

Using SAS® to Show the Distribution and Severity of COVID-19

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LeRoy Bessler PhD is a data artist, the world's longest serving and most frequent advisor to SAS® users on best practices for graphic design and use of color, and the author of *Visual Data Insights Using SAS® ODS Graphics: A Guide to Communication-Effective Data Visualization*.

He also has specialized in Software-Intelligent Application Development for reliability, reusability, maintainability, flexibility, and extendibility, as well as ODS tools (Excel, PDF, HTML5, LAYOUT) to deliver SAS output and reports, tabular and/graphic. LeRoy is a data analyst and SAS programmer, who has supported SAS servers, SAS software, SAS analytic data, and hundreds of SAS users at employers and client sites.

He is a quarterly contributor to the *VIEWS News* online newsletter. He has presented at SAS users conferences in the USA, Canada, Ireland, England, and Germany, and has provided pre- and post-conference training. An advocate for, and provider of, SAS user mutual education opportunities, LeRoy was event organizer for the Wisconsin Illinois SAS Users Group for most years from 1989 to 2016. For the MidWest SAS Users Group he served as Conference Chair in 1991, Assistant to Co-chairs in 1993, and Program Chair in 2010.

Acknowledgements

This project benefited from the help of SAS Technical Support, in particular, Marcia Surratt, Martin Mincey, and Kathryn McLawhorn.

My apology for omitting anyone else involved, but not mentioned here.

Thanks to All of You.

NOTE:

To adhere to the publication filesize limit, this is a compressed PDF, and some images have suffered. In-Conference presentation will be uncompressed.

Why this presentation?

- ▶ This project was inspired by an underinforming Tableau dashboard at the LinkedIn Data Visualization Group
 - ▶ The alternatives shown here use SAS[®] ODS Graphics (The Graphics SuperPower Tool) and my software-independent principles* for communication-effective graphic design and for communication-effective use of color
- *Find [them](#), e.g., in Chapters 1 and 2 of my book

Data Visualization Content

- ▶ InfoGeographic Maps of COVID-19 Data:
Population, Cases, Deaths, Case Rate, Mortality Rate
- ▶ Plots and Maps To Show Case Rates in Each Country
and Median Case Rate in All Countries Adjacent To It
- ▶ 5 Column X 3 Row Panels for Scatter Plots of
COVID-19 Rates and Counts versus 15 data elements
- ▶ Linked-To Web-Page Large-Size Versions
of the Fifteen Small Plots
- ▶ Maximally Informative Bar Charts
- ▶ Excel WorkSheets Linked To and From Map or Chart

How to divide the World?

- ▶ There are 236 countries in the COVID-19 data set
- ▶ There are seven continents and seven regions
- ▶ Antarctica is irrelevant for COVID-19 analysis

How to map the COVID-19 data?

- ▶ Five World Maps By Continent and By Region
- ▶ Five By-Country Maps for each Continent/Region
- ▶ Five By-Country Maps for The World

COVID-19 Data Measures:

- (1) Population . . . the context for the epidemic
- (2) Total Cases
- (3) Total Deaths
- (4) Case Rate
- (5) Mortality Rate

14 Sectors in the COVID-19 InfoGeographic Atlas

World Map & 6 Continents: Africa, Asia, Europe, Oceania, North America, South America

7 Regions (provide more space for included countries):

Central America (no Mexico—it's North America)

Caribbean Islands

Middle East and Transcaucasia

Central Asia

Indian SubContinent

SouthEast Asia

North Asia & East Asia (Russia, China, Mongolia, Japan,

North & South Korea) **not what some call "NorthEast Asia"**

Maps for five Response Variables:

Population, Total Cases, Total Deaths, Case Rate, and Mortality Rate—Five Maps Interlinked

Case Rate = Total Cases / Population

Mortality Rate = Total Deaths / Total Cases

► All maps have data tips (mouseover text) for supplemental data elements

Map Usability Obstacle

- ▶ countries too small for viewer to see the color-coding
- ▶ identity, location, mouseover text are undiscoverable

Maps Made Usable!

Annotated two ways:

- ▶ Rank Numbers on Top N & Bottom N Countries
- ▶ Rank Numbers on Every Country

Rank Numbers are keys to lists of countries.

Lists are at each side of the map image:

- (a) alphabetic order by country at left
- (b) response value rank order at right

Oceania is a Discontiguous Continent, Unlike the Others

24 Countries: But How Many of Their Color Fills Can You See?

Country : Rank : Case Rate

In Alphabetical Order:

American Samoa : 15 : 18.8712

Australia : 3 : 44.7341

Cook Islands : 5 : 42.2910

Federated States of Micronesia : 14 : 23.2505

Fiji : 19 : 7.4263

French Polynesia : 13 : 25.8665

Guam : 9 : 30.4291

Kiribati : 21 : 3.8747

Marshall Islands : 6 : 38.7998

Nauru : 4 : 42.4947

New Caledonia : 11 : 27.6122

New Zealand : 2 : 47.0634

Niue : 1 : 48.0020

Northern Mariana Islands : 10 : 28.9204

Palau : 7 : 34.6439

Papua New Guinea : 24 : 0.4621

Pitcairn : 17 : 8.5106

Samoa : 18 : 7.5453

Solomon Islands : 23 : 3.5835

Tokelau : 20 : 4.2261

Tonga : 16 : 15.8028

Tuvalu : 12 : 25.9638

Vanuatu : 22 : 3.6784

Wallis and Futuna : 8 : 30.6140

Case Rate In Oceania For 24 Countries

■ 0.4621 - 4.2261 (5 lowest) ■ 7.4263 - 23.2505 (below median) ■ 25.8665 - 25.9638 (median)

■ 27.6122 - 38.7998 (above median) ■ 42.2910 - 48.0020 (5 highest)

[Annotate This](#) [Population](#) [Total Cases](#) [Total Deaths](#) [Mortality Rate](#) [BarChart](#) [SpreadSheet](#) [Index](#)

[World Map of Case Rate By Continent and Region](#) (linked to world maps of other four COVID-19 variables)

HERE: Use the mouse for more information for any country.

For a too small country, find its Rank in the alphabetic list, and click that Rank button in the map.



Rank : Country : Case Rate

In Rank Order Within Range:

■ Top 5 Countries:

1 : Niue : 48.0020

2 : New Zealand : 47.0634

3 : Australia : 44.7341

4 : Nauru : 42.4947

5 : Cook Islands : 42.2910

■ Above Median Countries:

6 : Marshall Islands : 38.7998

7 : Palau : 34.6439

8 : Wallis and Futuna : 30.6140

9 : Guam : 30.4291

10 : Northern Mariana Islands : 28.9204

11 : New Caledonia : 27.6122

■ Median Countries:

12 : Tuvalu : 25.9638

13 : French Polynesia : 25.8665

■ Below Median Countries:

14 : Federated States of Micronesia : 23.2505

15 : American Samoa : 18.8712

16 : Tonga : 15.8028

17 : Pitcairn : 8.5106

18 : Samoa : 7.5453

19 : Fiji : 7.4263

■ Bottom 5 Countries:

20 : Tokelau : 4.2261

21 : Kiribati : 3.8747

22 : Vanuatu : 3.6784

23 : Solomon Islands : 3.5835

24 : Papua New Guinea : 0.4621

Annotation Makes Every Tiny Country in Oceania Discoverable!

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Cook Islands : 5 : 42.2910

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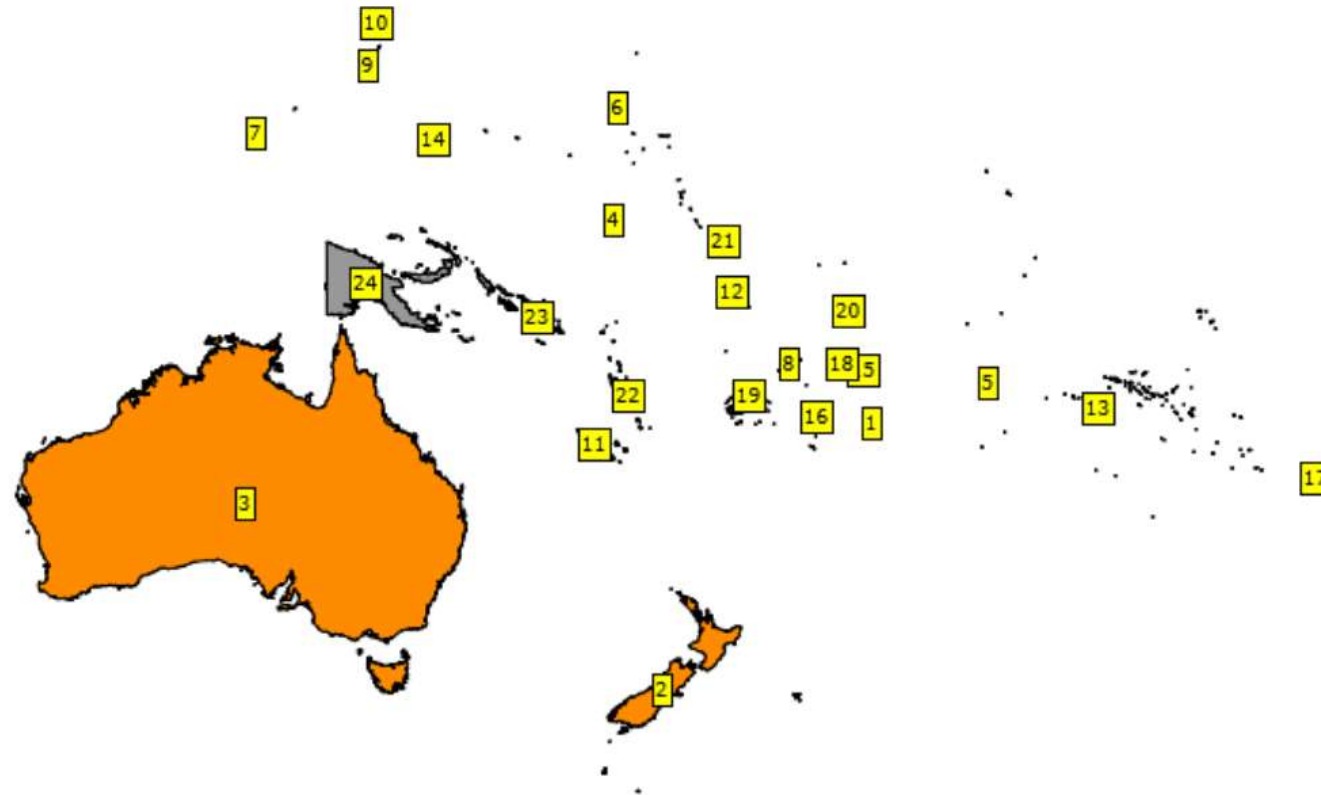
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■ Median Countries:

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20 : Tokelau : 4.2261

21 : Kiribati : 3.8747

22 : Vanuatu : 3.6784

23 : Solomon Islands : 3.5835

24 : Papua New Guinea : 0.4621

Alphabetic Order By Country With Rank

Country : Rank : Case Rate
In Alphabetical Order:
American Samoa : 15 : 18.8712
Australia : 3 : 44.7341
Cook Islands : 5 : 42.2910
Federated States of Micronesia : 14 : 23.2505
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Northern Mariana Islands : 10 : 28.9204
Palau : 7 : 34.6439
Papua New Guinea : 24 : 0.4621
Pitcairn : 17 : 8.5106
Samoa : 18 : 7.5453
Solomon Islands : 23 : 3.5835
Tokelau : 20 : 4.2261
Tonga : 16 : 15.8028
Tuvalu : 12 : 25.9638
Vanuatu : 22 : 3.6784
Wallis and Futuna : 8 : 30.6140

Five Ranges with Rank Ordered Countries

Rank : Country : Case Rate
In Rank Order Within Range:

■ Top 5 Countries:
1 : Niue : 48.0020
2 : New Zealand : 47.0634
3 : Australia : 44.7341
4 : Nauru : 42.4947
5 : Cook Islands : 42.2910

■ Above Median Countries:
6 : Marshall Islands : 38.7998
7 : Palau : 34.6439
8 : Wallis and Futuna : 30.6140
9 : Guam : 30.4291
10 : Northern Mariana Islands : 28.9204
11 : New Caledonia : 27.6122

■ Median Countries:
12 : Tuvalu : 25.9638
13 : French Polynesia : 25.8665

■ Below Median Countries:
14 : Federated States of Micronesia : 23.250
15 : American Samoa : 18.8712
16 : Tonga : 15.8028
17 : Pitcairn : 8.5106
18 : Samoa : 7.5453
19 : Fiji : 7.4263

■ Bottom 5 Countries:
20 : Tokelau : 4.2261
21 : Kiribati : 3.8747
22 : Vanuatu : 3.6784
23 : Solomon Islands : 3.5835
24 : Papua New Guinea : 0.4621

Two SideNote Alternatives Provide Country, Rank, and Value

MouseOver Text ("data tips" in ODS Graphics) can be as informative as you are willing to make them

Country : Rank : Case Rate

In Alphabetical Order:

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Nauru : 4 : 42.4947

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■ Top 5 Countries:

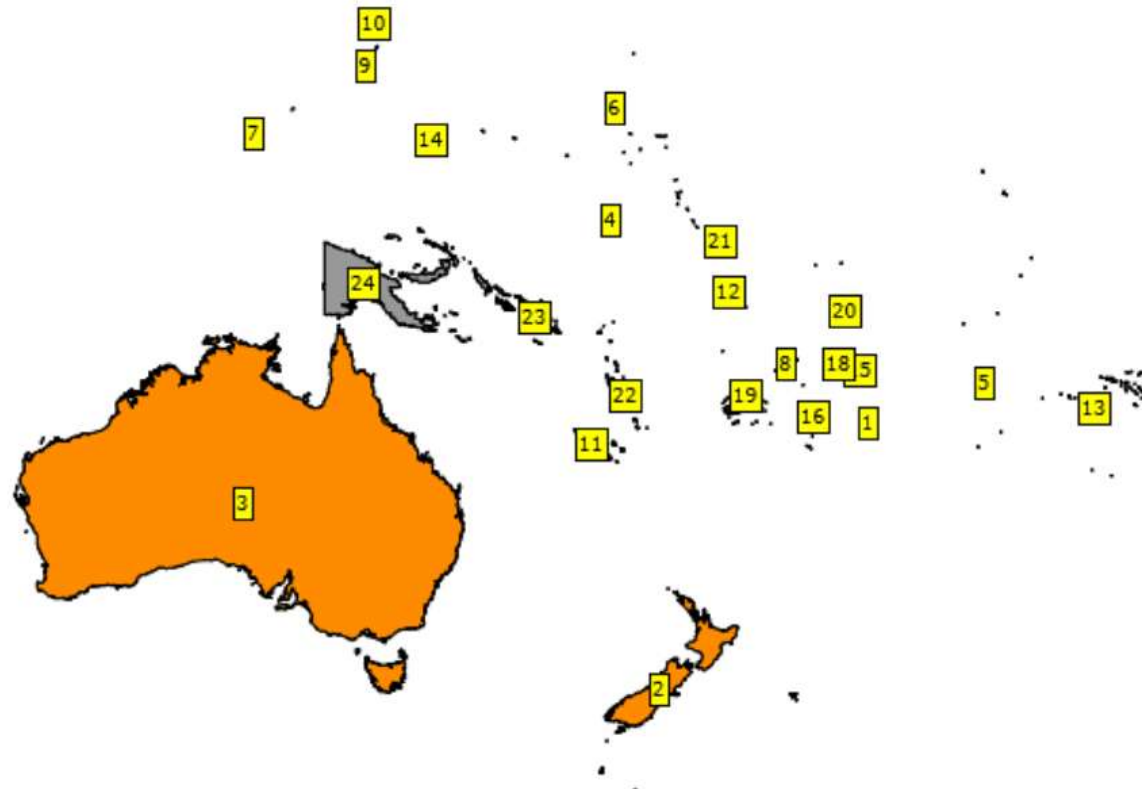
1 : Niue : 48.0020

2 : New Zealand : 47.0634

3 : Australia : 44.7341

4 : Nauru : 42.4947

5 : Cook Islands : 42.2910



Is this box of mouseover text from resting the mouse on the Rank button? = YES

Country = Pitcairn

Continent = Oceania

Population = 47

Total Cases = 4

Total Deaths =

Case Rate (Cases As Percent of Population) = 8.5106

Mortality Rate (Deaths As Percent of Cases) =

Percent of Population in Continent = 0.000104354%

Percent of Cases in Continent = 0.000027310%

Percent of Deaths in Continent =

Rank of Population in Continent = 24 of 24

Rank of Total Cases in Continent = 24 of 24

Rank of Total Deaths in Continent =

Rank of Case Rate in Continent = 17 of 24

Rank of Mortality Rate in Continent =

Percent of Population in World = 0.000000590%

Percent of Cases in World = 0.000000517%

Percent of Deaths in World =

Rank of Population in World = 236 of 236

Rank of Cases in World = 232 of 232

Rank of Deaths in World =

Rank of Case Rate in World = 141 of 232

Rank of Mortality Rate in World =

Mouse on Case Rate Rank 17 Button for the World's Least Populous Country

Is this box of mouseover text from resting the mouse on the Rank button? = YES

Country = Pitcairn

Continent = Oceania

Population = 47

Total Cases = 4

Total Deaths =

Case Rate (Cases As Percent of Population) = 8.5106

Mortality Rate (Deaths As Percent of Cases) =

Percent of Population in Continent = 0.000104354%

Percent of Cases in Continent = 0.000027310%

Percent of Deaths in Continent =

Rank of Population in Continent = 24 of 24

Rank of Total Cases in Continent = 24 of 24

Rank of Total Deaths in Continent =

Rank of Case Rate in Continent = 17 of 24

Rank of Mortality Rate in Continent =

Percent of Population in World = 0.000000590%

Percent of Cases in World = 0.000000517%

Percent of Deaths in World =

Rank of Population in World = 236 of 236

Rank of Cases in World = 232 of 232

Rank of Deaths in World =

Rank of Case Rate in World = 141 of 232

Rank of Mortality Rate in World =

Atlas Key to Discovery of The Tiny

Annotation enables the computer mouse to find The Pitcairn Islands: Pitcairn, Henderson, Ducie, and Oeno, with a **total area of 47 sq km (18.5 sq mi)**. Only Pitcairn is inhabited. Some of its residents are descendants of men from the Mutiny on the Bounty.

Countries and Their Information

- ▶ Mouseover data **DIRECTLY** connects information to each country
- ▶ For **non-vanishing inspection**, each map links to a bar chart of the mapped data and much of its mouseover data

























After Clicking on “Bar Chart”

Ranked Bar Chart For Map Of Case Rate In Oceania

[Go Back To The Annotated Map Of Case Rate In Oceania](#)

[Go To Alphabetic Order Bar Chart Of Case Rate In Oceania](#)

[SpreadSheet For More COVID-19 Information For Oceania](#)

	Rank	% of Continent Population	% of Continent Cases	% of Continent Deaths	Population	Total Cases	Total Deaths	Mortality Rate	Case Rate	
Niue	1	0.004334031%	0.006397412%		1,952	937	.	.	48.0020	
New Zealand	2	11.51291038%	16.66177700%	11.647645%	5,185,289	2,440,375	3,623	0.1485	47.0634	
Australia	3	58.12177014%	79.95205969%	77.437711%	26,177,410	11,710,216	24,087	0.2057	44.7341	
Nauru	4	0.028177860%	0.036820965%	0.0032149%	12,691	5,393	1	0.0185	42.4947	
Cook Islands	5	0.037816193%	0.049178827%	0.0064298%	17,032	7,203	2	0.0278	42.2910	
Marshall Islands	6	0.092349044%	0.110182967%	0.0546536%	41,593	16,138	17	0.1053	38.7998	
Palau	7	0.040151951%	0.042774587%	0.0289343%	18,084	6,265	9	0.1437	34.6439	
Wallis and Futuna	8	0.025746628%	0.024237795%	0.0257193%	11,596	3,550	8	0.2254	30.6140	
Guam	9	0.381410233%	0.356889580%	1.3470503%	171,783	52,272	419	0.8016	30.4291	
Northern Mariana Islands	10	0.110069279%	0.097886553%	0.1318116%	49,574	14,337	41	0.2860	28.9204	
New Caledonia	11	0.643796707%	0.546640788%	1.0094840%	289,959	80,064	314	0.3922	27.6122	
Tuvalu	12	0.025167129%	0.020093473%	0.0032149%	11,335	2,943	1	0.0340	25.9638	
French Polynesia	13	0.680060908%	0.540926131%	2.0864813%	306,292	79,227	649	0.8192	25.8665	
Federated States of Micronesia	14	0.253509704%	0.181250912%	0.2089696%	114,178	26,547	65	0.2448	23.2505	
American Samoa	15	0.098348301%	0.057071472%	0.1093072%	44,295	8,359	34	0.4067	18.8712	
Tonga	16	0.237277072%	0.115303628%	0.0385790%	106,867	16,888	12	0.0711	15.8028	
Pitcairn	17	0.000104354%	0.000027310%		47	4	.	.	8.5106	
Samoa	18	0.493773084%	0.114566252%	0.0996624%	222,390	16,780	31	0.1847	7.5453	
Fiji	19	2.064368480%	0.471421694%	2.8452017%	929,769	69,047	885	1.2817	7.4263	
Tokelau	20	0.004203033%	0.000546204%		1,893	80	.	.	4.2261	
Kiribati	21	0.291385846%	0.034718081%	0.0771580%	131,237	5,085	24	0.4720	3.8747	
Vanuatu	22	0.725470536%	0.082060297%	0.0450088%	326,744	12,019	14	0.1165	3.6784	
Solomon Islands	23	1.608102968%	0.177202176%	0.6397685%	724,272	25,954	199	0.7667	3.5835	
Papua New Guinea	24	22.51969614%	0.319966201%	2.1539945%	10,142,625	46,864	670	1.4297	0.4621	

The Alphabetic Order Bar Chart

Ranked Bar Chart For Map Of Case Rate In Oceania

[Go Back To The Annotated Map Of Case Rate In Oceania](#)

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Nauru	4	0.028177860%	0.036820965%	0.0032149%	12,691	5,393	1	0.0185	42.4947	<div></div>
Cook Islands	5	0.037816193%	0.049178827%	0.0064298%	17,032	7,203	2	0.0278	42.2910	<div></div>
Marshall Islands	6	0.092349044%	0.110182967%	0.0546536%	41,593	16,138	17	0.1053	38.7998	<div></div>
Palau	7	0.040151951%	0.042774587%	0.0289343%	18,084	6,265	9	0.1437	34.6439	<div></div>
Wallis and Futuna	8	0.025746628%	0.024237795%	0.0257193%	11,596	3,550	8	0.2254	30.6140	<div></div>
Guam	9	0.381410233%	0.356889580%	1.3470503%	171,783	52,272	419	0.8016	30.4291	<div></div>
Northern Mariana Islands	10	0.110069279%	0.097886553%	0.1318116%	49,574	14,337	41	0.2860	28.9204	<div></div>
New Caledonia	11	0.643796707%	0.546640788%	1.0094840%	289,959	80,064	314	0.3922	27.6122	<div></div>
Tuvalu	12	0.025167129%	0.020093473%	0.0032149%	11,335	2,943	1	0.0340	25.9638	<div></div>
French Polynesia	13	0.680060908%	0.540926131%	2.0864813%	306,292	79,227	649	0.8192	25.8665	<div></div>
Federated States of Micronesia	14	0.253509704%	0.181250912%	0.2089696%	114,178	26,547	65	0.2448	23.2505	<div></div>
American Samoa	15	0.098348301%	0.057071472%	0.1093072%	44,295	8,359	34	0.4067	18.8712	<div></div>
Tonga	16	0.237277072%	0.115303628%	0.0385790%	106,867	16,888	12	0.0711	15.8028	<div></div>
Pitcairn	17	0.000104354%	0.000027310%		47	4	.	.	8.5106	<div></div>
Samoa	18	0.493773084%	0.114566252%	0.0996624%	222,390	16,780	31	0.1847	7.5453	<div></div>
Fiji	19	2.064368480%	0.471421694%	2.8452017%	929,769	69,047	885	1.2817	7.4263	<div></div>
Tokelau	20	0.004203033%	0.000546204%		1,893	80	.	.	4.2261	<div></div>
Kiribati	21	0.291385846%	0.034718081%	0.0771580%	131,237	5,085	24	0.4720	3.8747	<div></div>
Vanuatu	22	0.725470536%	0.082060297%	0.0450088%	326,744	12,019	14	0.1165	3.6784	<div></div>
Solomon Islands	23	1.608102968%	0.177202176%	0.6397685%	724,272	25,954	199	0.7667	3.5835	<div></div>
Papua New Guinea	24	22.51969614%	0.319966201%	2.1539945%	10,142,625	46,864	670	1.4297	0.4621	<div></div>

Reason for so many decimal positions: Providing for worst case—for some countries on other maps, a percent can be all zeroes except for the rightmost digit.

After Clicking on "SpreadSheet" on the Map or Selecting "Spreadsheet" on Either Bar Chart

Data For All Five Maps Of Oceania															
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
Data For All Five Maps Of Oceania															
Go To The Annotated Map Of Population In Oceania															
Country	Continent	Population	Total Cases	Total Deaths	Case Rate	Mortality Rate	Percent of Continent Population	Percent of Continent Total Cases	Percent of Continent Total Deaths	Rank Population in Continent	Rank Total Cases in Continent	Rank Total Deaths in Continent	Rank Case Rate in Continent	Rank Mortality Rate in Continent	
American Samoa	Oceania	44,295	8,359	34	18.8712	0.4067	0.098348301%	0.057071472%	0.1093072%	15 of 24	15 of 24	11 of 21	15 of 24	7 of 21	
Australia	Oceania	26,177,410	11,710,216	24,087	44.7341	0.2057	58.12177014%	79.95205969%	77.437711%	1 of 24	1 of 24	1 of 21	3 of 24	12 of 21	
Cook Islands	Oceania	17,032	7,203	2	42.2910	0.0278	0.037816193%	0.049178827%	0.0064298%	18 of 24	16 of 24	19 of 21	5 of 24	20 of 21	
Federated States of Micronesia	Oceania	114,178	26,547	65	23.2505	0.2448	0.253509704%	0.181250912%	0.2089696%	12 of 24	8 of 24	9 of 21	14 of 24	10 of 21	
Fiji	Oceania	929,769	69,047	885	7.4263	1.2817	2.064368480%	0.471421694%	2.8452017%	4 of 24	5 of 24	3 of 21	19 of 24	2 of 21	
French Polynesia	Oceania	306,292	79,227	649	25.8665	0.8192	0.680060908%	0.540926131%	2.0864813%	7 of 24	4 of 24	5 of 21	13 of 24	3 of 21	
Guam	Oceania	171,783	52,272	419	30.4291	0.8016	0.381410233%	0.356889580%	1.3470503%	10 of 24	6 of 24	6 of 21	9 of 24	4 of 21	
Kiribati	Oceania	131,237	5,085	24	3.8747	0.4720	0.291385846%	0.034718081%	0.0771580%	11 of 24	19 of 24	13 of 21	21 of 24	6 of 21	
Marshall Islands	Oceania	41,593	16,138	17	38.7998	0.1053	0.092349044%	0.110182967%	0.0546536%	16 of 24	12 of 24	14 of 21	6 of 24	17 of 21	

After Scrolling Right in the Spreadsheet

SpreadSheet For Maps Of Oceania (2).xlsx - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View

Clipboard Font Alignment Number Styles Cells Editing

Normal Bad Good Neutral

AutoSum Fill Clear Sort & Filter Find & Select

A1 Data For All Five Maps Of Oceania

	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC
1																
2																
3																
	Rank Case Rate in Continent	Rank Mortality Rate in Continent	Percent of World Population	Percent of World Total Cases	Percent of World Total Deaths	Rank Population in World	Rank Total Cases in World	Rank Total Deaths in World	Rank Case Rate in World	Rank Mortality Rate in World						
4																
5	15 of 24	7 of 21	0.000555800%	0.001080686%	0.0004861%	212 of 236	209 of 232	208 of 226	99 of 232	171 of 226						
6	3 of 24	12 of 21	0.328465858%	1.513945118%	0.3443881%	55 of 236	14 of 232	43 of 226	43 of 232	200 of 226						
7	5 of 24	20 of 21	0.000213712%	0.000931234%	0.0000286%	223 of 236	214 of 232	223 of 226	46 of 232	224 of 226						
8	14 of 24	10 of 21	0.001432669%	0.003432106%	0.0009293%	193 of 236	173 of 232	200 of 226	88 of 232	193 of 226						
9	19 of 24	2 of 21	0.011666447%	0.008926682%	0.0126534%	161 of 236	142 of 232	137 of 226	147 of 232	76 of 226						
10	13 of 24	3 of 21	0.003843255%	0.010242794%	0.0092792%	182 of 236	138 of 232	148 of 226	79 of 232	119 of 226						
11	9 of 24	4 of 21	0.002155479%	0.006757940%	0.0059907%	190 of 236	151 of 232	151 of 226	66 of 232	122 of 226						
12	21 of 24	6 of 21	0.001646720%	0.000657410%	0.0003431%	191 of 236	221 of 232	211 of 226	161 of 232	165 of 226						
13	6 of 24	17 of 21	0.000521896%	0.002086387%	0.0002431%	214 of 236	190 of 232	214 of 226	52 of 232	213 of 226						

Data for Map

Ready

NOT MY Map

A useless map with a gradient legend is omitted here.
Find one, if you like them.

A gradient legend and color-coding are unsatisfactory.

- ▶ Impossible to match with certainty each color on the map with that precise color in the legend.
- ▶ Impossible to match with certainty the colors of two distinct areas on the map and to know exactly how much their colors differ.
- ▶ Impossible to label each color in the legend.

The Popularity of Gradient Legends Always Mystifies Me

My By-Country Maps

Use Rationale-Based Ranges and Discrete Color-Coding

Five ranges for the response variable:

- Top N
- Above Median
- Median
- Below Median
- Bottom N

N is typically not more than one-fifth of the country count

Let's take a world tour . . .

The Atlas includes an Index,
where each entry links to the Population map for each of
the 14 sectors. (Each Population Map has links to the
Case Rate Map, etc.)

