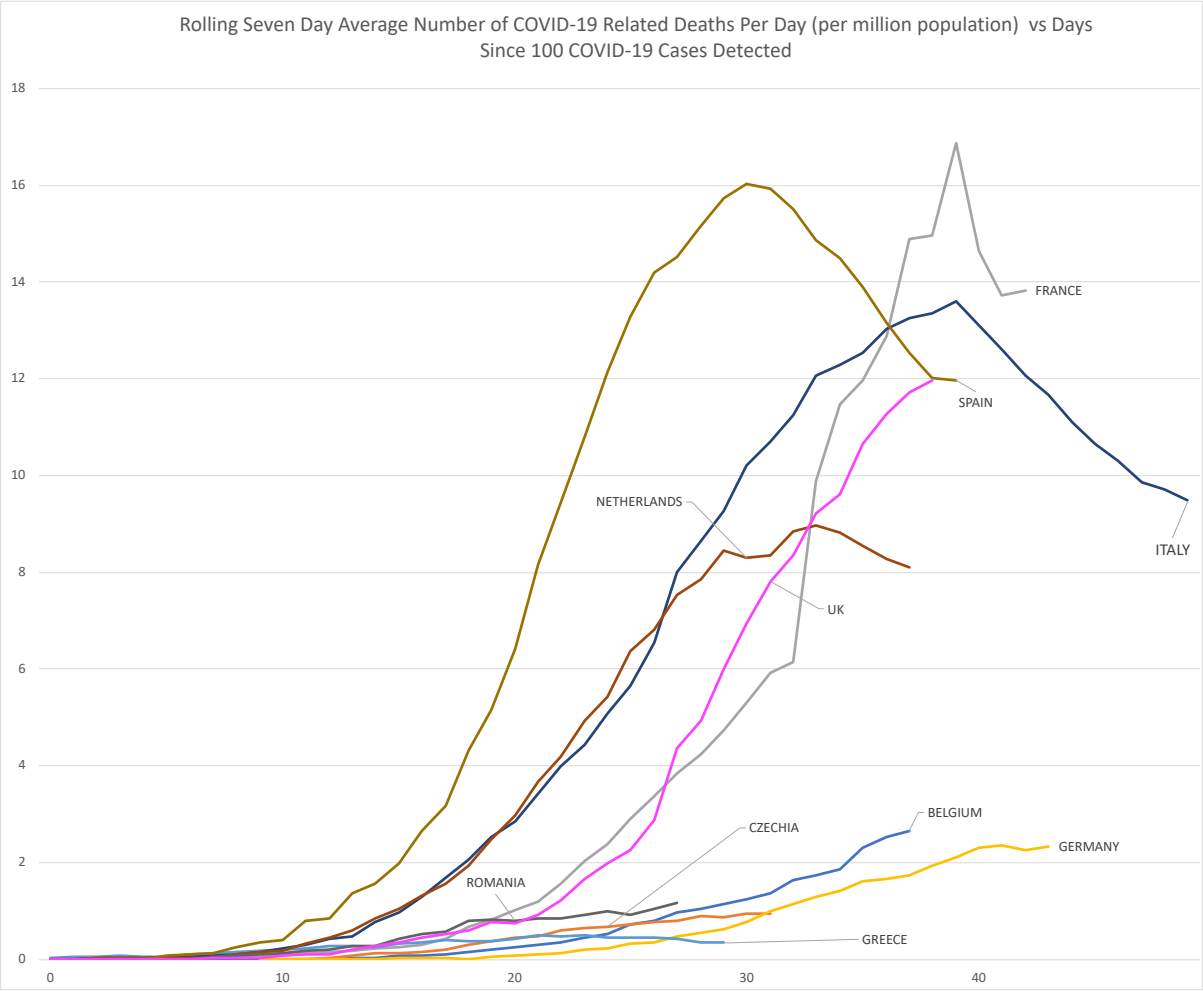

Figure 5

The two charts below, Figure 6 and Figure 7, show in more detail the trajectory of countries who have not seen such severe outbreaks, or are still in development. This is partly to make their trajectories more visible as the presence of France, Italy, Spain, the UK and The Netherlands above makes it hard to discern the relative performance of countries which are handling their outbreaks more effectively.

