

#### Response to COVID table:

- Dataset has no empty strings.
- Date\_end variable has missing values 'NA' (according to data documentation: NA indicates a measure that is DD/MM/YYYY still active on the date of the file/end date in the future).
- Replaced all NA in response measures to COVID19 with date of Data compiling (2022-06-23).
- Dates in COVID19cases table are in year-week format but in responseToCOVID19 table date is in DD/MM/YYYY. So, I added 2 new columns to the responseToCOVID19 table, which are, YearWeek\_start, and YearWeek\_end. In the new columns I calculated the start\_date, and end\_date in year\_week format. This will come handy when I join the two tables (COVID19Cases and responseToCOVID19).
- To explore for how long each response measure was adapted, so I added new column: daysDiffStartToEnd. Then I calculated day difference: days from start\_date to the end\_date of each response measure.

#### COVID19Cases table:

- I checked for null values. 'NA', and empty string; none was found. Note: MYSQL recognize 0 values as Null.

#### Joining the two tables:

- I used inner join to join the two tables. I joined on country from the two tables and on yearWeek\_end from responseToCovid19 and year\_week from COVID19Cases. I am interested in exploring number of cases/deaths by the end of applying each response measure.
  - [ResturansCafesPartial](#) is the most adapted response measure. It appeared 142 times.
  - Most response measures were adapted for more than 90 days (~ more than 3 months).
  - Upon checking the adapted response measures that were adapted for each year, we found that response measures adapted in 2020 and in 2021 are similar. Response measures used in 2022 are more relaxed most closures are partial (in 2020 and 2021 oscillated between partial closures and closures). No quarantine for international travelers reported in 2022 (as of 06/23/2022).
- In term of most frequent response measures in each year:  
[entertainmentVenues](#), [MassGatherAll](#), [ResturantCafes](#), and [ClosSec](#) are the most frequent response measures in 2020. [GymsSportsCenteresPartial](#), [EntertainmnetVenuesPartial](#), and [ResturantCafesPartial](#) are the most frequent response measures in 2021. [MaskMandatoryClosedSpacedPartial](#) is the most frequent response measure in 2022.
- Response measures were more relaxed in 2022- most bans lifted no lack down. Lockdown refers to any of the following response measures: '[StayHomeOrder](#)', or '[RegionalStayHomeOrder](#)', or '[StayHomeGen](#)'.
- For 2022, only [MaskVoluntaryAllSpacesPartial](#) adapted for more than 90 days (adapted for 96 days). It seems like measures adapted for longer period in 2020 comparing to 2021 and 2022.

- Closing schools and daycares, banning of events was most frequent in 2020 and it decreased in 2021 and reached its lowest in 2022.
- In 2020, the following countries adapted lockdown: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Liechtenstein, Lithuania, Luxembourg, Netherlands, Norway, Poland, Portugal, and Spain
- Norway the latest to have a lockdown (StayHomeOrder) and adapted this measure once in 2020.
- In 2021, the following countries adapted lockdown: Austria, Cyprus, Greece, Netherlands, and Portugal.
- No lockdowns in 2022.
- **Denmark, Finland, Iceland, Latvia, Malta, Romania, Slovakia, Slovenia, and Sweden Never had lockdown due to COVID19.**
- We explored COVID19 Cases and COVID19 Deaths regardless of what response measures were adapted (see the table below)

#### Cases and Deaths

	Cases of COVID19		Deaths Due to COVID19	
	Weekly count	Cumulative count	Weekly count	Cumulative count
Max	1,772,483	29,422,724	6,208	165,514
Min	0	0	0	0
Avg	40,242.19	1,133,565.48	284.92	16,916.35
Median	4,308	187,396	54	3,612

#### Cases:

- Max weekly count of cases reached 1,772,483 in France week 5 2022.
- Max cumulative count of cases reached 29,422,724 in France on week 20 of 2022.
- Min weekly count of cases 0 in:
    - o Liechtenstein: had zero count in week 17, 19, 20, 22, 23, and 26 of 2020.
    - o Lithuania: had zero weekly count of cases on week 11, 14, 16 of 2020.
    - o Cyprus: had 0 weekly count on week 22 of 2022.
  - Min cumulative count of cases 0 in:
    - o Lithuania: week 11, 14, 16 of 2020.
    - o Cyprus: week 23, and 22 of 2022.

