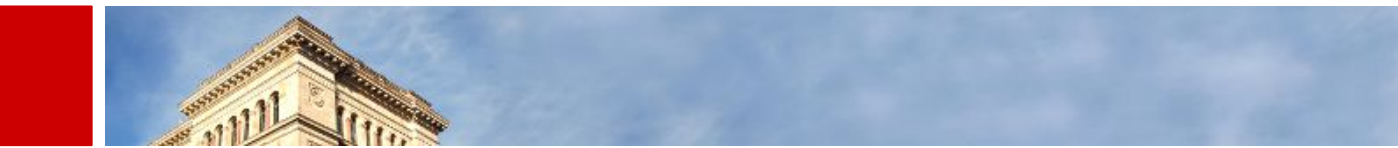




# Corona Virus and its Impact on the global Economy



# *Agenda*

- Background
- Research Question
- Methods used
- Results
- Plan



## ***Not just a virus***

- What started as a virus outbreak in December 2019 in a small Food Market in China turned out to be global Crisis .
- The Governments around the World started Lockdowns.
- After a few Weeks in the Lockdown the Economies started getting worse .



## ***Research Question***

- As soon as Lockdowns started the stock market started going down





## *Research Question*

- Which country(ies) saved more lives and still managed to avoid a stock market crash?



## *From previous presentation (Remember ?)*

### Problem:

-Two different aspects.

*Idea: define a factor*

Ex: GDP Growth in %  
Percentage of death cases





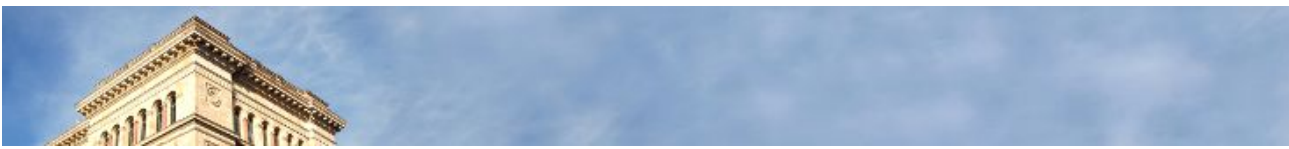


## Research Question

- Changed factor definition.

~~GDP Growth~~:  $\Delta$ Stock Market index in %  
Percentage of death cases





## ***Research Question - added..***

- How strict should the lockdown be?





## *Methods*

- ❖ Problem: a lot of variables should be considered
  - ❑ Covid-19 Data : time needed to flatten the curve, number of fatalities ,..
  - ❑ Lockdowns : how long, how strict for each country
  - ❑ Stock Market : Ups and downs of the Country Index

