'Covid-19 crisis as a model for Data Literacy'

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LOCKDOWN POLICIES

"How did the different lockdown strategies around the world affect the spread of the pandemic?"

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Introduction

"How did the different lockdown strategies affect the spread of the pandemic?"
Our research consists of a systematic review of lockdown policies in different countries and their efficiency in comparison with the evolution of the cases, deaths and number of people in ICU.
To do that we chose together seven countries that we find sufficiently different from each other in terms of lockdown policies, in order to have a broad vision of the different possible strategies. We firstly chose countries where we come from (France, Italy and Indonesia) since we know exactly what happened there, and for the rest we looked at the WHO dashboard and chose countries where the situation seemed interesting, either very stable or very unstable. Each member of the group had either one or two countries and worked on his side to find all the information and data to which we have access. We met around once a week to discuss our research and put them together. It was easier for some countries to find information than for others but we managed to produce a detailed analysis of the different lockdown policies of these countries. We have focused on a period from 2020 to 2021 since for the majority of countries, the year 2022 is a return to normal.

Choice of Datasets

For our dataset choice, our goal was to have reliable, efficient, relevant, clean data to work with. We could not gather all of that in one dataset. We first went to the WHO website as it is a worldwide reliable source, we found the new/cumulative cases/deaths per day dataset for all the countries, which was great and very easy to work with, but the daily numbers of covid ICU beds were not in it. We chose to work with new cases/deaths and not the cumulative, because they reflected best how fast the virus was spreading and killing. As for the numbers of ICU beds, it was quite a struggle finding the data. The most complete information we found was on ourworldindata, this is where we found a dataset for current ICU beds per day, and one for the new ICU beds per day, we decided to work with the current/cumulative numbers since it highlighted the danger of saturation of hospitals and displayed the emergency better than the new numbers. Unfortunately, this dataset did not have all the ICU numbers from all the countries we studied, which even after reaching out to some societies such as ANZICS, we could not have the access to because they were not published or available for research. However, that did not stop us from drawing the right conclusions because of our broad research, and the numbers of cases and deaths, which were available for all the countries.

Literature Review

In order to fight the outbreak of the covid-19 pandemic each country enforced some kind of lockdown. Those lockdown policies had different approaches in terms of limitation of citizens' liberties. After some time it was natural for scientists to ask them-self which approach was more effective in the reduction of the spread of viruses.

An article published on Nature[1] on 8-6-2020 states that the non-pharmaceutical intervention on Covid-19 in Europe had been enough to push the R_t below 1 i.e. to control the epidemic.

Another one published in Lancet-public health[2] assesses the potential impact of control measures in the UK. in this article 4 different methods (school closure, social distancing, self isolation of symptomatic individuals and shielding of older people i.e. >70 tears) are considered both alone and combined and it is found out that they are all effective but even combined are not enough to prevent the collapse of the healthcare system. To do so intensive intervention are needed.

Other studies were more focused on finding proper statistical tools to calculate the adequate duration of lockdowns. We found an interesting article in the Journal of Epidemiology and Global Health[3] that states that a lockdown of seven days half life is required to clear the 99.2% of the epidemics.

Here are some more articles stating that lockdowns are indeed effective against covid-19. One[4] focuses more on the proper length of the lockdown as a whole while the other[5] considers the duration of five categories of responses.

Research: The Different Lockdown Policies

INDONESIA

2020

Indonesia was infected by the virus in early March 2020. On March 25th 2020 Indonesia implemented its first nationwide lockdown. Big convenience stores, malls, tourist destinations, schools and offices were not authorized to operate during the nationwide lockdown. People are obliged to stay home as much as possible, get constant contact with the sun, daily consumption of vitamins and daily temperature check ups. At first the government stated the lockdown period would last for 2 weeks but several extensions were then applied as the situation worsens.

The health protocols implemented during this time concludes the limitations to:
a. learn in schools or other educational institutions;
b. Practice religious activities in public places of worship;
c. work activities in the workplace;
d. activities in public facilities
e. social and cultural activities; and
f. movement of people and goods using any modes of transportation.

During these first months of the nationwide quarantine all foreign tourists, both Indonesian citizens and foreigners who enter the territory of the Unitary State of the Republic of Indonesia, continue to follow the same provisions as for the category of foreigners who may enter Indonesia, including the same vaccination provisions, the same PCR test provisions with the following provisions, adjustments as regulated in the 2020/2021 Addendum:

1. Mandatory hotel quarantine changes from 5 x 24 hours to 3 x 24 hours for foreigners who have received complete vaccinations, with all costs being borne by the traveler.
2. The Head of the Diplomatic Mission and his family, VIP visits, as well as Foreign Officials who are recommended to the Task Force and approved for release, can self-isolate for 3 x 24 hours and report the results of the RT-PCR test to the Forced Covid-19 Task Force through the Ministry of Foreign Affairs , provided that they have received complete vaccinations.
3. RT-PCR collection is carried out 2 times, namely 1 x 24 hours after arriving in the Unitary State of the Republic of Indonesia; and 3 x 24 hours during quarantine before completing the mandatory 3 x 24 hour quarantine period.

2021

Indonesia then started to apply different measures according to the level of cases of each city/region. The cases are separated to 4 different levels. Quarantines were separated to 6 different periods by the Indonesian governments (21 -25 July, 26 July-2 August, 2-9 August, 9-16 August 2021, 16-23 Agustus 2021, and continued until 24-30 Agustus)

Briefly, during this nationwide quarantine, **level 1** regions/cities are only obliged to work and study online 50% of the time, malls and shops have more flexible curfews and are allowed to be open until late in the evening. **Level 2** regions/cities are also obliged 50% of the time to work/study online, but the curfews are more strict and shops/stores/malls are obliged to close sooner. **Level 3** regions have to work and study 100% online therefore offices and education institutes are closed during this period and public spaces close earlier. **Level 4** regions are not allowed to open their big stores/franchises and curfews are very strict.

During these 6 continued periods of quarantine the numbers of both deaths and confirmed cases peaked drastically because during this period people were vigorously trying to travel to different cities and regions to celebrate Eid Al-Fitr which were celebrated by most of the Indonesians. To guard all the paths taken by these travelers is impossible and in the end even if some are then sent back to their original cities and region, most managed to travel and arrive at their relatives' hometown. The people from the big cities are most probably bringing the virus with them while visiting level 1 countryside that is why at the end of this long "quarantine" the cases increased instead of declining. Not only during the July-August period but at the start of the year Indonesia managed to peak because of a similar reason. People traveled around Indonesia to see their relatives during christmas & new year break.