#### Deaths:

- Max weekly count of deaths 6208 in France on week 47 of 2020.
- Max cumulative deaths 165514 in Italy on week 17 of 2022.
- Min weekly count of deaths 0 in:
  - o Belgium week 11 of 2020
  - o Bulgaria on week 10 of 2020
  - o Cyprus week 22, 26, 27 of 2020. And week 22, and 23 of 2022
  - o Czechia week 10 and 11 of 2020.
  - o Denmark on week 15, 16, 17 and 19 of 2020
  - o Estonia 26, 28, and 30 of 2020
  - o Finland 24 and 28 of 2020 and week 26 of 2021
  - o Iceland week 11, 18, 20, 21, 24, 30, 36, 39, 40, 43, of 2020. And week 4, 8, 12, 13, 15, 19, 21, 24, 25, 32, 37, 45 of 2021
  - o Ireland week 10 of 2020
  - o Latvia week 23, 26, and 30 of 2020

- Liechtenstein on week 10, 17, 19, 20, 22, 23, 26, 27, and 42 of 2020. week 21, 24, 26, 27, 33, 37, 47 of 2021. And week 13 of 2022
  - Lithuania week 11, 23, 25, 26, and 30 of 2020
  - Luxembourg week 25, 38 of 2020. And week 25 of 2021
  - Malta week 26 of 2020 and week 19 and 26 of 2021
  - Norway week 41 of 2020
  - Poland week 10 of 2020
  - Portugal week 11 of 2020
  - Slovakia week 22, 23, 24, 26, 35 of 2020
  - Slovenia week 10, 22, 23, 24, 25 of 2020.
- Min cumulative count of deaths 0 in:
- Belgium on week 11 of 2020
  - Bulgaria on week 10 of 2020
  - Czechia week 10 and 11 of 2020
  - Iceland on week 11 of 2020
  - Liechtenstein on week 10 of 2020
  - Lithuania on week 11 of 2020
  - Poland on week 10 of 2020
  - Portugal on week 11 of 2020
  - Slovenia on week 10 of 2020
  - Cyprus on week 22 and 23 of 2020

- I divided up the table of COVID19 and Response Measures to three categories based on response measures ([Dictionary to response measures](#)):
  - StrictMeasuresAndCOVID19 (Strict response Measures): BanOnAllEvents, CloDaycar, ClosHigh, ClosPrim, ClosPubAny, ClosSec, ClosureOfPublicTransport, EntertainmentVenues, GymsSportsCentres, HotelsOtherAccommodation, MasksMandatoryAllSpaces, MasksMandatoryClosedSpaces, NonEssentialShops, PlaceOfWorship, PrivateGatheringRestrictions, QuarantineForInternationalTravellers, RegionalStayHomeOrder, RestaurantsCafes, StayHomeGen, StayHomeOrder, Teleworking, WorkplaceClosures.
  - RelaxedMeasuresAndCOVID19 (Relaxed response measures): AdaptationOfWorkplacePartial, IndoorOver1000, IndoorOver500, MasksVoluntaryAllSpacesPartial, MasksVoluntaryClosedSpaces, MasksVoluntaryClosedSpacesPartial, MasksMandatoryClosedSpacesPartial, MasksVoluntaryAllSpaces, OutdoorOver1000, SocialCirclePartial, StayHomeRiskGPartial,
  - Partial\_InBtwMeasuresAndCOVID19 (response measures that lies in btw strict and relaxed response measure): BanOnAllEventsPartial, AdaptationOfWorkplace, CloDaycarePartial, ClosHighPartial, ClosPrimPartial, ClosPubAnyPartial, ClosSecPartial, ClosureOfPublicTransportPartial, EntertainmentVenuesPartial, MassGatherAllPartial GymsSportsCentresPartial, HotelsOtherAccommodationPartial, IndoorOver100, MassGather50, MassGather50Partial, IndoorOver50, MasksMandatoryAllSpacesPartial, MassGatherAll, NonEssentialShopsPartial, OutdoorOver100, OutdoorOver50, OutdoorOver500, PlaceOfWorshipPartial, PrivateGatheringRestrictionsPartial, QuarantineForInternationalTravellersPartial, RegionalStayHomeOrderPartial, RestaurantsCafesPartial, SocialCircle, StayHomeGenPartial, StayHomeOrderPartial, StayHomeRiskG, TeleworkingPartial, WorkplaceClosuresPartial, MasksMandatoryClosedSpaces.
- We expected to have lower count of cases and deaths under Strict response measures in comparison to Partial\_InBtwMeasuresAndCOVID19 and Relaxed response measures. We expected to have lower count of cases and deaths under in Partial\_InBtwMeasuresAndCOVID19 comparing to Relaxed response measures. I calculated max, min, average, and median for each. See table below