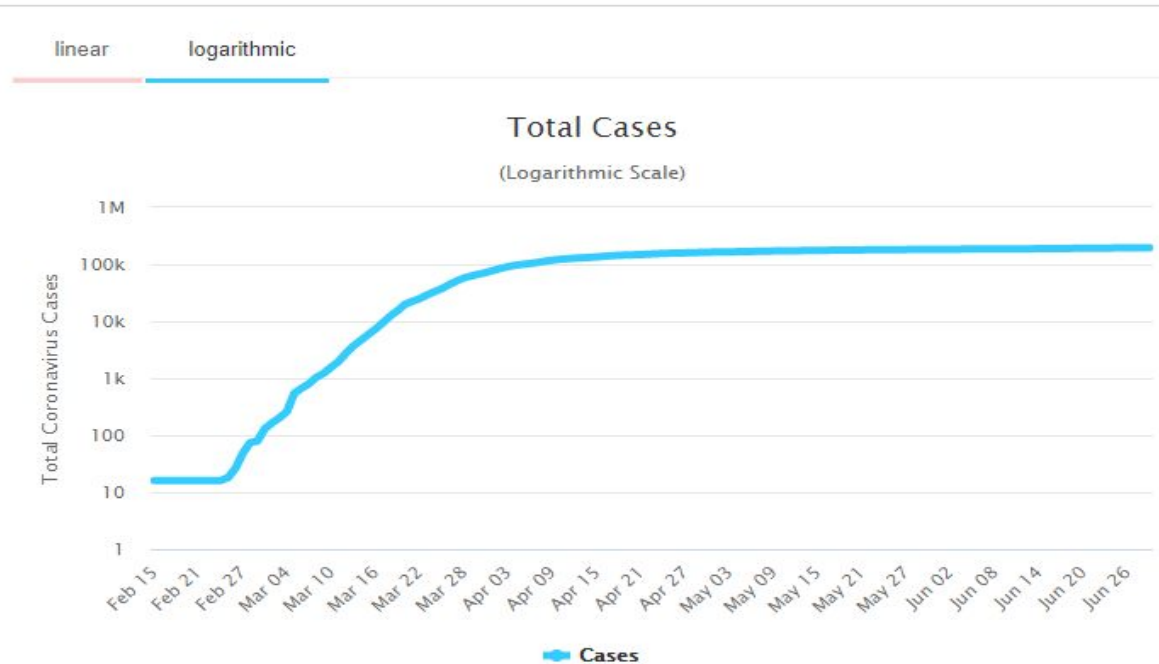


## ***Who flattened the Curve ?***

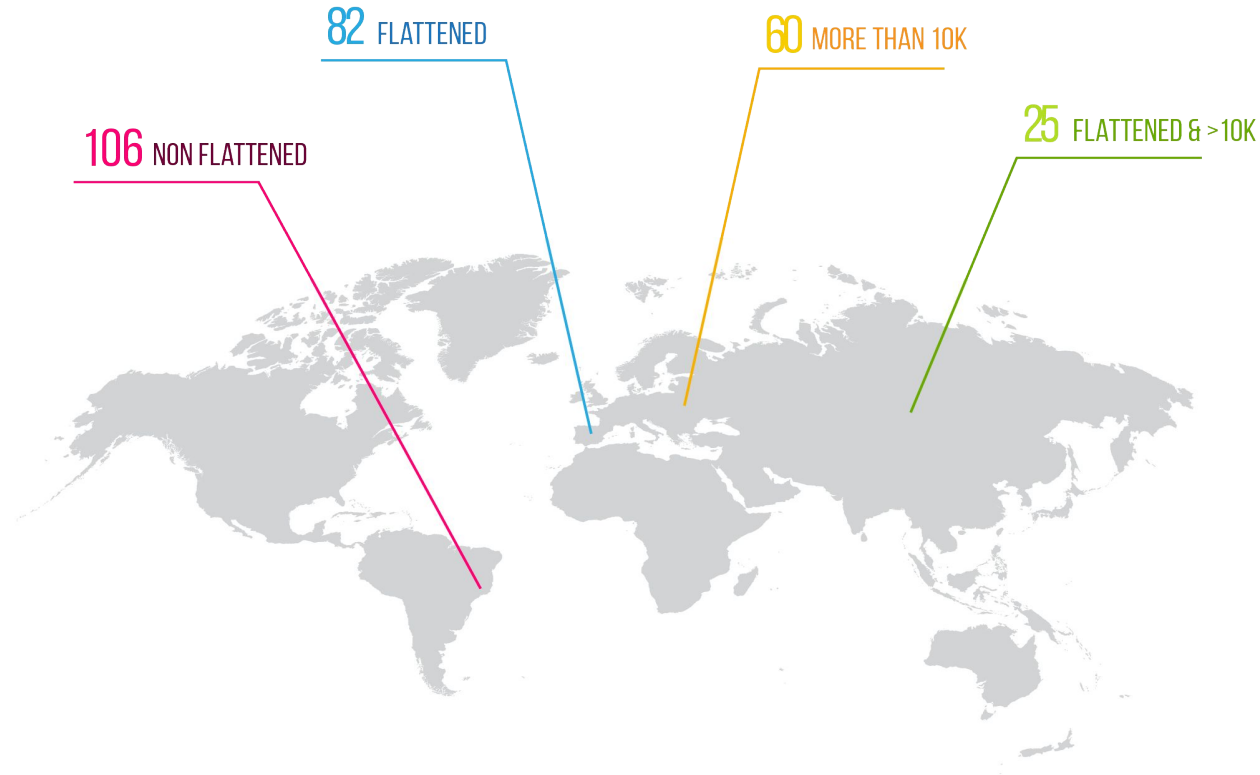
- ❖ Question : Which country to choose as samples ?
  - Who flattened the curve ?
  - When did it rise exponentially ?
  - Which countries didn't flatten yet ?