FRANCE

2020
On March 17, France had its first national lockdown. This lockdown plunged a quarter of France's working population into a work from home environment. For parents working from home, the closure of schools and universities added further complications to already constrained lives. Anyone leaving their home without urgent reasons (a mandatory form should be filled) can be fined and people are obligated to implement the current health protocols. This lockdown lasted until may 10. (1)

On May 11 starts the gradual lifting of the confinement. In order to avoid the prospect of a containment, the National Academy of Medicine recommended to reinforce epidemiological surveillance, to intensify screening,to maintain compliance with barrier measures and the wearing of masks, and to conduct an information campaign targeting the youngest age groups.(2)

Plans shown by Health Minister Olivier Véran show that France was cut in two, a green zone and a red zone, according to the suspected presence of the virus, the ability of hospitals to cope with patients in need of intensive care, and the availability of tests for people showing symptoms. Four regions - Ile-de-France, Hauts-de-France, Grand Est and Bourgogne-Franche-Comte - were still, after lockdown, classified red, denoting heightened risk. In the red regions,schools remained closed for most of May. According to the health minister, France is now ready to start mass testing and has the capacity to test, at a rate of around 700,000 per week, which might be a reason for the increase of cases.(3)

France enters a second nationwide lockdown on October 30. With lessons learned from the first lockdown, the government has made some significant changes to its confinement rules: In contrast to the first lockdown, schools remained open while universities continue to operate online. The construction sector, public services,retirement homes,places of worship/wedding/funerals, hotels,parks and beaches remained open but under strict conditions. On the other hand, gyms, sport clubs, non essential shops, restaurants, bars remained shut. Public or private gatherings, as well as non necessary travel were not allowed and working from home remained a priority. (4) This lockdown lasted until the end of November.

As for December, France lifted the lockdown, replacing it with a strict 8pm to 6am curfew. Non essential travel(in EU/Schengen zone), gatherings, shopping were allowed during that time, but gyms, restaurants, bars and cafés remained shut and permission forms were still needed to leave the house. The curfew was lifted on Christmas Eve but not on New Year's Eve. (5)

2021
On January 1, A new curfew goes into effect at 6pm in 15 French departments, while the previously installed 8pm curfew stays in place in the other departments. (6) As the new variant is discovered and the situation worsens, this 6pm curfew was extended to a further 8 departments on January 9, before being nationally extended later on January 14. (7)

On January 29, the borders were closed to non EU countries, except for a compelling motive, and people arriving from EU countries will be required to produce a negative virus test.(8)

On February 5, the head of France's hospital federation warned that hospitals and intensive care units hardest-hit by Covid-19 will need to start delaying some other procedures. But the Prime Minister said the

Covid-19 situation in France did not justify a new lockdown at present, even if the pressure on French hospitals remained strong. (9)

On March 4, a weekend lockdown was imposed in 20 areas with high infection rate, in the north of the country. (10) This weekend lockdown was extended to Nord Pas-de-Calais on March 6.(11)

On March 10, the number of people in intensive care in France who have COVID-19 is at the highest level since the end of November, health officials said, but the government is not planning to put the country into lockdown. France's public health chief said lockdown would be a last-resort measure imposed only if the hospital system could no longer cope. (12)

On March 15, France's government said Sunday it plans to evacuate around 100 Covid-19 patients from intensive care units in the Paris region this week as hospitals struggle to keep up with a surge in cases. With the transfers, officials hope to avoid a new lockdown. (13)

On March 18, French Prime Minister announced a month-long lockdown for Paris and several other regions to combat rising Covid-19 cases, while insisting the measures would not be as strict as in the past. (14) On March 26, France extends this lockdown to 3 more areas, including Lyon region.(15)

On April 2, President Emmanuel Macron ordered France into its third(and last) national lockdown and said schools would close for 3 weeks, in order to push back a third wave of Covid-19 infections that threatens to overwhelm hospitals. (16)

On April 23, France gets back to a 7pm curfew, and starts gradually easing the restrictions. (17)

On May 19, Cafés, restaurants and bars, cultural venues including theatres, cinemas and museums reopened at partial capacity. The nationwide curfew was pushed back to 9pm. (18)

On June 9, France reopens for international tourism, but with conditions, according to this color-coded system:

- Countries wrestling with virus surges and worrisome variants will need a compelling reason for their visit, and adhere to a set of strict conditions. This "red list" currently has 16 countries, including India, South Africa and Brazil.

- Outside of Europe, most of the rest of the world is classed as "orange".

Vaccinated visitors from "orange" countries no longer need to quarantine on arrival and no longer have to justify the reasons for their trip to France. They are, however, asked for a negative virus test.

- EU visitors and those from 7 countries– Australia, South Korea, Israel, Japan, Lebanon, New Zealand and Singapore – are classed as "green"; they no longer need to undergo testing if vaccinated.

This color-coded system was constantly updated depending on the situation.

The curfew was pushed from 9pm to 11pm. (19)

On June 20, France lifts mandatory mask-wearing outdoors and puts an end to the curfew. Masks would still be required outdoors in crowded places. (20)

On July 13, French President announced mandatory Covid-19 vaccinations for health staff, as well as a tightening of restrictions to fight a recent surge in cases linked to the Delta variant. From August, anyone wanting to go out to eat or drink, visit a shopping centre or attend a festival, theatre show or cinema screening needs to show a health pass(proof of vaccination or negative PCR from less than 72hours). (21)

ITALY

2020

Covid first arrived in Italy on the 30th January 2020 and on the 31th January the state of emergency was declared but it started to spread during the second half of February[1].

During the first wave (February-May 2020) the lockdown policies consisted in social distancing, the order to stay at home and quarantine for infected people, for those who had met them and for people showing symptoms of COVID-19[2]. By the 26th of April the use of masks was implemented[3]. This may look strange but we have to keep in mind that there weren't enough DPI available for the whole population so masks were reserved for hospitals and healthcare facilities.

The first lockdown started on the 4th March when all productive activities and shops but the necessary ones were closed[4]. Schools start doing online learning. On the 9th March all social gatherings and movements around the country were banned and all religious activities had to stop[5]. Citizens were ordered to stay at home.

In spring 2020 as the number of covid cases decreased[6] the government started to reopen some activities. On the 4th May visits to relatives were allowed and factories could reopen[7]. On the 18th all shops and restaurants reopened and religious buildings were open to the public. On the 25th, gyms and sport centers resumed their activities and on June 3, all movement limitations were lifted[8].