		Cases of COVID19		Deaths Due to COVID19	
		Weekly count	Cumulative count	Weekly count	Cumulative count
Strict Response Measures	Max	791,378	12,216,995	8,208	153,180
	Min	0	0	0	0
	Avg	20,305.66	614,281.50	327.04	13,303.30
	Median	2,550	82,768	46	1,909
Partial in Btw Response Measures	Max	1,772,483	25,997,911	5,326	165,514
	Min	0	0	0	0
	Avg	49,167.07	1,352,798.83	263.54	19,438.52
	Median	6,122	244,699	59	4,564
Relaxed Response Measures	Max	1,585,166	29,422,724	2,644	165,514
	Min	0	0	0	0
	Avg	61,771.06	1,708,224.34	242.34	16,434.37
	Median	4,231	118,607	15	1,236

#### Strict Measures:

##### Cases:

- Min weekly count is 0 in:
  - o Lithuania on week 16 of 2020
  - o Liechtenstein on week 17, 19, 20, 22, and 23 of 2020
- Min cumulative count is 0 on week 16 of 2020 in Lithuania.
- Max weekly count is 791378 on week 52 in 2021 in Spain.
- Max cumulative count is 12216995 on week 6 of 2022 in Italy.

##### Deaths:

- Max weekly deaths 6208 on week 47 of 2020 in France.

- Max cumulative count 153180 on week 6 of 2022 in Italy.
- Min weekly count is zero in
  - o Bulgaria 0 on week 10 of 2020
  - o Denmark 0 on week 15 and 19 of 2020
  - o Finland 0 on week 24 of 2020
  - o Iceland week 18, 20, 21 of 2020. Week 4, 8, 13, 15, 19, and 32 of 2021
  - o Ireland week 10 of 2020
  - o Latvia week 23 of 2020
  - o Liechtenstein week 17, 19, 20, 22, 23 of 2020 And week 21, 24, 27 of 2021
  - o Malta week 26 of 2020. And Week 19, 26 of 2021
  - o Poland week 10 of 2020
  - o Portugal week 11 of 2020
  - o Slovakia week 22 and 23 of 2020
  - o Slovenia week 25 of 2020

#### Relaxed Measures

##### Cases:

- Max weekly count 1585168 cases on week 12 of 2022 in Germany
- Max cumulative count 29422724 in France on week 20 of 2022
- Min weekly count 0 in:
  - o Lithuania 0 on week 14 of 2020
  - o Liechtenstein 0 on week 26 of 2020
- Min cumulative count is 0 in Lithuania on week 14 of 2020.

##### Deaths:

- Max weekly count 2644 in Poland on week 48 of 2021
- Max cumulative count 165514 in Italy on week 17 of 2022.
- Min weekly count 0 in:
  - o Belgium on week 11 of 2020
  - o Estonia on week 30 of 2020
  - o Finland week 26 of 21
  - o Iceland on week 30, 39, 40 of 2020 And, 25,37,45 of 2021
  - o Latvia week 26, 30 of 2020
  - o Liechtenstein 10, 26, 27, 42 of 2020. 27, 37, 47 of 2021 And, 13 of 2022
  - o Lithuania on week 30 of 2020
  - o Luxembourg week 25 of 2021
  - o Poland week 10 of 2020
  - o Slovakia week 35 of 2020
  - o Slovenia week 10 of 2020