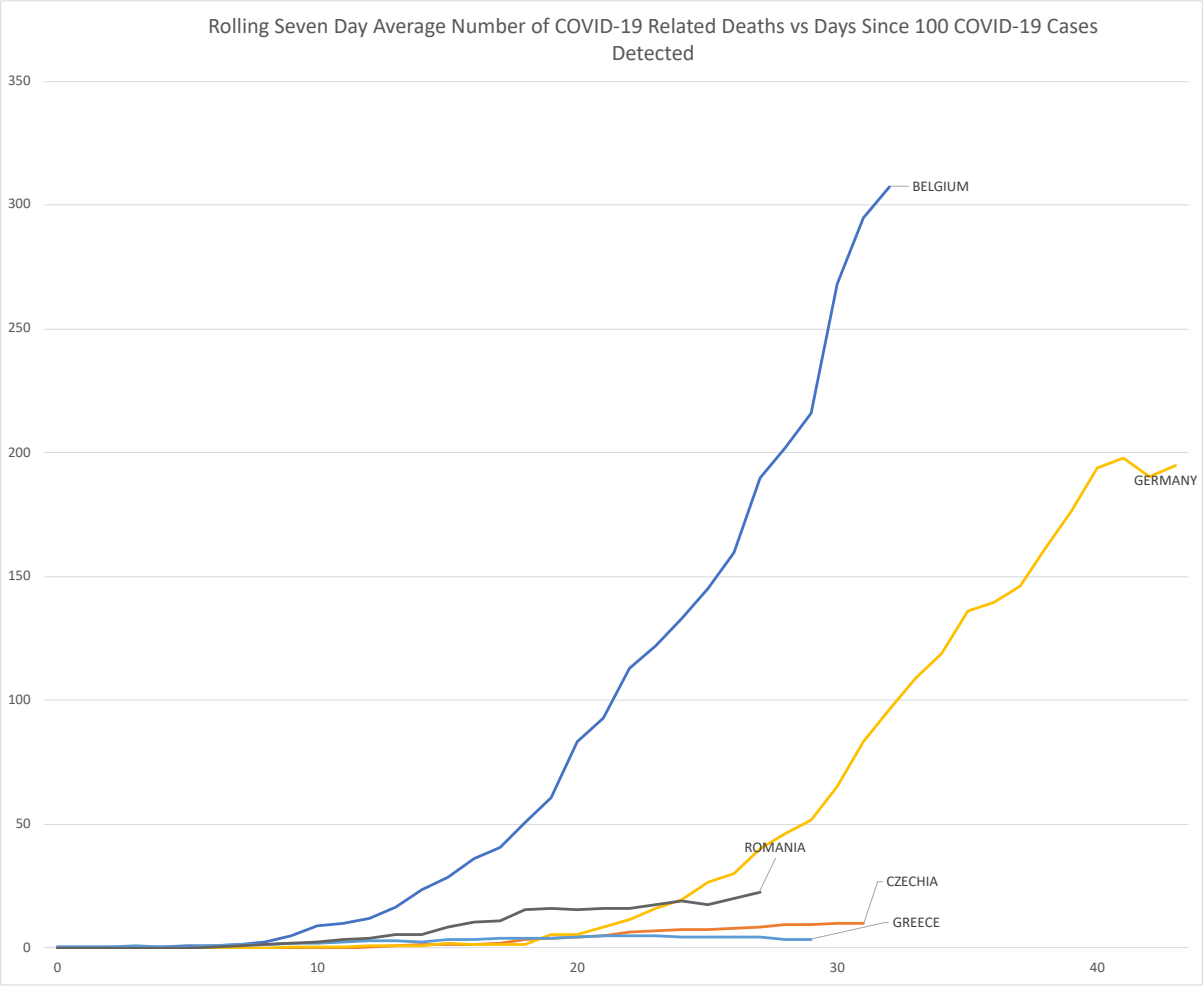

Figure 6

Figure 6 demonstrates a stark difference in the increase in number of deaths between Belgium and Germany, compared to those of Greece, Romania and Czechia.

Taking into account population size, Figure 7 (below) shows that Romania and Czechia are experiencing significantly worse outbreaks than Belgium or Germany were experiencing after the same number of days. Interestingly, Greece reported 32 deaths per day per million and had been performing slightly worse than Germany which reported only 16 deaths per day per million at this point in time. Subsequently Greece has effectively contained the virus. This is likely the effect of its early lockdown kicking in after the fourteen-day incubation period for COVID-19.

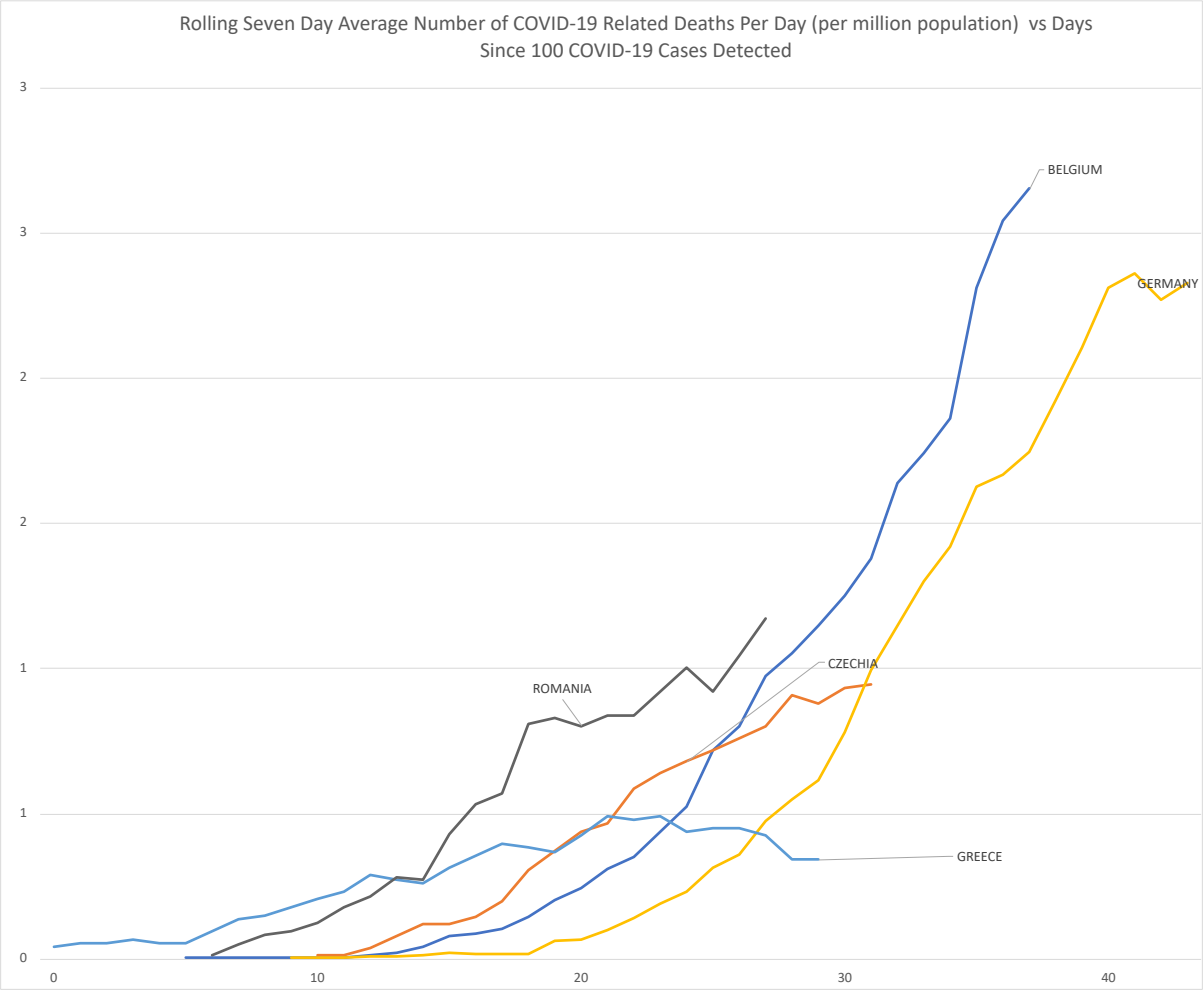
Rolling Seven Day Average Number of COVID-19 Related Deaths Per Day (per million population) vs Days
Since 100 COVID-19 Cases Detected
3
3
2
2
1
1
0
0
10
20
30
40
BELGIUM
GERMANY
CZECHIA
ROMANIA
GREECE

Figure 7

1.3 - Doubling Rates – a proxy metric for 'flattening the curve'

To assess the speed at which the outbreak is spreading, we have calculated the doubling rate – i.e. how many days it takes for the number of confirmed cases or deaths in each country to multiply by two. The doubling rate is an important measure for understanding the extent to which an outbreak is slowing down or speeding up. The doubling rate has the additional advantage of taking into account the testing regimes of each country. Having a longer doubling rate is better as it means the virus is spreading more slowly. Having a shorter doubling rate is worse as it means the virus is spreading faster. Having a doubling rate that steadily increases over time is a sign that the curve is getting actively flattened.