In September 2020 schools resumed their usual activity but at the beginning of October 2020 the infected number built up again[9] so on the 13th were imposed new restrictions on social gatherings, restaurant[10]. On the 24th October schools were forced to do 75% of the lessons online, gyms were closed and international mobility was banned[11].

3rd November a three level alert system was developed[12]. The alert level of each region was updated weekly on the basis of the Rt of the 2 previous weeks[13].

The tables report the number of regions in each alert level[13][14], Italy the 20 regions but for lockdown matter one of them (Trentino Alto Adige) is considered as two half.

During Christmas people weren't allowed to leave their city.

Measures in very high alert or red regions
- No movement outside of the region are allowed but the necessaries one
- No change of city are allowed
- Restaurants and similar activities are closed. Only take away is allowed
- All shops are closed but groceries and pharmacy
- Schools from the 7th grade (or 2nd year of middle school) and University must do online learning
- Smart working is encouraged
- Gyms, clubs and wellness centre are closed
- Mask and social distancing

	Red	Orange	Yellow
03-11-2020	4	2	14
08-11-2020	5	7	8
15-11-2020	7	9	4
29-11-2020	5	9	6
04-12-2020	1	7	12
13-12-2020	-	4,5	15,5
25-12-2020	20	-	-
27-12-2020	-	4,5	15,5
07-01-2021	-	8	12
17-01-2021	2,5	13	5,5
24-01-2021	1,5	16	4,5
01-02-2021	-	4,5	15,5
08-02-2021	-	3,5	16,5
15-02-2021	-	6	14
21-02-2021	-	12	8

Measures in high alert or orange regions
- No movement outside of the region are allowed but the necessaries one
- No change of city are allowed
- Restaurants and similar activities are closed. Only take away is allowed
- Gyms, clubs and wellness centre are closed
- Masks and social distancing

Measures in medium alert or yellow regions
- Curfew from 10 pm to 5 am
- Masks and social distancing
- Gyms, clubs and wellness centre are closed

Measures in low alert or white regions (introduced on 14th January 2021)[15]
- Clubs are closed
- Mask compulsory only indoor

	Red	Orange	Yellow	White
01-03-2021	2	8	9	1
08-03-2021	3	10	6	1
15-03-2021	10,5	8,5	-	1
22-03-2021	9,5	10,5	-	-
29-03-2021	12,5	7,5	-	-
03-04-2021	16	-	4	-
06-04-2021	9	11	-	-
12-04-2021	4	16	-	-
19-04-2021	3	17	-	-
26-04-2021	1	5	14	-
03-05-2021	1	5	14	-
10-05-2021	-	3	17	-
17-05-2021	-	1	19	-
24-05-2021	-	-	20	-
31-05-2021	-	-	17	3
07-06-2021	-	-	13	7
14-06-2021	-	-	7,5	12,5
21-06-2021	-	-	1	19
28-06-2021	-	-	-	20
30-08-2021	-	-	1	19
09-10-2021	-	-	-	20
27-11-2021	-	-	1	19
20-12-2021	-	-	3,5	16,5

On the 27th December 2020 the vaccination campaign began. At first the vaccine was only available for healthcare workers and elder people, then it was offered to fragile people (people with chronic illness) and adults over 50. By the beginning of summer it was available for everyone over 12 years[16].

2021
On the 22th April 2021 the green pass was introduced[17]. The green pass is a document that state that the owner has been vaccinated. People with the green pass were subject to less limitations. On the 17th June the government implemented the EU Digital COVID Certificate Regulation, ensuring fully interoperable digital certificates across all EU countries starting from 1st July 2021[18].
On the 28th June 2021 the curfew was lifted. On the 28th August the green pass became compulsory so eat at restaurants, enter cinemas, theaters, museums, gyms…
On the 1st September teachers and professors as well as university students were required a green pass to work[19] and on the 15th October it became compulsory in all workplaces.[20] On the 31st April 2022 it was declared the end of the state of emergency[21].

SOUTH KOREA AND VIETNAM

South Korea was one of the first countries to be hit by the virus in December 2019. However, the country is one of the countries that has best managed the pandemic, indeed, it is one of the few countries that have not resorted to any confinement.

A lot of the decisions that the country made affected the borders of the country. Effectively, from January 3, border controls began to be carried out. To avoid any confinement, the country operates with an alert level system ranging from level 1 to level 4 accompanied by massive screening of the population. They used a method called the "3T Method" for test, trace and treat. This method is based on mass screening of

symptomatic and asymptomatic cases (test), work to identify transmission routes and contact cases (trace) as well as the admission of patients and isolation. contacts (treat). The method is also based on transparent communication and the responsibility of the population.

The use of only this method isn't efficient enough and that's why they had to use social distancing. As said before, they had four level of social distancing. The level 2 was set up 20th January 2020, level 3 27th January, and level 4 23rd January. The level 4 is the closest of a lockdown but people can still "live" so South Korea managed to not do any real lockdown. Everything is still open under level 4 but some places such as restaurants or places of leisure are under curfew.

Since the last two years, Korea only used this method, choosing the level of social distancing depending on the covid cases.

Vietnam followed pretty much the same path as Korea except they had a small lockdown.
They entered a nationwide lockdown on April 1. Initially, the lockdown was set for 15 days, but it was extended to 21 days in 28 out of 63 provinces.
After seven consecutive days without a new case of coronavirus, Vietnam began on April 22 to ease containment measures. Shops, non-essential services and street vendors can resume their activities, but gatherings of more than 20 people remain prohibited.

They kept doing small lockdowns locally but it only affected a small part of the population each time.

INDIA
Nationwide lockdown:

- Phase 1: 24 March 2020 – 14 April 2020 (21 days)
- Phase 2: 15 April 2020 – 3 May 2020 (19 days)
- Phase 3: 4 May 2020 – 17 May 2020 (14 days)
- Phase 4: 18 May 2020 – 31 May 2020 (14 days)

Lockdown – 2020
Phase 1
On 24 March, the first day of the first nationwide lockdown, nearly all services and factories were suspended. Arrests across the states were made for violating norms of lockdown such as venturing out for no emergency, opening businesses and also home quarantine violations.

Phase 2
On 16 April, lockdown areas were classified as "red zone", indicating the presence of infection hotspots, "orange zone" indicating some infection, and "green zone" with no infections.
The government also announced certain relaxations from 20 April, allowing agricultural businesses, including dairy, aquaculture, and plantations, as well as shops selling farming supplies, to open. On 25

April, small retail shops were allowed to open with half the staff. Again social distancing norms were to be followed.