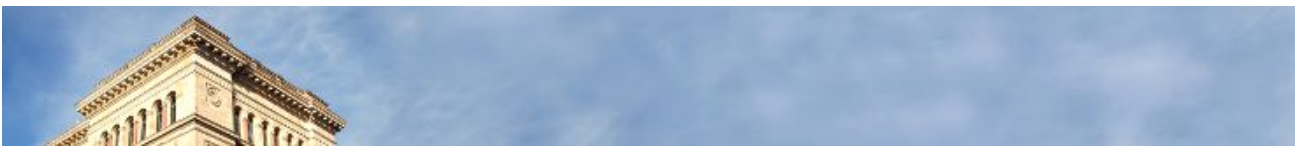


## What is a flat curve ?



## *Methods used to choose the sample countries*





## ***Lockdowns (Method and results)***

- Most of governments have taken actions to fight the virus
- Actions differ (National Lockdown, Localised Lockdown,..)
- The length of these Actions differ from country to another

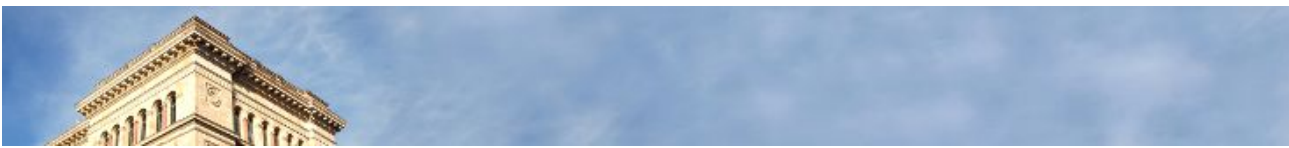




## ***Lockdowns (Method and results)***

- Step 1 : Find a Lockdown-Dataset from a trusted source





## ***Lockdowns (Method and results)***

- Step 1 (Backup plan): create the Dataset





## ***Lockdowns (Method and results)***

- ❖ Step 1 (Backup plan): create the Dataset
  - Get the list of Countries the successfully flatten the curve



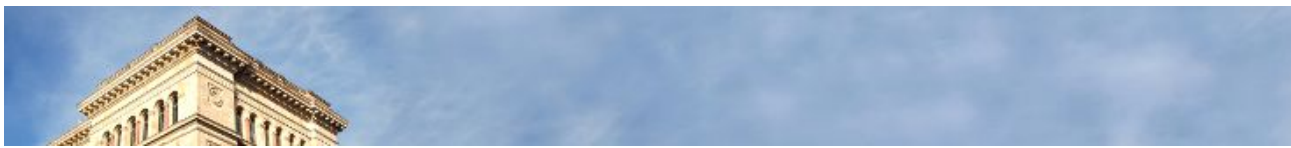
## ***Lockdowns (Method and results)***

- ❖ Step 1 (Backup plan): create the Dataset
  - Get the list of Countries the successful flatten the curve
  - Collect the Data of the lockdown of each country
  - Save the sources used



Country	Start of lockdown	End of lockdown	Length	Lockdown type
Austria	16.03.2020	01.05.2020	46	3
Belarus			0	0
Canada	16.03.2020	11.05.2020	56	3
China	23.01.2020	06.04.2020	74	2
Czechia	16.03.2020	27.04.2020	42	3
Denmark	13.03.2020	14.04.2020	32	3
Ecuador	16.03.2020	31.03.2020	15	3
France	17.03.2020	11.05.2020	55	3
Germany	23.03.2020	20.04.2020	28	3
Ireland	12.03.2020	18.05.2020	67	3
Israel	09.03.2020	19.04.2020	41	1
Italy	22.02.2020	03.06.2020	102	3
Japan	27.02.2020	25.05.2020	88	3





Lockdown type:

0 : No actions

1 : National or local Recommendation

2 : Localised Lockdown

3 : National Lockdown

### Sources :

Austria :

Start of the lock down:

<https://orf.at/stories/3158055/>

End of the Lockdown:

<https://www.zdf.de/nachrichten/politik/corona-oesterreich-ausgangssperre-aufhebung-100.html>