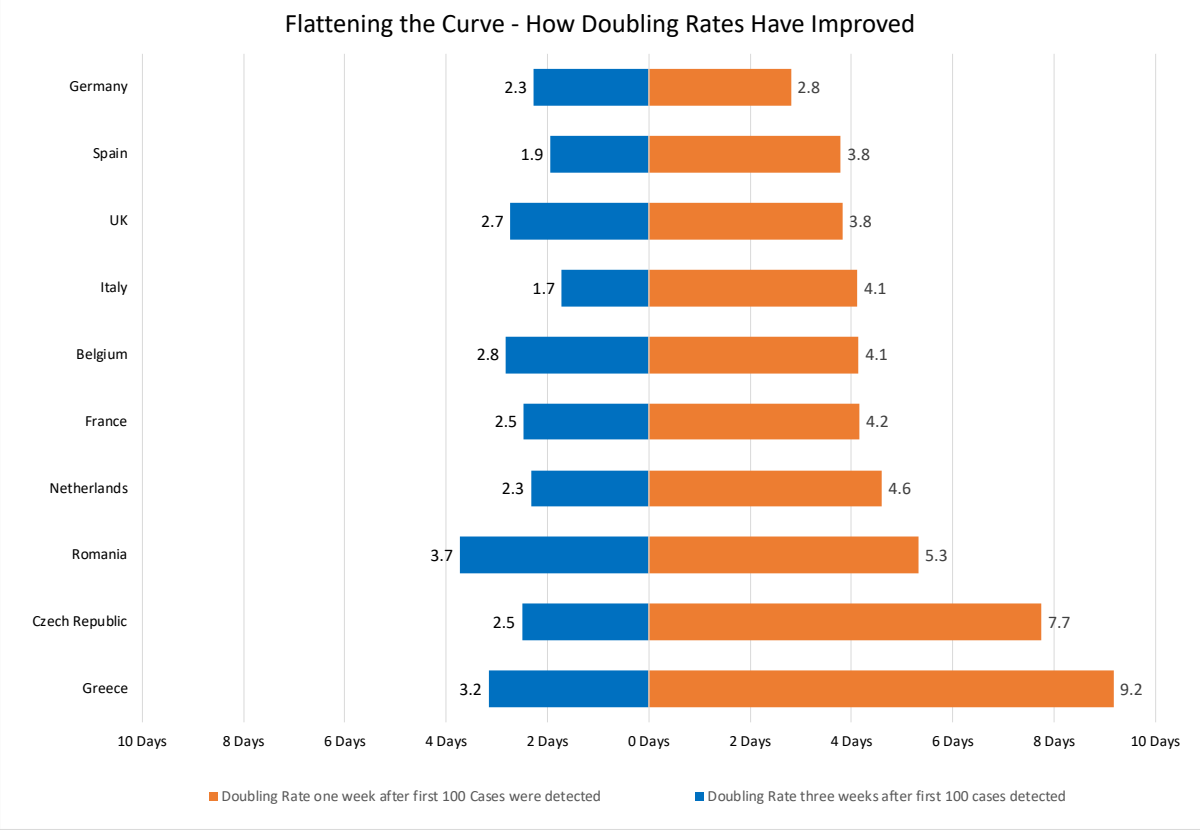

Figure 8

Figure 8 shows that between week one and week three, Greece has extended its doubling time the most, taking 3.2 days to double the number of cases when measured at one week (since its first 100 cases), but then 9.2 days when measured after three weeks. Czechia has extended its doubling time the most proportionally, from 2.5 days to 7.7 days. Italy starts with the shortest doubling time (1.7 days) of the countries surveyed, but after 3 weeks has improved its standing from last place in the country ranking (with 1.7 days) to eighth place (with 4.1 days).

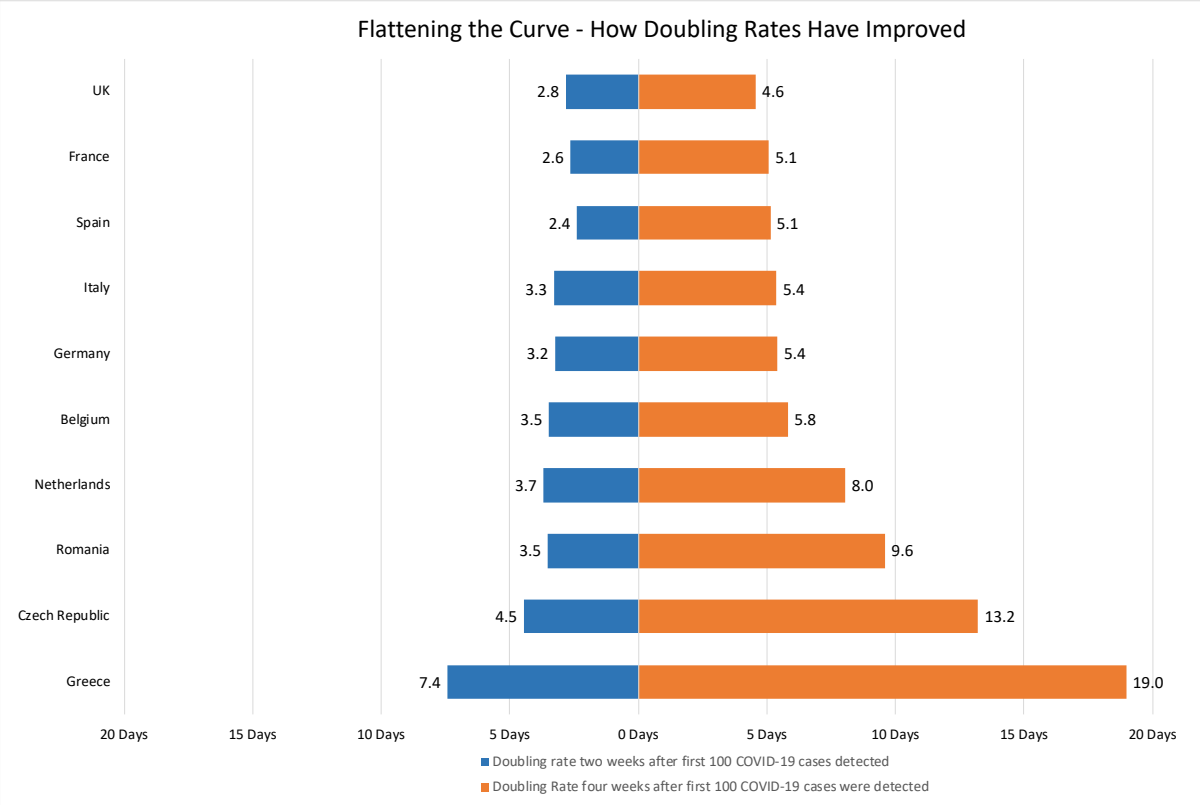

Figure 9

Figure 9 shows the country position after two weeks compared with the position after four weeks. Greece has extended its doubling rate even further to 19 days. Czechia (from 4.5 days to 13.2 days) and Romania (from 3.5 days to 9.6 days) have also extended their doubling rates to an impressive degree. The UK now ranks last in terms of doubling rate (4.6 days).

A review of the average doubling rate for confirmed cases shows that in general, countries are seeing slower doubling rates as their outbreaks evolve, from 2.5 days after one week (from 100 confirmed cases detected, see Figure 10) through to 5.2 days after three weeks (again, from 100 confirmed cases detected, see Figure 13). However, there are substantial differences in how fast countries have been able to slow their outbreaks.