On 29 April, the nation's minister issued guidelines for the states to allow inter-state movement of the stranded persons. States have been asked to designate nodal authorities and form protocols to receive and send such persons. States have also been asked to screen the people, quarantine them, and do periodic health checkups.

Phase 3

On 1 May, the Ministry of Home Affairs (MHA) and the Government of India (GoI) further extended the lockdown period to two weeks beyond 4 May. The country has been split into 3 zones: red zones (130 districts), orange zones (284 districts), and green zones (320 districts). Red zones are those with high coronavirus cases and a high doubling rate, orange zones are those with comparatively fewer cases than red zones and green zones are those without any cases in the past 21 days. Normal movement is permitted in green zones with buses limited to 50 percent capacity. Orange zones would allow only private and hired vehicles but no public transportation. The red zones would remain under lockdown. The zone classification would be revised once a week.

Phase 4

On 17 May, the National Disaster Management Authority (NDMA) and the Ministry of Home Affairs (MHA) extended the lockdown for a period for two weeks beyond 18 May, with additional relaxations. Unlike the previous extensions, states were given a larger say in the demarcation of Green, Orange and Red zones and the implementation roadmap. Red zones were further divided into to *containment and buffer zones*. The local bodies were given the authority to demarcate containment and buffer zones.

April 5–15 June 2021

When cases rapidly increased in Maharashtra, CM Uddhav warned people on March 28, 2021, to imposed complete lockdown and night curfew was imposed. Schools and offices remained shut. On 4 April 2021 Maharashtra CM Uddhav Thackeray announced a lockdown until April 30. On 5 April 2021 everything began to close due to rise in COVID-19 second wave. Only online deliveries were free at this stage. Several States And UTs are imposed complete Lockdown whereas some like Punjab, Chandigarh, Gujarat, Andhra Pradesh, Assam, Arunachal Pradesh and Nagaland Imposed Partial Lockdown and Major Restrictions.

From 15 June 2021, Many States started lifting lockdowns and restrictions and moved in Unlock (end of lockdown) phase.

NEW ZEALAND

2020

The Sars-CoV-2 pandemic arrived in New Zealand on the 28th February 2020[1].

On the 19th March the government closed the borders to prevent the access of further unknown infected people while it started to isolate positive people. Kiwis who has been abroad had to undergo a 14 days period of isolation[2]. On the 21st March a 4 level alert system was developed[3].

Level 4: Lockdown
- Order to stay at home
- School closed

- Non-essential activities closed
- Travel restriction

Level 3: Restrict
- Limitation of movement in infected areas
- Infected schools closed
- No mass gatherings
- Alternative ways of working required and closure of some non-essential business

Level 2: reduce
- Smart working encouraged
- Limitation to gatherings
- More borders measures
- High risk people must stay at home
- Masks compulsory on public transport

Level 1: prepare
- Border measures
- Contact tracing and intensive testing
- Social distancing
- Mass gathering with max 500 people

On the 25th March NZ entered a level 4 lockdown that lasted till 27th April when the country became level 3, later on 12th May the country moved to level 2 and then to level 1 on the 8th June. After the first wave New Zealand experienced one more national lockdown and some regional ones, most of them in the Auckland region.

One on the 12th August the Auckland region was placed in level 3 after 4 covid cases were discovered while the rest of the country was placed in alert level 2. Auckland region reverted to level 2 the 30th August and on the 7th of October it went back to level 1.

2021
The second lockdown started on the 14th February 2021 (Auckland level 2, country level 1) and it lasted only 3 day. By the 22sd the whole country was back again in level 1.
The last Auckland lockdown started on the 28th February and by the 6th March it was back in level 2 and then in level 1 on the 12th March. From 23 June Wellington experienced 6 days of alert level 2.

On the 17th August 2021 New Zealand entered a national level 4 lockdown, the restrictions were then lifted on the 6th September and the whole country but the Auckland region became level 2[4].
On the 3rd December 2021 the "protection framework" replaced the alert level system[5].
The key points of the protection framework are vaccination which is encouraged for everyone and required in some places, capacity limits in defined spaces and localized protections and lockdowns. The protection framework is also known as light traffic system and has three different scenarios
Green light:

- No restriction

Orange light
- Face masks must be worn inside and on public transportations
- Some workers are required to be vaccinated (health sector workers, prison staff, border workers

Red light
- Face masks must be worn inside and on public transportations
- Indoor gatherings of any kind are limited to 200 people
- Some workers are required to be vaccinated (health sector workers, prison staff, border workers
- Working from home is encouraged

Statistical analysis and comparison between the countries

Some ICU Data
-2020-

| France | Italy | South Korea |

-2021-

| France | Italy | South Korea |
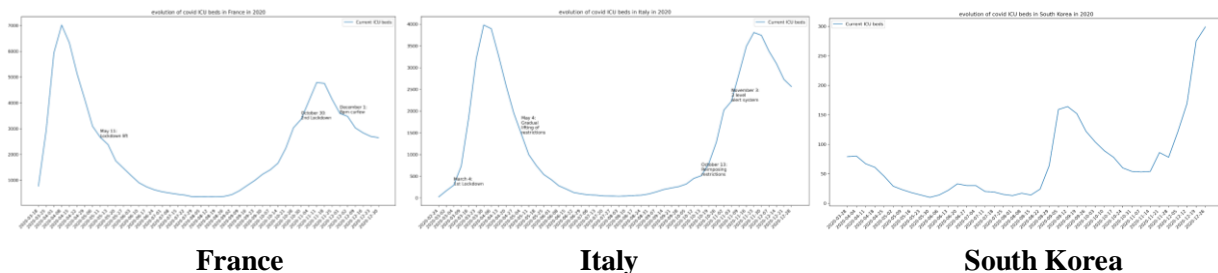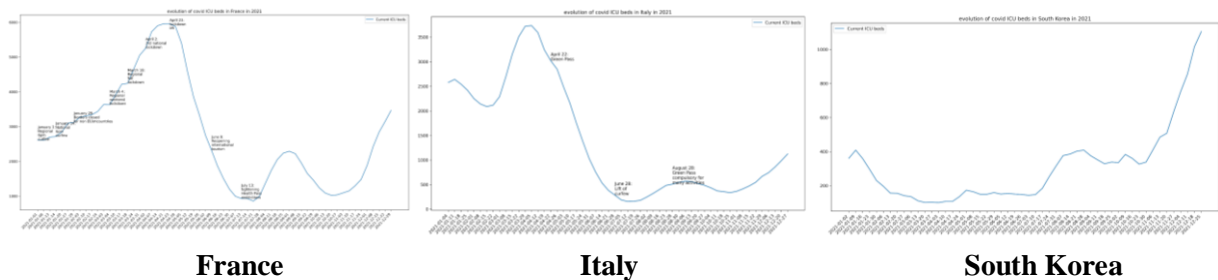
We can notice France and Italy's graphs have very similar shapes, which is not strange because their approaches were not so different. The numbers might be more alarming in France since they were criticized for a very slow start of the vaccination campaign. In South Korea the number of ICU beds never went past 1000 over 2 years and that shows the country had a very stable situation compared to Italy and France.

