

Evaluating Covid Data

Introduction

Coronavirus disease (Covid-19) is an infectious disease caused by the SARS-CoV-2 virus. The virus spreads in aerosolised droplets when an infected individual coughs, sneezes, speaks or breathes. It typically causes moderate respiratory illness but can be fatal, particularly in the elderly. Due to a lack of immunity in the population, Covid-19 caused a global pandemic from approximately 2020 – 2023.

Aim

To evaluate data related to the Covid-19 pandemic (confirmed deaths across geographical regions)

Materials

- Global pandemic data has been sourced from the Covid-19 Data Explorer at [OurWorldinData.org](https://ourworldindata.org)
- Covid death data can be downloaded at <https://ib.bioninja.com.au/practical-work/covid-data>
 - A subset of this data for six different countries is included in the table on the following page

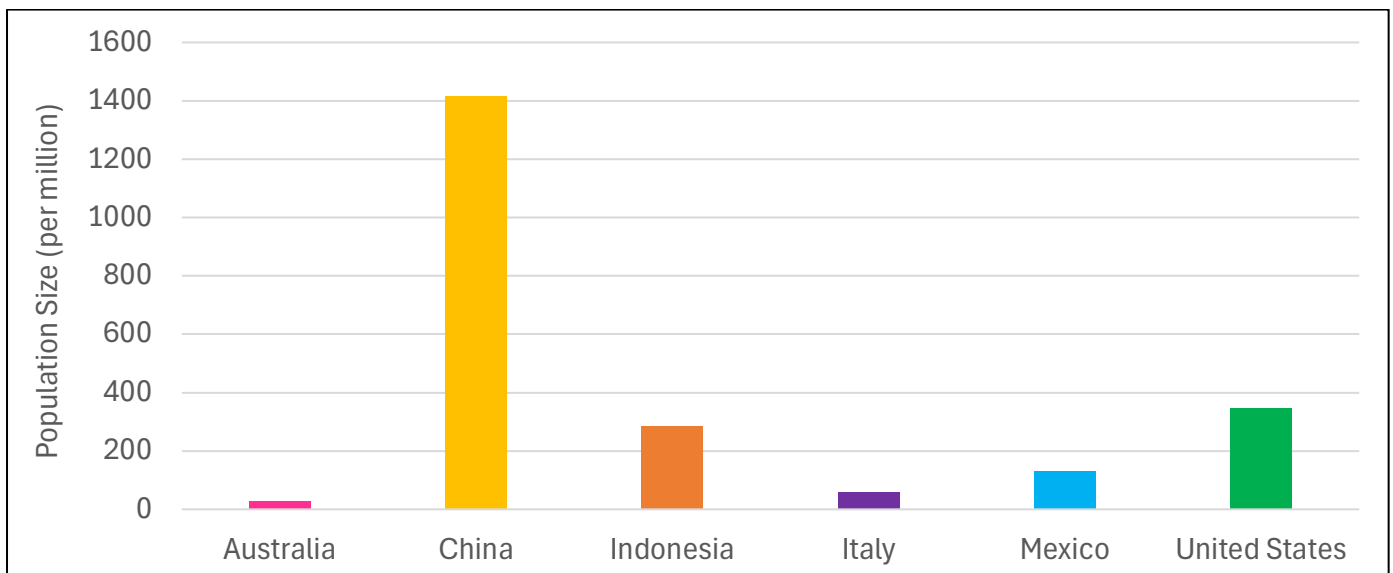
Method

1. Calculate total covid deaths using the table below and the table provided on the following page
 - *Total deaths per country formula:* Deaths per million \times Population of country
2. Use the following formula to evaluate global data pertaining to the Covid-19 pandemic
 - *Percentage difference formula:* difference in values \div average of values \times 100
 - *Percentage change formula:* (final value – initial value) \div initial value \times 100

Table 1: Total population per country (2025)

Australia	China	Indonesia	Italy	Mexico	United States
26,974,026	1,416,096,094	285,721,236	59,146,260	131,946,900	347,275,807

Graph 1: Total population per country (2025)



Cumulative Confirmed Covid Deaths per Million People (OurWorldinData.org)