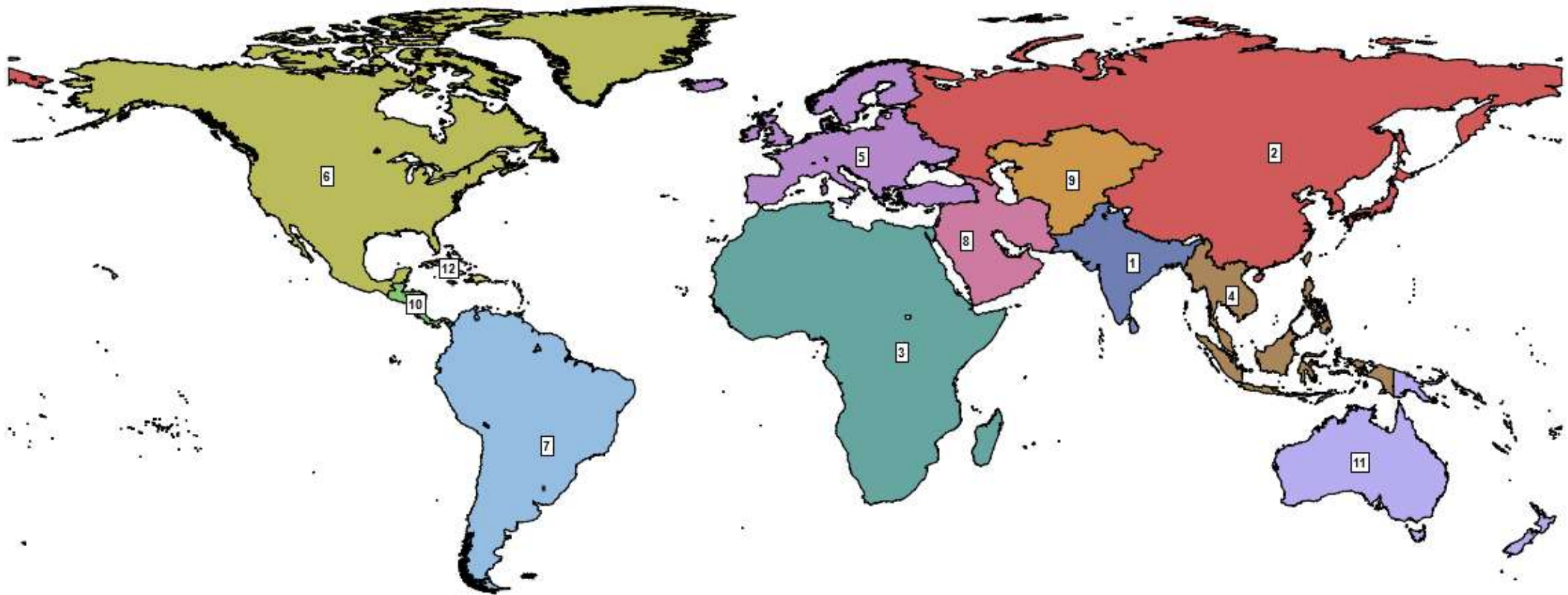
But let's look at the World differently,
for each of the five response variables,
and then use drill-down to
By-Country maps of the sectors of the world.

The World View Of Population By Continent And By Region

Map Of Population By Continent And Region - Grand Total = 7,969,598,474 | For the Five Regions of Asia, Total Population = 4,772,643,411

[Total Cases](#) [Total Deaths](#) [Case Rate](#) [Mortality Rate](#) [Spread Sheet Of Data For All Five Maps](#) [Index To By-Country Population Maps For Each Continent And Region And The World](#)

Click on the Rank Button to get to the By-Country map of Population in the Continent/Region. Rest the mouse on the button to see Continent/Region name, five COVID-19 values, & the Continent/Region count of countries.



1 : Indian SubContinent : 1,877,870,343	2 : North Asia And East Asia : 1,775,835,965	3 : Africa : 1,426,736,614	4 : SouthEast Asia : 704,679,806
5 : Europe : 688,039,206	6 : North America : 507,627,302	7 : South America : 436,816,679	8 : Middle East And TransCaucasia : 296,088,692
9 : Central Asia : 118,168,605	10 : Central America : 51,556,263	11 : Oceania : 45,038,907	12 : Caribbean Islands : 41,140,092

CloseUp of Title Lines 1 and 2

Map Of Population By Continent And Region - Grand Total = 7,969,598,474 | For the Five Regions of Asia, Total Population = 4,772,643,411

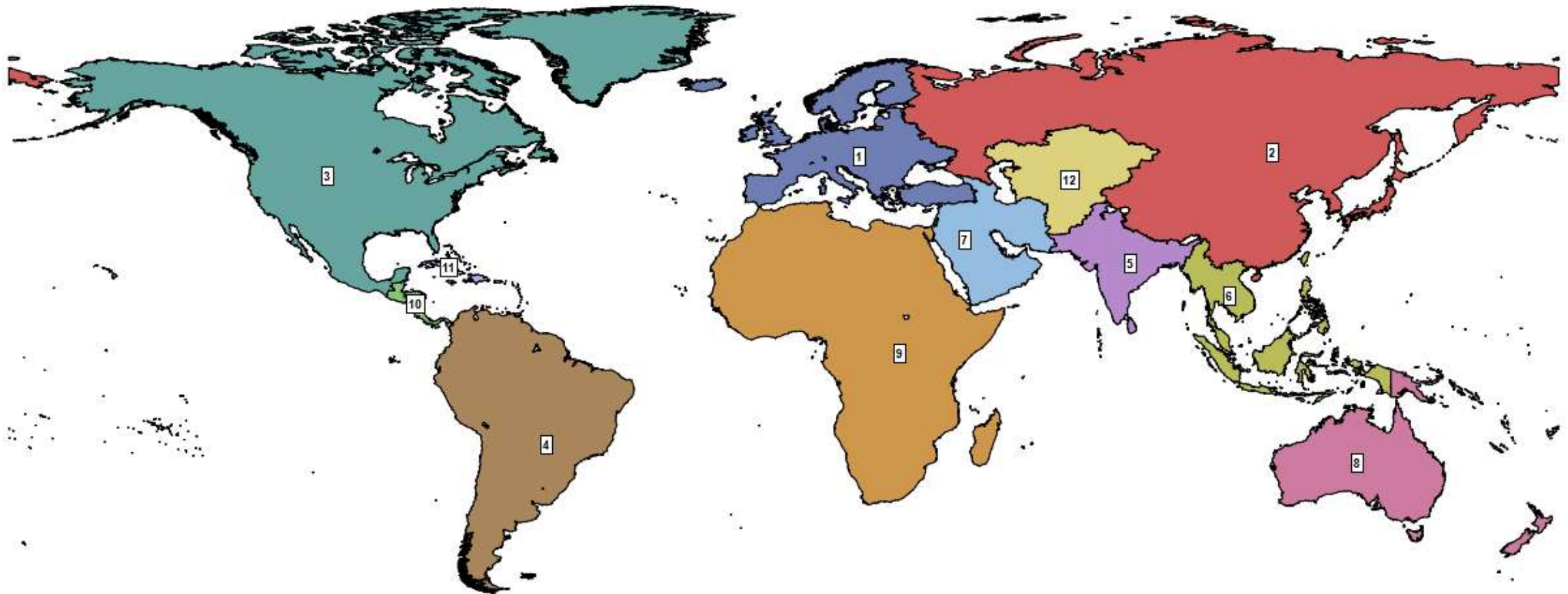
[Total Cases](#) [Total Deaths](#) [Case Rate](#) [Mortality Rate](#) [Spread Sheet Of Data For All Five Maps](#) [Index To By-Country Population Maps For](#)

Total Cases

Map Of Total Cases By Continent And Region - Grand Total = 773,490,126 | For the Five Regions of Asia, Total Total Cases = 307,780,080

[Population](#) [Total Deaths](#) [Case Rate](#) [Mortality Rate](#) [SpreadSheet Of Data For All Five Maps](#) [Index To By-Country Population Maps For Each Continent And Region And The World](#)

Click on the Rank Button to get to the By-Country map of Total Cases in the Continent/Region. Rest the mouse on the button to see Continent/Region name, five COVID-19 values, & the Continent/Region count of countries.



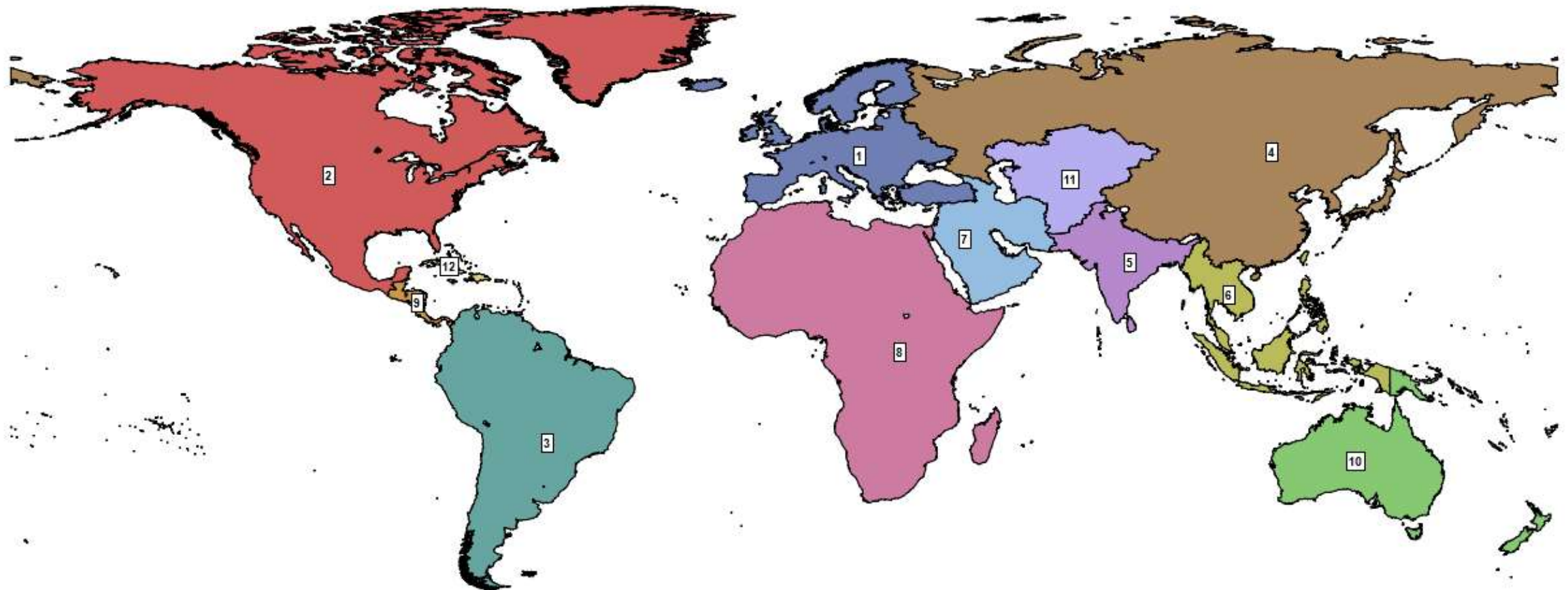
1 : Europe : 244,720,216	2 : North Asia And East Asia : 192,318,113	3 : North America : 117,177,376	4 : South America : 68,710,841
5 : Indian SubContinent : 50,563,304	6 : SouthEast Asia : 36,865,155	7 : Middle East And TransCaucasia : 26,018,560	8 : Oceania : 14,646,547
9 : Africa : 13,130,999	10 : Central America : 4,284,920	11 : Caribbean Islands : 3,039,147	12 : Central Asia : 2,014,948

Total Deaths

Map Of Total Deaths By Continent And Region - Grand Total = 6,994,144 | For the Five Regions of Asia, Total Total Deaths = 1,935,537

[Population](#) [Total Cases](#) [Case Rate](#) [Mortality Rate](#) [SpreadSheet Of Data For All Five Maps](#) [Index To By-Country Population Maps For Each Continent And Region And The World](#)

Click on the Rank Button to get to the By-Country map of Total Deaths in the Continent/Region. Rest the mouse on the button to see Continent/Region name, five COVID-19 values, & the Continent/Region count of countries.



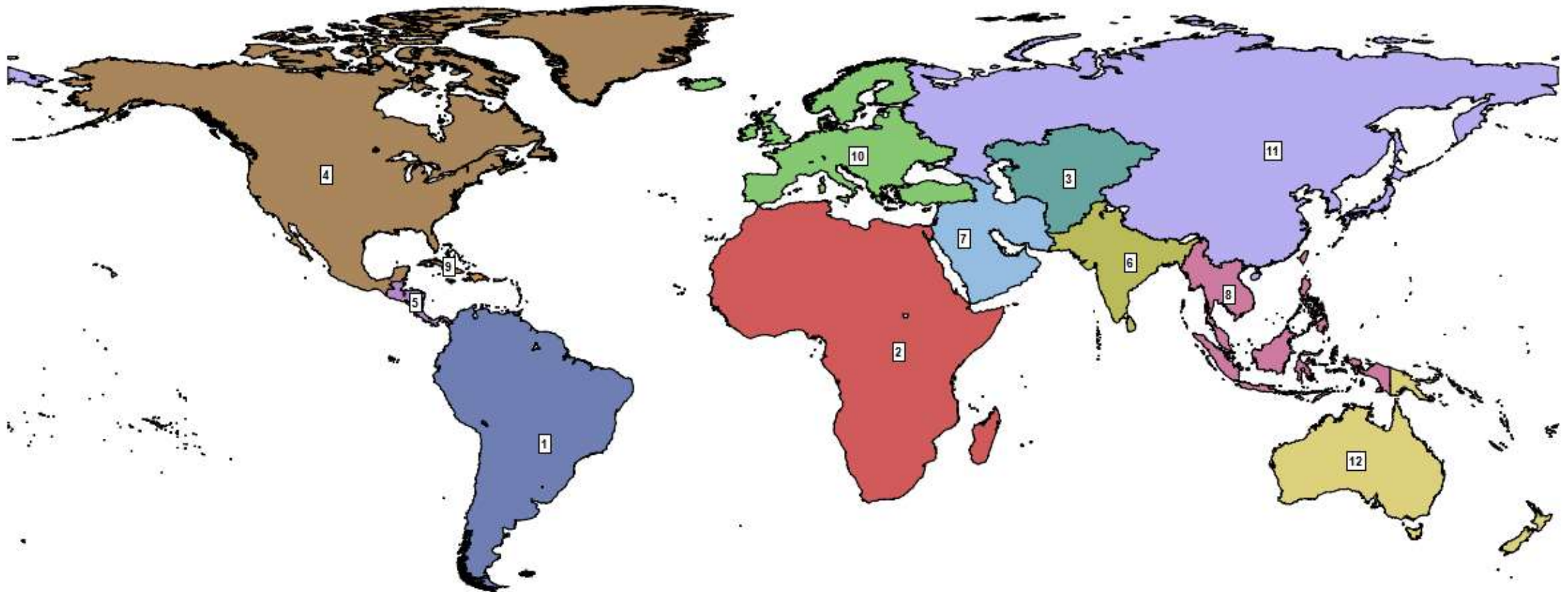
1 : Europe : 1,790,363	2 : North America : 1,539,556	3 : South America : 1,356,593	4 : North Asia And East Asia : 635,768
5 : Indian SubContinent : 622,735	6 : SouthEast Asia : 369,211	7 : Middle East And TransCaucasia : 278,613	8 : Africa : 259,064
9 : Central America : 54,498	10 : Oceania : 31,105	11 : Central Asia : 29,210	12 : Caribbean Islands : 27,428

Mortality Rate (Total Deaths as Percent of Total Cases)

Map Of Mortality Rate By Continent And Region

[Population](#) [Total Cases](#) [Total Deaths](#) [Case Rate](#) [SpreadSheet Of Data For All Five Maps](#) [Index To By-Country Population Maps For Each Continent And Region And The World](#)

Click on the Rank Button to get to the By-Country map of Mortality Rate in the Continent/Region. Rest the mouse on the button to see Continent/Region name, five COVID-19 values, & the Continent/Region count of countries.



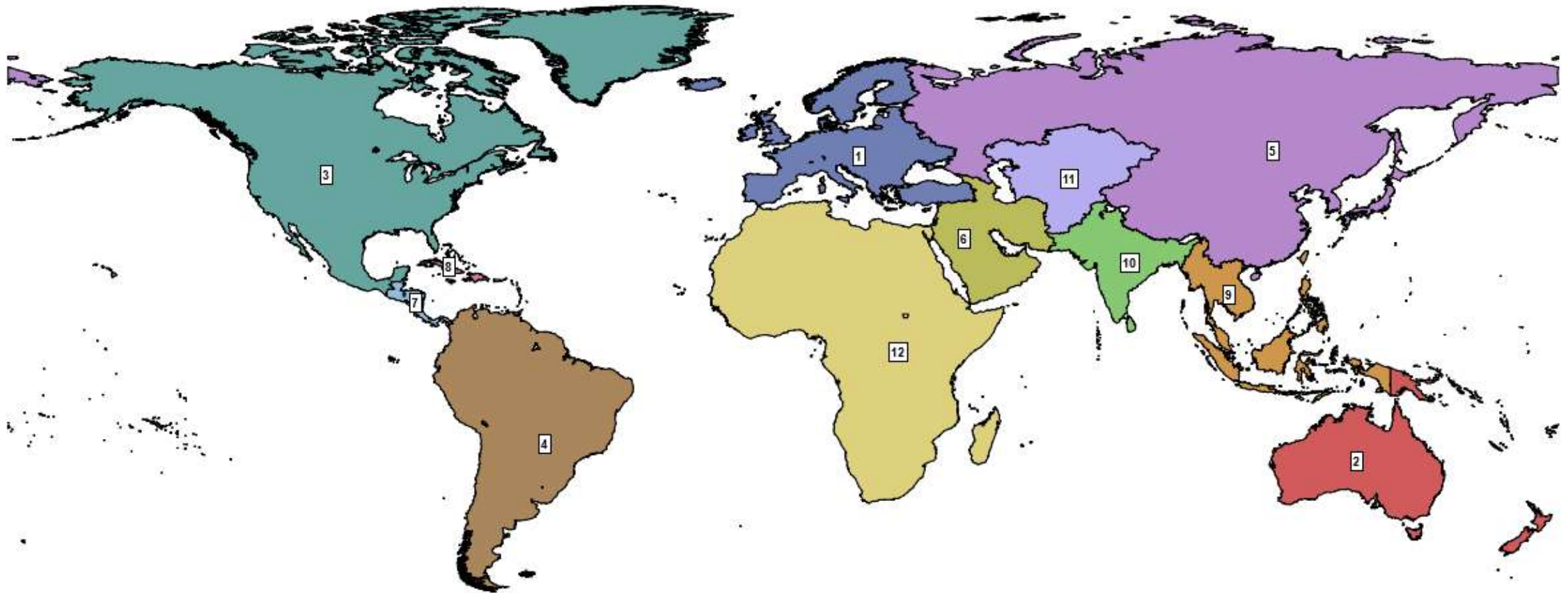
1 : South America : 1.9744	2 : Africa : 1.9732	3 : Central Asia : 1.4497	4 : North America : 1.3139	5 : Central America : 1.2719	6 : Indian SubContinent : 1.2316
7 : Middle East And TransCaucasia : 1.0708	8 : SouthEast Asia : 1.0015	9 : Caribbean Islands : 0.9025	10 : Europe : 0.7316	11 : North Asia And East Asia : 0.3306	12 : Oceania : 0.2124

Case Rate (Total Cases As Percent of Population)

Map Of Case Rate By Continent And Region

[Population](#) [Total Cases](#) [Total Deaths](#) [Mortality Rate](#) [SpreadSheet Of Data For All Five Maps](#) [Index To By-Country Population Maps For Each Continent And Region And The World](#)

Click on the Rank Button to get to the By-Country map of Case Rate in the Continent/Region. Rest the mouse on the button to see Continent/Region name, five COVID-19 values, & the Continent/Region count of countries.



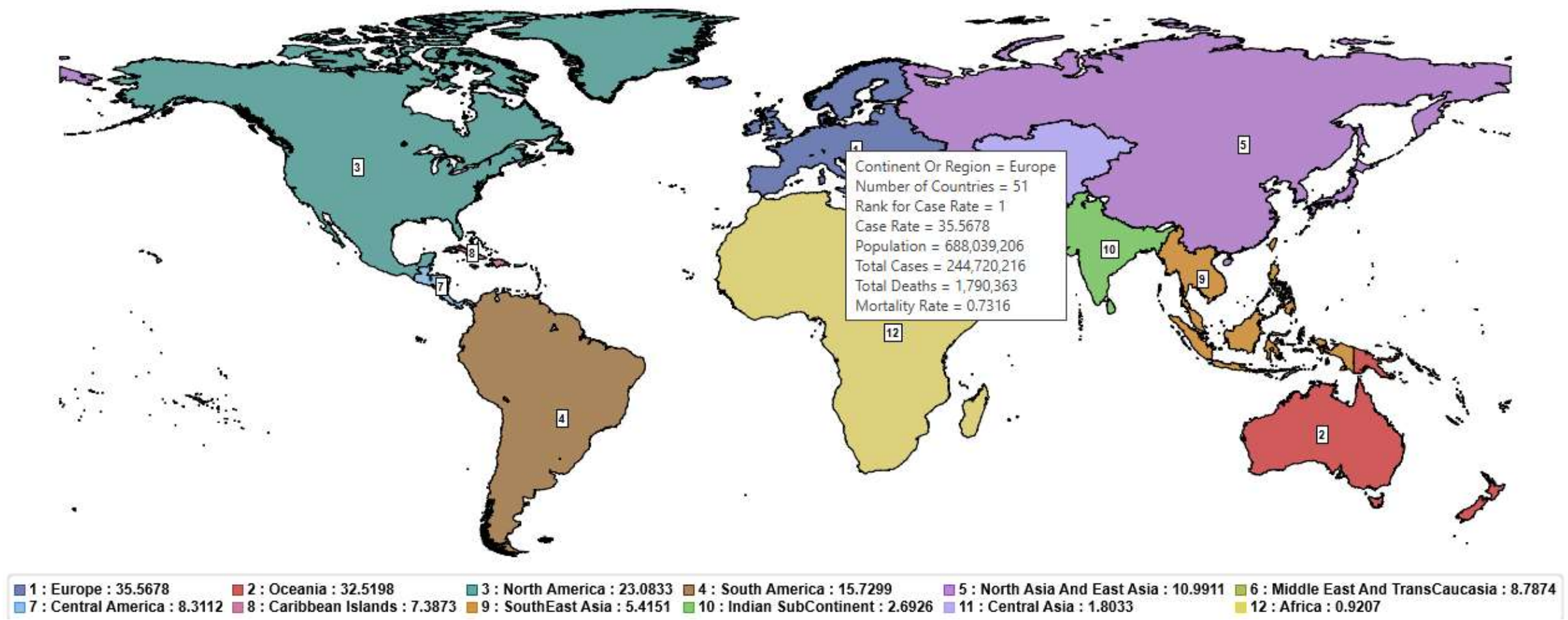
1 : Europe : 35.5678	2 : Oceania : 32.5198	3 : North America : 23.0833	4 : South America : 15.7299	5 : North Asia And East Asia : 10.9911	6 : Middle East And TransCaucasia : 8.7874
7 : Central America : 8.3112	8 : Caribbean Islands : 7.3873	9 : SouthEast Asia : 5.4151	10 : Indian SubContinent : 2.6926	11 : Central Asia : 1.8033	12 : Africa : 0.9207

At this level, mouseover text is more limited, but a SpreadSheet is more informative.

Map Of Case Rate By Continent And Region

[Population](#) [Total Cases](#) [Total Deaths](#) [Mortality Rate](#) [SpreadSheet Of Data For All Five Maps](#) [Index To By-Country Population Maps For Each Continent And Region And The World](#)

Click on the Rank Button to get to the By-Country map of Case Rate in the Continent/Region. Rest the mouse on the button to see Continent/Region name, five COVID-19 values, & the Continent/Region count of countries.



Using the mouse to instead take the link to the SpreadSheet

File Home Insert Page Layout Formulas Data Review View

Cut Copy Paste Format Painter Clipboard

Arial 11 Font

Wrap Text Merge & Center Alignment

General Number

Conditional Formatting Format as Table

Normal Good Bad Neutral Styles

Insert Delete Format Cells

AutoSum Fill Clear Sort & Filter Find & Select Editing

A1 Data For All Five Maps By Continent And Region

	A	B	C	D	E	F	G	H	I	J	K	L
1	Data For All Five Maps By Continent And Region											
2	Go To The Map Of Population By Continent And Region											
3												
4	Continent or Region	Number of Countries	Rank of Population	Population	Rank of Total Cases	Total Cases	Rank of Total Deaths	Total Deaths	Rank of Case Rate	Case Rate	Rank of Mortality Rate	Mortality Rate
5	Caribbean Islands	27	12	41,140,092	11	3,039,147	12	27,428	8	7.3873	9	0.9025
6	Central America	7	10	51,556,263	10	4,284,920	9	54,498	7	8.3112	5	1.2719
7	Middle East And TransCaucasia	17	8	296,088,692	7	26,018,560	7	278,613	6	8.7874	7	1.0708
8	Central Asia	6	9	118,168,605	12	2,014,948	11	29,210	11	1.7051	3	1.4497
9	Indian SubContinent	7	1	1,877,870,343	5	50,563,304	5	622,735	10	2.6926	6	1.2316
10	SouthEast Asia	12	4	704,679,806	6	36,865,155	6	369,211	9	5.2315	8	1.0015
11	North Asia And East Asia	6	2	1,775,835,965	2	192,318,113	4	635,768	5	10.8297	11	0.3306
12	Oceania	24	11	45,038,907	8	14,646,547	10	31,105	2	32.5198	12	0.2124
13	Africa	58	3	1,426,736,614	9	13,130,999	8	259,064	12	0.9204	2	1.9729
14	Europe	51	5	688,039,206	1	244,720,216	1	1,790,363	1	35.5678	10	0.7316
15	North America	7	6	507,627,302	3	117,177,376	2	1,539,556	3	23.0833	4	1.3139
16	South America	14	7	436,816,679	4	68,710,841	3	1,356,593	4	15.7299	1	1.9744
17												
18												
19												

Data For All Five Maps

Ready

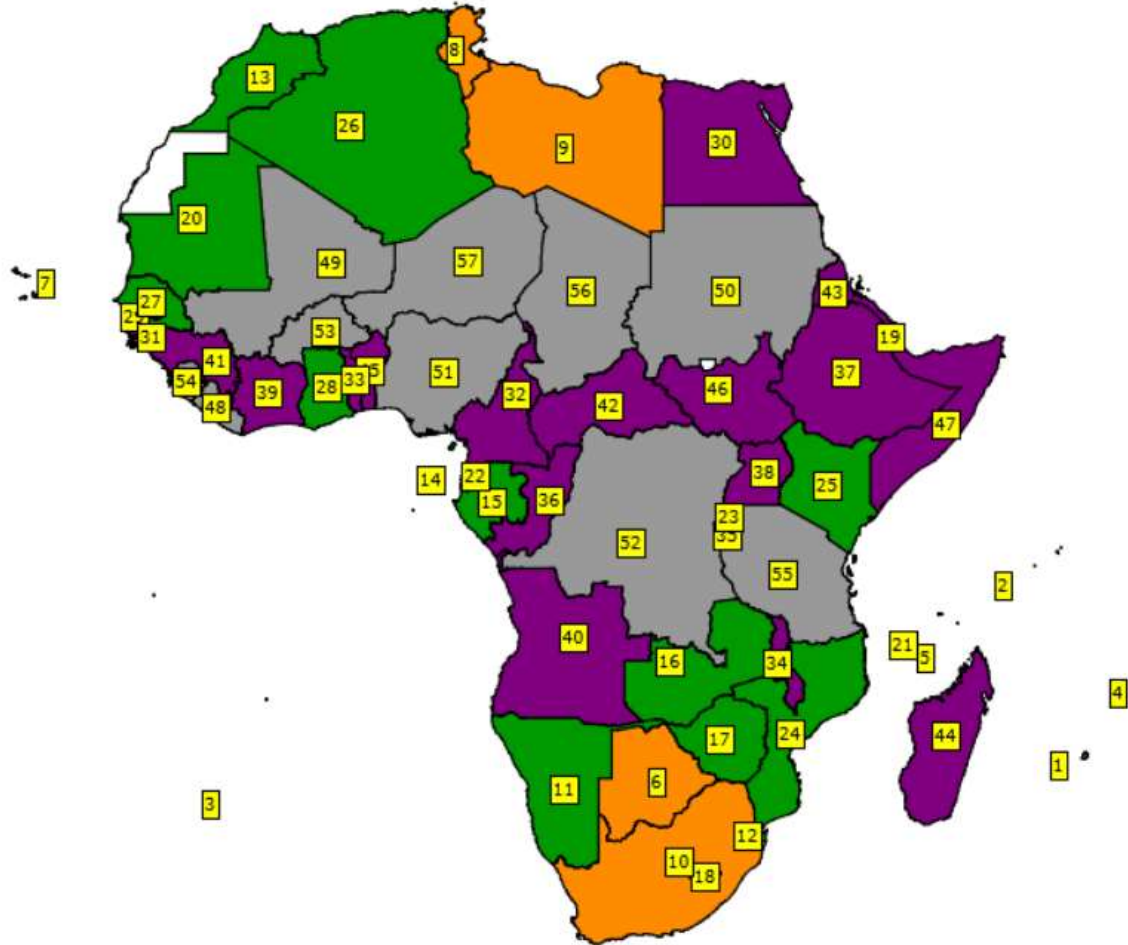
**Click on any continent/region for the corresponding map
of the current response variable by country within continent/region**

After Clicking on Africa in the World Map for Case Rate

Country : Rank : Case Rate
In Alphabetical Order:

Algeria : 26 : 0.6058
Angola : 40 : 0.2999
Benin : 45 : 0.2100
Botswana : 6 : 12.5620
Burkina Faso : 53 : 0.0975
Burundi : 35 : 0.4225
Cameroon : 32 : 0.4483
Cape Verde : 7 : 10.8695
Central African Republic : 42 : 0.2767
Chad : 56 : 0.0434
Comoros : 21 : 1.0886
Congo : 36 : 0.4223
Cote d'Ivoire : 39 : 0.3139
Democratic Republic of the Congo : 52 : 0.1003
Djibouti : 19 : 1.3998
Egypt : 30 : 0.4649
Equatorial Guinea : 22 : 1.0227
Eritrea : 43 : 0.2766
Eswatini : 12 : 6.2572
Ethiopia : 37 : 0.4062
Gabon : 15 : 2.0532
Gambia : 29 : 0.4666
Ghana : 28 : 0.5133
Guinea : 41 : 0.2783
Guinea-Bissau : 31 : 0.4566
Kenya : 25 : 0.6369
Lesotho : 18 : 1.5671
Liberia : 48 : 0.1526
Libya : 9 : 7.4463
Madagascar : 44 : 0.2312
Malawi : 34 : 0.4370
Mali : 49 : 0.1468
Mauritania : 20 : 1.3465
Mauritius : 4 : 24.7345
Mayotte : 5 : 12.8873
Morocco : 13 : 3.4125
Mozambique : 24 : 0.7089
Namibia : 11 : 6.7097
Niger : 57 : 0.0363
Nigeria : 51 : 0.1223
Reunion : 1 : 50.7765
Rwanda : 23 : 0.9669
Sao Tome and Principe : 14 : 2.9614
Senegal : 27 : 0.5143
Seychelles : 2 : 47.8088
Sierra Leone : 54 : 0.0904
Somalia : 47 : 0.1553
South Africa : 10 : 6.7998
South Sudan : 46 : 0.1724
St Helena & Ascension & TristanDaCunha : 3 : 40.1037
Sudan : 50 : 0.1365
Tanzania : 55 : 0.0660
Togo : 33 : 0.4467
Tunisia : 8 : 9.3343
Uganda : 38 : 0.3638
Zambia : 16 : 1.7450
Zimbabwe : 17 : 1.6301

Case Rate In Africa For 57 Countries
Countries With No Data (have Empty Area Fill): Western Sahara
■ 0.0363 - 0.1526 (10 lowest) ■ 0.1553 - 0.4649 (below median) ■ 0.4666 - 0.4666 (median)
■ 0.5133 - 6.7097 (above median) ■ 6.7998 - 50.7765 (10 highest) □ No Data
[No Annotation](#) [Population](#) [Total Cases](#) [Total Deaths](#) [Mortality Rate](#) [BarChart](#) [SpreadSheet](#) [Index](#)
[World Map of Case Rate By Continent and Region](#) (linked to world maps of other four COVID-19 variables)
HERE: Use the mouse for more information for any country. For a too small country, find its Rank in the alphabetic list. and click that Rank button in the map.