Overall Data (Cases, Deaths & ICU)
-2020-
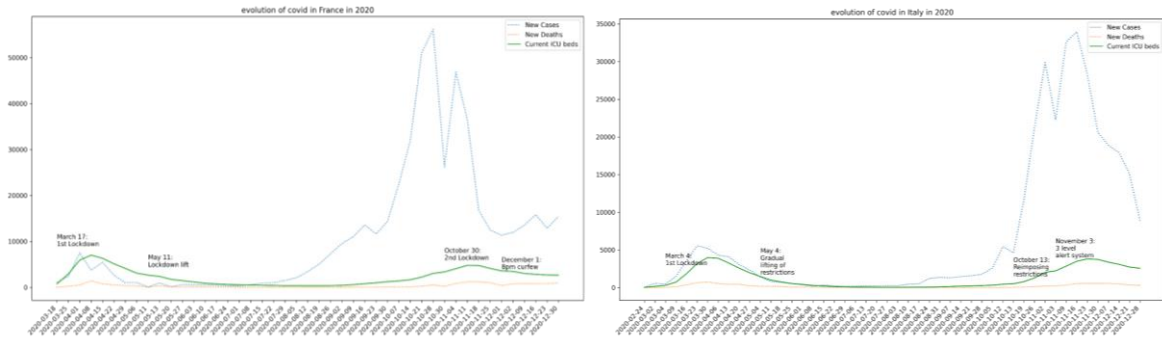
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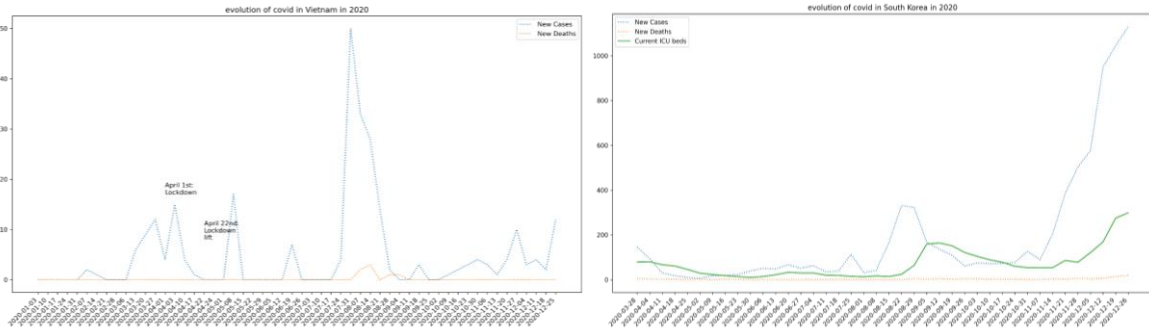
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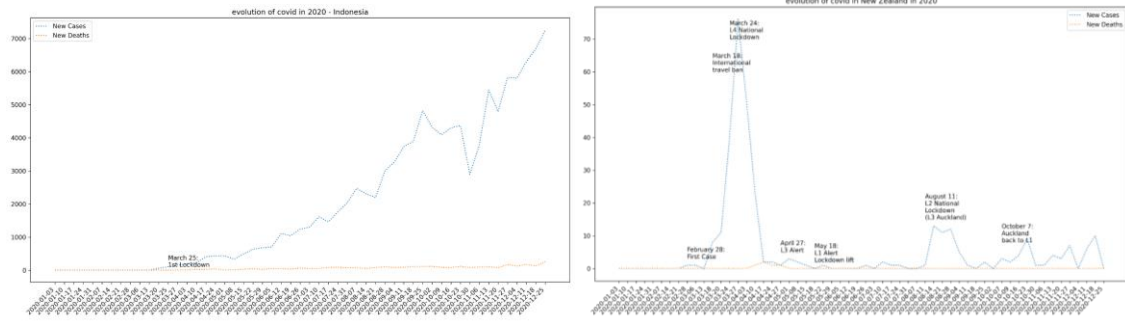
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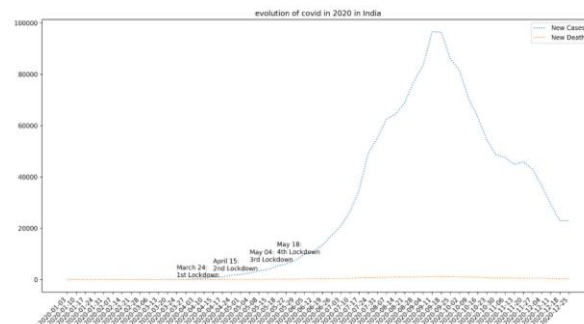
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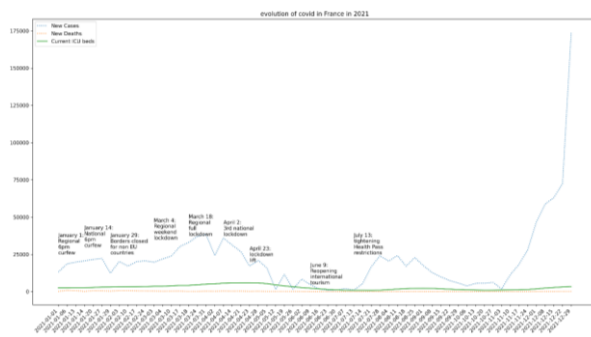
New Zealand