#### Partial\_InBetween

##### Cases:

- Max weekly count of Cases 1772483 in France on week 5 of 2022
- Max cumulative count of cases 25997911 in France week 13 of 2022.
- Min weekly count 0 in:
  - o Liechtenstein on 22 and 26 of 2020
  - o Cyprus on week 22 of 2022

##### Deaths:

- Max weekly count 5326 in Italy on week 48 of 2020.
- Max cumulative count 165514 on week 17 of 2022.
- Min is 0 in:

- Belgium on week 11 of 2020
- Bulgaria on week 10 of 2020
- Cyprus on week 22, 26, 27 of 2020 And week 22, 23 of 2022
- Czechia on week 10, 11, of 2020
- Denmark on week 16, 17 of 2020
- Estonia week 26 and 28 of 2020
- Finland week 28 of 2020
- Iceland week 11, 21, 24,30, 36, 39, 43, of 2020 and week 8, 12, 21, 24, 25, 37 of 2021
- Ireland on week 10 of 2020
- Latvia week 23, 26, 30 of 2020
- Liechtenstein on week 22, 26 of 2020. week 21, 24, 26, 27, 33, of 2021. And week 13 of 2022
- Lithuania week 23, 25, 26 of 2020
- Luxembourg week 25, 38 of 2020
- Malta on week 26 on 2021
- Slovakia week 22, 24, 26 of 2020
- Slovenia on week 22, 23, 24 of 2020
- Min cumulative count is 0 in:
  - Belgium on week 11 of 0220
  - Bulgaria on week 10 of 2020
  - Czechia on week 10, 11 of 2020
  - Iceland on week 11 of 2020
  - Cyprus on week 22, 23 of 2022

Countries and adaptation to each measure:

Countries	Strict Response Measure	Relaxed Response Measure	Partial in btw response measure
'Austria'	'Austria'	'Austria'	'Austria'
'Belgium'	'Belgium'	'Belgium'	'Belgium'
'Bulgaria'	'Bulgaria'	'Bulgaria'	'Bulgaria'
'Croatia'	'Croatia'	'Croatia'	'Croatia'
'Cyprus'	'Cyprus'		'Cyprus'
'Czechia'	'Czechia'	'Czechia'	'Czechia'
'Denmark'	'Denmark'	'Denmark'	'Denmark'
'Estonia'	'Estonia'	'Estonia'	'Estonia'
'Finland'	'Finland'	'Finland'	'Finland'
'France'	'France'	'France'	'France'
'Germany'	'Germany'	'Germany'	'Germany'
'Greece'	'Greece'	'Greece'	'Greece'
'Hungary'	'Hungary'	'Hungary'	'Hungary'
'Iceland'	'Iceland'	'Iceland'	'Iceland'
'Ireland'	'Ireland'	'Ireland'	'Ireland'
'Italy'	'Italy'	'Italy'	'Italy'
'Latvia'	'Latvia'	'Latvia'	'Latvia'
'Liechtenstein'	'Liechtenstein'	'Liechtenstein'	'Liechtenstein'
'Lithuania'	'Lithuania'	'Lithuania'	'Lithuania'
'Luxembourg'	'Luxembourg'	'Luxembourg'	'Luxembourg'
'Malta'	'Malta'	'Malta'	'Malta'
'Netherlands'	'Netherlands'	'Netherlands'	'Netherlands'
'Norway'	'Norway'	'Norway'	'Norway'
'Poland'	'Poland'	'Poland'	'Poland'
'Portugal'	'Portugal'	'Portugal'	'Portugal'
'Romania'	'Romania'	'Romania'	'Romania'
'Slovakia'	'Slovakia'	'Slovakia'	'Slovakia'
'Slovenia'	'Slovenia'	'Slovenia'	'Slovenia'
'Spain'	'Spain'	'Spain'	'Spain'
'Sweden'	'Sweden'	'Sweden'	'Sweden'

Date of each category usage

Dates	Dates strict measures used	Dates relaxed measures used	Dates partial in btw measures used
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