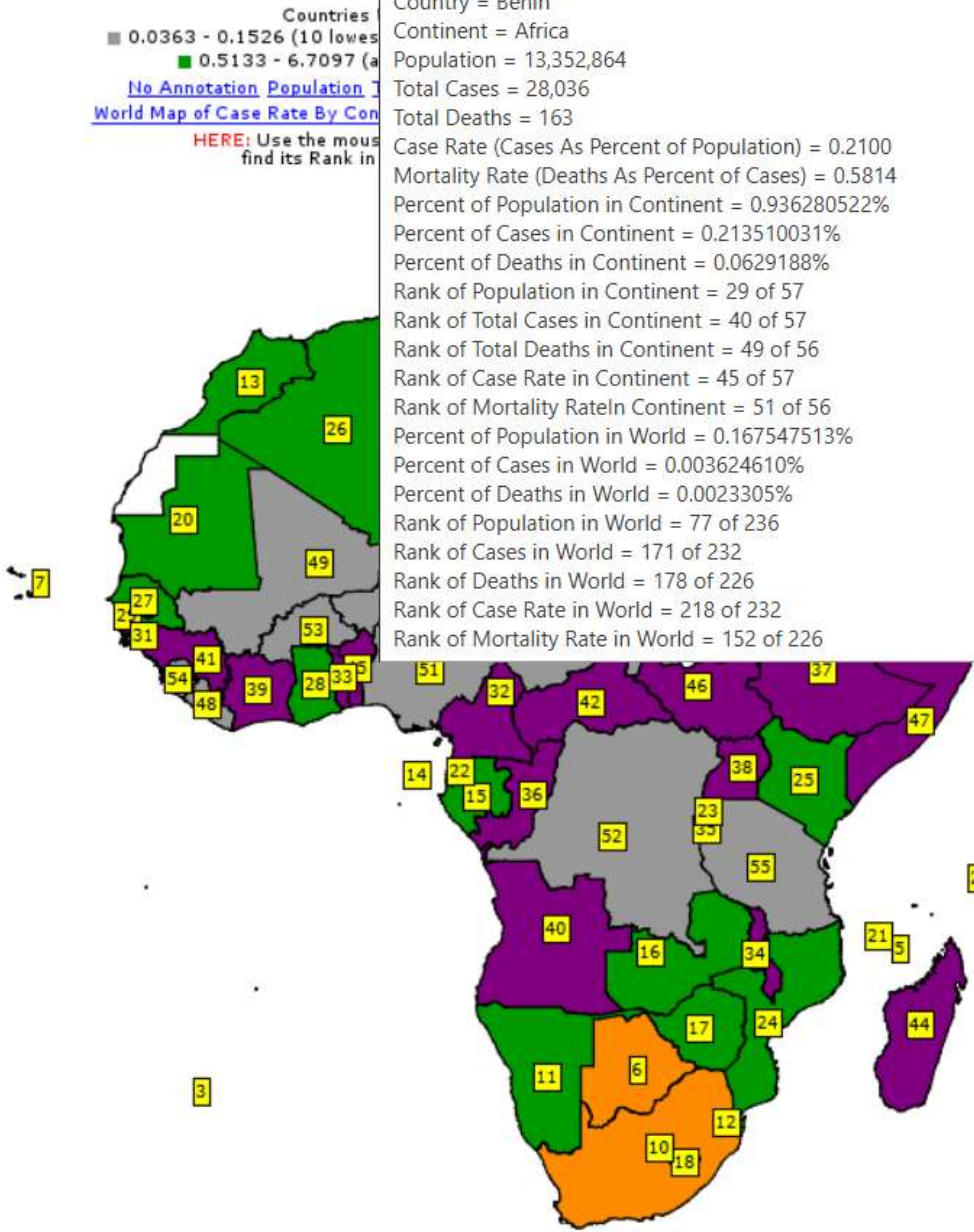


Rank : Country : Case Rate
In Rank Order Within Range:

Top 10 Countries:
1 : Reunion : 50.7765
2 : Seychelles : 47.8088
3 : St Helena & Ascension & TristanDaCunha : 40.1037
4 : Mauritius : 24.7345
5 : Mayotte : 12.8873
6 : Botswana : 12.5620
7 : Cape Verde : 10.8695
8 : Tunisia : 9.3343
9 : Libya : 7.4463
10 : South Africa : 6.7998
Above Median Countries:
11 : Namibia : 6.7097
12 : Eswatini : 6.2572
13 : Morocco : 3.4125
14 : Sao Tome and Principe : 2.9614
15 : Gabon : 2.0532
16 : Zambia : 1.7450
17 : Zimbabwe : 1.6301
18 : Lesotho : 1.5671
19 : Djibouti : 1.3998
20 : Mauritania : 1.3465
21 : Comoros : 1.0886
22 : Equatorial Guinea : 1.0227
23 : Rwanda : 0.9669
24 : Mozambique : 0.7089
25 : Kenya : 0.6369
26 : Algeria : 0.6058
27 : Senegal : 0.5143
28 : Ghana : 0.5133
Median Countries:
29 : Gambia : 0.4666
Below Median Countries:
30 : Egypt : 0.4649
31 : Guinea-Bissau : 0.4566
32 : Cameroon : 0.4483
33 : Togo : 0.4467
34 : Malawi : 0.4370
35 : Burundi : 0.4225
36 : Congo : 0.4223
37 : Ethiopia : 0.4062
38 : Uganda : 0.3638
39 : Cote d'Ivoire : 0.3139
40 : Angola : 0.2999
41 : Guinea : 0.2783
42 : Central African Republic : 0.2767
43 : Eritrea : 0.2766
44 : Madagascar : 0.2312
45 : Benin : 0.2100
46 : South Sudan : 0.1724
47 : Somalia : 0.1553
Bottom 10 Countries:
48 : Liberia : 0.1526
49 : Mali : 0.1468
50 : Sudan : 0.1365
51 : Nigeria : 0.1223
52 : Democratic Republic of the Congo : 0.1003
53 : Burkina Faso : 0.0975
54 : Sierra Leone : 0.0904
55 : Tanzania : 0.0660
56 : Chad : 0.0434
57 : Niger : 0.0363

Enough of Benin's Rank Button 45 peaks out to be accessible, but Benin's area also is.

Country : Rank : Case Rate
In Alphabetical Order:
Algeria : 26 : 0.6058
Angola : 40 : 0.2999
Benin : 45 : 0.2100
Botswana : 6 : 12.5620
Burkina Faso : 53 : 0.0975
Burundi : 35 : 0.4225
Cameroon : 32 : 0.4483
Cape Verde : 7 : 10.8695
Central African Republic : 42 : 0.2767
Chad : 56 : 0.0434
Comoros : 21 : 1.0886
Congo : 36 : 0.4223
Cote d'Ivoire : 39 : 0.3139
Democratic Republic of the Congo : 52 : 0.1003
Djibouti : 19 : 1.3998
Egypt : 30 : 0.4649
Equatorial Guinea : 22 : 1.0227
Eritrea : 43 : 0.2766
Eswatini : 12 : 6.2572
Ethiopia : 37 : 0.4062
Gabon : 15 : 2.0532
Gambia : 29 : 0.4666
Ghana : 28 : 0.5133
Guinea : 41 : 0.2783
Guinea-Bissau : 31 : 0.4566
Kenya : 25 : 0.6369
Lesotho : 18 : 1.5671
Liberia : 48 : 0.1526
Libya : 9 : 7.4463
Madagascar : 44 : 0.2312
Malawi : 34 : 0.4370
Mali : 49 : 0.1468
Mauritania : 20 : 1.3465
Mauritius : 4 : 24.7345
Mayotte : 5 : 12.8873
Morocco : 13 : 3.4125
Mozambique : 24 : 0.7089
Namibia : 11 : 6.7097
Niger : 57 : 0.0363
Nigeria : 51 : 0.1223
Reunion : 1 : 50.7765
Rwanda : 23 : 0.9669
Sao Tome and Principe : 14 : 2.9614
Senegal : 27 : 0.5143
Seychelles : 2 : 47.8088
Sierra Leone : 54 : 0.0904
Somalia : 47 : 0.1553
South Africa : 10 : 6.7998
South Sudan : 46 : 0.1724
St Helena & Ascension & TristanDaCunha : 3 : 40.1037
Sudan : 50 : 0.1365
Tanzania : 55 : 0.0660
Togo : 33 : 0.4467
Tunisia : 8 : 9.3343
Uganda : 38 : 0.3638
Zambia : 16 : 1.7450
Zimbabwe : 17 : 1.6301



Is this box of mouseover text from resting the mouse on the Rank button? = YES
Country = Benin
Continent = Africa
Population = 13,352,864
Total Cases = 28,036
Total Deaths = 163
Case Rate (Cases As Percent of Population) = 0.2100
Mortality Rate (Deaths As Percent of Cases) = 0.5814
Percent of Population in Continent = 0.936280522%
Percent of Cases in Continent = 0.213510031%
Percent of Deaths in Continent = 0.0629188%
Rank of Population in Continent = 29 of 57
Rank of Total Cases in Continent = 40 of 57
Rank of Total Deaths in Continent = 49 of 56
Rank of Case Rate in Continent = 45 of 57
Rank of Mortality Rate in Continent = 51 of 56
Percent of Population in World = 0.167547513%
Percent of Cases in World = 0.003624610%
Percent of Deaths in World = 0.0023305%
Rank of Population in World = 77 of 236
Rank of Cases in World = 171 of 232
Rank of Deaths in World = 178 of 226
Rank of Case Rate in World = 218 of 232
Rank of Mortality Rate in World = 152 of 226

Rank : Country : Case Rate
In Rank Order Within Range:
■ Top 10 Countries:
1 : Reunion : 50.7765
2 : Seychelles : 47.8088
3 : St Helena & Ascension & TristanDaCunha : 40.1037
4 : Mauritius : 24.7345
5 : Mayotte : 12.8873
6 : Botswana : 12.5620
7 : Cape Verde : 10.8695
8 : Tunisia : 9.3343
9 : Libya : 7.4463
10 : South Africa : 6.7998
■ Above Median Countries:
11 : Namibia : 6.7097
12 : Eswatini : 6.2572
13 : Morocco : 3.4125
14 : Sao Tome and Principe : 2.9614
15 : Gabon : 2.0532
16 : Zambia : 1.7450
17 : Zimbabwe : 1.6301
18 : Lesotho : 1.5671
19 : Djibouti : 1.3998
20 : Mauritania : 1.3465
21 : Comoros : 1.0886
22 : Equatorial Guinea : 1.0227
23 : Rwanda : 0.9669
24 : Mozambique : 0.7089
25 : Kenya : 0.6369
26 : Algeria : 0.6058
27 : Senegal : 0.5143
28 : Ghana : 0.5133
■ Median Countries:
29 : Gambia : 0.4666
■ Below Median Countries:
30 : Egypt : 0.4649
31 : Guinea-Bissau : 0.4566
32 : Cameroon : 0.4483
33 : Togo : 0.4467
34 : Malawi : 0.4370
35 : Burundi : 0.4225
36 : Congo : 0.4223
37 : Ethiopia : 0.4062
38 : Uganda : 0.3638
39 : Cote d'Ivoire : 0.3139
40 : Angola : 0.2999
41 : Guinea : 0.2783
42 : Central African Republic : 0.2767
43 : Eritrea : 0.2766
44 : Madagascar : 0.2312
45 : Benin : 0.2100
46 : South Sudan : 0.1724
47 : Somalia : 0.1553
■ Bottom 10 Countries:
48 : Liberia : 0.1526
49 : Mali : 0.1468
50 : Sudan : 0.1365
51 : Nigeria : 0.1223
52 : Democratic Republic of the Congo : 0.1003
53 : Burkina Faso : 0.0975
54 : Sierra Leone : 0.0904
55 : Tanzania : 0.0660
56 : Chad : 0.0434
57 : Niger : 0.0363

Getting to Europe

Go back to the World Map and use DrillDown or Click on the Index Link and look for Europe in the list. There are five drillable World Maps. From each you can get to Region and Continent maps for whatever is the current response variable. The Index only links to Population maps. Every Population map has links to Case Rate map, etc.

Europe

Country : Rank : Case Rate

In Alphabetical Order:

Albania : 49 : 11.7705
Andorra : 7 : 60.1368
Austria : 3 : 68.0263
Belarus : 50 : 10.4252
Belgium : 27 : 41.5405
Bosnia and Herzegovina : 48 : 12.4776
Bulgaria : 41 : 19.4799
Croatia : 33 : 31.8944
Cyprus : 2 : 73.9907
Czechia : 24 : 45.0715
Denmark : 10 : 58.2498
Estonia : 23 : 45.7887
Faroe Islands : 4 : 65.2484
Finland : 36 : 27.0670
France : 11 : 57.5074
Germany : 22 : 46.1051
Gibraltar : 6 : 62.8883
Greece : 16 : 53.2882
Guernsey : 13 : 55.7817
Hungary : 39 : 22.3113
Iceland : 12 : 56.2211
Ireland : 31 : 34.3898
Isle of Man : 25 : 44.9618
Italy : 26 : 44.9167
Jersey : 9 : 59.9218
Kosovo : 46 : 15.3906
Latvia : 17 : 52.8300
Liechtenstein : 15 : 54.7783
Lithuania : 19 : 49.4255
Luxembourg : 8 : 60.0686
Malta : 38 : 22.6633
Moldova : 42 : 19.2332
Monaco : 21 : 47.0828
Montenegro : 28 : 40.0713
Netherlands : 20 : 49.1214
North Macedonia : 44 : 16.7270
Norway : 35 : 27.6247
Poland : 45 : 16.5820
Portugal : 14 : 54.8846
Romania : 43 : 17.8412
San Marino : 1 : 75.0727
Serbia : 29 : 37.5966
Slovakia : 32 : 33.1948
Slovenia : 5 : 63.8156
Spain : 34 : 29.3960
Sweden : 37 : 25.9958
Switzerland : 18 : 50.8184
Turkey : 40 : 19.9255
Ukraine : 47 : 13.9049
United Kingdom : 30 : 36.8004
Vatican City State : 51 : 3.2178

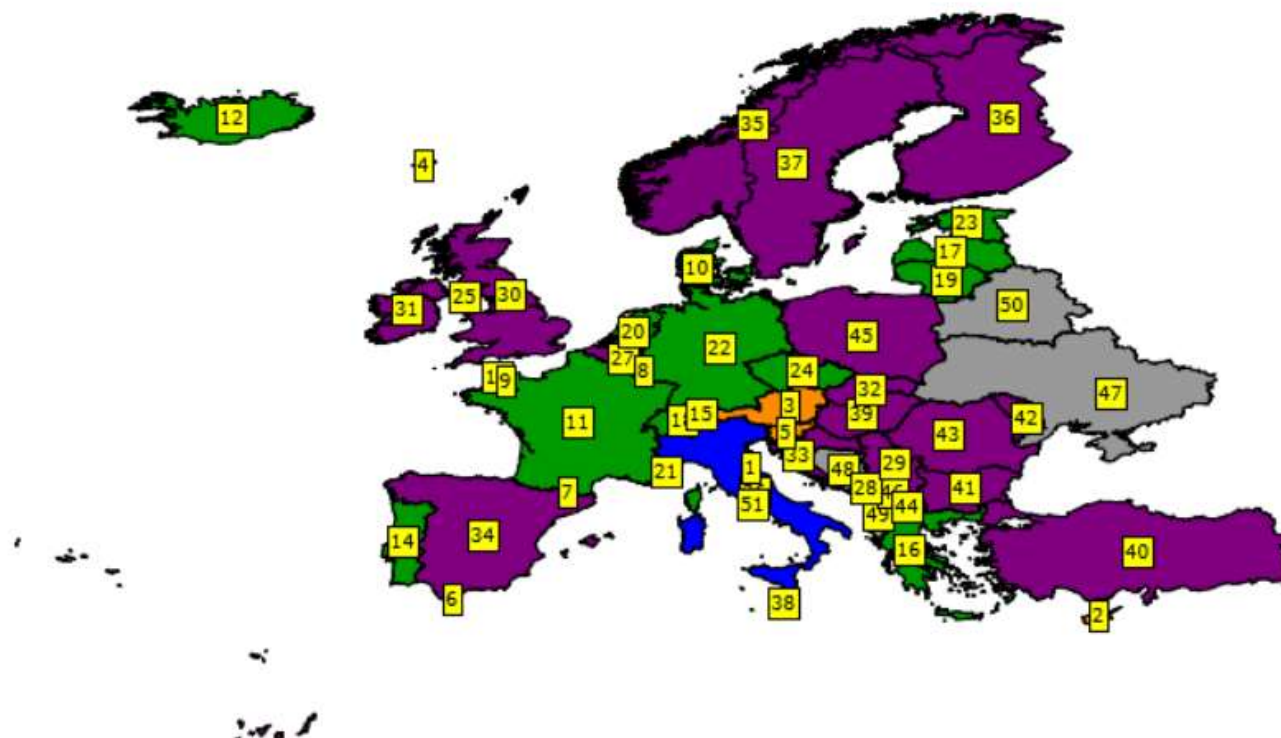
Case Rate In Europe For 51 Countries

■ 3.2178 - 13.9049 (5 lowest) ■ 15.3906 - 41.5405 (below median) ■ 44.9167 - 44.9167 (median)
■ 44.9618 - 62.8883 (above median) ■ 63.8156 - 75.0727 (5 highest)

[No Annotation](#) [Population](#) [Total Cases](#) [Total Deaths](#) [Mortality Rate](#) [BarChart](#) [SpreadSheet](#) [Index](#)
[World Map of Case Rate By Continent and Region](#) (linked to world maps of other four COVID-19 variables)

[HERE](#): Use the mouse for more information for any country.

For a too small country, find its Rank in the alphabetic list, and click that Rank button in the map.



Rank : Country : Case Rate
In Rank Order Within Range:

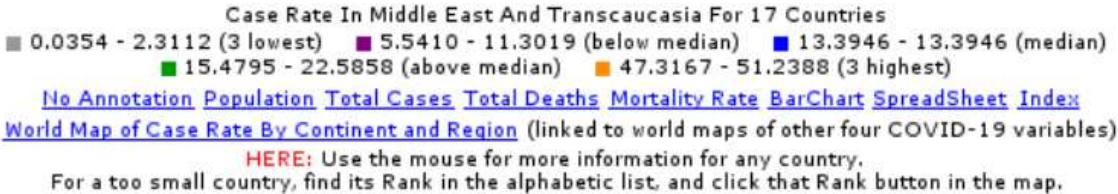
■ Top 5 Countries:
1 : San Marino : 75.0727
2 : Cyprus : 73.9907
3 : Austria : 68.0263
4 : Faroe Islands : 65.2484
5 : Slovenia : 63.8156
■ Above Median Countries:
6 : Gibraltar : 62.8883
7 : Andorra : 60.1368
8 : Luxembourg : 60.0686
9 : Jersey : 59.9218
10 : Denmark : 58.2498
11 : France : 57.5074
12 : Iceland : 56.2211
13 : Guernsey : 55.7817
14 : Portugal : 54.8846
15 : Liechtenstein : 54.7783
16 : Greece : 53.2882
17 : Latvia : 52.8300
18 : Switzerland : 50.8184
19 : Lithuania : 49.4255
20 : Netherlands : 49.1214
21 : Monaco : 47.0828
22 : Germany : 46.1051
23 : Estonia : 45.7887
24 : Czechia : 45.0715
25 : Isle of Man : 44.9618
■ Median Countries:
26 : Italy : 44.9167
■ Below Median Countries:
27 : Belgium : 41.5405
28 : Montenegro : 40.0713
29 : Serbia : 37.5966
30 : United Kingdom : 36.8004
31 : Ireland : 34.3898
32 : Slovakia : 33.1948
33 : Croatia : 31.8944
34 : Spain : 29.3960
35 : Norway : 27.6247
36 : Finland : 27.0670
37 : Sweden : 25.9958
38 : Malta : 22.6633
39 : Hungary : 22.3113
40 : Turkey : 19.9255
41 : Bulgaria : 19.4799
42 : Moldova : 19.2332
43 : Romania : 17.8412
44 : North Macedonia : 16.7270
45 : Poland : 16.5820
46 : Kosovo : 15.3906
■ Bottom 5 Countries:
47 : Ukraine : 13.9049
48 : Bosnia and Herzegovina : 12.4776
49 : Albania : 11.7705
50 : Belarus : 10.4252
51 : Vatican City State : 3.2178

Middle East and Transcaucasia

Transcaucasia is the West Asian Countries of Armenia, Azerbaijan, and Georgia

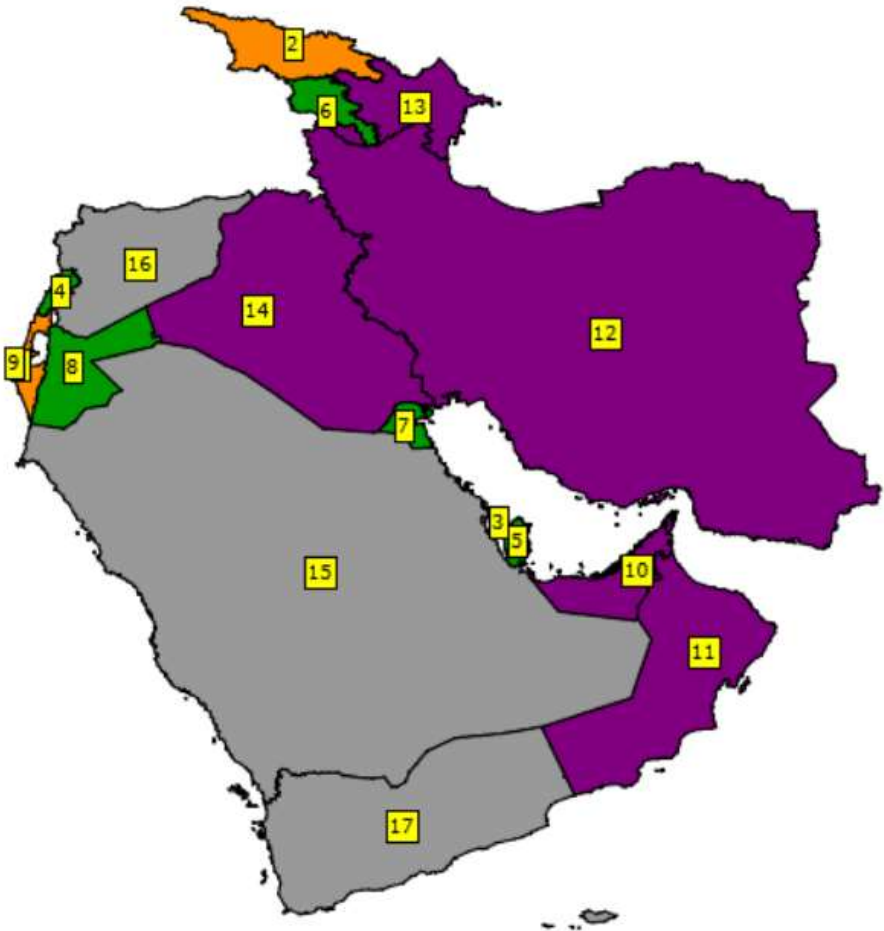
Country : Rank : Case Rate
In Alphabetical Order:

Armenia	: 6	: 16.2330
Azerbaijan	: 13	: 8.0535
Bahrain	: 3	: 47.3167
Georgia	: 2	: 49.5486
Iran	: 12	: 8.6114
Iraq	: 14	: 5.5410
Israel	: 1	: 51.2388
Jordan	: 8	: 15.4795
Kuwait	: 7	: 15.6150
Lebanon	: 4	: 22.5858
Oman	: 11	: 8.7286
Palestine	: 9	: 13.3946
Qatar	: 5	: 19.0909
Saudi Arabia	: 15	: 2.3112
Syria	: 16	: 0.2595
United Arab Emirates	: 10	: 11.3019
Yemen	: 17	: 0.0354



Rank : Country : Case Rate
In Rank Order Within Range:

■	Top 3 Countries:
1	: Israel : 51.2388
2	: Georgia : 49.5486
3	: Bahrain : 47.3167
■	Above Median Countries:
4	: Lebanon : 22.5858
5	: Qatar : 19.0909
6	: Armenia : 16.2330
7	: Kuwait : 15.6150
8	: Jordan : 15.4795
■	Median Countries:
9	: Palestine : 13.3946
■	Below Median Countries:
10	: United Arab Emirates : 11.3019
11	: Oman : 8.7286
12	: Iran : 8.6114
13	: Azerbaijan : 8.0535
14	: Iraq : 5.5410
■	Bottom 3 Countries:
15	: Saudi Arabia : 2.3112
16	: Syria : 0.2595
17	: Yemen : 0.0354



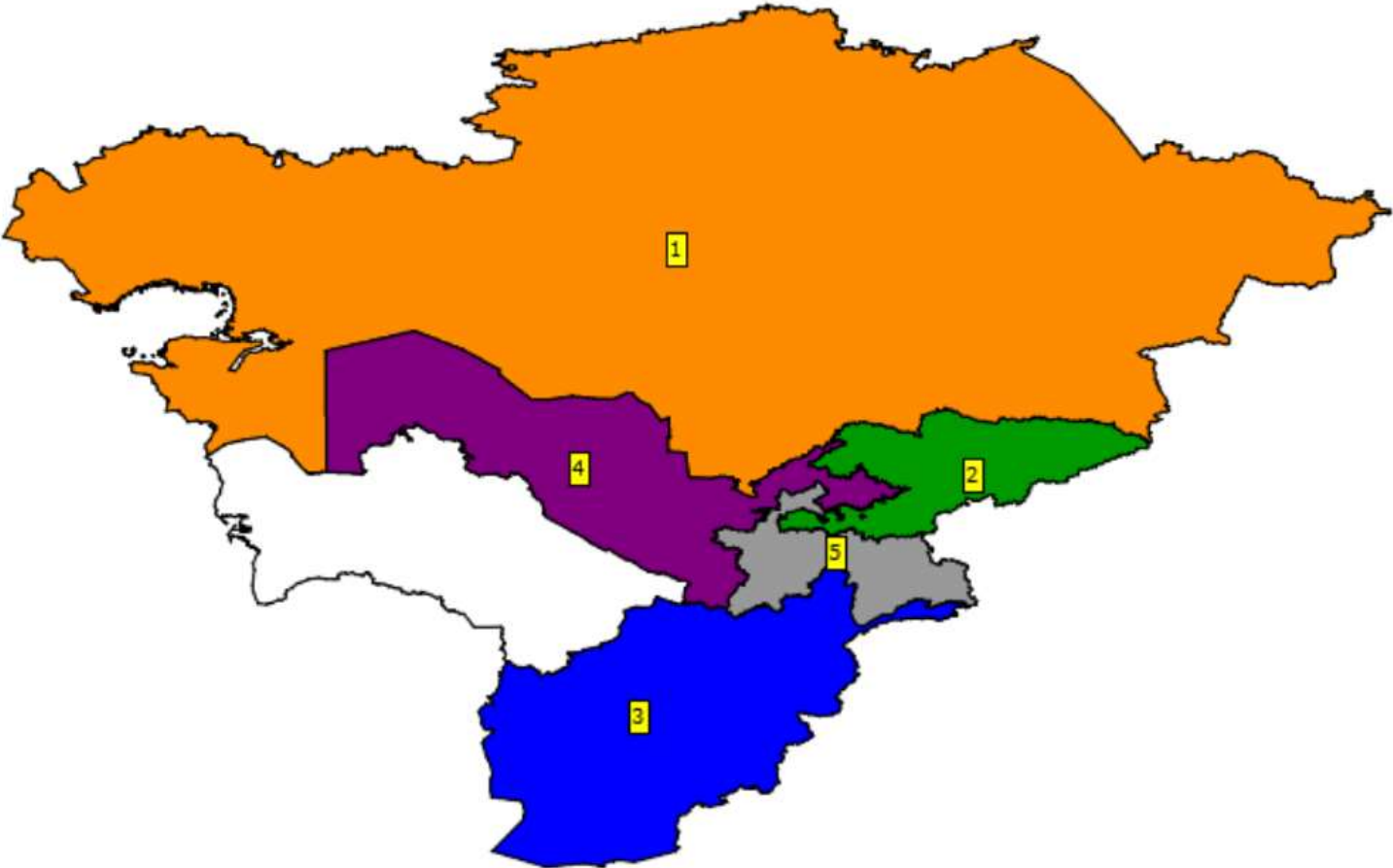
Central Asia Missing Data Countries Are Identified in a SubTitle

Country : Rank : Case Rate
In Alphabetical Order:
Afghanistan : 3 : 0.5599
Kazakhstan : 1 : 7.7475
Kyrgyzstan : 2 : 1.3413
Tajikistan : 5 : 0.1787
Uzbekistan : 4 : 0.5056

Case Rate In Central Asia For 5 Countries
Countries With No Data (have Empty Area Fill): Turkmenistan
■ 0.1787 - 0.1787 (1 lowest) ■ 0.5056 - 0.5056 (below median) ■ 0.5599 - 0.5599 (median)
■ 1.3413 - 1.3413 (above median) ■ 7.7475 - 7.7475 (1 highest) □ No Data
[No Annotation](#) [Population](#) [Total Cases](#) [Total Deaths](#) [Mortality Rate](#) [BarChart](#) [SpreadSheet](#) [Index](#)
[World Map of Case Rate By Continent and Region](#) (linked to world maps of other four COVID-19 variables)

HERE: Use the mouse for more information for any country.
For a too small country, find its Rank in the alphabetic list, and click that Rank button in the map.