India

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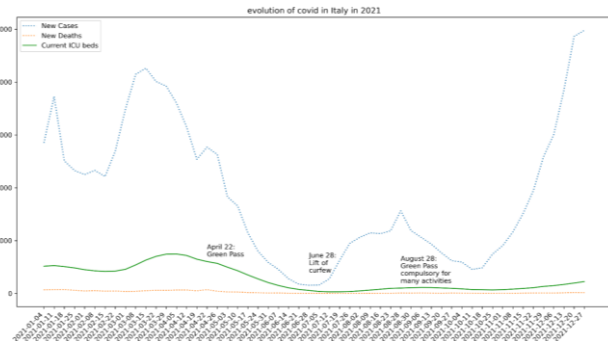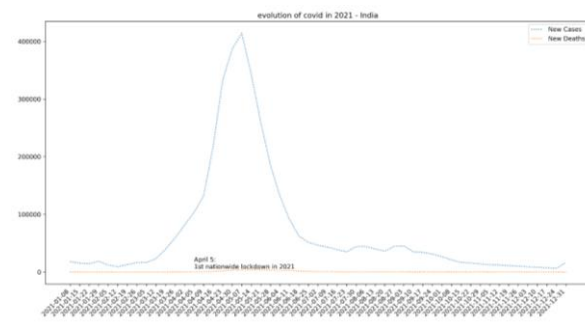

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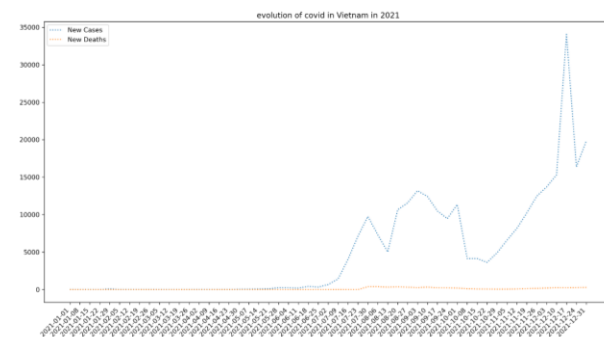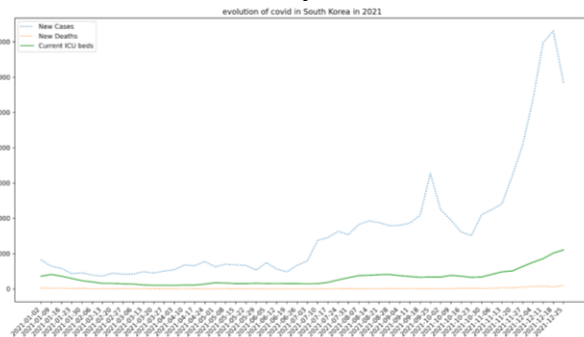
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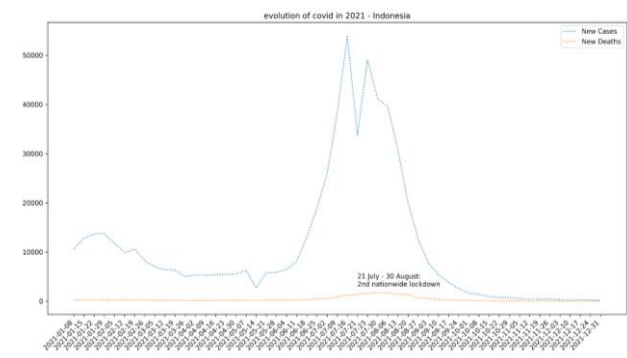
South Korea

Indonesia
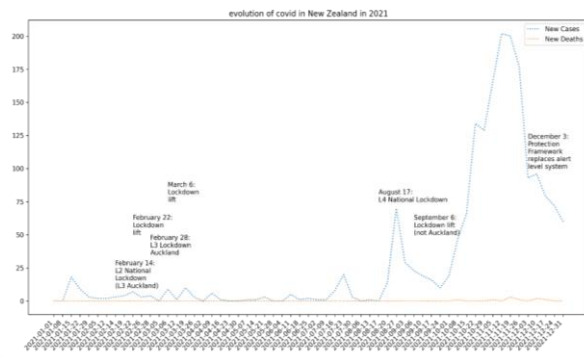
New Zealand

India

After analyzing the data and linking the dots with our detailed research, we were first able to distinguish three countries where the situation was handled really well: New Zealand, Vietnam and South Korea; despite some peaks in the cases (which were not really dangerous considering the population), the deaths and ICU in these countries seemed very stable. This must be no surprise thought, because it is known that the best way to handle an illness is not to get ill in the first place: this three country isolated themself from other country and instead on focusing on preventing the circulation of the virus among citizens, they focused on preventing the virus to enter the country on the first place. New Zealand had the most successful method likely thanks to her geography: being an island it is much easier to control incoming people because the majority is forced to use an airport.

Indonesia on the other hand had longer lockdowns yet because of the citizens not respecting the rules and regulations of the lockdowns and keeping the health protocols right after it was lifted is the main reason why the number of cases in Indonesia peaked at some periods of these 2 years.

In France, the lockdown decisions were correct enough in 2020 as they helped decrease the ICU numbers, whereas in 2021, the mistakes of the government was trying too hard to avoid a full lockdown, prioritizing economy over health and starting too slow on the vaccination. An efficient initiative from France was the health pass because it helped encourage and urge the vaccination. A similar thing happened in Italy.

India failed to contain the pandemics and suffered great losses: during the second wave for a whole month it had more than 300000 new cases/day and it had peaked over 400000 new cases/day. In the middle of 2021 the government of the country was confident with the constant decrease of the confirmed cases and soon after, India commenced their annual festival to only multiplied the number of confirmed cases and deaths. It was also the beginning of the new virus variant "Delta".