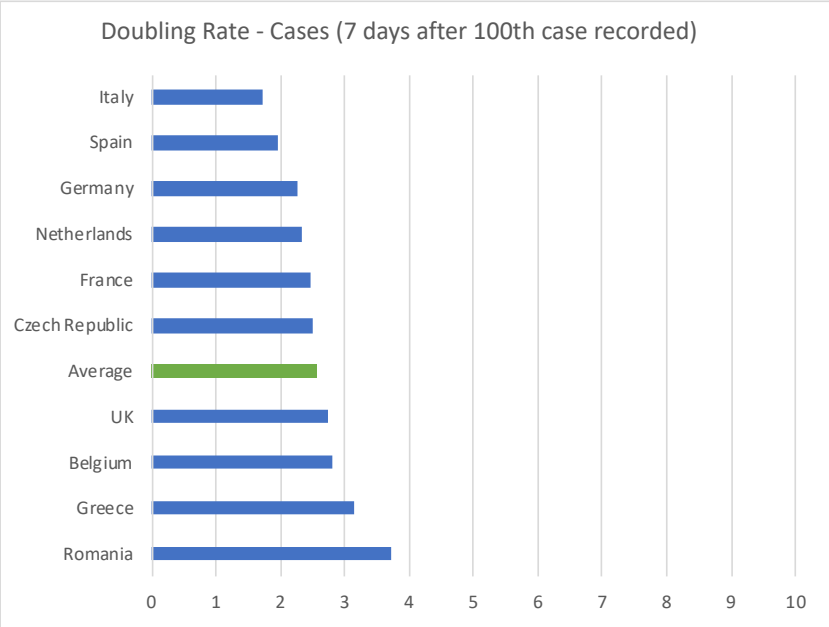

Figure 10

After one week (see Figure 10), two countries were seeing confirmed cases double every two days or less: Italy (1.72 days) and Spain (2 days). The countries with the longest doubling rates were Romania (3.7 days) and Greece (3.2 days).

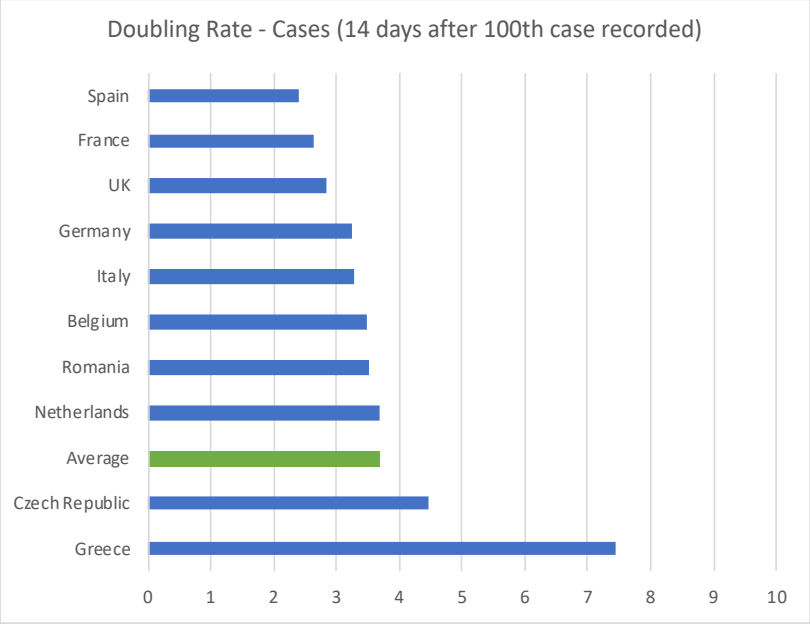

Figure 11

After two weeks (see Figure 11), most countries began slowing their doubling rate, although four countries saw relatively small changes (Romania with -0.2 days), UK with +0.1 days, France with +0.2 days and Spain with +0.44 days). Greece was able

to extend its doubling rate the most (+4.26 days), while Czechia also performed well (+1.95 days).

After three weeks (see Figure 12), Germany had dropped to last place in terms of its doubling rate. Although it had still slowed its rate of growth, it also saw the lowest increase in doubling time (+0.53 days), while Greece (+6.01 days) and Czechia (+5.24 days) continued to see the greatest improvements in slowing the spread.

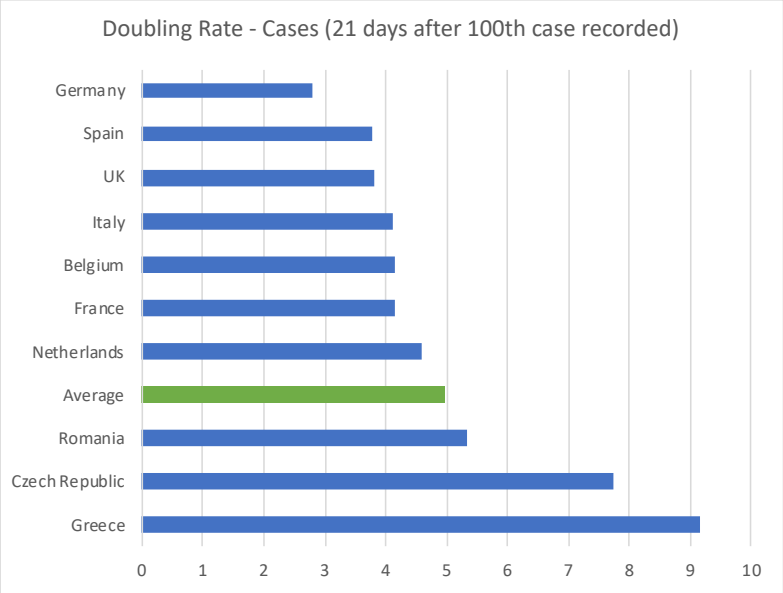

Figure 12

We have also looked at doubling rates for deaths. There was little data recorded for the number of deaths seven days after the first 100 cases were recorded in each country. After 14 days, only six out of our ten countries had relevant data. However, we have presented the data below as it still provides useful insights.

Greece keeps on performing well, extending its doubling rate from 2.9 days when measured after 2 weeks through to 6.81 days when measured after 3 weeks, and then to 10.0 days when measured after 3 weeks.

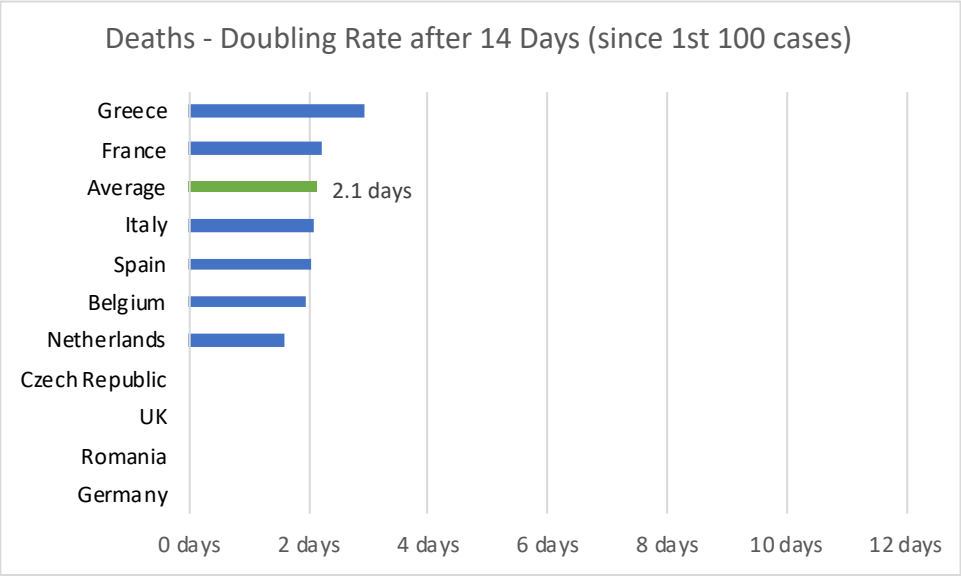

Figure 13

We also see average doubling times for deaths improve across Europe from 2.1 days when measured after two weeks (Figure 13) to 3.2 days when measured after 3 weeks (Figure 14) and finally to 4.8 days when measured after 4 weeks (Figure 18).