Rank : Country : Case Rate
In Rank Order Within Range:
■ Top 1 Countries:
1 : Kazakhstan : 7.7475
■ Above Median Countries:
2 : Kyrgyzstan : 1.3413
■ Median Countries:
3 : Afghanistan : 0.5599
■ Below Median Countries:
4 : Uzbekistan : 0.5056
■ Bottom 1 Countries:
5 : Tajikistan : 0.1787



Indian SubContinent It is on the Indian tectonic plate south of the Himalayas

Country : Rank : Case Rate
In Alphabetical Order:
Bangladesh : 6 : 1.1953
Bhutan : 2 : 8.0128
India : 4 : 3.1761
Maldives : 1 : 35.6424
Nepal : 3 : 3.2849
Pakistan : 7 : 0.6703
Sri Lanka : 5 : 3.0812

Case Rate In Indian SubContinent For 7 Countries

■ 0.6703 - 1.1953 (2 lowest) ■ 3.0812 - 3.0812 (below median) ■ 3.1761 - 3.1761 (median)
■ 3.2849 - 3.2849 (above median) ■ 8.0128 - 35.6424 (2 highest)

[No Annotation](#) [Population](#) [Total Cases](#) [Total Deaths](#) [Mortality Rate](#) [BarChart](#) [SpreadSheet](#) [Index](#)
[World Map of Case Rate By Continent and Region](#) (linked to world maps of other four COVID-19 variables)

HERE: Use the mouse for more information for any country.
For a too small country, find its Rank in the alphabetic list, and click that Rank button in the map.

Rank : Country : Case Rate
In Rank Order Within Range:

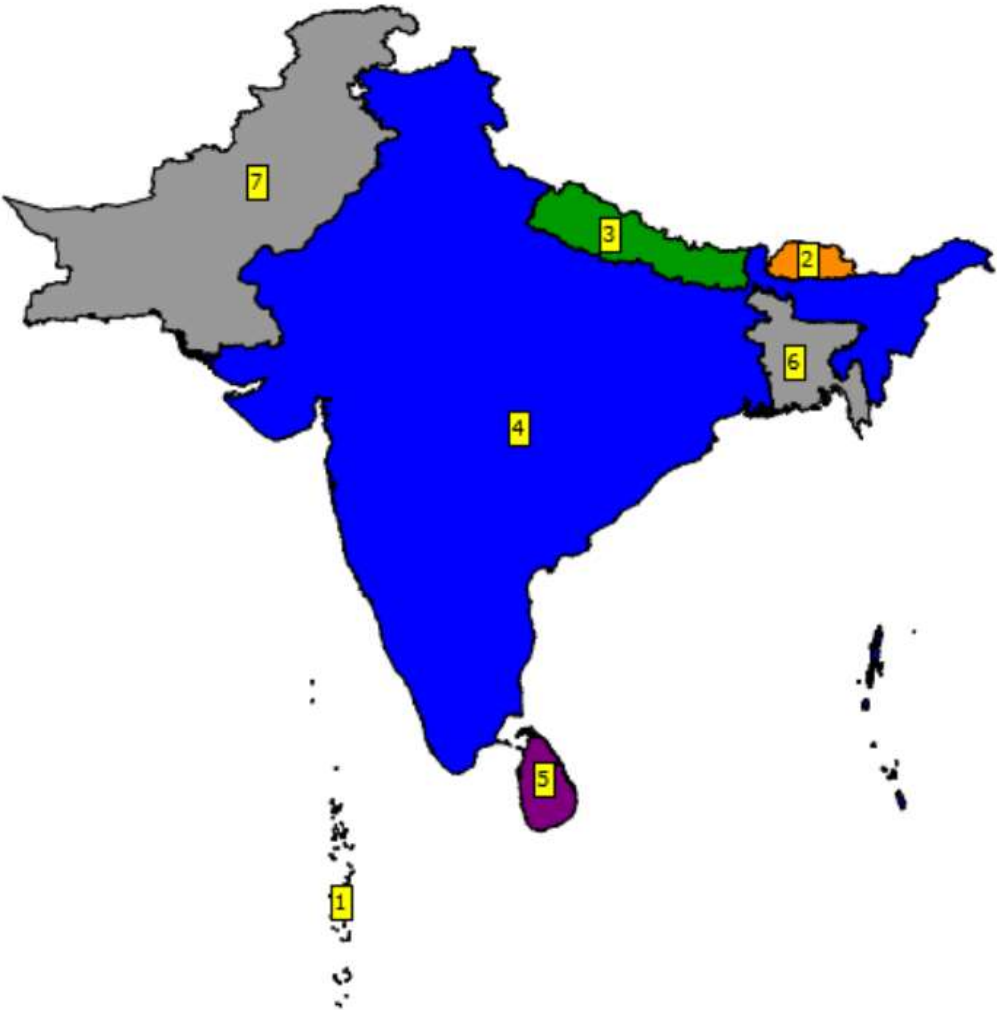
■ Top 2 Countries:
1 : Maldives : 35.6424
2 : Bhutan : 8.0128

■ Above Median Countries:
3 : Nepal : 3.2849

■ Median Countries:
4 : India : 3.1761

■ Below Median Countries:
5 : Sri Lanka : 3.0812

■ Bottom 2 Countries:
6 : Bangladesh : 1.1953
7 : Pakistan : 0.6703

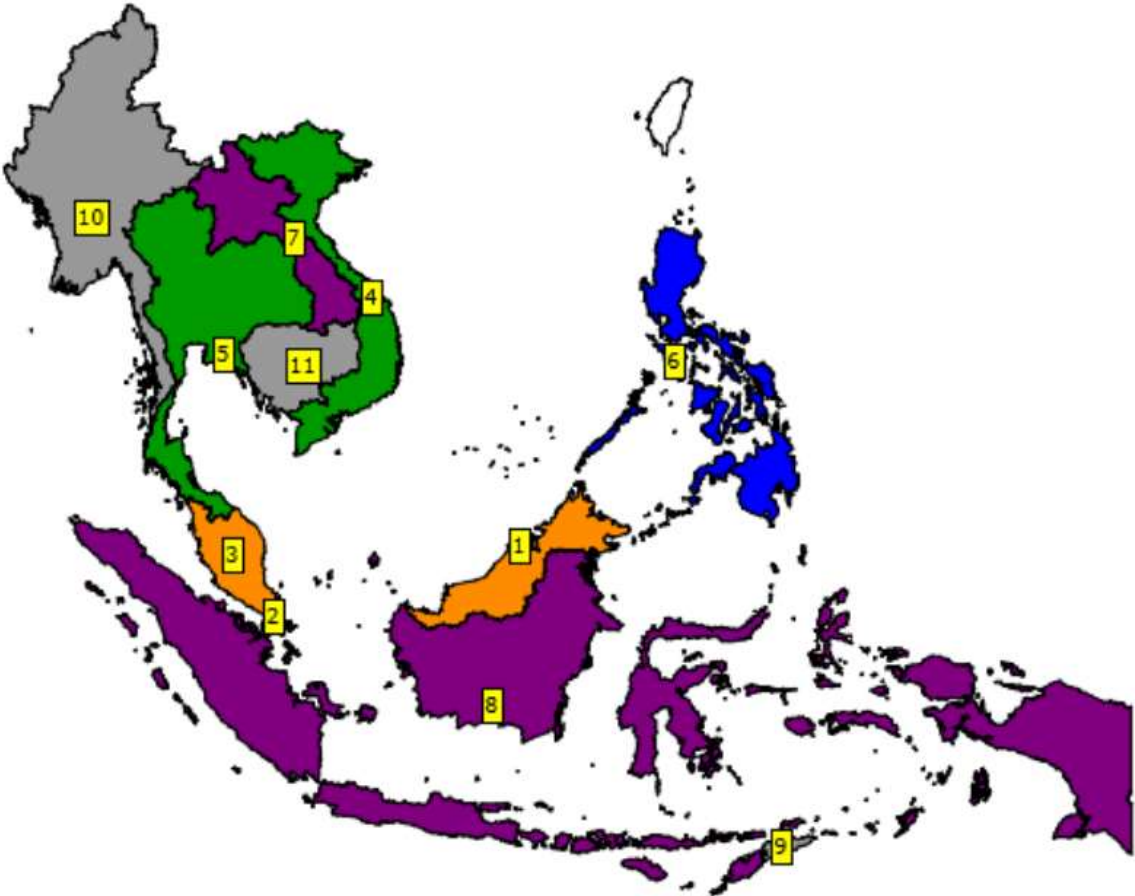


SouthEast Asia This is the commonly agreed definition

Country : Rank : Case Rate
In Alphabetical Order:
Brunei : 1 : 73.6692
Cambodia : 11 : 0.8291
Indonesia : 8 : 2.4758
Laos : 7 : 2.9073
Malaysia : 3 : 15.3418
Myanmar : 10 : 1.1839
Philippines : 6 : 3.6117
Singapore : 2 : 51.8805
Thailand : 5 : 6.6415
Timor-Leste : 9 : 1.7491
Viet Nam : 4 : 11.8387

Case Rate In SouthEast Asia For 11 Countries
Countries With No Data (have Empty Area Fill): Taiwan
■ 0.8291 - 1.7491 (3 lowest) ■ 2.4758 - 2.9073 (below median) ■ 3.6117 - 3.6117 (median)
■ 6.6415 - 11.8387 (above median) ■ 15.3418 - 73.6692 (3 highest) □ No Data
[No Annotation](#) [Population](#) [Total Cases](#) [Total Deaths](#) [Mortality Rate](#) [BarChart](#) [SpreadSheet](#) [Index](#)
[World Map of Case Rate By Continent and Region](#) (linked to world maps of other four COVID-19 variables)
HERE: Use the mouse for more information for any country.
For a too small country, find its Rank in the alphabetic list, and click that Rank button in the map.

Rank : Country : Case Rate
In Rank Order Within Range:
■ Top 3 Countries:
1 : Brunei : 73.6692
2 : Singapore : 51.8805
3 : Malaysia : 15.3418
■ Above Median Countries:
4 : Viet Nam : 11.8387
5 : Thailand : 6.6415
■ Median Countries:
6 : Philippines : 3.6117
■ Below Median Countries:
7 : Laos : 2.9073
8 : Indonesia : 2.4758
■ Bottom 3 Countries:
9 : Timor-Leste : 1.7491
10 : Myanmar : 1.1839
11 : Cambodia : 0.8291



North Asia and East Asia (not "NorthEast Asia" which does not include ALL of Russia)
North of Mainland Russia are its numerous Arctic islands. West of it, is Kaliningrad.
NOT an island, it is a Russian enclave on the Baltic Sea between Lithuania and Poland.

Country : Rank : Case Rate
In Alphabetical Order:
China : 5 : 6.9657
Japan : 3 : 27.2716
Mongolia : 2 : 29.7619
Russia : 4 : 16.3141
South Korea : 1 : 66.7207

Case Rate In North Asia And East Asia For 5 Countries
Countries With No Data (have Empty Area Fill): North Korea
■ 6.9657 - 6.9657 (1 lowest) ■ 16.3141 - 16.3141 (below median) ■ 27.2716 - 27.2716 (median)
■ 29.7619 - 29.7619 (above median) ■ 66.7207 - 66.7207 (1 highest) □ No Data
[No Annotation](#) [Population](#) [Total Cases](#) [Total Deaths](#) [Mortality Rate](#) [BarChart](#) [SpreadSheet](#) [Index](#)
[World Map of Case Rate By Continent and Region](#) (linked to world maps of other four COVID-19 variables)
HERE: Use the mouse for more information for any country.
For a too small country, find its Rank in the alphabetic list, and click that Rank button in the map.

Rank : Country : Case Rate
In Rank Order Within Range:
■ Top 1 Countries:
1 : South Korea : 66.7207
■ Above Median Countries:
2 : Mongolia : 29.7619
■ Median Countries:
3 : Japan : 27.2716
■ Below Median Countries:
4 : Russia : 16.3141
■ Bottom 1 Countries:
5 : China : 6.9657

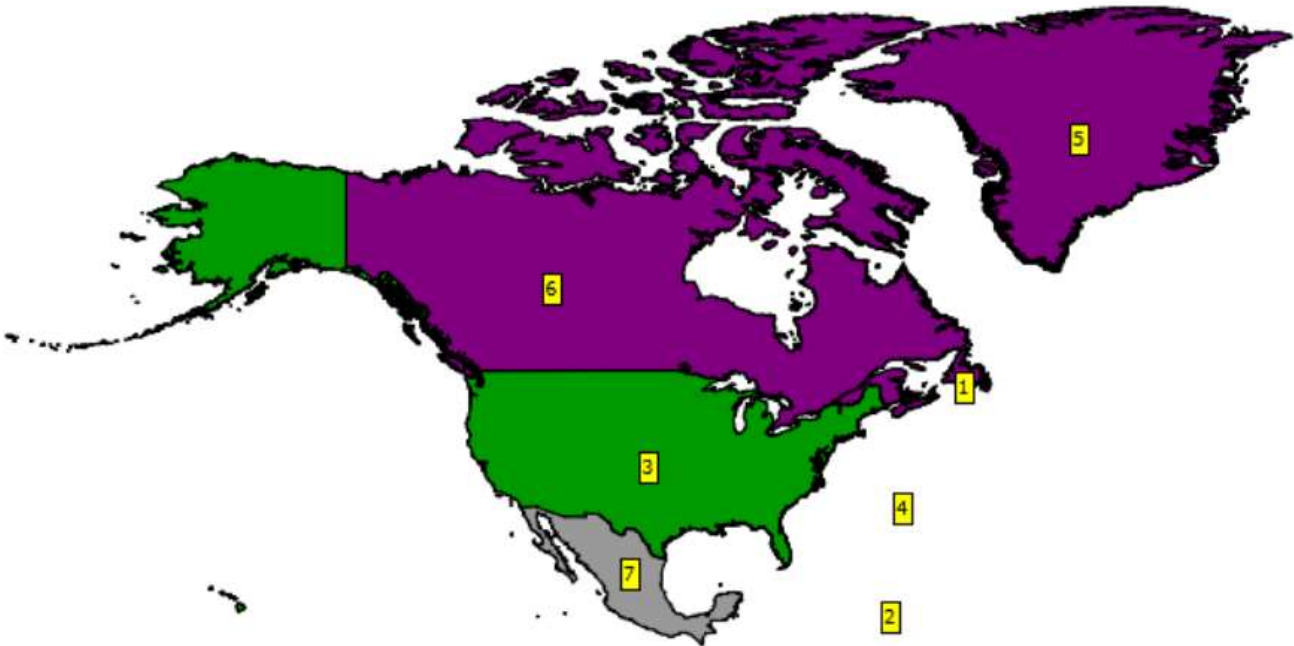


North America Saint Pierre and Miquelon, Greenland, Bermuda, and Puerto Rico are Territories of France, Denmark, The United Kingdom, and The United States

Country : Rank : Case Rate
In Alphabetical Order:
Bermuda : 4 : 29.3737
Canada : 6 : 12.3543
Greenland : 5 : 21.1899
Mexico : 7 : 6.0412
Puerto Rico : 2 : 38.5164
Saint Pierre and Miquelon : 1 : 58.2158
United States of America : 3 : 30.5764

Case Rate In North America For 7 Countries
■ 6.0412 - 6.0412 (1 lowest) ■ 12.3543 - 21.1899 (below median) ■ 29.3737 - 29.3737 (median)
■ 30.5764 - 38.5164 (above median) ■ 58.2158 - 58.2158 (1 highest)
[No Annotation](#) [Population](#) [Total Cases](#) [Total Deaths](#) [Mortality Rate](#) [BarChart](#) [SpreadSheet](#) [Index](#)
[World Map of Case Rate By Continent and Region](#) (linked to world maps of other four COVID-19 variables)
HERE: Use the mouse for more information for any country.
For a too small country, find its Rank in the alphabetic list, and click that Rank button in the map.

Rank : Country : Case Rate
In Rank Order Within Range:
■ Top 1 Countries:
1 : Saint Pierre and Miquelon : 58.2158
■ Above Median Countries:
2 : Puerto Rico : 38.5164
3 : United States of America : 30.5764
■ Median Countries:
4 : Bermuda : 29.3737
■ Below Median Countries:
5 : Greenland : 21.1899
6 : Canada : 12.3543
■ Bottom 1 Countries:
7 : Mexico : 6.0412



South America Almost No Rank Button Overlays

Country : Rank : Case Rate
In Alphabetical Order:
Argentina : 5 : 22.1384
Bolivia : 11 : 9.9125
Brazil : 6 : 17.4257
Chile : 4 : 27.1841
Colombia : 9 : 12.3097
Ecuador : 13 : 5.9242
Falkland Islands : 1 : 50.5919
French Guiana : 2 : 32.1902
Guyana : 12 : 9.1107
Paraguay : 10 : 10.8569
Peru : 8 : 13.3239
Suriname : 7 : 13.3495
Uruguay : 3 : 30.4170
Venezuela : 14 : 1.9529

Case Rate In South America For 14 Countries
■ 1.9529 - 9.1107 (3 lowest) ■ 9.9125 - 12.3097 (below median) ■ 13.3239 - 13.3495 (median)
■ 17.4257 - 27.1841 (above median) ■ 30.4170 - 50.5919 (3 highest)
[No Annotation](#) [Population](#) [Total Cases](#) [Total Deaths](#) [Mortality Rate](#) [BarChart](#) [SpreadSheet](#) [Index](#)
[World Map of Case Rate By Continent and Region](#) (linked to world maps of other four COVID-19 variables)

HERE: Use the mouse for more information for any country.
For a too small country, find its Rank in the alphabetic list, and click that Rank button in the map.



Rank : Country : Case Rate
In Rank Order Within Range:
■ Top 3 Countries:
1 : Falkland Islands : 50.5919
2 : French Guiana : 32.1902
3 : Uruguay : 30.4170
■ Above Median Countries:
4 : Chile : 27.1841
5 : Argentina : 22.1384
6 : Brazil : 17.4257
■ Median Countries:
7 : Suriname : 13.3495
8 : Peru : 13.3239
■ Below Median Countries:
9 : Colombia : 12.3097
10 : Paraguay : 10.8569
11 : Bolivia : 9.9125
■ Bottom 3 Countries:
12 : Guyana : 9.1107
13 : Ecuador : 5.9242
14 : Venezuela : 1.9529

Central America No Rank Button Overlays

Country : Rank : Case Rate
In Alphabetical Order:
Belize : 3 : 17.6106
Costa Rica : 1 : 23.7539
El Salvador : 6 : 3.1853
Guatemala : 4 : 7.0069
Honduras : 5 : 4.5313
Nicaragua : 7 : 0.2315
Panama : 2 : 23.6340

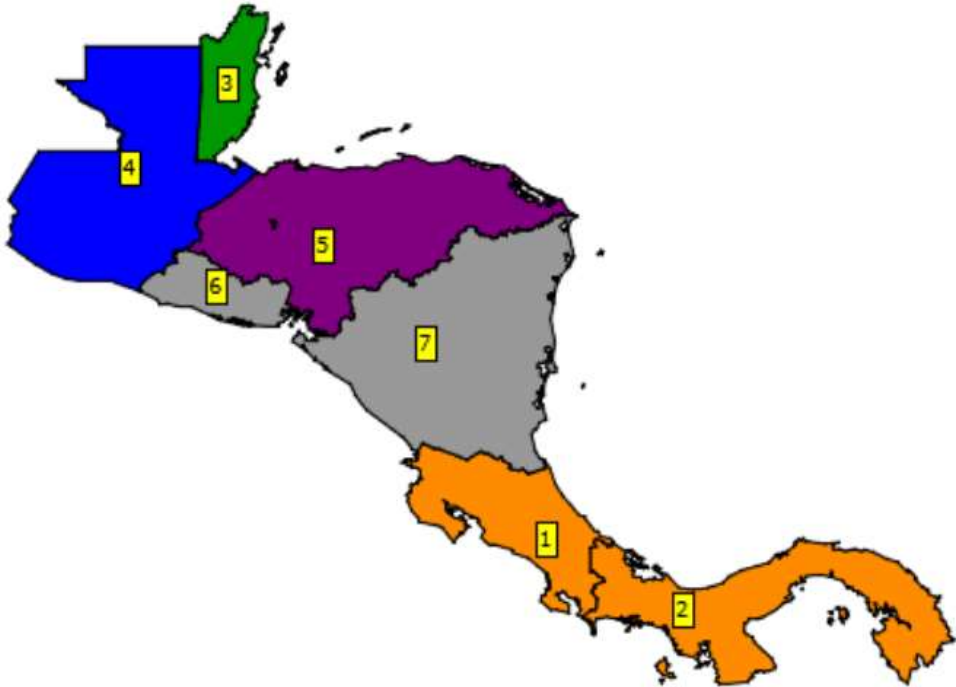
Case Rate In Central America For 7 Countries

■ 0.2315 - 3.1853 (2 lowest) ■ 4.5313 - 4.5313 (below median) ■ 7.0069 - 7.0069 (median)
■ 17.6106 - 17.6106 (above median) ■ 23.6340 - 23.7539 (2 highest)

[No Annotation](#) [Population](#) [Total Cases](#) [Total Deaths](#) [Mortality Rate](#) [BarChart](#) [SpreadSheet](#) [Index](#)
[World Map of Case Rate By Continent and Region](#) (linked to world maps of other four COVID-19 variables)

HERE: Use the mouse for more information for any country.
For a too small country, find its Rank in the alphabetic list, and click that Rank button in the map.

Rank : Country : Case Rate
In Rank Order Within Range:
■ Top 2 Countries:
1 : Costa Rica : 23.7539
2 : Panama : 23.6340
■ Above Median Countries:
3 : Belize : 17.6106
■ Median Countries:
4 : Guatemala : 7.0069
■ Below Median Countries:
5 : Honduras : 4.5313
■ Bottom 2 Countries:
6 : El Salvador : 3.1853
7 : Nicaragua : 0.2315



Caribbean Islands

A much larger image height could eliminate most of the overlays

Country : Rank : Case Rate

In Alphabetical Order:

Anguilla : 12 : 24.5890

Antigua and Barbuda : 22 : 9.7108

Aruba : 6 : 41.5409

Bahamas : 24 : 9.2890

Barbados : 7 : 39.1104

Bonaire and Sint Eustatius and Saba : 5 : 44.0707

British Virgin Islands : 14 : 23.5925

Cayman Islands : 4 : 45.7961

Cuba : 21 : 9.9449

Curacao : 13 : 24.0008

Dominica : 15 : 22.0429

Dominican Republic : 25 : 5.8882

Grenada : 17 : 15.6968

Guadeloupe : 2 : 51.3528

Haiti : 27 : 0.2979

Jamaica : 26 : 5.5381

Martinique : 1 : 62.6793

Montserrat : 9 : 31.7924

Saint Barthelemy : 3 : 50.0910

Saint Kitts and Nevis : 19 : 13.8567

Saint Lucia : 16 : 16.7947

Saint Martin : 8 : 38.7352

Saint Vincent and the Grenadines : 23 : 9.3056

Sint Maarten : 11 : 25.0068

Trinidad and Tobago : 20 : 12.5076

Turks and Caicos Islands : 18 : 14.6766

United States Virgin Islands : 10 : 25.5220

Case Rate In Caribbean Islands For 27 Countries

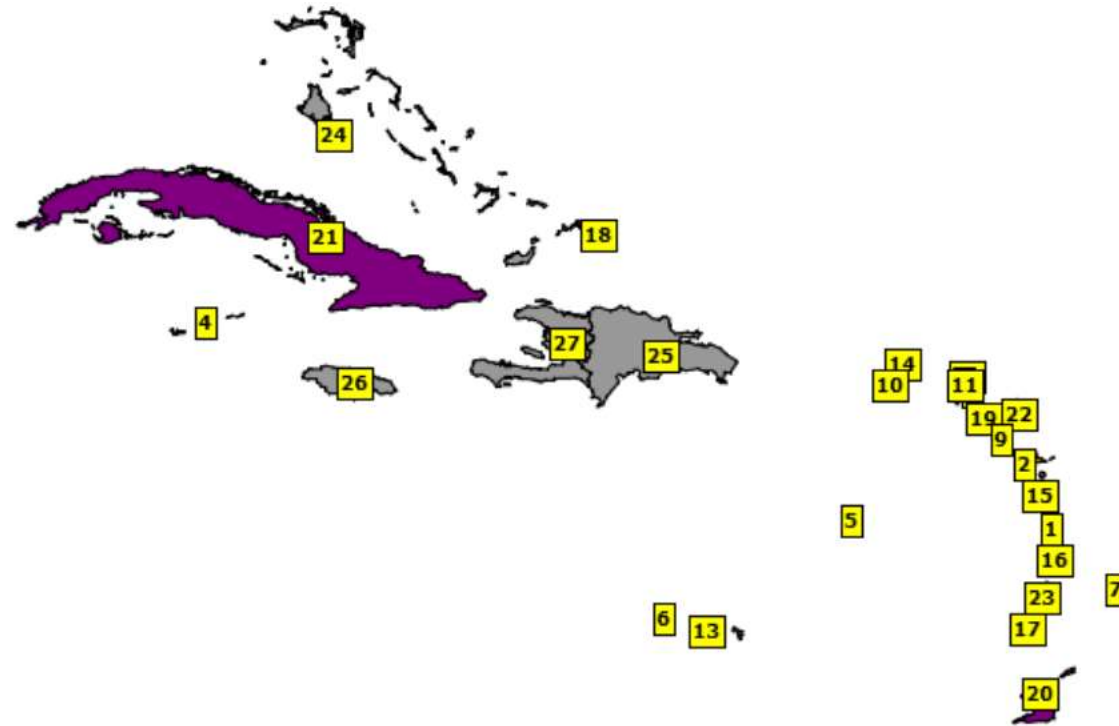
■ 0.2979 - 9.3056 (5 lowest) ■ 9.7108 - 22.0429 (below median) ■ 23.5925 - 23.5925 (median)

■ 24.0008 - 41.5409 (above median) ■ 44.0707 - 62.6793 (5 highest)

[No Annotation](#) [Population](#) [Total Cases](#) [Total Deaths](#) [Mortality Rate](#) [BarChart](#) [SpreadSheet](#) [Index](#)

[World Map of Case Rate By Continent and Region](#) (linked to world maps of other four COVID-19 variables)

HERE: Use the mouse for more information for any country. For a too small country, find its Rank in the alphabetic list, and click that Rank button in the map.