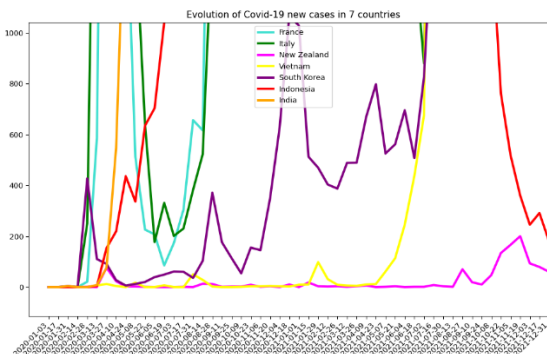# Comparison Graphs
-Cases(2020/2021)-

Evolution of Covid-19 new cases in 7 countries
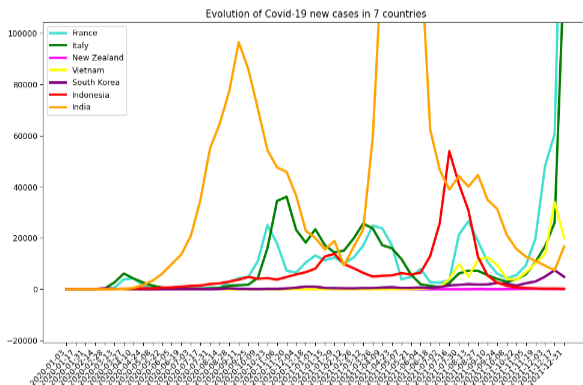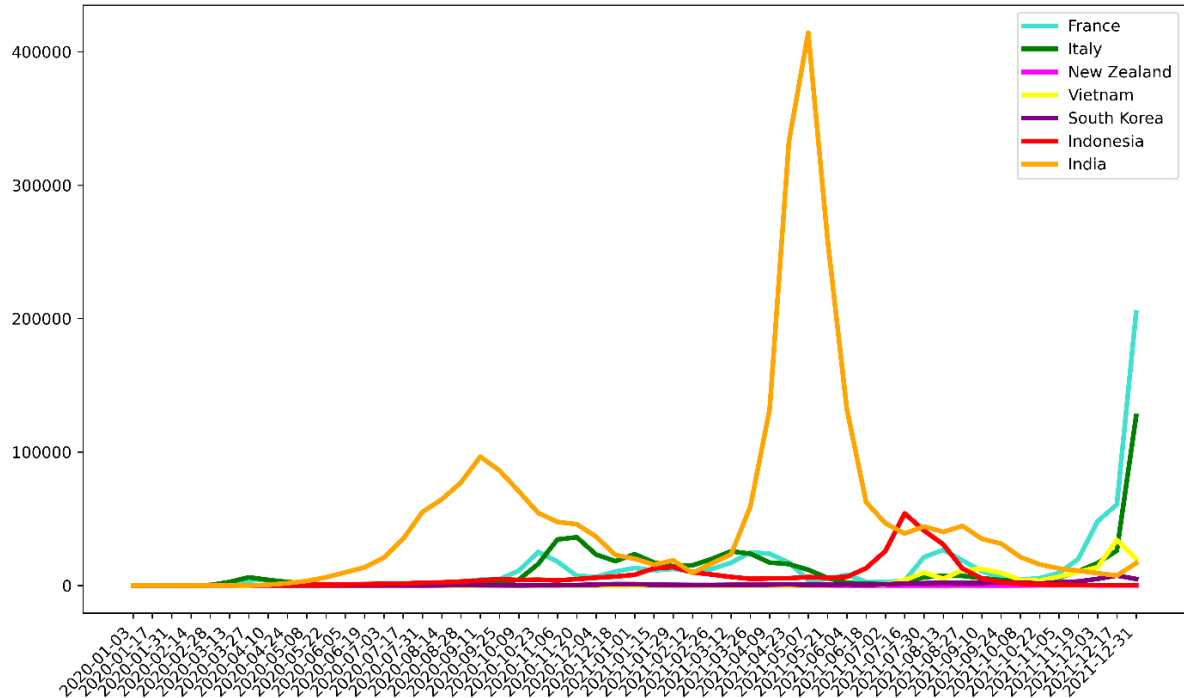
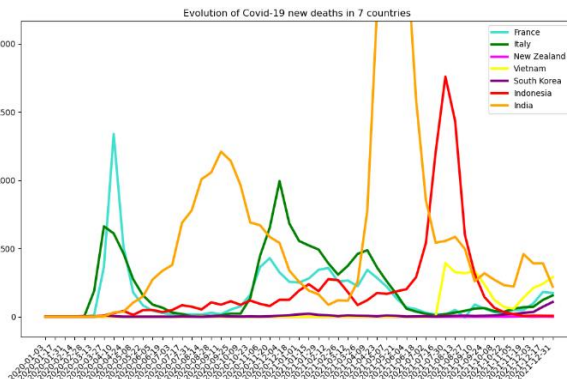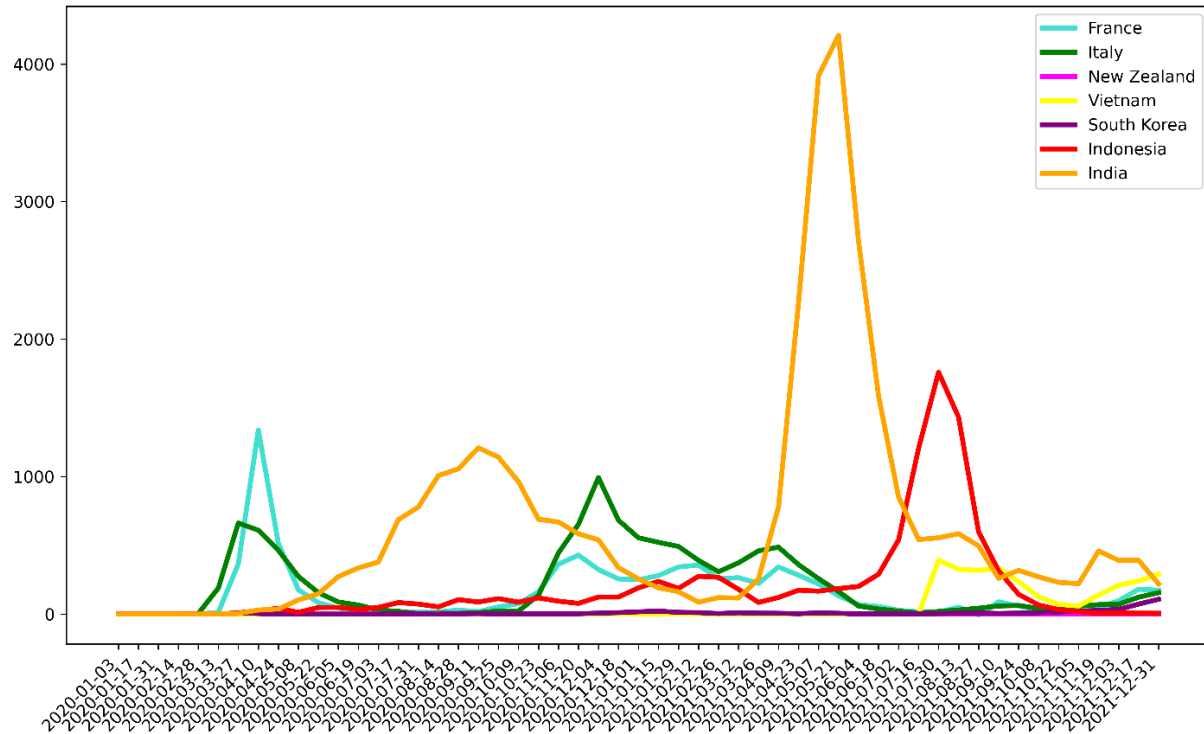
Zoom in (100 000 cases)
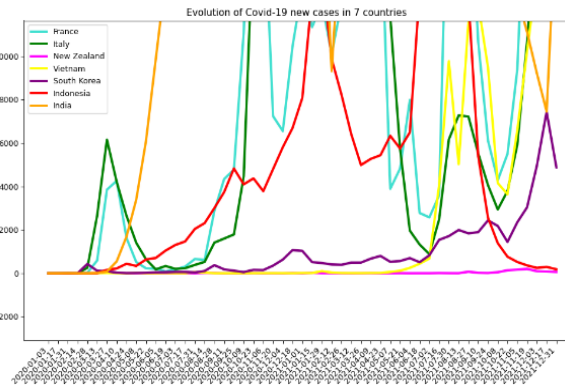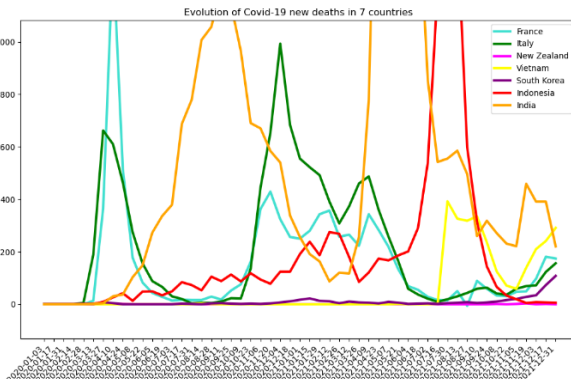
Zoom in (10 000 cases)
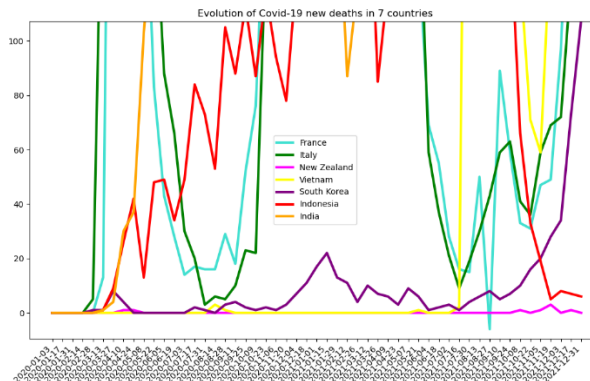
Zoom in (1 000 cases)