Lockdown Type:

<https://www.euronews.com/2020/04/20/austria-begins-reopening-after-very-early-and-very-harsh-lockdown>

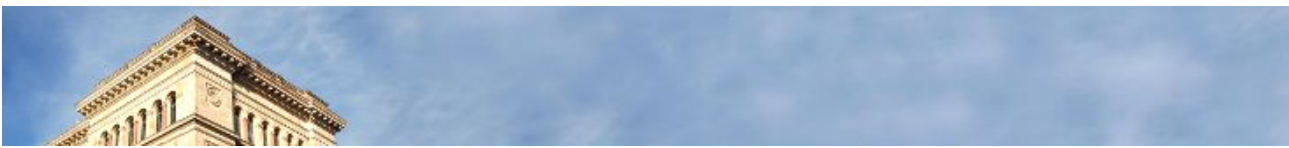
Length of the Lockdown:

Automatic calculation

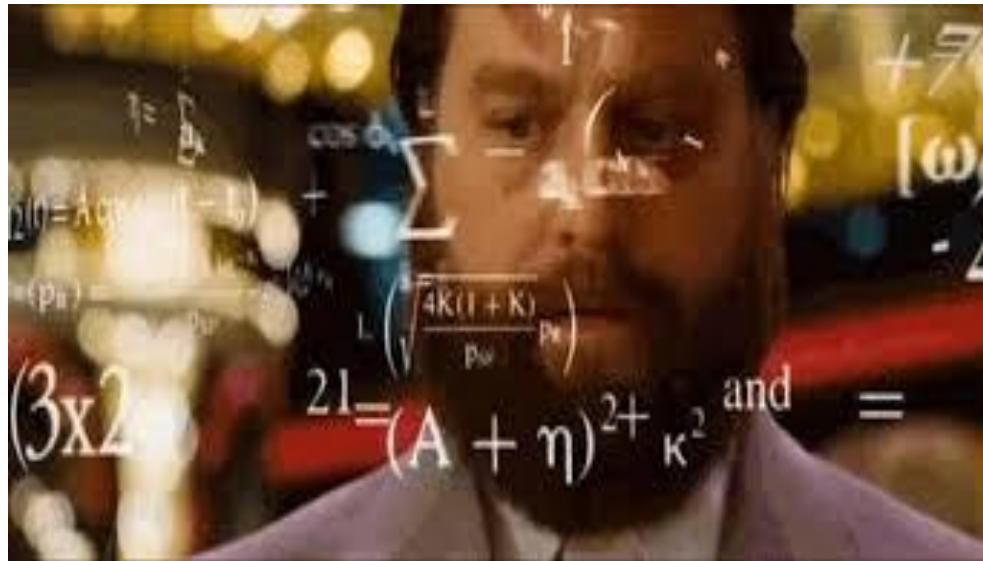


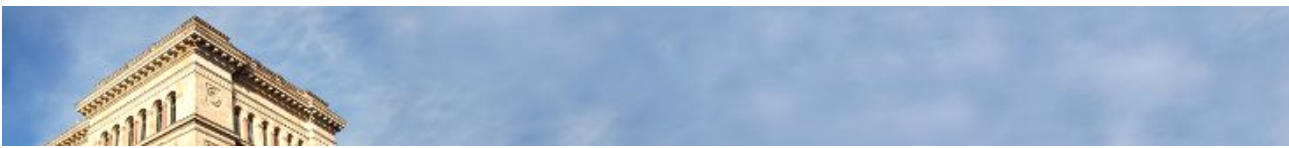
## ***Lockdowns (Method and results)***

- ❖ Step 2: Extract information
  - The average length of lockdown in Countries the successfully flatten the curve is 50 Days
  - The most successful Countries used Lockdown of type 3 (National Lockdown)



## *Factor calculations*





## 1- Stock Market

- How good (or most probably bad) did a country's major index behave during the “exponential period”?
- Used to determine the economic stability of a country.
- One of many aspects to measure a country's economy.