Rank : Country : Case Rate

In Rank Order Within Range:

■ Top 5 Countries:

1 : Martinique : 62.6793

2 : Guadeloupe : 51.3528

3 : Saint Barthelemy : 50.0910

4 : Cayman Islands : 45.7961

5 : Bonaire and Sint Eustatius and Saba : 44.0707

■ Above Median Countries:

6 : Aruba : 41.5409

7 : Barbados : 39.1104

8 : Saint Martin : 38.7352

9 : Montserrat : 31.7924

10 : United States Virgin Islands : 25.5220

11 : Sint Maarten : 25.0068

12 : Anguilla : 24.5890

13 : Curacao : 24.0008

■ Median Countries:

14 : British Virgin Islands : 23.5925

■ Below Median Countries:

15 : Dominica : 22.0429

16 : Saint Lucia : 16.7947

17 : Grenada : 15.6968

18 : Turks and Caicos Islands : 14.6766

19 : Saint Kitts and Nevis : 13.8567

20 : Trinidad and Tobago : 12.5076

21 : Cuba : 9.9449

22 : Antigua and Barbuda : 9.7108

■ Bottom 5 Countries:

23 : Saint Vincent and the Grenadines : 9.3056

24 : Bahamas : 9.2890

25 : Dominican Republic : 5.8882

26 : Jamaica : 5.5381

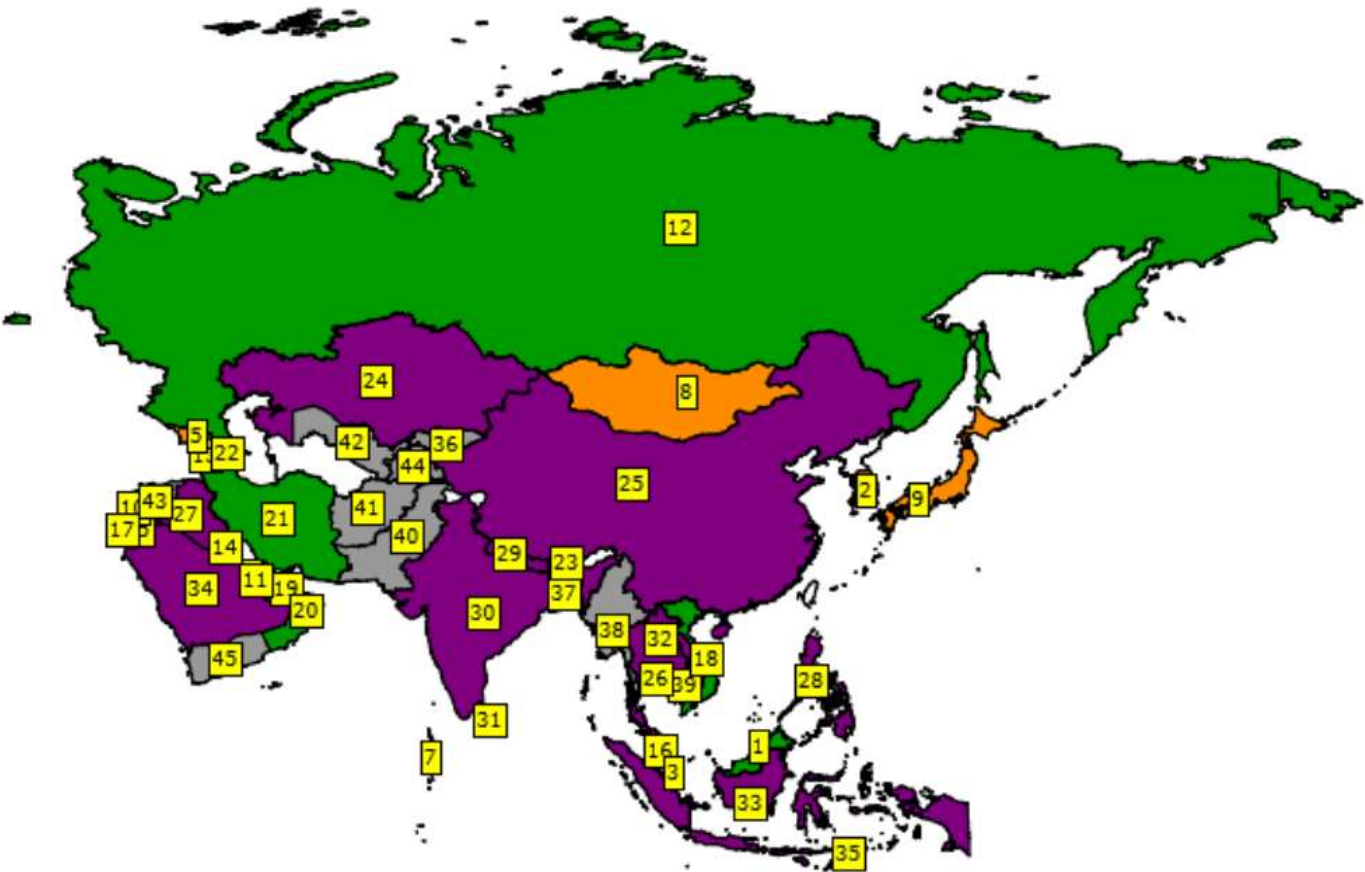
27 : Haiti : 0.2979

Asia With All of Its Five Regions Together

Country : Rank : Case Rate
In Alphabetical Order:

Afghanistan : 41 : 0.5599
Armenia : 13 : 16.2330
Azerbaijan : 22 : 8.0535
Bahrain : 6 : 47.3167
Bangladesh : 37 : 1.1953
Bhutan : 23 : 8.0128
Brunei : 1 : 73.6692
Cambodia : 39 : 0.8291
China : 25 : 6.9657
Georgia : 5 : 49.5486
India : 30 : 3.1761
Indonesia : 33 : 2.4758
Iran : 21 : 8.6114
Iraq : 27 : 5.5410
Israel : 4 : 51.2388
Japan : 9 : 27.2716
Jordan : 15 : 15.4795
Kazakhstan : 24 : 7.7475
Kuwait : 14 : 15.6150
Kyrgyzstan : 36 : 1.3413
Laos : 32 : 2.9073
Lebanon : 10 : 22.5858
Malaysia : 16 : 15.3418
Maldives : 7 : 35.6424
Mongolia : 8 : 29.7619
Myanmar : 38 : 1.1839
Nepal : 29 : 3.2849
Oman : 20 : 8.7286
Pakistan : 40 : 0.6703
Palestine : 17 : 13.3946
Philippines : 28 : 3.6117
Qatar : 11 : 19.0909
Russia : 12 : 16.3141
Saudi Arabia : 34 : 2.3112
Singapore : 3 : 51.8805
South Korea : 2 : 66.7207
Sri Lanka : 31 : 3.0812
Syria : 43 : 0.2595
Tajikistan : 44 : 0.1787
Thailand : 26 : 6.6415
Timor-Leste : 35 : 1.7491
United Arab Emirates : 19 : 11.3019
Uzbekistan : 42 : 0.5056
Viet Nam : 18 : 11.8387
Yemen : 45 : 0.0354

Case Rate In Asia For 45 Countries
Countries With No Data (have Empty Area Fill): North Korea | Taiwan | Turkmenistan
■ 0.0354 - 1.3413 (10 lowest) ■ 1.7491 - 7.7475 (below median) ■ 8.0128 - 8.0128 (median)
■ 8.0535 - 19.0909 (above median) ■ 22.5858 - 73.6692 (10 highest) □ No Data
[No Annotation](#) [Population](#) [Total Cases](#) [Total Deaths](#) [Mortality Rate](#) [BarChart](#) [SpreadSheet](#) [Index](#)
[World Map of Case Rate By Continent and Region](#) (linked to world maps of other four COVID-19 variables)
[HERE](#): Use the mouse for more information for any country.
For a too small country, find its Rank in the alphabetic list, and click that Rank button in the map.



Rank : Country : Case Rate
In Rank Order Within Range:

■ Top 10 Countries:
1 : Brunei : 73.6692
2 : South Korea : 66.7207
3 : Singapore : 51.8805
4 : Israel : 51.2388
5 : Georgia : 49.5486
6 : Bahrain : 47.3167
7 : Maldives : 35.6424
8 : Mongolia : 29.7619
9 : Japan : 27.2716
10 : Lebanon : 22.5858

■ Above Median Countries:
11 : Qatar : 19.0909
12 : Russia : 16.3141
13 : Armenia : 16.2330
14 : Kuwait : 15.6150
15 : Jordan : 15.4795
16 : Malaysia : 15.3418
17 : Palestine : 13.3946
18 : Viet Nam : 11.8387
19 : United Arab Emirates : 11.3019
20 : Oman : 8.7286
21 : Iran : 8.6114
22 : Azerbaijan : 8.0535

■ Median Countries:
23 : Bhutan : 8.0128

■ Below Median Countries:
24 : Kazakhstan : 7.7475
25 : China : 6.9657
26 : Thailand : 6.6415
27 : Iraq : 5.5410
28 : Philippines : 3.6117
29 : Nepal : 3.2849
30 : India : 3.1761
31 : Sri Lanka : 3.0812
32 : Laos : 2.9073
33 : Indonesia : 2.4758
34 : Saudi Arabia : 2.3112
35 : Timor-Leste : 1.7491

■ Bottom 10 Countries:
36 : Kyrgyzstan : 1.3413
37 : Bangladesh : 1.1953
38 : Myanmar : 1.1839
39 : Cambodia : 0.8291
40 : Pakistan : 0.6703
41 : Afghanistan : 0.5599
42 : Uzbekistan : 0.5056
43 : Syria : 0.2595
44 : Tajikistan : 0.1787
45 : Yemen : 0.0354

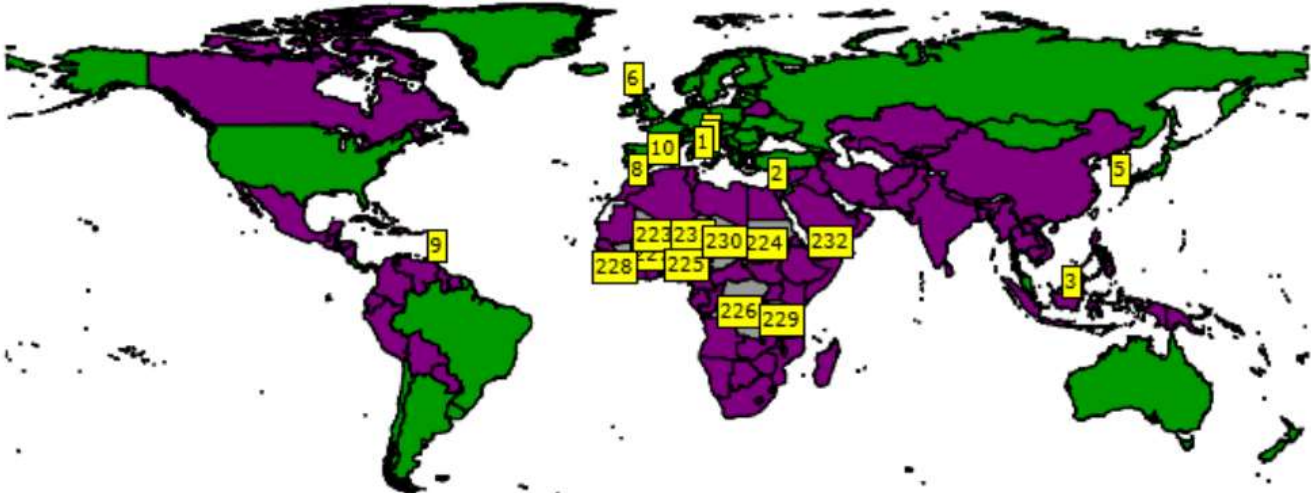
The World (with SideNotes Truncated and Rank 44 Case Rate Clipped at Right Below)

Country : Rank : Case Rate
In Alphabetical Order:

Afghanistan	: 194	: 0.5599
Albania	: 127	: 11.7705
Algeria	: 193	: 0.6058
American Samoa	: 99	: 18.8712
Andorra	: 10	: 60.1368
Angola	: 210	: 0.2999
Anguilla	: 83	: 24.5890
Antigua and Barbuda	: 134	: 9.7108
Argentina	: 92	: 22.1384
Armenia	: 107	: 16.2330
Aruba	: 47	: 41.5409
Australia	: 43	: 44.7341
Austria	: 4	: 68.0263
Azerbaijan	: 142	: 8.0535
Bahamas	: 137	: 9.2890
Bahrain	: 34	: 47.3167
Bangladesh	: 184	: 1.1953
Barbados	: 51	: 39.1104
Belarus	: 131	: 10.4252
Belgium	: 48	: 41.5405
Belize	: 101	: 17.6106
Benin	: 218	: 0.2100
Bermuda	: 70	: 29.3737
Bhutan	: 143	: 8.0128
Bolivia	: 133	: 9.9125
Bonaire and Sint Eustatius and Saba	: 44	: 44.0707
Bosnia and Herzegovina	: 123	: 12.4776
Botswana	: 121	: 12.5620
Brazil	: 102	: 17.4257
British Virgin Islands	: 87	: 23.5925
Brunei	: 3	: 73.6692
Bulgaria	: 96	: 19.4799
Burkina Faso	: 227	: 0.0975
Burundi	: 205	: 0.4225
Cambodia	: 189	: 0.8291
Cameroon	: 202	: 0.4483
Canada	: 124	: 12.3543
Cape Verde	: 129	: 10.8695
Cayman Islands	: 38	: 45.7961
Central African Republic	: 213	: 0.2767
Chad	: 230	: 0.0434
Chile	: 75	: 27.1841
China	: 149	: 6.9657
Colombia	: 125	: 12.3097
Comoros	: 186	: 1.0886
Congo	: 206	: 0.4223
Cook Islands	: 46	: 42.2910
Costa Rica	: 85	: 23.7539

Case Rate In World For 232 Countries
Countries With No Data (have Empty Area Fill): North Korea | Taiwan | Turkmenistan | Western Sahara
■ 0.0354 - 0.1468 (10 lowest) ■ 0.1526 - 13.3495 (below median) ■ 13.3946 - 13.8567 (median)
■ 13.9049 - 60.0686 (above median) ■ 60.1368 - 75.0727 (10 highest) □ No Data
[No Annotation](#) [Population](#) [Total Cases](#) [Total Deaths](#) [Mortality Rate](#) [BarChart](#) [SpreadSheet](#) [Index](#)
[World Map of Case Rate By Continent and Region](#) (linked to world maps of other four COVID-19 variables)

HERE: Use the mouse for more information for any country.
For a too small country, find its Rank in the alphabetic list, and click that Rank button in the map.



Rank : Country : Case Rate
In Rank Order Within Range:

Top 10 Countries:
1 : San Marino : 75.0727
2 : Cyprus : 73.9907
3 : Brunei : 73.6692
4 : Austria : 68.0263
5 : South Korea : 66.7207
6 : Faroe Islands : 65.2484
7 : Slovenia : 63.8156
8 : Gibraltar : 62.8883
9 : Martinique : 62.6793
10 : Andorra : 60.1368
Above Median Countries:
11 : Luxembourg : 60.0686
12 : Jersey : 59.9218
13 : Denmark : 58.2498
14 : Saint Pierre and Miquelon : 58.2158
15 : France : 57.5074
16 : Iceland : 56.2211
17 : Guernsey : 55.7817
18 : Portugal : 54.8846
19 : Liechtenstein : 54.7783
20 : Greece : 53.2882
21 : Latvia : 52.8300
22 : Singapore : 51.8805
23 : Guadeloupe : 51.3528
24 : Israel : 51.2388
25 : Switzerland : 50.8184
26 : Reunion : 50.7765
27 : Falkland Islands : 50.5919
28 : Saint Barthelemy : 50.0910
29 : Georgia : 49.5486
30 : Lithuania : 49.4255
31 : Netherlands : 49.1214
32 : Niue : 48.0020
33 : Seychelles : 47.8088
34 : Bahrain : 47.3167
35 : Monaco : 47.0828
36 : New Zealand : 47.0634
37 : Germany : 46.1051
38 : Cayman Islands : 45.7961
39 : Estonia : 45.7887
40 : Czechia : 45.0715
41 : Isle of Man : 44.9618
42 : Italy : 44.9167
43 : Australia : 44.7341
44 : Bonaire and Sint Eustatius and Saba : 44.0707
45 : Nauru : 42.4947
46 : Cook Islands : 42.2910

Was there much cross-border propagation of COVID-19?
Which high case rate countries had a high median case rate for their adjacent countries?

Let's look by continent.

Ignoring two continents:

- ▶ North America,
which has only one surrounded country
- ▶ Oceania is, effectively, all islands.
(Australia is its biggest "island".)

Of the 236 countries in the data,
only 158 have at least one adjacent country.

- ▶ Initial challenge: How to programmatically identify adjacent countries?
- ▶ Ask me for the code, if interested

Asia: Except for Case Rates 13.4 and 22.6, all Surrounded Country Case Rates > 10 have Median Adjacent Countries' Case Rates comparable to those for Case Rates < 10

Plot Of Asia Median Case Rate Of Adjacent Countries Versus Surrounded Country Case Rate

[Go To Map Of Asia Surrounded Country Case Rates And Median Case Rate Of Adjacent Countries](#)

This Plot For: [South America](#) [Europe](#) [Africa](#) [World](#)

45 Countries In Asia Have Case Rate Data. 38 Countries Have At Least One Adjacent Country.

The Countries In Asia With No Case Rate Data (Not Includable): North Korea, Turkmenistan, Taiwan

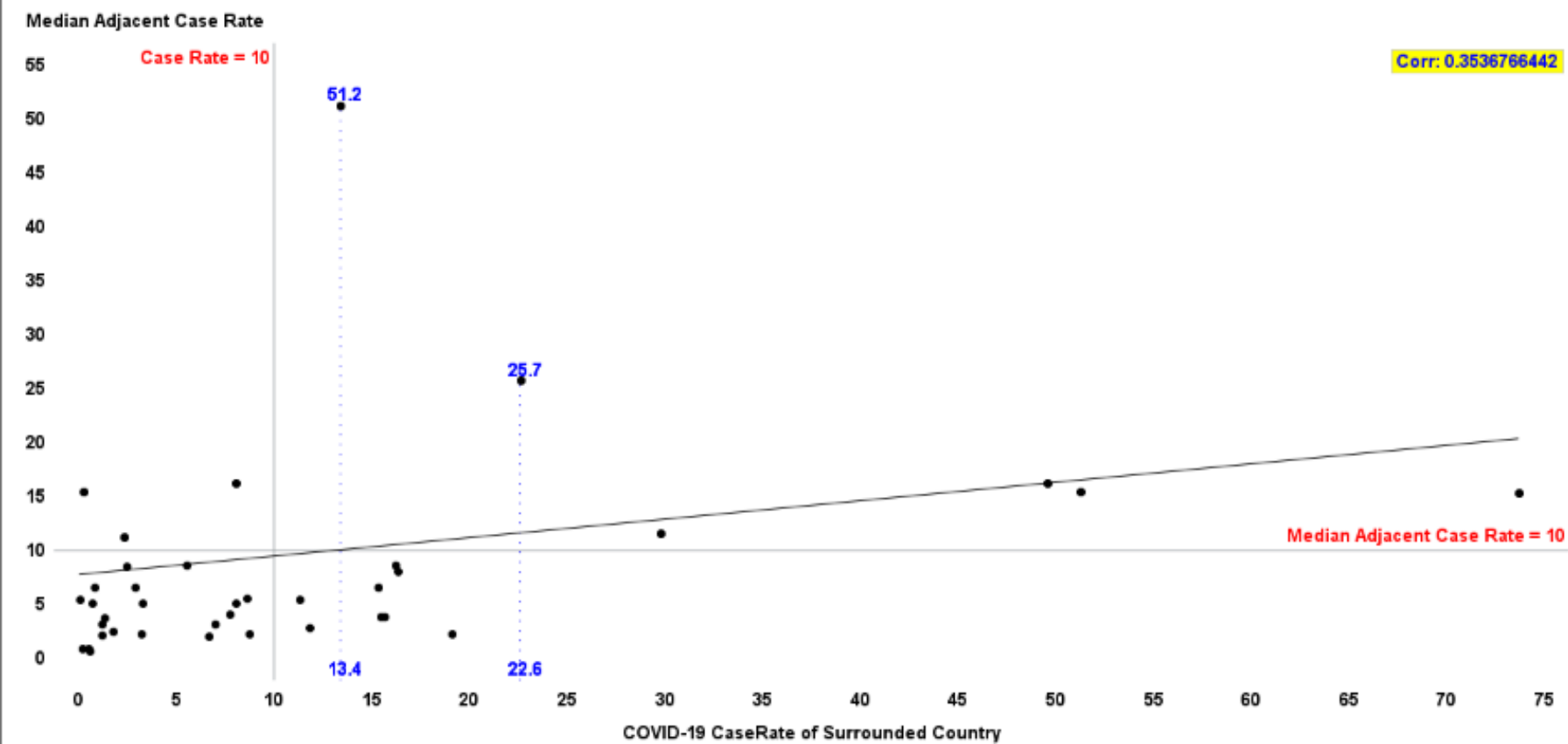
Use the mouse for Country, Number of Adjacent Countries, Case Rate, Case Rate Rank, and Median, Min, Max, & Rank for Median Adjacent Countries' Case Rate

Median, Min, Max Case Rate of All Countries In Asia (Including Islands) = 8.0128 0.0354 73.6692

Median, Min, Max Case Rate of All Countries In The World (Including Islands) = 13.62565 0.0354 75.0727

7 Islands Or Countries Without At Least One Adjacent Country With Data (Not Includable): Bahrain, Japan, Maldives, Philippines, Singapore, South Korea, Sri Lanka

Except for Surrounded Countries with a Case Rates of 13.4 and 22.6, all of the other countries with Case Rate over 10 have Median Adjacent Case Rates comparable to Median Adjacent Case Rates for Surrounded Country Case Rates less than 10.



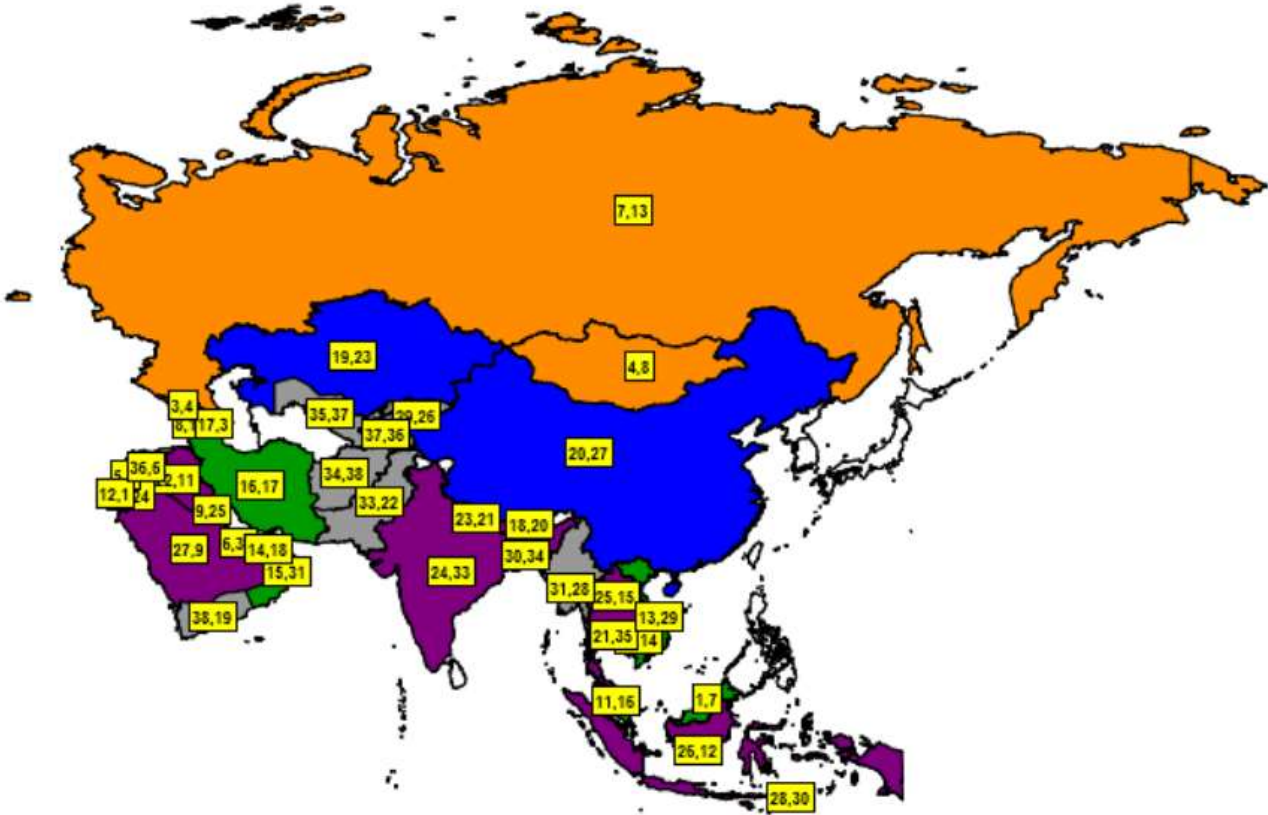
Asia: Some Top 10 Countries are under Rank buttons. Adjacent Pairs, Some Visible, are:
Israel (2) & Lebanon (5); Georgia (3) & Russia (7); Georgia (3) & Armenia (8); Mongolia (4) & Russia (7)

Rank : Country : Case Rate : Rank Adj : Median Adj : Count Adj
In Rank Order Within Range:

- Top 10 Countries:
- 1 : Brunei : 73.6692 : 7 : 15.3418 : 1
 - 2 : Israel : 51.2388 : 5 : 15.4795 : 3
 - 3 : Georgia : 49.5486 : 4 : 16.2330 : 3
 - 4 : Mongolia : 29.7619 : 8 : 11.6399 : 2
 - 5 : Lebanon : 22.5858 : 2 : 25.7492 : 2
 - 6 : Qatar : 19.0909 : 32 : 2.3112 : 1
 - 7 : Russia : 16.3141 : 13 : 8.0535 : 5
 - 8 : Armenia : 16.2330 : 10 : 8.6114 : 3
 - 9 : Kuwait : 15.6150 : 25 : 3.9261 : 2
 - 10 : Jordan : 15.4795 : 24 : 3.9261 : 4
- Above Median Countries:
- 11 : Malaysia : 15.3418 : 16 : 6.6415 : 3
 - 12 : Palestine : 13.3946 : 1 : 51.2388 : 1
 - 13 : Viet Nam : 11.8387 : 29 : 2.9073 : 3
 - 14 : United Arab Emirates : 11.3019 : 18 : 5.5199 : 2
 - 15 : Oman : 8.7286 : 31 : 2.3112 : 3
 - 16 : Iran : 8.6114 : 17 : 5.5410 : 5
 - 17 : Azerbaijan : 8.0535 : 3 : 16.2736 : 4
 - 18 : Bhutan : 8.0128 : 20 : 5.0709 : 2
- Median Countries:
- 19 : Kazakhstan : 7.7475 : 23 : 4.1535 : 4
 - 20 : China : 6.9657 : 27 : 3.1761 : 13
- Below Median Countries:
- 21 : Thailand : 6.6415 : 35 : 2.0456 : 4
 - 22 : Iraq : 5.5410 : 11 : 8.6114 : 5
 - 23 : Nepal : 3.2849 : 21 : 5.0709 : 2
 - 24 : India : 3.1761 : 33 : 2.2401 : 6
 - 25 : Laos : 2.9073 : 15 : 6.6415 : 5
 - 26 : Indonesia : 2.4758 : 12 : 8.5455 : 2
 - 27 : Saudi Arabia : 2.3112 : 9 : 11.3019 : 7
 - 28 : Timor-Leste : 1.7491 : 30 : 2.4758 : 1
- Bottom 10 Countries:
- 29 : Kyrgyzstan : 1.3413 : 26 : 3.7357 : 4
 - 30 : Bangladesh : 1.1953 : 34 : 2.1800 : 2
 - 31 : Myanmar : 1.1839 : 28 : 3.1761 : 5
 - 32 : Cambodia : 0.8291 : 14 : 6.6415 : 3
 - 33 : Pakistan : 0.6703 : 22 : 5.0709 : 4
 - 34 : Afghanistan : 0.5599 : 38 : 0.6703 : 5
 - 35 : Uzbekistan : 0.5056 : 37 : 0.9506 : 4
 - 36 : Syria : 0.2595 : 6 : 15.4795 : 3
 - 37 : Tajikistan : 0.1787 : 36 : 0.9506 : 4
 - 38 : Yemen : 0.0354 : 19 : 5.5199 : 2

Map Of Surrounded Country Case Rates With Information About Median Case Rate Of Adjacent Countries
45 Countries In Asia Have Case Rate Data. 38 in Asia Have At Least One Adjacent Country.
Any countries that are islands, or have no adjacent countries with data, are not annotated, and are not in the list at Left.
If any have a large enough land area, the area will be visible, but white (empty).
□ Empty Color Fill Is Also Used For Countries With No Data: North Korea | Taiwan | Turkmenistan
7 Countries Listed At The Right Were NOT Surrounded By Countries With A Case Rate. Some or All may be islands.
■ 0.0354 - 1.3413 (10 lowest) ■ 1.7491 - 6.6415 (below median) ■ 6.9657 - 7.7475 (median)
■ 8.0128 - 15.3418 (above median) ■ 15.4795 - 73.6692 (10 highest) □ No Data
Below, left number is Rank of the Country's Case Rate, right number is Rank of Median of Adjacent Countries' Case Rates.
Mouse: Country, CaseRate, Rank, Adj CountryCount, Median Adj CaseRate, Median Adj CaseRate Rank, Min&Max Adj CaseRate

Not Surrounded Country : Case Rate
In Alphabetic Order:
Bahrain : 47.3167
Japan : 27.2716
Maldives : 35.6424
Philippines : 3.6117
Singapore : 51.8805
South Korea : 66.7207
Sri Lanka : 3.0812



Asia: With List of Details for the Top 10 and Above Median

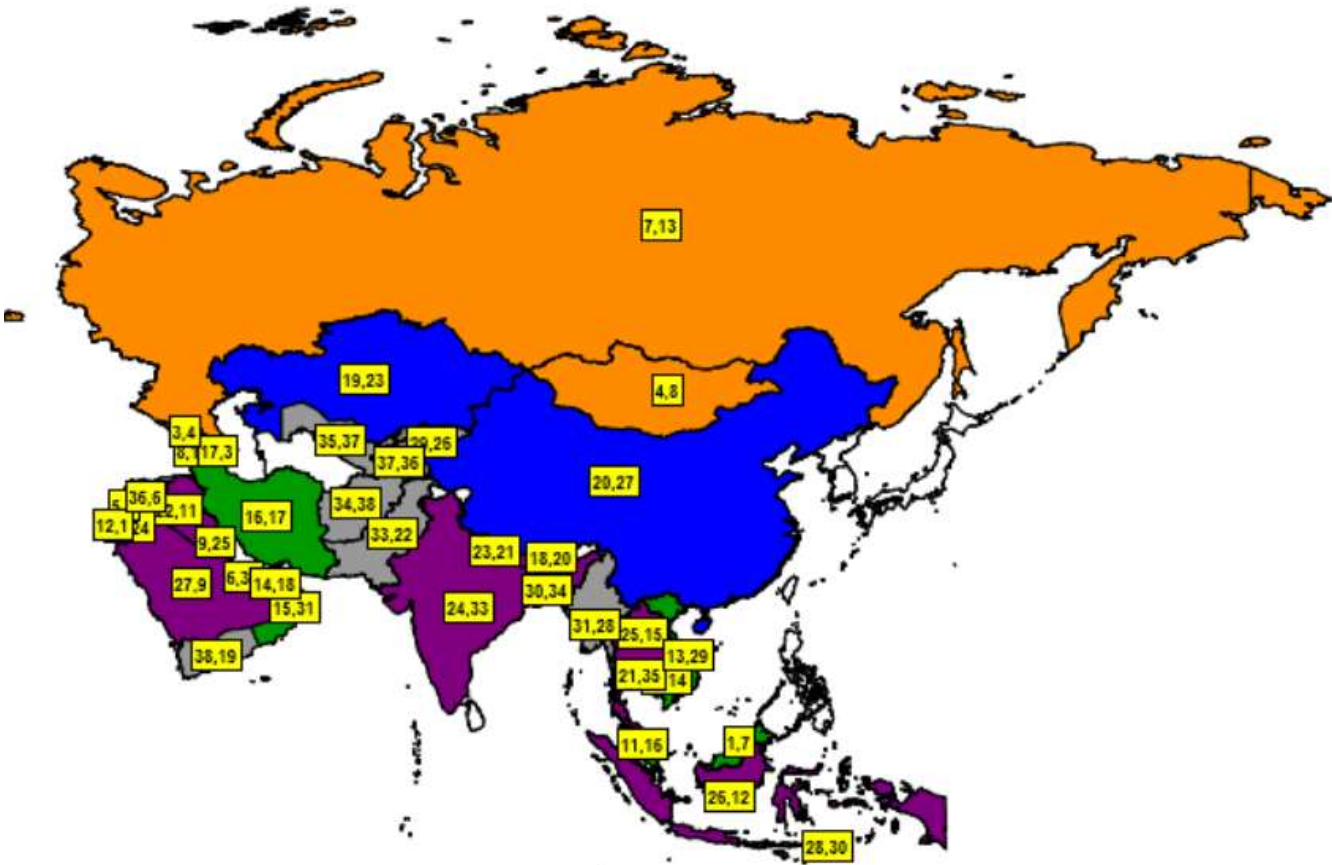
Rank : Country : Case Rate : Rank Adj : Median Adj : Count Adj
In Rank Order Within Range:

Top 10 Countries:

- 1 : Brunei : 73.6692 : 7 : 15.3418 : 1
- 2 : Israel : 51.2388 : 5 : 15.4795 : 3
- 3 : Georgia : 49.5486 : 4 : 16.2330 : 3
- 4 : Mongolia : 29.7619 : 8 : 11.6399 : 2
- 5 : Lebanon : 22.5858 : 2 : 25.7492 : 2
- 6 : Qatar : 19.0909 : 32 : 2.3112 : 1
- 7 : Russia : 16.3141 : 13 : 8.0535 : 5
- 8 : Armenia : 16.2330 : 10 : 8.6114 : 3
- 9 : Kuwait : 15.6150 : 25 : 3.9261 : 2
- 10 : Jordan : 15.4795 : 24 : 3.9261 : 4

Above Median Countries:

- 11 : Malaysia : 15.3418 : 16 : 6.6415 : 3
- 12 : Palestine : 13.3946 : 1 : 51.2388 : 1
- 13 : Viet Nam : 11.8387 : 29 : 2.9073 : 3
- 14 : United Arab Emirates : 11.3019 : 18 : 5.5199 : 2
- 15 : Oman : 8.7286 : 31 : 2.3112 : 3
- 16 : Iran : 8.6114 : 17 : 5.5410 : 5
- 17 : Azerbaijan : 8.0535 : 3 : 16.2736 : 4
- 18 : Bhutan : 8.0128 : 20 : 5.0709 : 2



South America: Only Half of the Case Rates > 9.9 have Median Adjacent Case Rates substantially higher than those for Case Rates < 9.9

Median COVID-19 Case Rate of Adjacent Countries Versus That of Each Surrounded Country in South America

14 Countries In South America Have Case Rate Data. 13 Countries Have At Least One Adjacent Country. Each Country is annotated with its Number of Adjacent Countries.