-Deaths(2020/2021)-

Evolution of Covid-19 new deaths in 7 countries

Zoom in (2 000 deaths)

Zoom in (1 000 deaths)

Zoom in (100 deaths)

For the evolution of the cases (in a chronological order), France Italy and South Korea have roughly the same population (near 60 million), yet France and Italy had way higher peaks while South Korea's peaks were very controlled.

For Indonesia, it's true that the peak wasn't that high compared to the population, however the cases were constantly increasing so the situation was overall unstable.

In india, not only the peaks were very high but also extended on a very wide period of time which shows a lack of control over the cases skyrocketing, also dont forget that india was the origin of the delta variant, which explains the alarming numbers.

For vietnam and new zealand as we can see the situation was very stable, the slight increase of cases towards the end is not a sign of danger, with the arrival of the vaccine, the virus kept spreading but wasnt scary anymore.

As for the evolution of the deaths, the graphs are of course on much smaller scales, since the cases include asymptomatic people and people who recover so a very small percentage are the ones who die.

In 2021, as opposed to what we saw in the cases graph, there is a general decrease in the number of deaths, because as we mentioned, the virus was still spreading but not killing anymore.

For the countries that still had high peaks for the deaths in 2021 like india and indonesia, that is due to their high population of course, and also to the fact that the vaccination campaign was not fast enough to deal with the emergency.

Critical Review

Although we have done our best for this dissertation, some points could have enabled us to produce a better quality work. We will cite them in this section.

Finding everything in one single dataset would have made the statistical work easier. The dataset from WHO had all the countries in the world, but was not exactly the target of the complete research, whereas the dataset from ourworldindata was very simple, but did not have all the countries we needed.

We had a hard time gathering the data since we had to find the cases, deaths and ICU separately by country, then merge the datasets. Moreover, we couldn't get access to the ICU beds data for part of the countries, although we tried for a long time to find it, unfortunately we didn't succeed.

Further, we experienced some problems outsearching the policies of countries whose mother tongue none of us speak. In those situations we couldn't read the official documents of the government and we had to rely on journal articles.

Finally, something that had nothing to do with the data available to us, however the working period for this essay fell for the majority of us during our final exams. The stress of our exams plus the time for revisions probably prevents us from giving 100% in this assignment.

Conclusion

After analyzing all these different strategies we came to different conclusions that we will expose in this small paragraph. Firstly, we found out that a lockdown isn't necessarily the key, we can see that South Korea did very well (one of the most impressive results of all countries) without having a single day of lockdown when Indonesia is still struggling with the virus these days even with their strong lockdown. With the example of New Zealand , we can affirm that border closures are a very important decision to make at the very beginning, that's the decision this country made and look at the results, the country is a success story during this epidemic. For us, social distancing and barriers measures should be and should have always been a part of our daily lives whether or not we are in a pandemic or not (Korea and Vietnam mainly relied on social distancing and they succeeded). It is probably the best way to fight the epidemic. In a deadly pandemic like Covid-19, we shouldn't wait for a crisis to take action like France and Italy did and we can see why in the results of these two countries.

As for now, May 2022, we hope that it is the end for this pandemic and this dark phase of our lives! Many countries have more or less managed to get out of this epidemic and the virus has been somewhat pushed into the background, for the moment.

However, BREAKING NEWS, a new virus entered the game, the "Monkeypox" in May 2022 ! After seeing how the world handled Covid-19, we can not wait to see how we will handle this one. Is it only a false alarm ? Will it be different ? Will we learn from our mistakes ? So many questions that can only remain unanswered for the moment.

Who did what?

<u>Intro</u> : Yoann Klinger
<u>Choice of Datasets</u> : Christina Souaiby
<u>Literature Review</u> : Anna De Carli

<u>Research</u> :
France : Christina Souaiby
Indonesia and India : Sandra Kisdwiutomo
Italy and New Zealand : Anna De Carli
South Korea and Vietnam : Yoann Klinger

<u>Statistical work</u> : Christina Souaiby and Sandra Kisdwiutomo
<u>Research Comparing</u> : Christina Souaiby, Sandra Kisdwiutomo, Yoann Klinger and Anna De Carli
<u>Critical review</u> : Yoann Klinger and Christina Souaiby
<u>Conclusion</u> : Yoann Klinger and Christina Souaiby

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