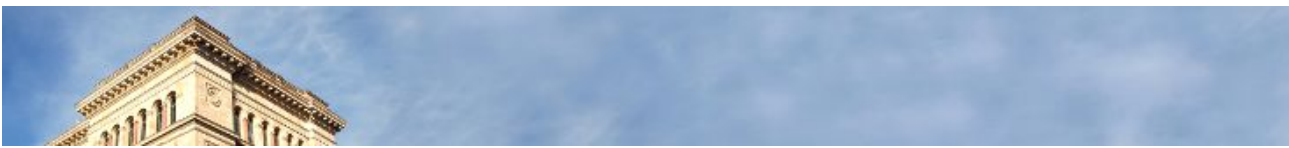
# Stock Market and Death Cases data

## Stock Market Datasets

Date ↕	Price ↕	Open ↕	High ↕	Low ↕	Vol. ↕	Change % ↕
Mar 17, 2020	8,904.5	8,740.0	9,165.0	8,416.0	157.80K	2.13%
Mar 16, 2020	8,719.0	9,117.5	9,117.5	8,226.5	184.55K	-4.97%
Mar 13, 2020	9,175.0	9,051.5	9,990.5	8,809.5	188.97K	-0.84%
Mar 12, 2020	9,253.0	10,282.5	10,282.5	8,967.0	209.79K	-11.09%
Mar 11, 2020	10,407.0	10,702.5	10,757.5	10,205.5	149.49K	-0.95%
Mar 10, 2020	10,506.5	10,530.0	11,031.0	10,414.5	174.85K	-1.68%
Mar 09, 2020	10,685.5	11,046.0	11,092.0	10,350.0	172.27K	-7.44%
Mar 06, 2020	11,545.0	11,836.0	11,862.0	11,417.5	212.68K	-3.44%
Mar 05, 2020	11,956.0	12,159.0	12,219.5	11,746.0	180.68K	-1.07%
Mar 04, 2020	12,085.0	11,841.5	12,275.5	11,841.5	149.25K	1.35%
Mar 03, 2020	11,924.0	12,049.5	12,269.0	11,731.0	215.19K	0.51%
Mar 02, 2020	11,864.0	11,744.5	12,213.0	11,617.0	208.93K	0.38%
Highest: 12,275.5	Lowest: 8,226.5	Difference: 4,049.0		Average: 10,585.4		Change %: -24.7

SOURCE: <https://www.investing.com/indices/germany-30-futures-historical-data>



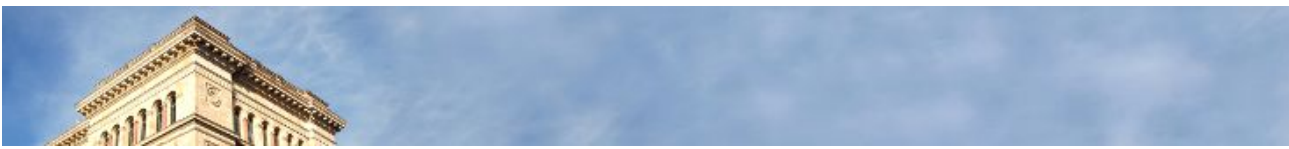


# ***Stock Market and Death Cases data***

## ***Stock Market Datasets***

-Downloaded dataset for each country  
during its “exponential” period..





## 2- Death Cases(Rates)

-How good did each country do saving lives?