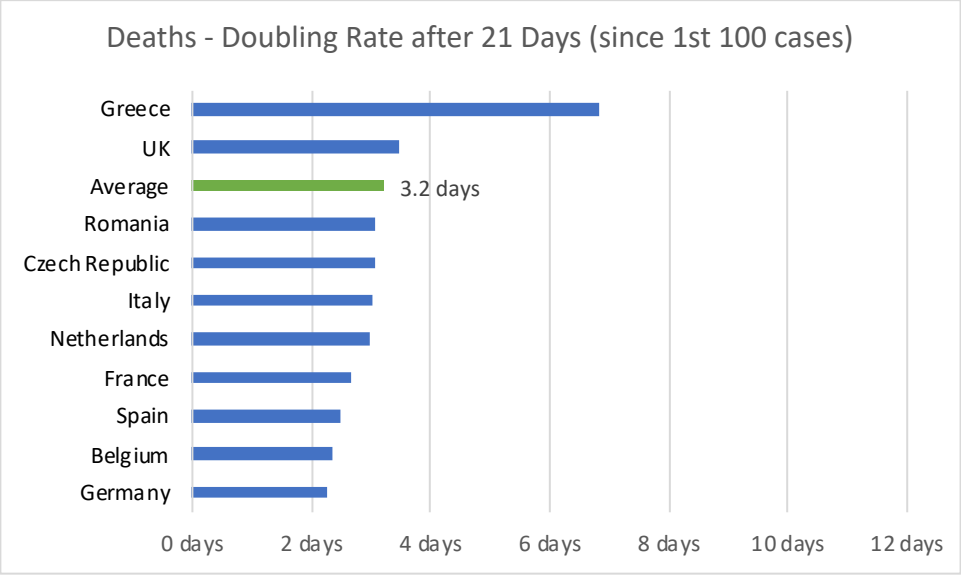

Figure 14

A notable difference between the 21-day and 28-day snapshots is the collapse in the UK's average ranking. In Figure 14, the UK ranks above the European average with a 3.5 day doubling rate. When measured a week later, the UK has dropped to second last place, with a 2.99 day doubling rate. In other words, while other countries in Europe have been able to substantially improve their doubling rates for deaths and reduce the speed of the spread, the UK seem to be struggling.

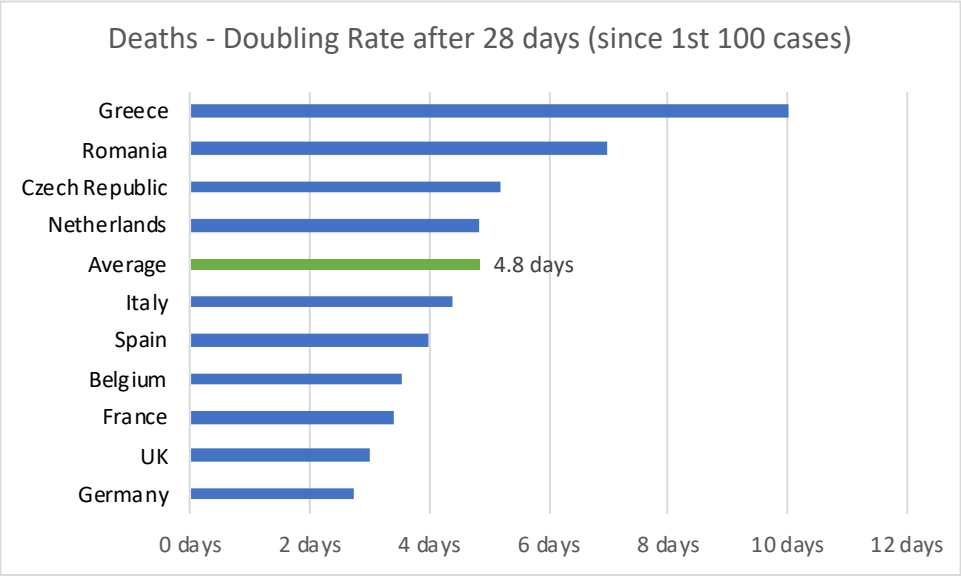

Figure 15

France is also struggling to control its doubling rate. After two weeks it stood at 2.2 days (see Figure 13), which was above the European average, but after 3 weeks it was only at 2.7 days, which was below the European average (see Figure 15). After 4 weeks, it was ranking third worst in Europe with a doubling time of 3.4 days.

In conclusion, we therefore see a group of six countries whose COVID-19 outbreaks are substantially worse than their European neighbours – Italy, Spain, The Netherlands, France, Belgium and the UK. Germany is performing better than these six above-mentioned countries.

Greece appears to be by far the best performing country in Europe, particularly on the key measure of doubling rates, followed by Czechia and Romania.

CHAPTER TWO – HOW DID COUNTRIES FLATTEN THE CURVE?

This section attempts to explain some of the successes and failures of the countries identified in Chapter One through pre-existing factors, policy decisions, and other factors unique to each country.

2.1 Our Main Findings

Nearly all reviewed countries were below or far below the necessary capacity required to deal with COVID-19 in terms of the availability of intensive care beds, ventilators, staff and personal protective equipment (PPE). While trying to increase their capacity at short notice, these countries also took a variety of measures to try and slow the spread of the disease, hoping that their peak would move down, and closer to what the healthcare system could handle at any one time.

In short, countries which witnessed the outbreak in Italy and then reacted fast have performed well, while countries that were slow to implement lockdowns early on and with stringent terms, despite seeing Italy's struggle, have performed poorly.

2.2 Preparedness

It should be said that numerous factors were also at play that were largely out of government's control at the point they went into the crisis. Levels of air pollution, prevalence of smoking, average age of population, prevalence of relevant pre-existing medical conditions, average amounts of social contact between generations (including living arrangements), as well as more geographic features like the prevalence of islands (Greece) or the relative urbanisation of different countries, all played some sort of role.