Use the mouse for Country, Number of Adjacent Countries, Case Rate, Case Rate Rank, and Median, Min, Max, & Rank for Median Adjacent Countries' Case Rate

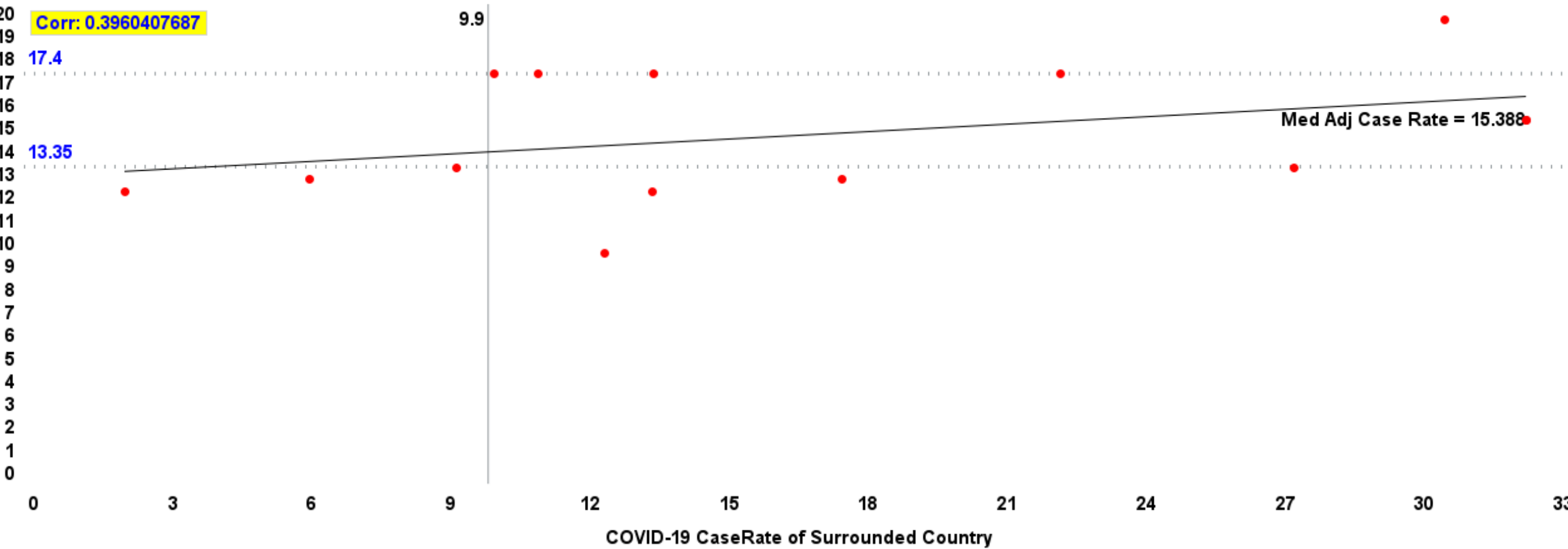
Median, Min, Max Case Rate of All Countries In South America (Including Islands) = 13.3367 1.9529 50.5919

Median, Min, Max Case Rate of All Countries In The World (Including Islands) = 13.62565 0.0354 75.0727

Islands Or Countries Without At Least One Adjacent Country With Data (Not Includable): Falkland Islands

Only half of the ten Case Rates Greater Than 9.9 have Median Adjacent Case Rates substantially higher than those for 7 of the other 8 Surrounded Country Case Rates.

The highest Surrounded Country Case Rate has a Median Adjacent Case Rate which is only 2 more than the Median Adjacent Case Rate of the other seven countries in that lower tier.



South America: The Top Three Case Rate Ranked Countries are isolated from each other. Argentina (4) has a small border with Brazil (5). Uruguay (2) is surrounded by Argentina (4) and Brazil (5).

Rank : Country : Case Rate : Rank Adj : Median Adj : Count Adj
In Rank Order Within Range:

■ Top 3 Countries:

1 : French Guiana : 32.1902 : 6 : 15.3876 : 2
2 : Uruguay : 30.4170 : 1 : 19.7821 : 2
3 : Chile : 27.1841 : 8 : 13.3239 : 3

■ Above Median Countries:

4 : Argentina : 22.1384 : 2 : 17.4257 : 5
5 : Brazil : 17.4257 : 9 : 12.8168 : 10
6 : Suriname : 13.3495 : 5 : 17.4257 : 3

■ Median Countries:

7 : Peru : 13.3239 : 11 : 12.3097 : 5

■ Below Median Countries:

8 : Colombia : 12.3097 : 13 : 9.6241 : 4
9 : Paraguay : 10.8569 : 4 : 17.4257 : 3
10 : Bolivia : 9.9125 : 3 : 17.4257 : 5

■ Bottom 3 Countries:

11 : Guyana : 9.1107 : 7 : 13.3495 : 3
12 : Ecuador : 5.9242 : 10 : 12.8168 : 2
13 : Venezuela : 1.9529 : 12 : 12.3097 : 3

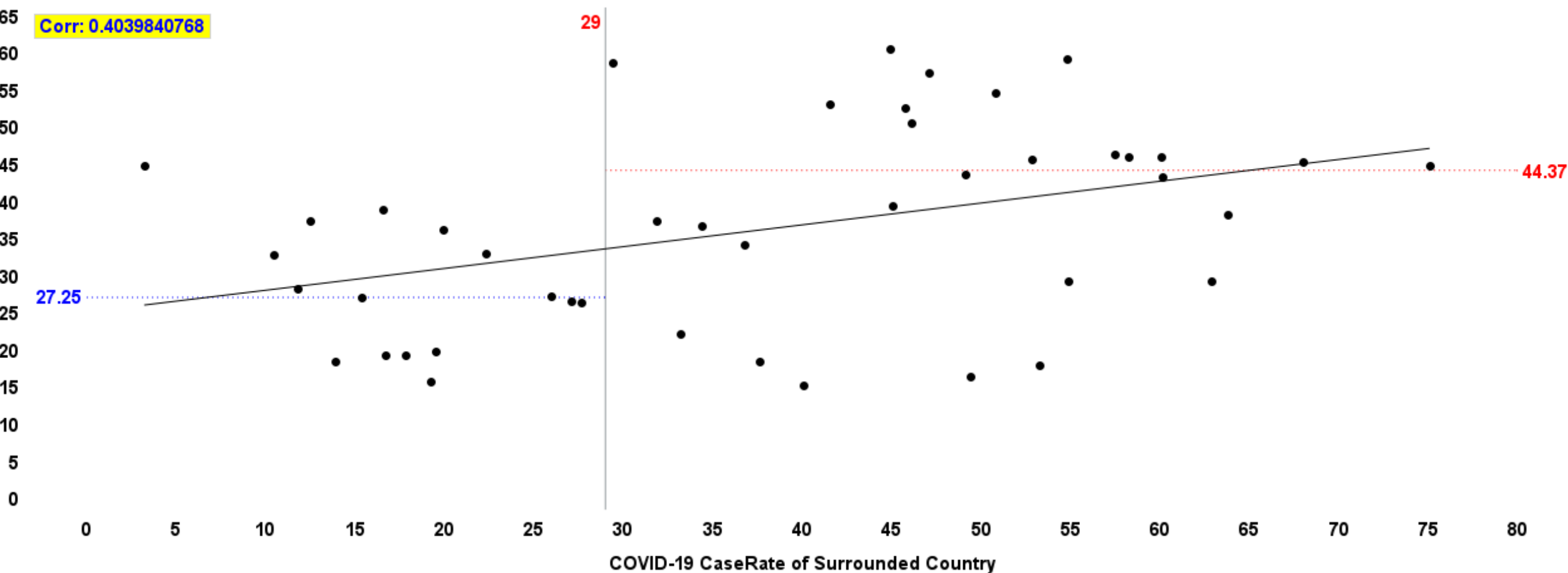
Map Of Surrounded Country Case Rates With Information About Median Case Rate Of Adjacent Countries
14 Countries In South America Have Case Rate Data. 13 in South America Have At Least One Adjacent Country.
Any countries that are islands, or have no adjacent countries with data, are not annotated, and are not in the list at Left.
If any have a large enough land area, the area will be visible, but white (empty).
1 Countries Listed At The Right Were NOT Surrounded By Countries With A Case Rate. Some or All may be islands.
■ 1.9529 - 9.1107 (3 lowest) ■ 9.9125 - 12.3097 (below median) ■ 13.3239 - 13.3239 (median)
■ 13.3495 - 22.1384 (above median) ■ 27.1841 - 32.1902 (3 highest)
Below, left number is Rank of the Country's Case Rate, right number is Rank of Median of Adjacent Countries' Case Rates.
Mouse: Country, CaseRate, Rank, Adj CountryCount, Median Adj CaseRate, Median Adj CaseRate Rank, Min&Max Adj CaseRate

Not Surrounded Country : Case Rate
In Alphabetic Order:
Falkland Islands : 50.5919



Europe: The Median Adjacent Countries' Case Rate is clearly higher when the Surrounded Country Case Rate is at least 29

Median COVID-19 Case Rate of Adjacent Countries Versus That of Each Surrounded Country in Europe
51 Countries In Europe Have Case Rate Data. 44 Countries Have At Least One Adjacent Country. Each Country is annotated with its Number of Adjacent Countries.
Use the mouse for Country, Number of Adjacent Countries, Case Rate, Case Rate Rank, and Median, Min, Max, & Rank for Median Adjacent Countries' Case Rate
Median, Min, Max Case Rate of All Countries In Europe (Including Islands) = 44.9167 3.2178 75.0727
Median, Min, Max Case Rate of All Countries In The World (Including Islands) = 13.62565 0.0354 75.0727
7 Islands Or Countries Without At Least One Adjacent Country With Data (Not Includable): Cyprus, Faroe Islands, Guernsey, Iceland, Isle of Man, Jersey, Malta
The Case Rate of Surrounded Countries does appear to affect the Median Case Rate of Adjacent Countries.
The Median of Median Adjacent Country Case Rates is clearly higher when the Surrounded Country Case Rate is 29 or higher.



Europe: Two countries of the Top 10 are adjacent: Austria and Slovenia.
Some of the Above Median are adjacent: The Baltic States (Latvia, Lithuania, Estonia);
Germany which is bordered by Switzerland, Netherlands, Belgium, and Czechia.

Rank : Country : Case Rate : Rank Adj : Median Adj : Count Adj
In Rank Order Within Range:

- Top 10 Countries:
- 1 : San Marino : 75.0727 : 14 : 44.9167 : 1
 - 2 : Austria : 68.0263 : 13 : 45.5883 : 8
 - 3 : Slovenia : 63.8156 : 20 : 38.4056 : 4
 - 4 : Gibraltar : 62.8883 : 28 : 29.3960 : 1
 - 5 : Andorra : 60.1368 : 17 : 43.4517 : 2
 - 6 : Luxembourg : 60.0686 : 11 : 46.1051 : 3
 - 7 : Denmark : 58.2498 : 10 : 46.1051 : 1
 - 8 : France : 57.5074 : 9 : 46.5940 : 8
 - 9 : Portugal : 54.8846 : 29 : 29.3960 : 1
 - 10 : Liechtenstein : 54.7783 : 2 : 59.4224 : 2

- Above Median Countries:
- 11 : Greece : 53.2882 : 41 : 18.1035 : 4
 - 12 : Latvia : 52.8300 : 12 : 45.7887 : 3
 - 13 : Switzerland : 50.8184 : 5 : 54.7783 : 5
 - 14 : Lithuania : 49.4255 : 42 : 16.5820 : 3
 - 15 : Netherlands : 49.1214 : 16 : 43.8228 : 2
 - 16 : Monaco : 47.0828 : 4 : 57.5074 : 1
 - 17 : Germany : 46.1051 : 8 : 50.8184 : 9
 - 18 : Estonia : 45.7887 : 7 : 52.8300 : 1
 - 19 : Czechia : 45.0715 : 18 : 39.6500 : 4
 - 20 : Italy : 44.9167 : 1 : 60.6615 : 6
 - 21 : Belgium : 41.5405 : 6 : 53.3144 : 4

- Median Countries:
- 22 : Montenegro : 40.0713 : 44 : 15.3906 : 5
 - 23 : Serbia : 37.5966 : 39 : 18.6606 : 8

- Below Median Countries:
- 24 : United Kingdom : 36.8004 : 25 : 34.3898 : 1
 - 25 : Ireland : 34.3898 : 23 : 36.8004 : 1
 - 26 : Slovakia : 33.1948 : 35 : 22.3113 : 5
 - 27 : Croatia : 31.8944 : 22 : 37.5966 : 5
 - 28 : Spain : 29.3960 : 3 : 58.8221 : 4
 - 29 : Norway : 27.6247 : 34 : 26.5314 : 2
 - 30 : Finland : 27.0670 : 33 : 26.8103 : 2
 - 31 : Sweden : 25.9958 : 31 : 27.3459 : 2
 - 32 : Hungary : 22.3113 : 26 : 33.1948 : 7
 - 33 : Turkey : 19.9255 : 24 : 36.3841 : 2
 - 34 : Bulgaria : 19.4799 : 36 : 19.9255 : 5

- Bottom 10 Countries:
- 35 : Moldova : 19.2332 : 43 : 15.8731 : 2
 - 36 : Romania : 17.8412 : 38 : 19.4799 : 5
 - 37 : North Macedonia : 16.7270 : 37 : 19.4799 : 5
 - 38 : Poland : 16.5820 : 19 : 39.1332 : 6
 - 39 : Kosovo : 15.3906 : 32 : 27.1618 : 4
 - 40 : Ukraine : 13.9049 : 40 : 18.5372 : 6
 - 41 : Bosnia and Herzegovina : 12.4776 : 21 : 37.5966 : 3
 - 42 : Albania : 11.7705 : 30 : 28.3992 : 4
 - 43 : Belarus : 10.4252 : 27 : 33.0038 : 4
 - 44 : Vatican City State : 3.2178 : 15 : 44.9167 : 1

Map Of Surrounded Country Case Rates With Information About Median Case Rate Of Adjacent Countries

51 Countries In Europe Have Case Rate Data, 44 In Europe Have At Least One Adjacent Country.

Any countries that are islands, or have no adjacent countries with data, are not annotated, and are not in the list at Left.
If any have a large enough land area, the area will be visible, but white (empty).

7 Countries Listed At The Right Were NOT Surrounded By Countries With A Case Rate. Some or All may be islands.

■ 3.2178 - 19.2332 (10 lowest) ■ 19.4799 - 36.8004 (below median) ■ 37.5966 - 40.0713 (median)
■ 41.5405 - 53.2882 (above median) ■ 54.7783 - 75.0727 (10 highest)

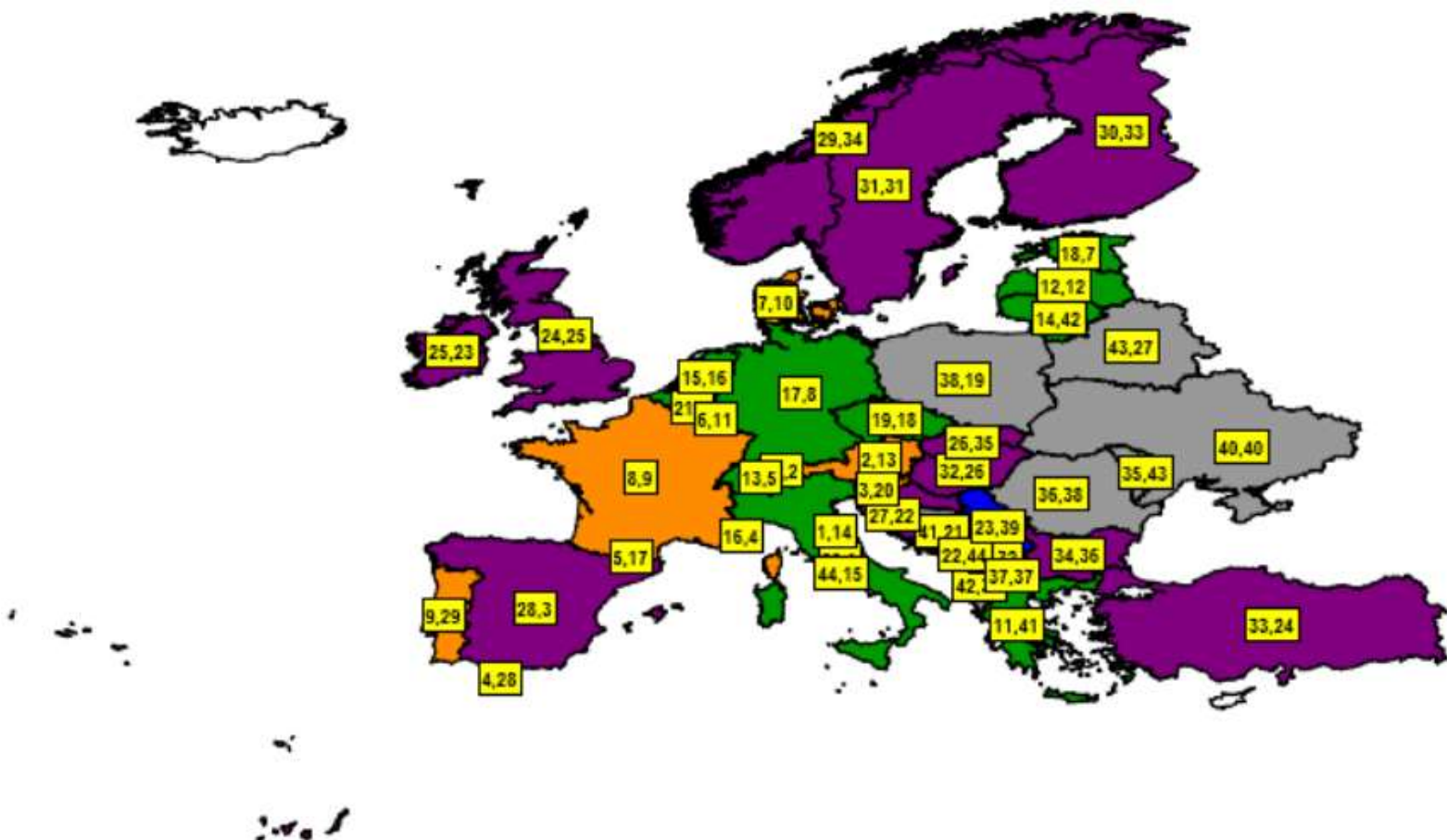
Below, left number is Rank of the Country's Case Rate, right number is Rank of Median of Adjacent Countries' Case Rates.

Mouse: Country, CaseRate, Rank, Adj CountryCount, Median Adj CaseRate, Median Adj CaseRate Rank, Min&Max Adj CaseRate

Not Surrounded Country : Case Rate

In Alphabetic Order:

- Cyprus : 73.9907
- Faroe Islands : 65.2484
- Guernsey : 55.7817
- Iceland : 56.2211
- Isle of Man : 44.9618
- Jersey : 59.9218
- Malta : 22.6633



Africa: There is a High Case Rate cluster around Botswana which is Case Rate Rank 1

Rank : Country : Case Rate : Rank Adj : Median Adj : Count Adj
In Rank Order Within Range:

■ Top 10 Countries:

- 1: Botswana : 12.5620 : 4 : 4.2274 : 4
- 2: Tunisia : 9.3343 : 5 : 4.0261 : 2
- 3: Libya : 7.4463 : 29 : 0.3007 : 6
- 4: South Africa : 6.7998 : 6 : 3.9437 : 6
- 5: Namibia : 6.7097 : 2 : 4.2724 : 4
- 6: Eswatini : 6.2572 : 8 : 3.7544 : 2
- 7: Morocco : 3.4125 : 15 : 0.6058 : 1
- 8: Gabon : 2.0532 : 21 : 0.4483 : 3
- 9: Zambia : 1.7450 : 16 : 0.5730 : 8
- 10: Zimbabwe : 1.6301 : 3 : 4.2724 : 4

■ Above Median Countries:

- 11: Lesotho : 1.5671 : 1 : 6.7998 : 1
- 12: Djibouti : 1.3998 : 33 : 0.2766 : 3
- 13: Mauritania : 1.3465 : 19 : 0.5143 : 3
- 14: Equatorial Guinea : 1.0227 : 11 : 1.2508 : 2
- 15: Rwanda : 0.9669 : 36 : 0.2321 : 4
- 16: Mozambique : 0.7089 : 10 : 1.6876 : 6
- 17: Kenya : 0.6369 : 41 : 0.1724 : 5
- 18: Algeria : 0.6058 : 9 : 2.3795 : 6
- 19: Senegal : 0.5143 : 20 : 0.4566 : 5
- 20: Ghana : 0.5133 : 27 : 0.3139 : 3
- 21: Gambia : 0.4666 : 18 : 0.5143 : 1
- 22: Egypt : 0.4649 : 7 : 3.7914 : 2
- 23: Guinea-Bissau : 0.4566 : 23 : 0.3963 : 2

■ Median Countries:

- 24: Cameroon : 0.4483 : 25 : 0.3495 : 6
- 25: Togo : 0.4467 : 39 : 0.2100 : 3

■ Below Median Countries:

- 26: Malawi : 0.4370 : 13 : 0.7089 : 3
- 27: Burundi : 0.4225 : 48 : 0.1003 : 3
- 28: Congo : 0.4223 : 30 : 0.2999 : 5
- 29: Ethiopia : 0.4062 : 37 : 0.2245 : 6
- 30: Uganda : 0.3638 : 42 : 0.1724 : 5
- 31: Cote d'Ivoire : 0.3139 : 44 : 0.1526 : 5
- 32: Angola : 0.2999 : 12 : 1.0837 : 4
- 33: Guinea : 0.2783 : 35 : 0.2333 : 6
- 34: Central African Republic : 0.2767 : 43 : 0.1545 : 6
- 35: Eritrea : 0.2766 : 22 : 0.4062 : 3
- 36: Benin : 0.2100 : 47 : 0.1099 : 4
- 37: South Sudan : 0.1724 : 26 : 0.3203 : 6
- 38: Somalia : 0.1553 : 14 : 0.6369 : 3

■ Bottom 10 Countries:

- 39: Liberia : 0.1526 : 31 : 0.2783 : 3
- 40: Mali : 0.1468 : 28 : 0.3139 : 7
- 41: Sudan : 0.1365 : 32 : 0.2767 : 7
- 42: Nigeria : 0.1223 : 46 : 0.1267 : 4
- 43: Dem. Republic of the Congo : 0.1003 : 24 : 0.3638 : 9
- 44: Burkina Faso : 0.0975 : 34 : 0.2620 : 6
- 45: Sierra Leone : 0.0904 : 38 : 0.2155 : 2
- 46: Tanzania : 0.0660 : 17 : 0.5370 : 8
- 47: Chad : 0.0434 : 40 : 0.2066 : 6
- 48: Niger : 0.0363 : 45 : 0.1468 : 7

Map Of Surrounded Country Case Rates With Information About Median Case Rate Of Adjacent Countries

57 Countries In Africa Have Case Rate Data. 48 In Africa Have At Least One Adjacent Country.

Any countries that are islands, or have no adjacent countries with data, are not annotated, and are not in the list at Left. If any have a large enough land area, the area will be visible, but white (empty).

Empty Color Fill Is Also Used For Countries With No Data: **Western Sahara**

9 Countries Listed At The Right Were NOT Surrounded By Countries With A Case Rate. Some or All may be islands.

■ 0.0363 - 0.1526 (10 lowest) ■ 0.1553 - 0.4370 (below median) ■ 0.4467 - 0.4483 (median)

■ 0.4566 - 1.5671 (above median) ■ 1.6301 - 12.5620 (10 highest) □ No Data

Below, left number is Rank of the Country's Case Rate, right number is Rank of Median of Adjacent Countries' Case Rates.

Mouse: Country, CaseRate, Rank, Adj CountryCount, Median Adj CaseRate, Median Adj CaseRate Rank, Min&Max: Adj CaseRate

Not Surrounded Country : Case Rate

In Alphabetic Order:

Cape Verde : 10.8695

Comoros : 1.0886

Madagascar : 0.2312

Mauritius : 24.7345

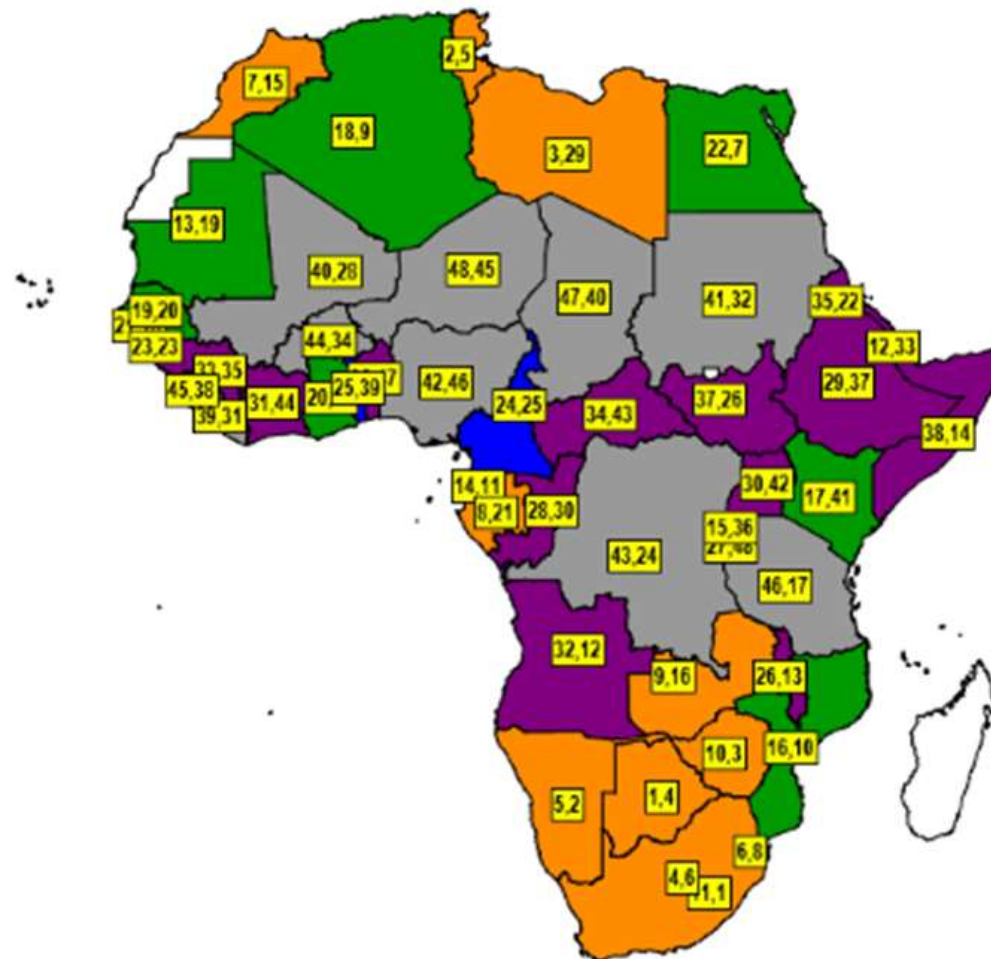
Mayotte : 12.8873

Reunion : 50.7765

Sao Tome and Principe : 2.9614

Seychelles : 47.8088

St Helena and Ascension and Tristan da Cunha : 40.1037



Data of 2000 to 2003 for 236 Countries includes:

- ▶ Country Name, Continent
- ▶ ISOALPHA3, ID (geographic keys)
- ▶ Population
- ▶ Total Cases & Total Deaths
- ▶ Case Rate (Cases as Percent of Population)
- ▶ Mortality Rate (Deaths as Percent of Cases)
- ▶ Fifteen other data elements listed on next slides

Source:

owid-covid-data.csv

<https://covid.ourworldindata.org/> on 5 January 2024

The Number of Countries with Each Data Element Is:

236 Population

227 Life Expectancy

210 People Per Sq. Km.

202 Diabetes Percent of Aged 20 to 79

194 Median Age

192 Cardiac Deaths Per 1000

192 GDP (\$K) Per Capita

192 Pop. Percent Aged 70 or Older

188 Pop. Percent Aged 65 or Older

187 Human Development Index

170 Hospital Beds Per 1000 People

146 Females Percent Who Smoke

144 Males Percent Who Smoke

125 Pop. Percent in Extreme Poverty

94 Pop. Percent with On-Premises HandWashing

Data Source's Fifteen Data Elements By Country

- ▶ Do they have any effect on:
 - Case Rate or Mortality Rate?
 - Case Count or Mortality Count?
- ▶ Presentation is visual exploration of COVID-19 data.
- ▶ Your suggestions as to determining relationships?
- ▶ Send me an email.
- ▶ A prior slide has link to the raw data.

Plots of Case Rate, Mortality Rate, Case Count, and Mortality Count versus the Fifteen Variables Are Delivered Two Ways:

1. Fifteen Stand-Alone Full Web Pages
2. One 3-Row BY 5-Column Panel of scatter plot miniatures in 15 cells
 - ▶ The Panel has links to the full web page version of each stand-alone scatter plot
 - ▶ There are 15 links in the Panel's third TITLE line (Each of the Panel's Cells is NOT directly linked to the full web page versions of their content.)