# Stock Market and Death Cases data

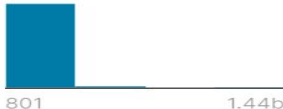

## Death Cases Dataset

Provinc...	Country...	Lat	Long	1/22/20	1/23/20	1/24/20	4/11/20	4/12/20	4/13/20	4/14/20	4/15/20	4/16/20
Tibet	China	31.6927	88.0924	0	0	0	0	0	0	0	0	0
Xinjiang	China	41.1129	85.2401	0	0	0	3	3	3	3	3	3
Yunnan	China	24.974	101.487...	0	0	0	2	2	2	2	2	2
Zhejiang	China	29.1832	120.0934	0	0	0	1	1	1	1	1	1
	Colombia	4.5709	-74.2973	0	0	0	100	109	112	127	131	144
	Congo (...)	-4.0383	21.7587	0	0	0	5	5	5	5	5	5
	Congo (...)	-4.0383	21.7587	0	0	0	20	20	20	20	21	22
	Costa Rica	9.7489	-83.7534	0	0	0	3	3	3	3	4	4
	Cote d'Iv...	7.54	-5.5471	0	0	0	4	5	6	6	6	6
	Croatia	45.1	15.2	0	0	0	21	23	25	31	33	35
	Diamond...	0	0	0	0	0	11	11	11	12	12	12
	Cuba	22	-80	0	0	0	16	18	21	21	24	27
	Cyprus	35.1264	33.4299	0	0	0	10	11	12	12	12	12
	Czechia	49.8175	15.4729...	0	0	0	129	138	143	161	166	169
	Faroe Isl...	61.8926	-6.9118	0	0	0	0	0	0	0	0	0
Greenland	Denmark	71.7069	-42.6043	0	0	0	0	0	0	0	0	0
	Denmark	56.2639	9.5018	0	0	0	260	273	285	299	309	321
	Djibouti	11.8251	42.5903	0	0	0	2	2	2	2	2	2
	Dominic...	18.7357	-70.1627	0	0	0	135	173	177	183	189	196
	Ecuador	-1.8312	-78.1834	0	0	0	315	333	355	369	388	403
	Egypt	26	30	0	0	0	146	159	164	178	183	196
				0	0	0	6	6	6	6	6	6

source: <https://data.humdata.org/dataset/novel-coronavirus-2019-ncov-cases>

# Stock Market and Death Cases data World Population Dataset

-To calculate  
death rates..

Country (or dep... This column contains different country's name (235 countries)	Population (2020) This columns contains the population of different countries	Yearly Change This columns contains the population change by yearly	Net Change This columns contains net change of the population
235 unique values		1.48 % 1.06 % Other (228) 97%	
China	1438207241	0.39 %	5540090
India	1377233523	0.99 %	13586631
United States	330610570	0.59 %	1937734
Indonesia	272931713	1.07 %	2898047
Pakistan	219992900	2.00 %	4327022
Brazil	212253150	0.72 %	1509890
Nigeria	205052107	2.58 %	5175990
Bangladesh	164354176	1.01 %	1643222

source: <https://www.kaggle.com/tanuprabhu/population-by-country-2020/data#>



## ***Factor Calculations***

**-Now, we (should) have enough data to start comparing between different countries' performances.**



# Factor Calculations - Preliminary Factor

Country	Start Price	End Price	Change %	Death Cases	Population(2020)	Death %	Factor
Austria	2970.26	1997.8	-32.74	58	8996022	0.000645	-50781
Canada	12508.45	14620.34	16.88	3537	37674770	0.009388	1798
China	2976.53	2906.07	-2.37	1369	1438207241	9.52E-05	-24869
Czech Republic	913.47	881.34	-3.52	270	10705012	0.002522	-1395
Denmark	1137.93	1163.79	2.27	403	5788108	0.006963	326
Ecuador	209.09	206.01	-1.47	576	17587526	0.003275	-450
France	5791.87	4505.26	-22.21	23296	65244628	0.035706	-622
Germany	12790.49	10861.64	-15.08	6623	83730223	0.00791	-1907
Ireland	6387.52	5308.81	-16.89	1375	4926480	0.02791	-605
Israel	1678.02	1242.28	-25.97	49	8627444	0.000568	-45721
Italy	25223.51	16719.07	-33.72	21645	60479424	0.035789	-942
Netherlands	559.98	508.04	-9.28	2403	17127290	0.01403	-661
Portugal	4816.12	4148.91	-13.85	820	10202571	0.008037	-1724
Romania	8733.96	7935.06	-9.15	392	19262731	0.002035	-4495
Serbia	764.78	676.83	-11.5	162	8744288	0.001853	-6207
South Korea	2242.17	1771.44	-20.99	66	51260395	0.000129	-163058
Spain	9483.5	7070.6	-25.44	15447	46751175	0.033041	-770
Sweden	1769.14	1577.92	-10.81	2586	10086531	0.025638	-422
Switzerland	10512.15	9514.6	-9.49	821	8641786	0.0095	-999

## *Plan*

- Tidy and visualize current datasets
- Sort country by the length of time to flatten the curve
- Calculate the average of stock market growth by periods of time and compare them
- Lockdown type could be useful
- Find pattern & factors
- Define the winner(s) (best country/ top x countries)!