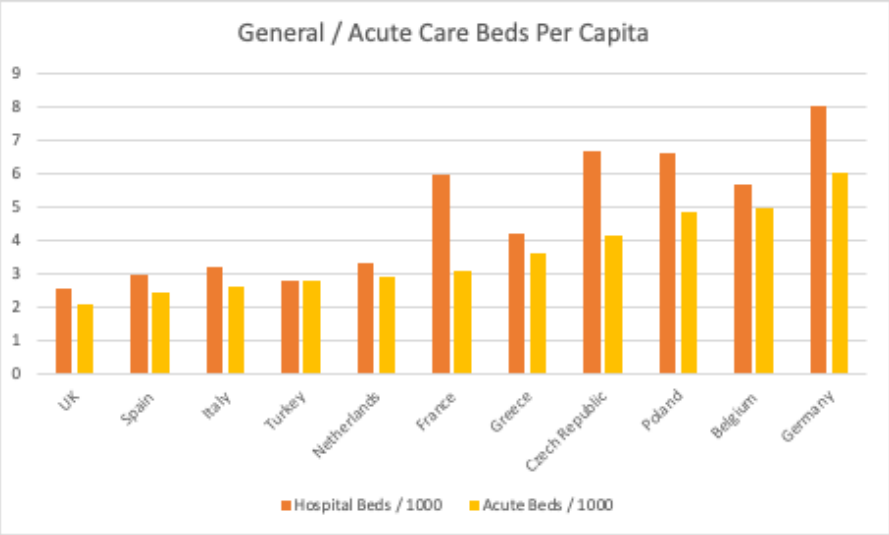

Figure 16

The above chart shows the number of hospital beds and acute care beds within each country prior to the COVID-19 outbreak. It shows that the UK, Spain Italy and The Netherlands had similar capacities, while a second group had both larger numbers of general hospital beds as well as more intensive care beds available. It also shows that Germany was better prepared than most.

As Figure 16 suggests, most healthcare systems struggled to provide necessary capacity in terms of acute care beds, but also other equipment, such as invasive ventilators. Acquiring or producing more beds, ventilators and other equipment is where a good portion of each government's energy was directed in the early days of the crisis.

As the severity of the potential outbreak became clear, most countries in our survey announced plans to rapidly expand the number of intensive care beds by outfitting emergency temporary hospitals, as well as attempting to procure ventilators, including a multi-country procurement scheme co-ordinated by the European Commission.[9] Subsequently, the focus has shifted to addressing country shortages of personal protective equipment ('PPE'), which became increasingly necessary to prevent healthcare workers contracting the disease or becoming silent spreaders when their shifts were over. Countries have also attempted to boost their testing capacity, with Germany significantly further ahead in this regard.

[9] https://www.politico.eu/article/uk-missed-out-on-eu-ventilator-scheme-due-to-communication-problem/

2.3. Comparing epidemic trajectories versus lockdown effectiveness

We have reviewed the comparative rates at which COVID-19 spread in each country, compared with how fast lockdowns were implemented. Note that two countries, the Netherlands and Germany, have implemented only partial lockdown (The Netherlands call theirs an 'intelligent lockdown'; see end of report for full list of measures implemented).

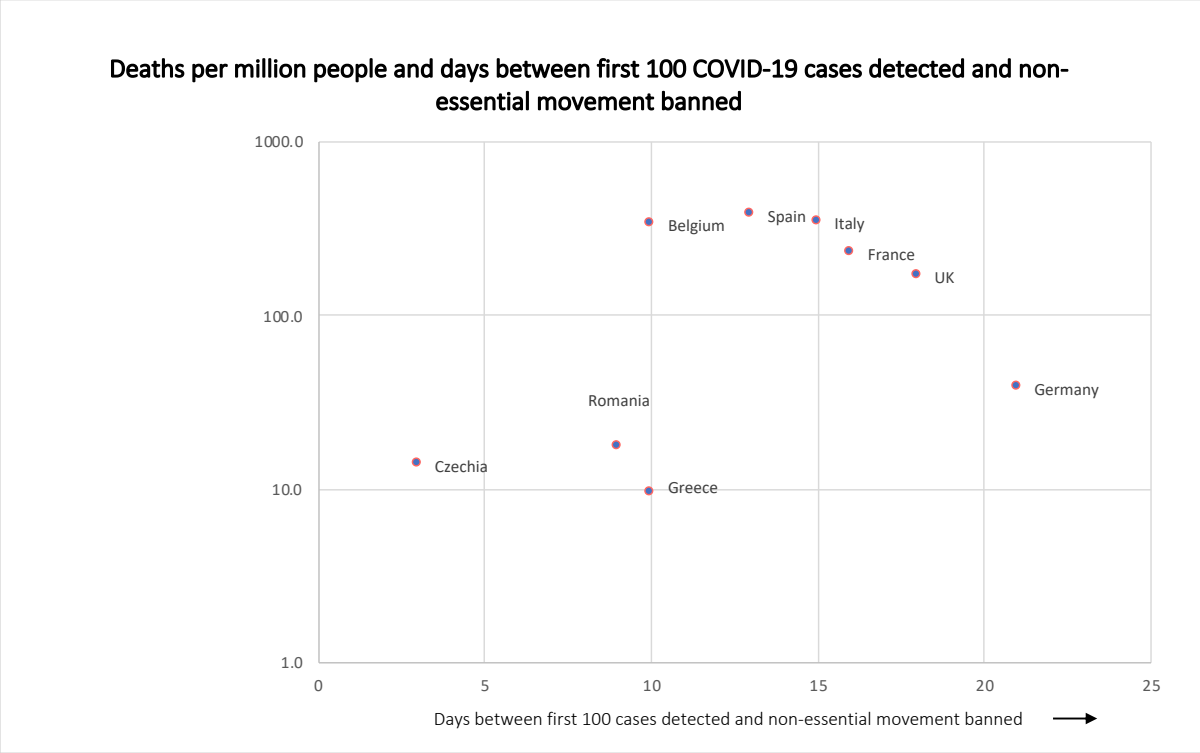

Figure 17

In Figure 17 we can see two clear clusters of countries – excluding The Netherlands which is yet to impose a complete lockdown and Germany which has only imposed a partial lockdown. The first are those countries to the bottom left – Romania, Greece and Czechia - which implemented their lockdowns more rapidly, and were later rewarded with lower deaths per capita.

The second cluster to the top right – Belgium, Spain, Italy, France, and UK. These countries all waited at least ten days, and in the case of UK, Italy and France more than fifteen days, to implement a lockdown. Germany, which has not implemented a national lockdown yet, only began implementing some restrictions on non-essential movement after twenty-one days.

2.4 - Testing

The variations in testing regimes by different countries cause a variety of complications in understanding the depth of the crisis both in each country and at a comparative level. Germany has been widely praised for increasing its testing capacity to 50,000 per day, but testing the entire population at that rate would still take over four and a half years.[10] France has now increased testing to 30,000 cases per day, meaning they can expect to test the entire country in just under six years.[11] Until last week, the UK was only testing 10,000 cases per day, which means that testing the entire population would have taken over eighteen years.[12]

The lack of testing worsens as countries go through the crisis, and can distort our understanding of the virus, including how deadly it is. Italy, for example, is presently recording a 12% mortality rate, compared to a global average of 5.3%.[13] One view is that this figure has moved so drastically upwards not because of the Italian healthcare system being overwhelmed, or because Italian citizens are for some reason particularly susceptible, but also because daily testing capacity has reduced as time has gone on and medical workers have been absorbed by caring for more and more critical cases.[14] So as fewer cases are detected in the wider community, only the most serious cases were recorded which proportionally were also more likely to be deadly cases.