Scatter Plots (ALL list Pearson's Correlation Coefficient)

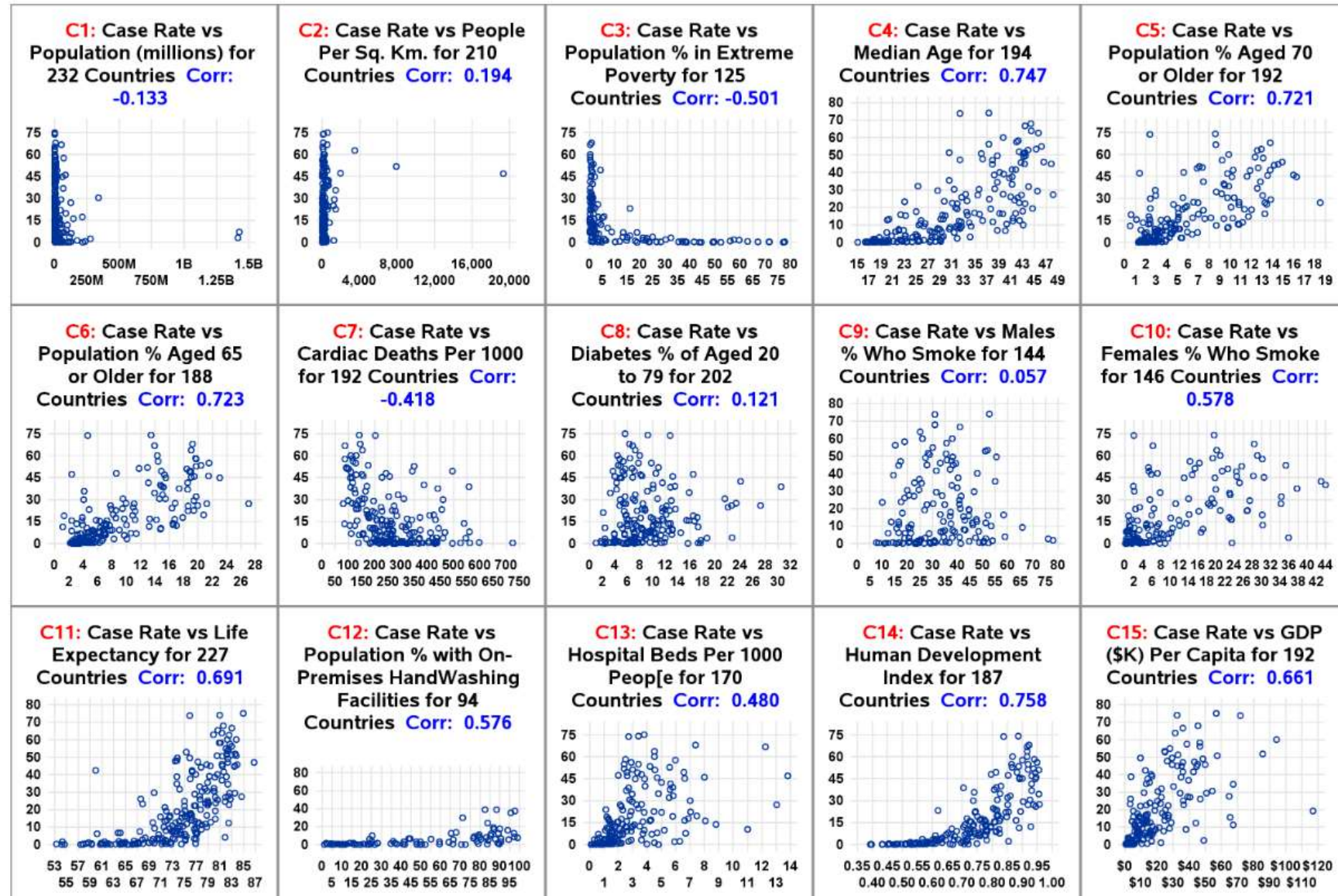
- ▶ Four Basic Options
 - ▶ Highlighting the plot points that have the Top 10 and Bottom 10 response values
 - ▶ Linear Fit
 - ▶ Highlighting AND Fit
 - Highlighting always has value**
 - ▶ None of the above
- ▶ Further Plot Option
 - ▶ Omit outliers
 - ▶ Any specified outliers are identified in the scatter plot's second title line

Panel of Scatter Plots of Case Rate vs 15 variables

Case Rate with [Correlation Coefficients & No Fit](#) [Go to Plots of Mortality Rate versus the Fifteen X Variables](#) [Go To Table of Contents](#)

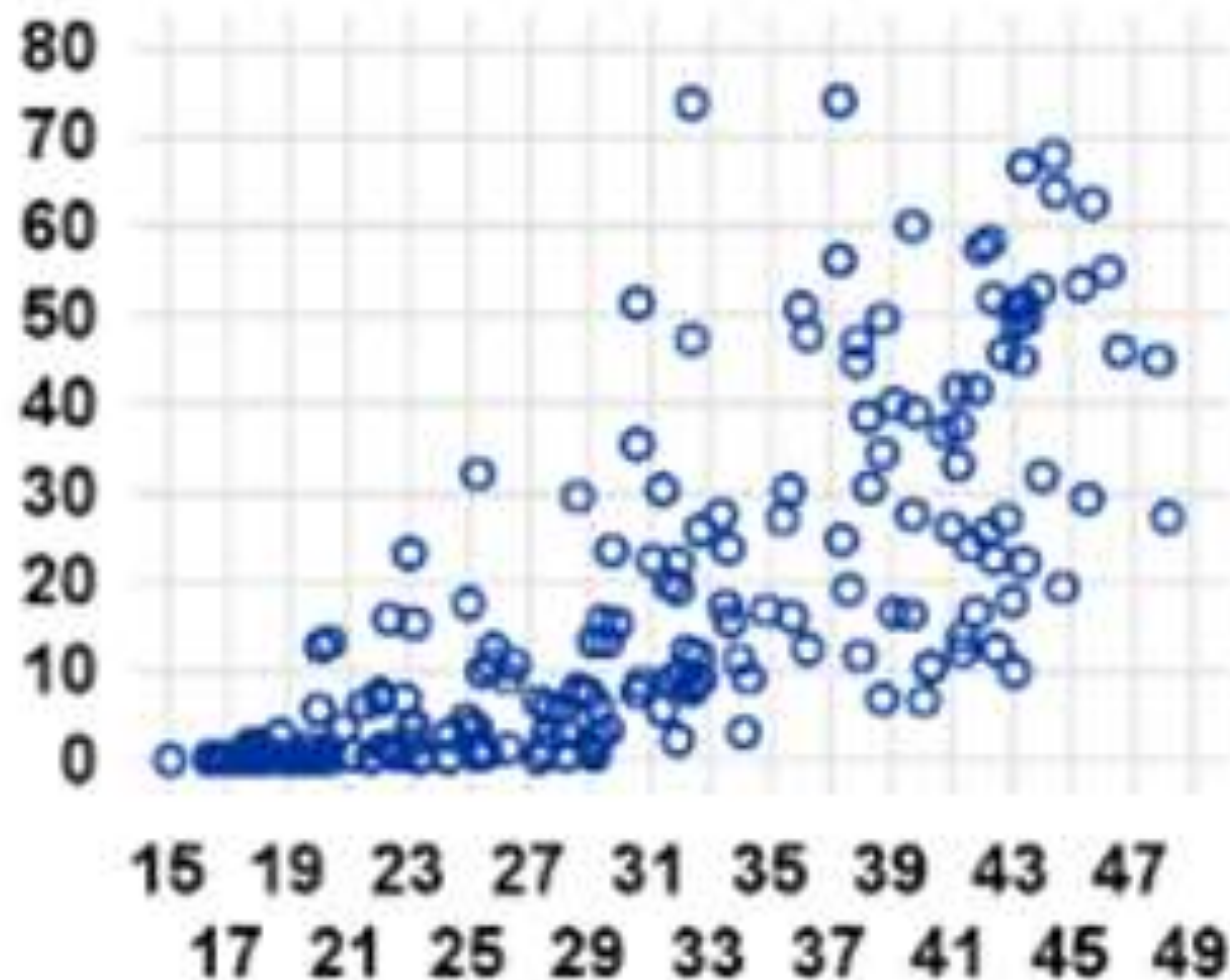
For any plot, its full-size equivalent with mouseover data tips is at the link corresponding to its red plot number title prefix:

[C1](#) [C2](#) [C3](#) [C4](#) [C5](#) [C6](#) [C7](#) [C8](#) [C9](#) [C10](#) [C11](#) [C12](#) [C13](#) [C14](#) [C15](#)



Magnified
Excerpt of Cell
C4 from Screen
Capture of Full
Panel Web Page

**C4: Case Rate vs
Median Age for 194
Countries** **Corr: 0.747**



After Clicking C4 for Versus Median Age in Panel Title Line 3, then using the mouse.

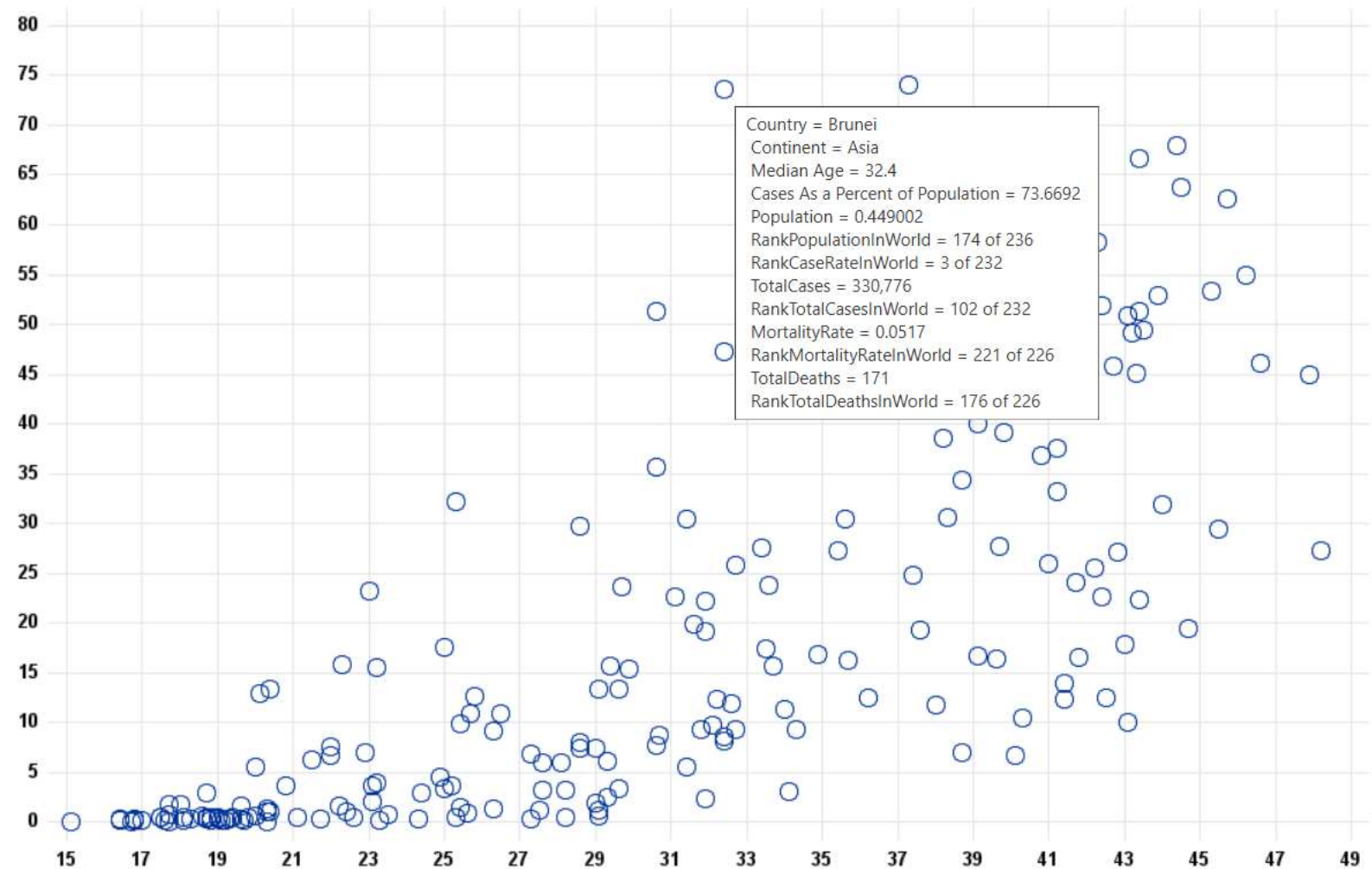
NOTE: Data tip label "Population" needs to be changed to "Population In Millions"

C1: Cases As a Percent of Population versus Median Age for 194 Countries Corr: 0.747

[Mortality Rate versus Median Age](#)

[Panel of Plots of Case Rate versus each of fifteen X Variables](#)

[Panel of Plots of Mortality Rate versus each of fifteen X Variables](#)



Highlight Top N & Bottom N Countries

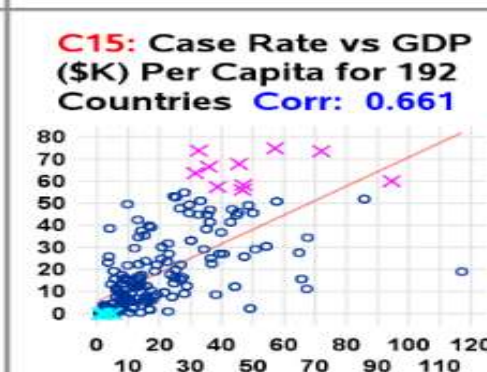
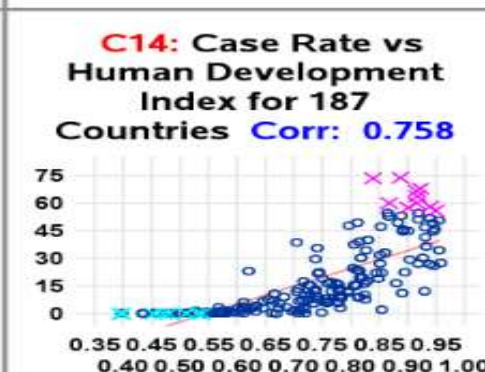
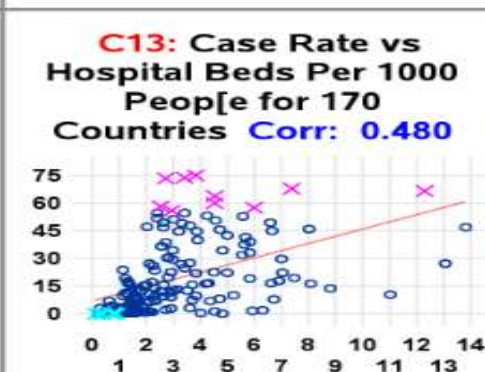
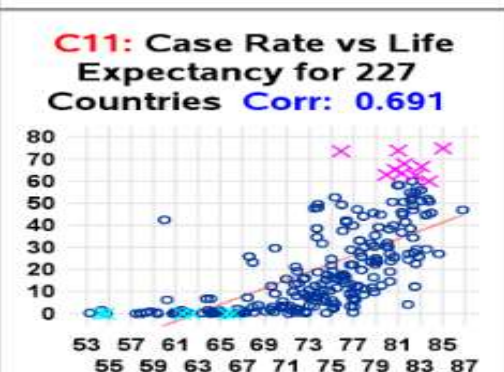
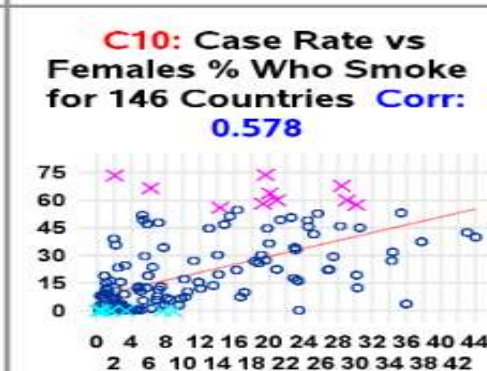
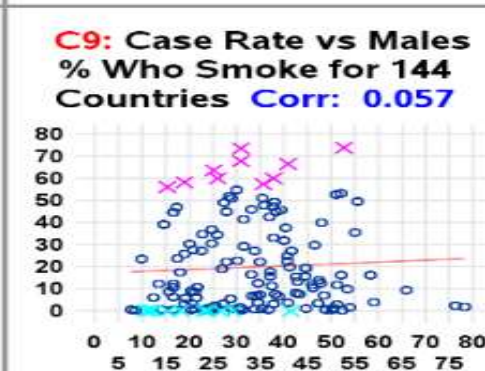
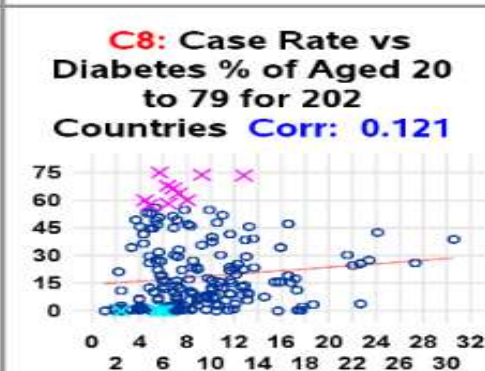
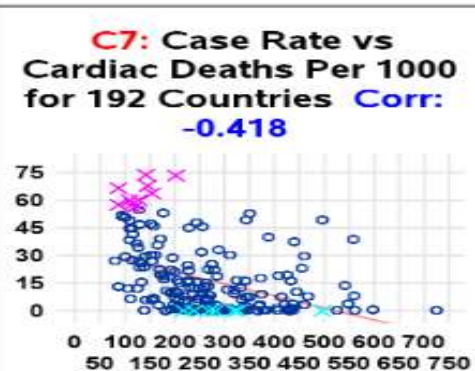
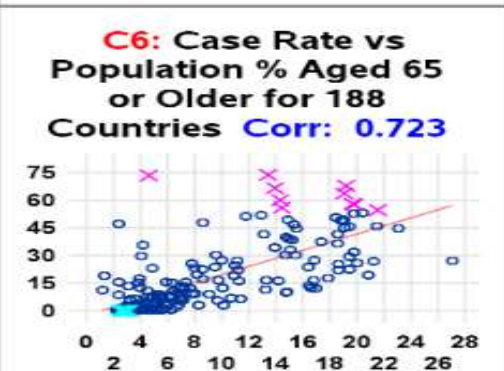
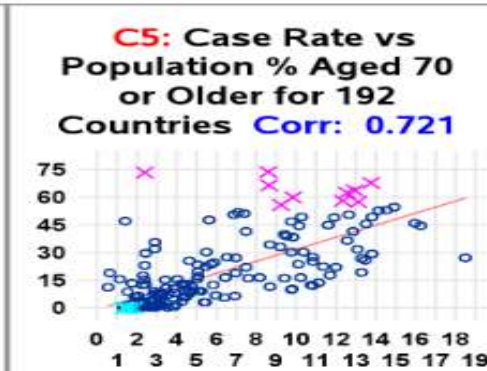
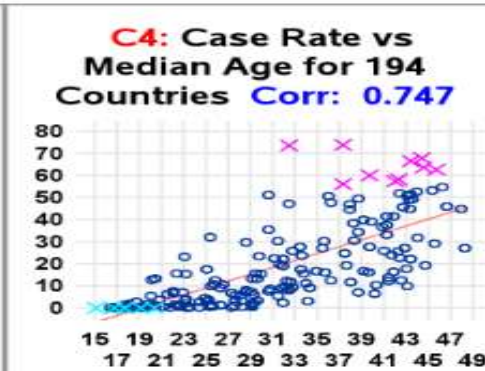
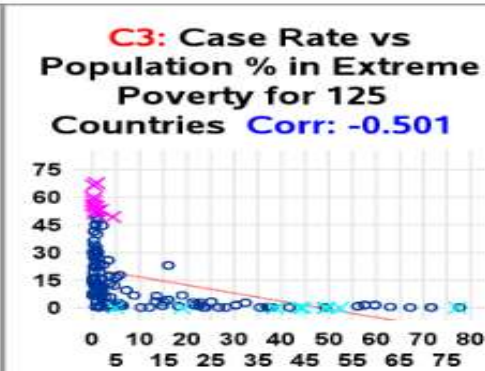
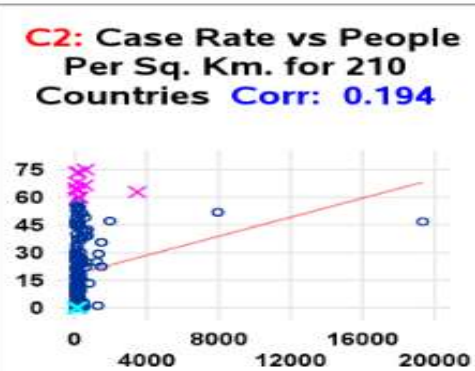
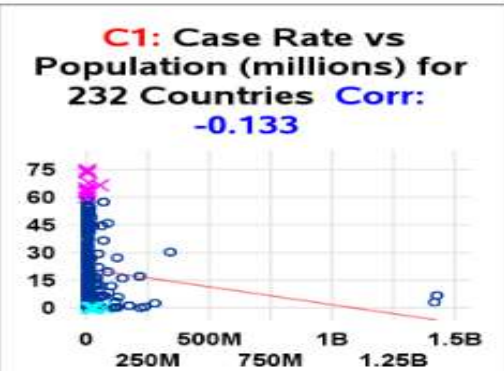
- ▶ Show Them What Happens in Those N Countries in the Plot
- ▶ Depending on the X variable, there may be 94 to 236 countries
- ▶ Depending on the number of countries on the map, N can be any reasonably small number, typically not more than one-fifth of the countries

Case Rate Plots with Linear Fit & Highlight Top and Bottom 10 Countries

Case Rate with [Correlation Coefficients](#) & Linear Fit & Highlights: X = Top 10 Case Rate X = Bottom 10 Case Rate [Go to Plots of Mortality Rate vs Case Rate](#)

For any plot, its full-size equivalent with mouseover data tips is at the link corresponding to its red plot number title prefix:

[C1](#) [C2](#) [C3](#) [C4](#) [C5](#) [C6](#) [C7](#) [C8](#) [C9](#) [C10](#) [C11](#) [C12](#) [C13](#) [C14](#) [C15](#)



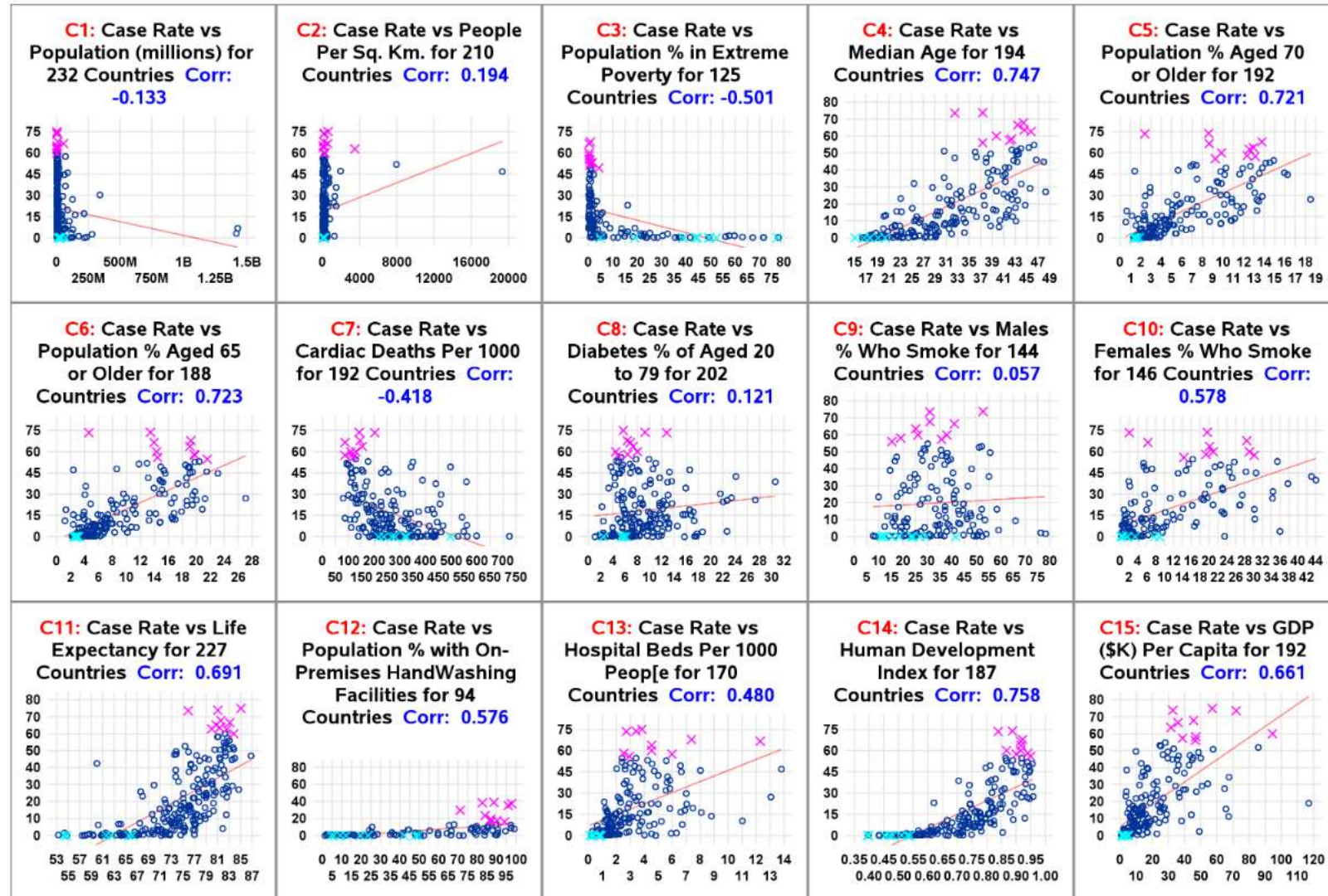
Case Rate Plots with Linear Fit & Highlight Top and Bottom 10 Countries

Outliers Present (See C1 & C2 cell excerpts below)

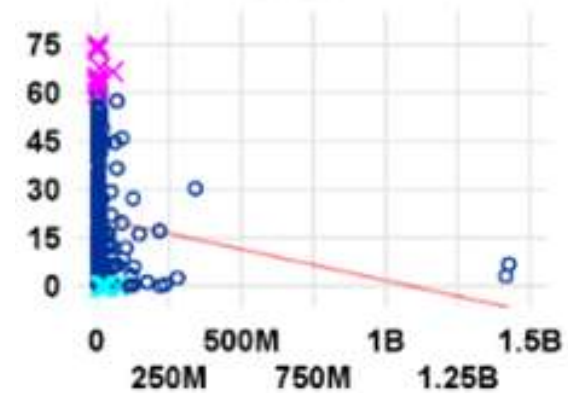
Case Rate with [Correlation Coefficients](#) & Linear Fit & Highlights: ✕ = Top 10 Case Rate ✕ = Bottom 10 Case Rate [Go to Plots of Mortality Rate vs](#)

For any plot, its full-size equivalent with mouseover data tips is at the link corresponding to its red plot number title prefix:

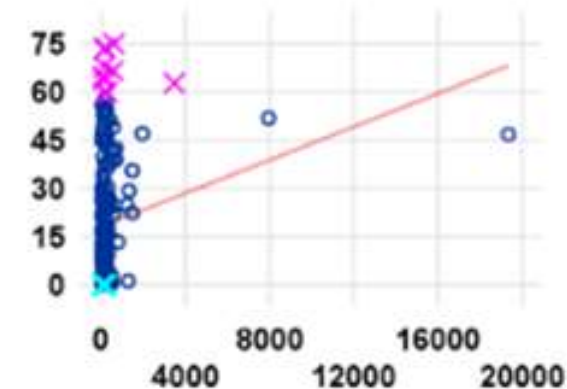
[C1](#) [C2](#) [C3](#) [C4](#) [C5](#) [C6](#) [C7](#) [C8](#) [C9](#) [C10](#) [C11](#) [C12](#) [C13](#) [C14](#) [C15](#)



C1: Case Rate vs Population (millions) for 232 Countries Corr: -0.133



C2: Case Rate vs People Per Sq. Km. for 210 Countries Corr: 0.194



Case Rate Plots with Linear Fit & Highlight Top and Bottom 10 Countries

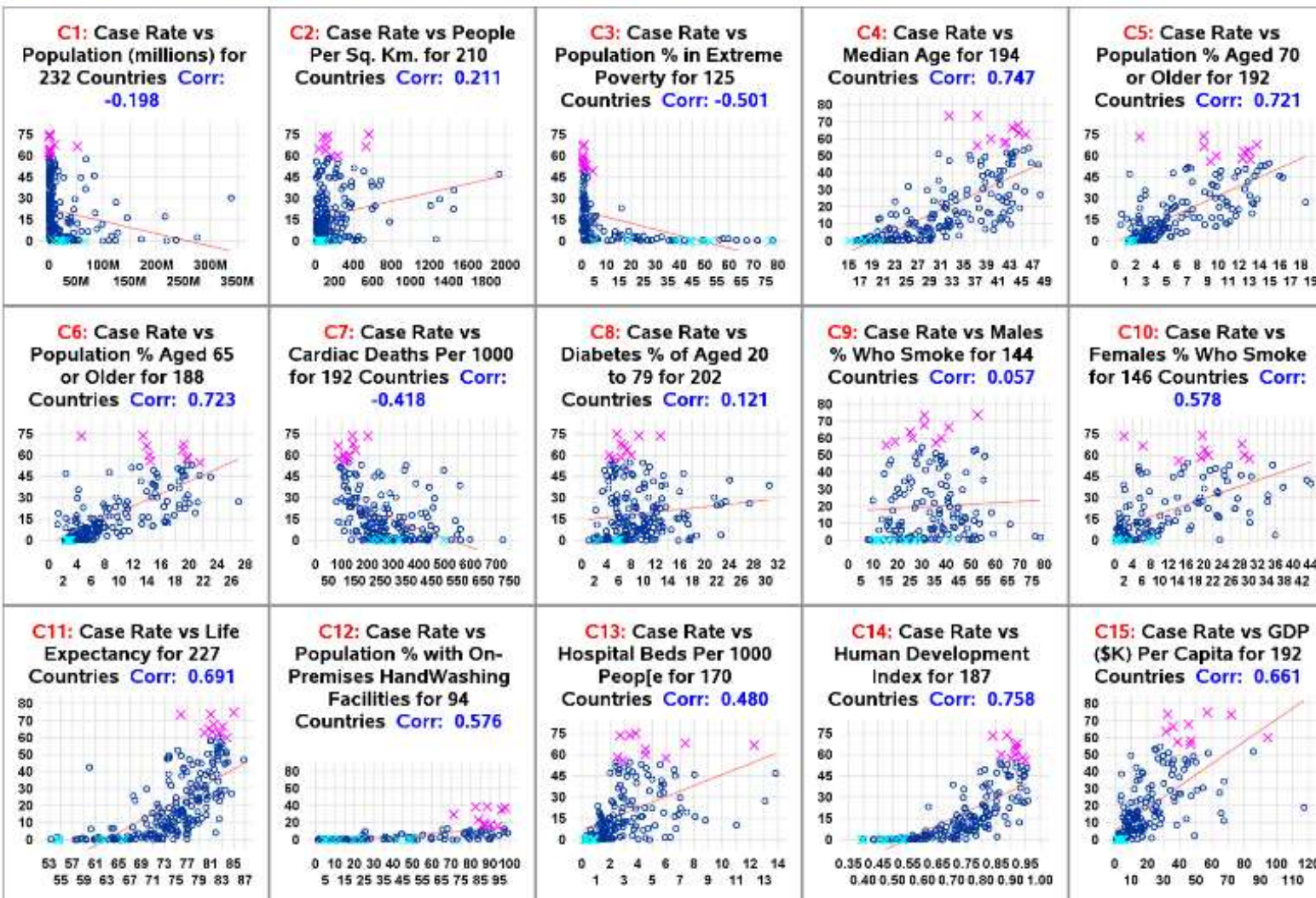
Outliers Removed Cited in Red Subtitle (see the affected cells below)