Date	Australia	China	Indonesia	Italy	Mexico	United States
Jan-20	0.0	0.1	0.0	0.0	0.0	0.0
Feb-20	0.0	2.0	0.0	0.4	0.0	0.0
Mar-20	0.8	2.3	0.5	194.4	0.4	9.7
Apr-20	3.6	3.3	2.8	464.3	30.9	177.0
May-20	4.1	3.3	5.8	559.2	152.4	308.4
Jun-20	4.1	3.3	10.3	582.8	310.6	375.5
Jul-20	9.1	3.3	18.4	589.3	495.6	459.6
Aug-20	28.0	3.3	26.6	595.1	645.5	552.8
Sep-20	34.3	3.3	38.5	601.7	747.9	615.3
Oct-20	34.9	3.3	49.7	642.8	845.9	684.0
Nov-20	35.1	3.3	60.8	920.9	969.1	804.3
Dec-20	35.1	3.4	79.4	1234.6	1147.8	1030.7
Jan-21	35.2	3.4	107.6	1480.7	1447.7	1323.8
Feb-21	35.3	3.4	129.7	1635.5	1640.5	1522.1
Mar-21	35.3	3.4	146.5	1826.2	1746.5	1619.9
Apr-21	35.4	3.4	163.3	2021.9	1807.8	1680.7
May-21	35.4	3.5	181.4	2114.2	1840.2	1731.8
Jun-21	35.4	3.9	209.8	2139.3	1864.2	1759.5
Jul-21	36.1	4.0	337.5	2147.8	1925.9	1786.0
Aug-21	40.0	4.0	477.1	2166.2	2098.6	1878.2
Sep-21	52.7	4.0	509.1	2195.1	2232.5	2038.3
Oct-21	71.2	4.0	514.3	2215.3	2299.1	2180.5
Nov-21	83.1	4.0	515.8	2243.2	2332.7	2272.2
Dec-21	93.2	4.0	516.8	2302.1	2362.3	2398.2
Jan-22	173.9	4.0	517.6	2451.4	2432.6	2588.5
Feb-22	232.2	4.4	532.0	2592.5	2516.4	2774.9
Mar-22	257.5	9.3	556.2	2670.7	2531.6	2855.9
Apr-22	299.7	10.7	560.4	2740.3	2534.3	2894.7
May-22	354.8	11.8	561.6	2794.9	2535.6	2923.8
Jun-22	411.1	15.0	562.1	2822.8	2538.4	2952.8
Jul-22	496.1	16.6	563.0	2885.0	2555.6	2991.2
Aug-22	570.1	17.5	565.1	2943.8	2568.2	3031.3
Sep-22	596.0	18.6	567.1	2969.8	2571.2	3068.8
Oct-22	614.2	20.0	568.9	3005.0	2572.2	3103.4
Nov-22	635.5	21.3	573.2	3045.1	2573.2	3131.4
Dec-22	721.7	36.9	576.0	3099.5	2577.5	3169.4
Jan-23	721.7	49.0	576.7	3135.9	2586.7	3212.1
Feb-23	776.5	84.1	577.1	3157.0	2591.3	3247.5
Mar-23	789.4	84.8	577.5	3171.6	2594.7	3270.7
Apr-23	814.5	84.9	578.4	3183.3	2597.2	3291.2
May-23	842.3	85.1	580.2	3195.0	2597.9	3306.7
Jun-23	869.1	85.2	580.5	3201.5	2597.9	3313.7
Jul-23	871.7	85.3	580.7	3204.0	2597.9	3319.8
Aug-23	879.9	85.4	580.7	3208.3	2597.9	3333.3
Sep-23	885.5	85.4	580.7	3216.4	2597.9	3349.7
Oct-23	896.9	85.5	580.7	3230.7	2597.9	3369.2
Nov-23	913.9	85.5	580.7	3247.7	2597.9	3386.7
Dec-23	929.1	85.5	580.9	3271.6	2597.9	3409.6

Results

1. Choose two countries and a particular month and determine the *total Covid deaths* each year

Month:	Country 1:	Country 2:
2020		
2021		
2022		
2023		

2. Calculate the *percentage change* in total Covid deaths year on year for each of the two countries

Month:	Country 1:	Country 2:
2020 – 2021		
2021 – 2022		
2022 – 2023		

3. Calculate the *percentage difference* in total Covid deaths between the two countries selected

Month:	Country 1:	Country 2:
2020		
2021		
2022		
2023		