Nevertheless, as the table below (Figure 18) shows, Italy and Germany have implemented the most widespread testing but have vastly different experiences of the virus to date, with Italy experiencing a far worse outbreak.

[10] https://www.ft.com/content/6a8d66a4-5862-4937-8d53-b2d10794e795
[11] https://www.ft.com/content/6a8d66a4-5862-4937-8d53-b2d10794e795
[12] https://www.telegraph.co.uk/news/2020/04/05/coronavirus-testing-uk-how-many-done/
At the time of publication, this figure was reported to have improved to closer to 15,000 cases per day.
https://www.theguardian.com/world/2020/apr/13/britain-on-target-for-100000-coronavirus-tests-a-day-says-no-10
[13] https://ourworldindata.org/grapher/coronavirus-cfr
[14] https://www.aljazeera.com/news/2020/03/italy-coronavirus-fatality-rate-high-200323114405536.html

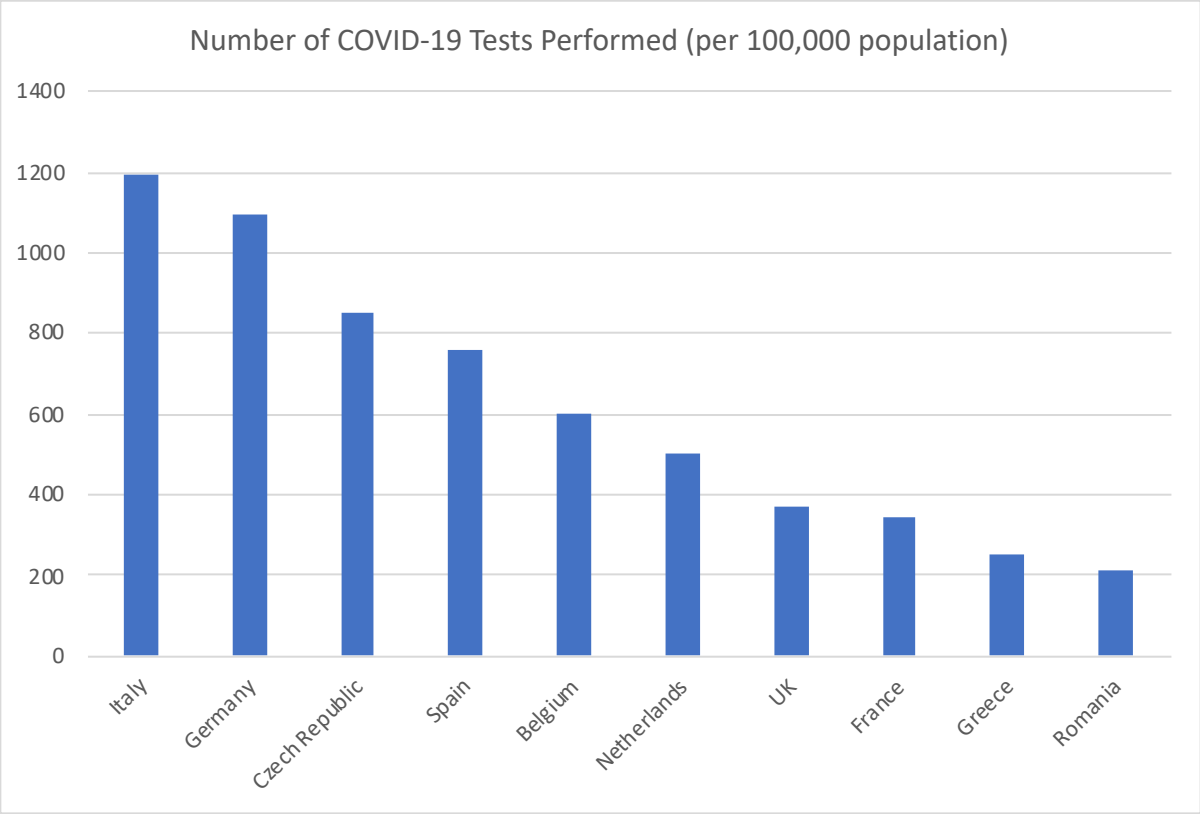

Figure 18[15]

Greece and Romania have in fact tested relatively few people and seen much better performance in terms of reducing the spread of the contagion. Testing ultimately is neither producing a negative correlation to deaths nor decreasing the number of deaths. It appears more as a secondary tool in most countries – except to some extent in Germany. No doubt testing will play a tremendously important role in exiting the lockdown, but so far it has not conclusively played its own part in 'flattening the curve.'

2.5 – Germany; a story in progress

It is important now to address why Germany is considered to be doing relatively well, despite having only a patchy lockdown which was not implemented particularly quickly. More widespread testing has certainly helped, especially in combination with meticulous contact tracing which the German government implemented, in order to capitalise on their data.[16] Testing was much easier to implement in Germany partly because results could be processed in multiple laboratories across the country, unlike in most other countries, which relied on a single centralised facility. In addition, when

[15] Source : Worldometer, COVID-19 testing data per country

[16] https://www.weforum.org/agenda/2020/04/it-was-the-saltshaker-how-germany-meticulously-traced-its-coronavirus-outbreak/

needed Bundeslaender (federal state authorities) could act more quickly to implement strict measures.[17]

What is also helping Germany is its low mortality rate – partly credited to having more intensive care beds per capita than any other European country at the start of the crisis.[18] This is particularly important as Germany has the third highest number of cases in Europe.[19] Its low mortality figures are perhaps also down to how the virus entered the country. Anecdotally it seems to have come via younger people on ski holidays in Italy and Austria, and far fewer cases being transmitted in care homes, which have populations particularly vulnerable to death from COVID-19.[20] As of 26th March, eighty percent of Germany's coronavirus cases were under 59 years of old, putting most people with COVID-19 younger than the high-risk age category (which is 70 years+).[21] Germany has the additional advantage of its federalised healthcare system, which has a separate health ministry per state, with a full staff count for each planning and dealing with the various aspects of the COVID-19 outbreak.[22]

While Germany's overall figures for now appear encouraging, it has also struggled to improve its doubling rates for cases compared to other countries in Europe, as seen in Chapter On (figures 13 – 18). This indicates that even with a lower mortality rate, Germany could still witness a sharp increase with high casualties. Furthermore, the German healthcare system may have large amounts of hospital equipment, but it is reportedly chronically under-staffed and is experiencing increasing shortages of protective equipment.[23]

2.6 Greece versus Spain

Greece went into the COVID-19 crisis after more than a decade of dramatic government spending cuts, and with a healthcare system which had seen its budgets cut by three-quarters[24].

[17] https://www.businessinsider.com/death-rate-german-laboratory-city-5x-less-than-national-average-2020-4?r=US&IR=T
https://www.morgenpost.de/vermischtes/article228882661/Coronavirus-Deutschland-Lockerung-der-Corona-Massnahmen-laut-Heinsberg-Forschern-moeglich.html
https://www.welt.de/politik/ausland/article206741617/Coronavirus-Auslandspresse-staunt-ueber-Deutschlands-Todesrate.html
[18] Ibid
[19] https://www.bmj.com/content/369/bmj.m1395
[20] https://www.bmj.com/content/369/bmj.m1395
[21] https://www.sueddeutsche.de/gesundheit/coronavirus-sterberate-deutschland-italien-1.4858618
[22] https://www.dw.com/en/germanys-coronavirus-response-separating-fact-from-fiction/a-53053822
[23] https://www.dw.com/en/germanys-coronavirus-response-separating-fact-from-fiction/a-53053822
[24] https://www.aljazeera.com/news/2020/04/greece-flattened-coronavirus-curve-200407191043404.html

To understand why Greece has performed so well, we have made comparisons with Spain. Both countries share a vibrant social culture and a climate favourable for spending time outdoors. Both countries had a close geographic proximity to Italy where the COVID-19 outbreak firstly appeared in Europe, and the timely advantage of witnessing the Italian outbreak enabled both Spain or Greece to draw important lessons, should they have chosen to. Both countries also detected the first COVID-19 case on their mainland at a very similar date; Spain on 25th February, and Greece on 27th February.

However, whilst Spain is currently experiencing an increasingly high number of coronavirus cases and its healthcare system's capacity to deal with COVID-19 is being pushed to its limits, Greece only reports 2,170 confirmed cases and 101 deaths,[25] and its hospitals still currently have sufficient vacancies.

The comparative speed of the lockdowns between Greece and Spain is startling. On the 8th of March, five days before one hundred cases had been confirmed in Greece, the government had already suspended all public events. In Spain, public events were suspended only seven days *after* 100 cases had been confirmed. In Greece, school closures had already been announced three days before 100 cases were detected, whilst in Spain schools remained open until 12 days after passing the hundred case mark.

The table below demonstrates how Greece had suspended public events and closed all schools before the 1st 100 cases were detected. By contrast, Spain took 12 days to close schools, Italy took 10 days, and the UK took 17 days. Note that Romania, another country which has performed well in our study, also locked down early, but has failed to fully implement the lockdown by not closing non-essential shops, or banning non-essential movement. Czechia has in general performed better than Romania. Like Greece it locked down early, but unlike Romania it then persisted with its lockdown across a broader range of measures. This suggests that early lockdown on its own is not enough; lockdowns need to be consistent, comprehensive and enforced for some time in order to yield results.

[25] https://www.worldometers.info/coronavirus/

How many days passed since measures were implemented and first 100 COVID-19 cases have been detected ?

	Events Suspended	School Closures	Non-essential shops closed	Non-essential movement banned	Land borders closed	Non-essential production stopped
Germany	19	14	not fully implemented	21	15	not fully implemented
France	-1	15	13	16	15	not fully implemented
Italy	10	10	15	15	not fully implemented	31
Spain	7	12	12	13	13	17
Romania	-6	-6	not fully implemented	9	not fully implemented	not fully implemented
Netherlands	5	8	not fully implemented	not fully implemented	not fully implemented	not fully implemented
Belgium	7	8	10	10	13	not fully implemented
Czechia	-2	-2	1	3	3	not fully implemented
Greece	-5	-3	3	10	2	not fully implemented
UK	11	17	15	18	not fully implemented	not fully implemented

Figure 19

There are other reasons Greece may be performing well. The government was fast to ban religious gatherings in particular, which on average attract older citizens.[26] It also targeted care homes early on in its lockdown. Anecdotally, there have been suggestions that the island nature of Greece may also have been a contributing factor.

In addition to moving fast and efficiently, Greece has also launched a new, large-scale volunteer initiative to provide logistical and non-care support to the health system.[27] Depending on the volunteer's experience, applicants have been trained and then placed into administrative, technical or other kinds of support. The program has proven successful, attracting more than 5,500 applications, which have helped shore up the healthcare system.[28] Additionally, a civil protection phoneline and hotline was quickly set up, alongside detailed and easily accessible online guidelines and daily reports. These clear, consistent and easily accessible communications have not only increased public trust, but also ensured public awareness about how best to act in order to curb the spread of the virus.

[26] https://greekcitytimes.com/2020/03/19/greece-bans-gatherings-of-10-people-and-more-in-public-spaces/
[27] https://ethelontes.gov.gr/
[28] https://www.tornosnews.gr/en/greek-news/society/39470-coronavirus-fight-over-5-500-volunteers-via-digital-ministry-s-platform-in-greece.html

LOCKDOWN MEASURES & DATES THEY WERE ENFORCED

Date on which social distancing measures were enforced by country

	Events Suspended	School Closures	Non-essential shops closed	Non-essential movement banned	Land borders closed	Non-essential production stopped
Germany	20/03/2020	15/03/2020	not fully implemented	22/03/2020	16/03/2020	not fully implemented
France	29/02/2020	16/03/2020	14/03/2020	17/03/2020	16/03/2020	not fully implemented
Italy	05/03/2020	05/03/2020	10/03/2020	10/03/2020	not fully implemented	26/03/2020
Spain	10/03/2020	15/03/2020	15/03/2020	16/03/2020	16/03/2020	20/03/2020
Romania	09/03/2020	09/03/2020	not fully implemented	24/03/2020	not fully implemented	not fully implemented
Netherlands	12/03/2020	15/03/2020	not fully implemented	not fully implemented	not fully implemented	not fully implemented
Belgium	14/03/2020	15/03/2020	17/03/2020	17/03/2020	20/03/2020	not fully implemented
Czechia	11/03/2020	11/03/2020	14/03/2020	16/03/2020	16/03/2020	not fully implemented
Greece	08/03/2020	10/03/2020	16/03/2020	23/03/2020	15/03/2020	not fully implemented
UK	17/03/2020	23/03/2020	21/03/2020	24/03/2020	not fully implemented	not fully implemented

Figure 20

CONCLUSION

The UK, France, Italy, Belgium, The Netherlands and Spain face grave and deadly COVID-19 crises which largely reflect a failure to react quickly and implement lockdowns. This situation is further aggravated by the fact that these six countries have also far fewer acute care hospital beds per capita than their European counter-parts. Germany has been performing much better, with a patchy and partial lockdown. Greece, followed by Czechia and Romania, is the best performing country in Europe, thanks to its early and stringent lockdown.

While testing certainly has added value when dealing with the COVID-19 crisis, no country seems likely to reach testing capacity which will provide meaningful data about potential 'herd immunity'. The lesson for now appears to be that fast and total lockdowns work, although how to end them without seeing COVID-19 resurge is the next challenge. This is where widespread testing could be the key to success.