Case Rate with [Correlation Coefficients](#) & Linear Fit & Highlights: X = Top 10 Case Rate X = Bottom 10 Case Rate [Go to Plots of Mortality Rate v](#)

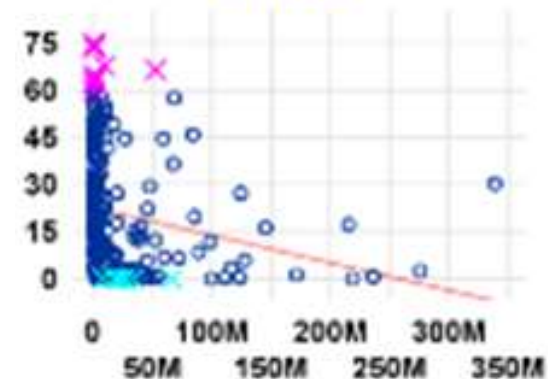
Omitting Outliers: Population China & India (both > 1.4B), Pop. Density Monaco (19,346), Singapore (7,916), Gibraltar (3,457)

For any plot, its full-size equivalent with mouseover data tips is at the link corresponding to its red plot number title prefix:

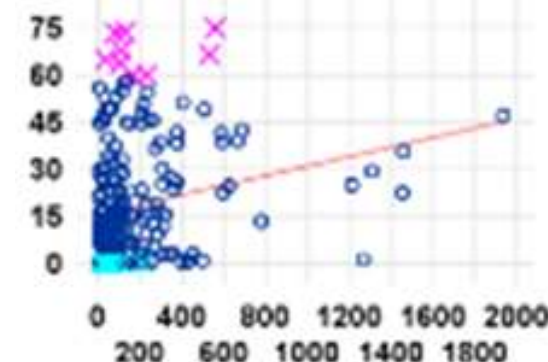
[C1](#) [C2](#) [C3](#) [C4](#) [C5](#) [C6](#) [C7](#) [C8](#) [C9](#) [C10](#) [C11](#) [C12](#) [C13](#) [C14](#) [C15](#)



C1: Case Rate vs Population (millions) for 232 Countries Corr: -0.198



C2: Case Rate vs People Per Sq. Km. for 210 Countries Corr: 0.211



After Clicking on C1 (Case Rate vs Population) in Panel Title Line 3 The Highest Case Rates Cluster at Low Population Countries (X's near 0)

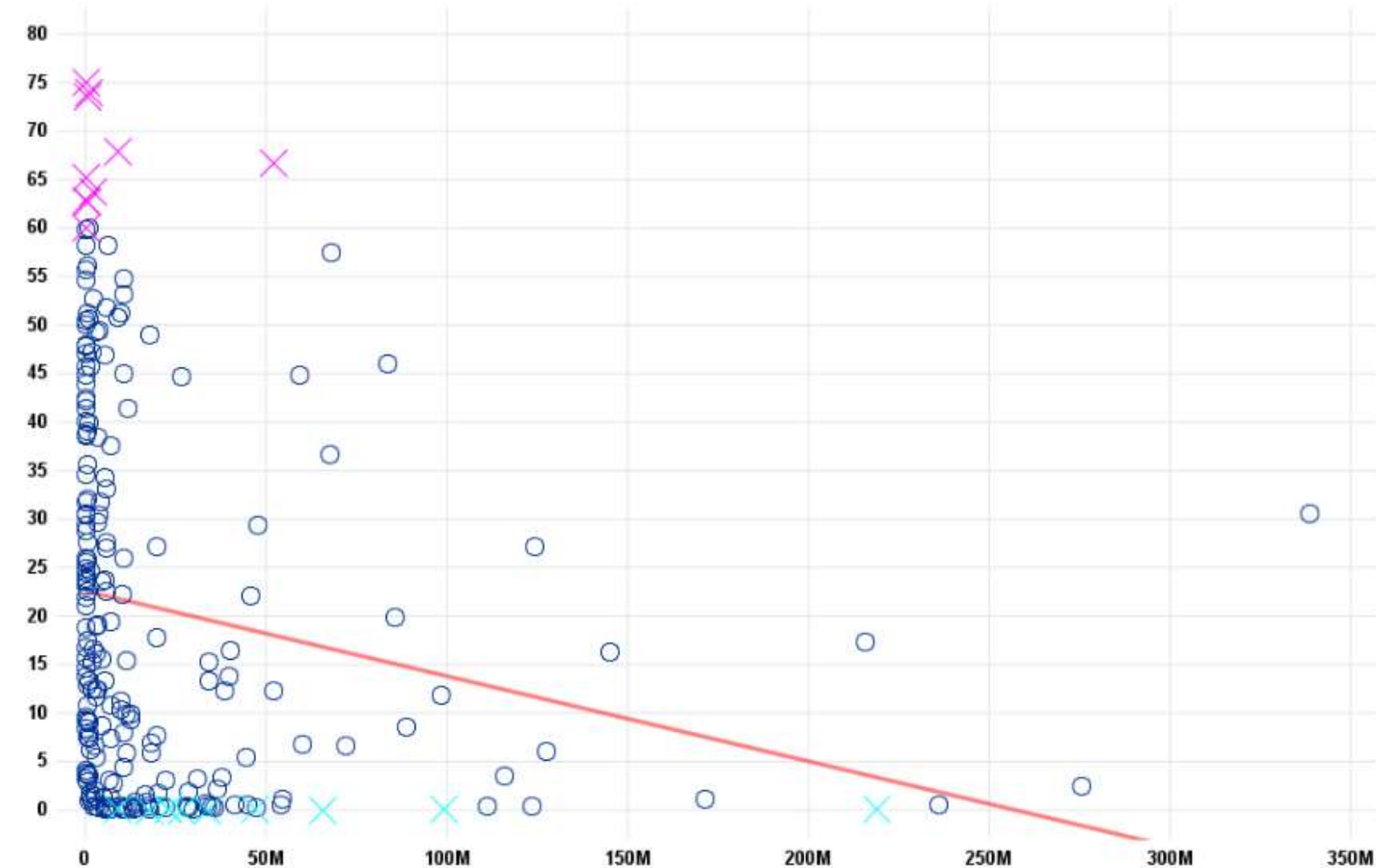
C1: Cases As a Percent of Population versus Population (millions) for 232 Countries Corr: -0.198 X = Top 10 Cases As a Percent of Population X = Bottom 10 Cases As a Percent of Population

Omitting outliers: Population China & India (both > 1.4B), Pop. Density Monaco (19,346), Singapore (7,916), Gibraltar (3,457)

[Mortality Rate versus Population \(millions\)](#)

[Panel of Plots of Case Rate versus each of fifteen X Variables](#)

[Panel of Plots of Mortality Rate versus each of fifteen X Variables](#)



Using Joint Rank to **See** Low Population Countries with High Case Rates

Inverse Pop. Rank: Assign 1,2,3, . . . , starting at the Lowest Population

Top 30 Countries Ranked by Joint COVID-19 Sum of Rank of Case Rate and Inverse Rank of Population - 2020 to 2023

Rank		Case Rate Rank	Inverse Population Rank	Case Rate	Population	Joint Rank	
1	San Marino	1	20	75.0727	33,690	21	<div></div>
2	Saint Pierre and Miquelon	14	8	58.2158	5,885	22	<div></div>
3	Gibraltar	8	19	62.8883	32,677	27	<div></div>
4	Falkland Islands	27	5	50.5919	3,801	32	<div></div>
5	Faroe Islands	6	29	65.2484	53,117	35	<div></div>
6	Niue	32	4	48.0020	1,952	36	<div></div>
7	Saint Barthelemy	28	9	50.0910	10,994	37	<div></div>
8	Liechtenstein	19	22	54.7783	39,355	41	<div></div>
9	Andorra	10	35	60.1368	79,843	45	<div></div>
10	Guernsey	17	31	55.7817	63,329	48	<div></div>
11	Jersey	12	43	59.9218	110,796	55	<div></div>
12	Monaco	35	21	47.0828	36,491	56	<div></div>
13	St Helena, Ascension, Tristan da Cunha	49	7	40.1037	5,401	56	<div></div>
14	Nauru	45	12	42.4947	12,691	57	<div></div>
15	Bonaire, Sint Eustatius, and Saba	44	16	44.0707	27,052	60	<div></div>
16	Cook Islands	46	14	42.2910	17,032	60	<div></div>
17	Brunei	3	63	73.6692	449,002	66	<div></div>
18	Martinique	9	58	62.6793	367,512	67	<div></div>
19	Montserrat	63	6	31.7924	4,413	69	<div></div>
20	Cayman Islands	38	33	45.7961	68,722	71	<div></div>
21	Saint Martin	53	18	38.7352	31,816	71	<div></div>
22	Palau	58	15	34.6439	18,084	73	<div></div>
23	Iceland	16	59	56.2211	372,903	75	<div></div>
24	Marshall Islands	52	23	38.7998	41,593	75	<div></div>
25	Seychelles	33	42	47.8088	107,135	75	<div></div>
26	Wallis and Futuna	64	11	30.6140	11,596	75	<div></div>
27	Cyprus	2	74	73.9907	896,007	76	<div></div>
28	Isle of Man	41	36	44.9618	84,534	77	<div></div>
29	Luxembourg	11	69	60.0686	647,601	80	<div></div>
30	Guadeloupe	23	60	51.3528	395,762	83	<div></div>

After Clicking on C2 (Case Rate vs Pop. Density) in Panel Title Line 3 Highest Case Rates Are Not Apparently Driven by Population Density

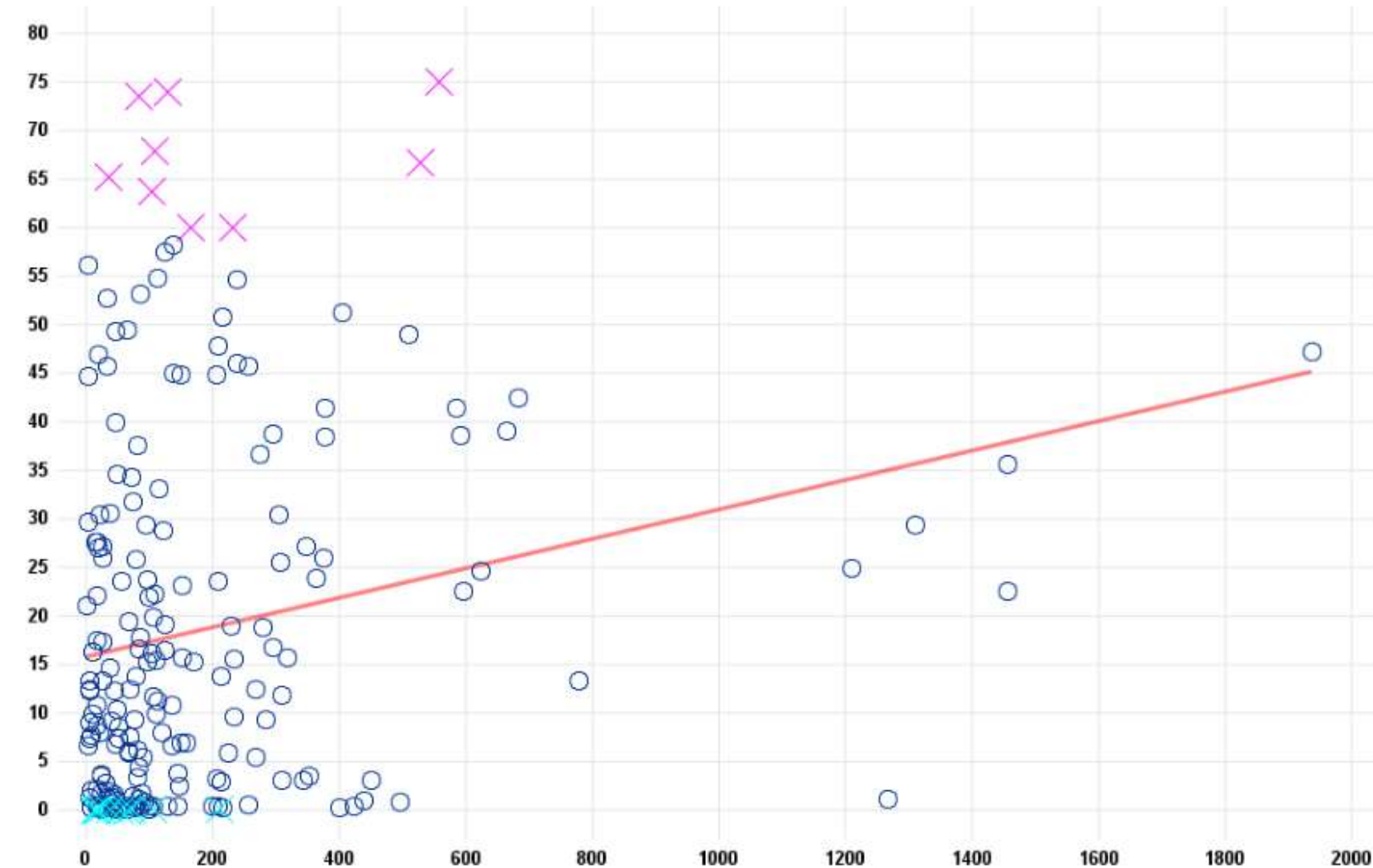
C2: Cases As a Percent of Population versus People Per Sq. Km. for 210 Countries Corr: 0.211 X = Top 10 Cases As a Percent of Population X = Bottom 10 Cases As a Percent of Population

Omitting outliers: Population China & India (both > 1.4B), Pop. Density Monaco (19,346), Singapore (7,916), Gibraltar (3,457)

[Mortality Rate versus People Per Sq. Km.](#)

[Panel of Plots of Case Rate versus each of fifteen X Variables](#)

[Panel of Plots of Mortality Rate versus each of fifteen X Variables](#)



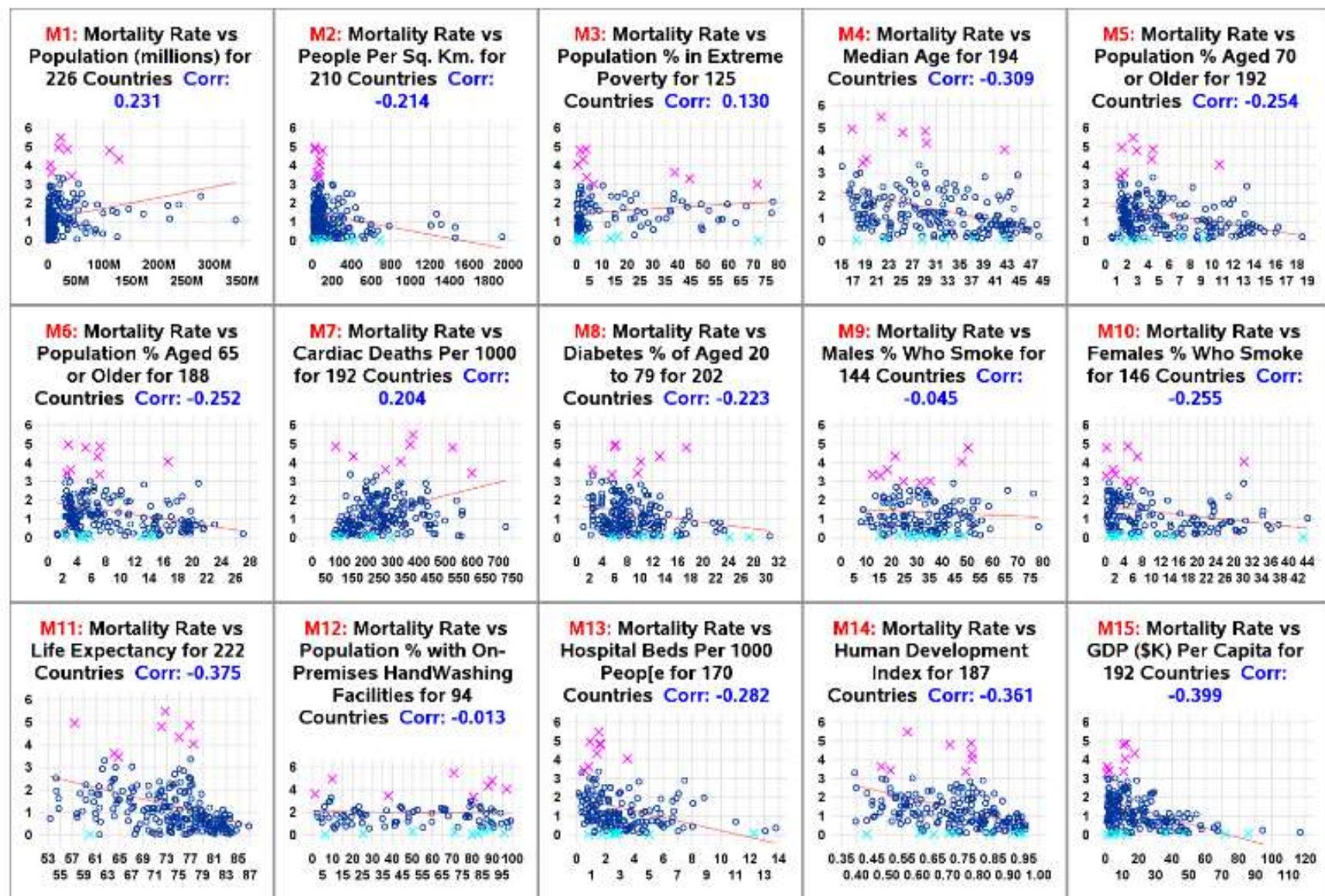
Panel of Mortality Rate vs 15 Variables with Outliers Omitted

Mortality Rate with [Correlation Coefficients & Linear Fit & Highlights](#): X = Top 10 Mortality Rate X = Bottom 10 Mortality Rate [Go to Plots of Case Rate versus the Fifteen X Variables](#) [Go To Table of Contents](#)

Omitting Outliers: Population China & India (both > 1.4B), Pop. Density Monaco (19,346), Singapore (7,916), Gibraltar (3,457) Omitting Mortality Rate Outliers Yemen (18.07) & Sudan (7.88)

For any plot, its full-size equivalent with mouseover data tips is at the link corresponding to its red plot number title prefix:

[M1](#) [M2](#) [M3](#) [M4](#) [M5](#) [M6](#) [M7](#) [M8](#) [M9](#) [M10](#) [M11](#) [M12](#) [M13](#) [M14](#) [M15](#)



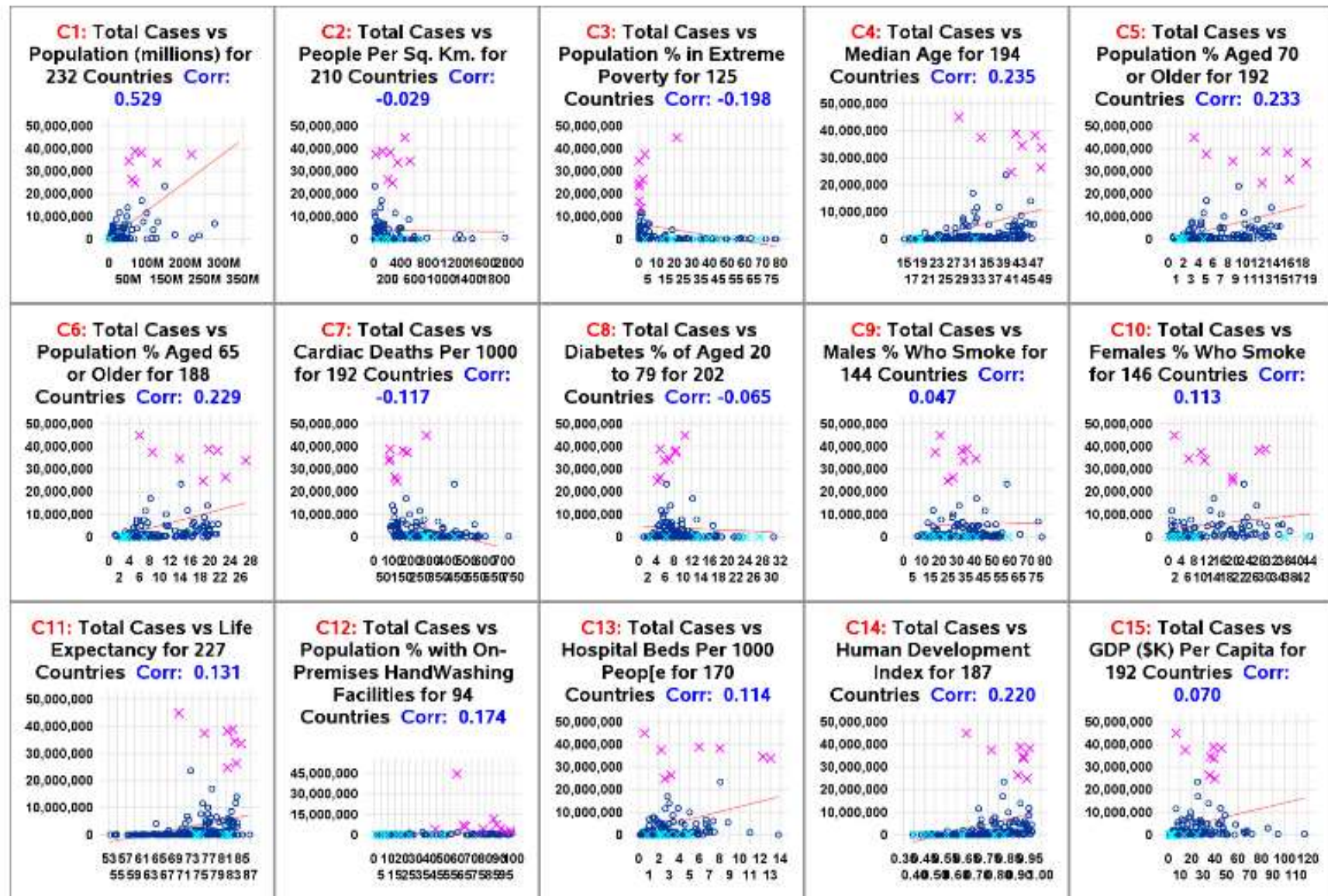
Panel of Total Cases vs 15 Variables with Outliers Omitted

Total Cases with [Correlation Coefficients](#) & Linear Fit & Highlights: [X](#) = Top 10 Total Cases [X](#) = Bottom 10 Total Cases [Go to Plots of Total Deaths versus the Fifteen X Variables](#) [Go To Table of Contents](#)

Omitting Outliers: Population China & India (both > 1.4B), Pop. Density Monaco (19,346), Singapore (7,916), Gibraltar (3,457), Omitting Total Cases Outliers USA (103,436,829) and China (99,322,525)

For any plot, its full-size equivalent with mouseover data tips is at the link corresponding to its red plot number title prefix:

[C1](#) [C2](#) [C3](#) [C4](#) [C5](#) [C6](#) [C7](#) [C8](#) [C9](#) [C10](#) [C11](#) [C12](#) [C13](#) [C14](#) [C15](#)



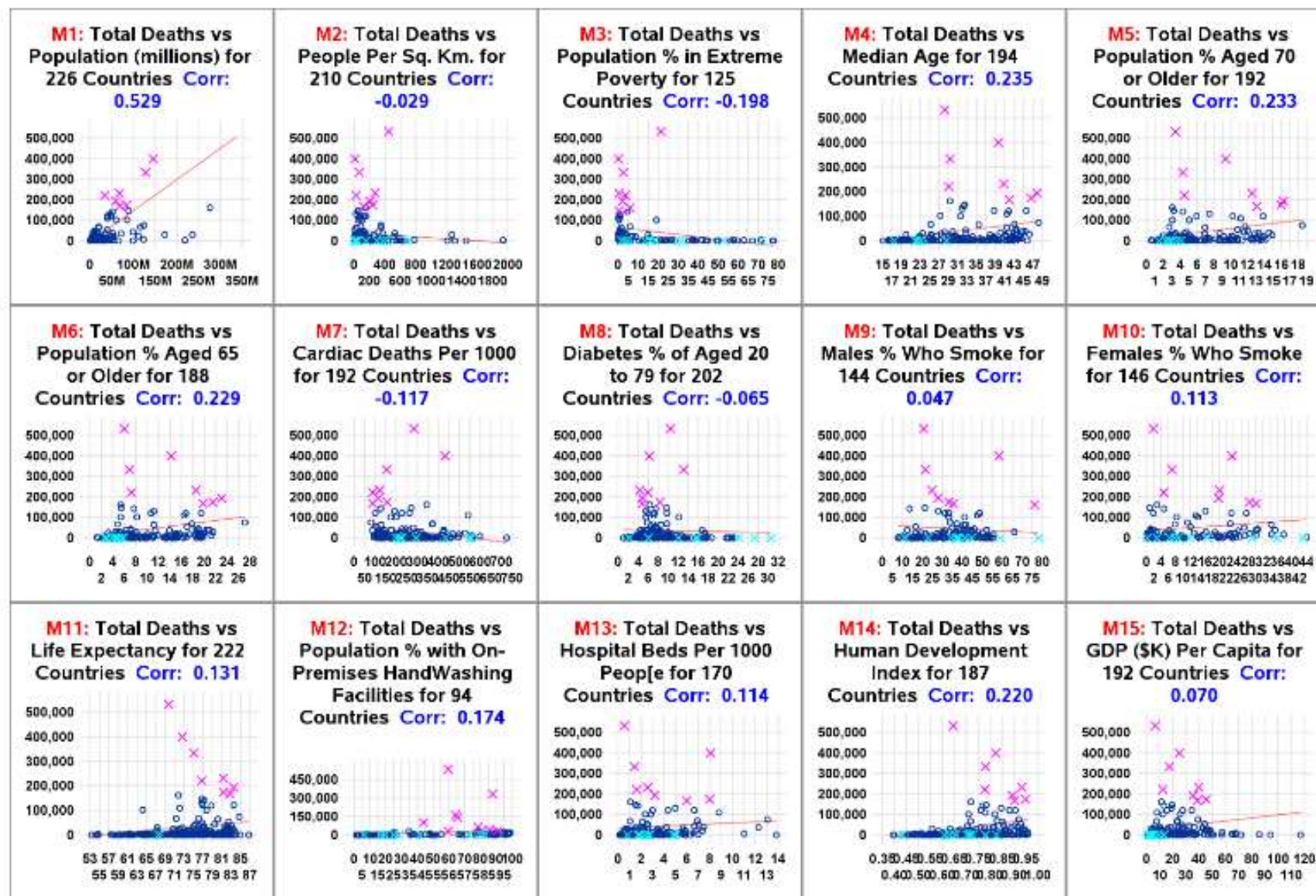
Panel of Total Mortalities vs 15 Variables with Outliers Omitted

Total Deaths with [Correlation Coefficients](#) & Linear Fit & Highlights: [X](#) = Top 10 Total Deaths [X](#) = Bottom 10 Total Deaths [Go to Plots of Total Cases versus the Fifteen X Variables](#) [Go To Table of Contents](#)

Omitting Outliers: Population China & India (both > 1.4B), Pop. Density Monaco (19,346), Singapore (7,916), Gibraltar (3,457), Omitting Total Deaths Outliers USA (1,144,877) and Brazil (702,116)

For any plot, its full-size equivalent with mouseover data tips is at the link corresponding to its red plot number title prefix:

[M1](#) [M2](#) [M3](#) [M4](#) [M5](#) [M6](#) [M7](#) [M8](#) [M9](#) [M10](#) [M11](#) [M12](#) [M13](#) [M14](#) [M15](#)



Show Them What's Important with Bar Charts By Using

- ▶ Ranking . . . Always
- ▶ Subsetting . . .

Sometimes Incompleteness Can Be Beneficial:
Enough Is A Cure For Information Overload!

Top 30 Countries By Total Cases AND Top 30 By Total Deaths

Go To Alphabetic Order by Country Table of All COVID-19 Information WorldWide

Top 30 Countries Ranked by COVID-19 Total Cases - 2020 to 2023					Top 30 Countries Ranked by COVID-19 Total Deaths - 2020 to 2023				
This SubTotal of 657,229,080 Cases Is 85.0% of the World Total					This SubTotal of 5,906,988 Mortalities Is 84.5% of the World Total				
All 232 Countries had a Total of 773,490,126 Cases					All 226 Countries had a Total of 6,994,144 Deaths				
	Rank	Cases	% of World Cases	Case Rate		Rank	Deaths	% of World Deaths	Mortality Rate
United States of America	1	103,436,829	13.3727	30.5764	United States of America	1	1,144,877	16.3691	1.1068
China	2	99,322,525	12.8408	6.9657	Brazil	2	702,116	10.0386	1.8713
India	3	45,010,891	5.8192	3.1761	India	3	533,346	7.6256	1.1849
France	4	38,997,490	5.0418	57.5074	Russia	4	400,967	5.7329	1.6984
Germany	5	38,437,756	4.9694	46.1051	Mexico	5	334,958	4.7891	4.3485
Brazil	6	37,519,960	4.8507	17.4257	United Kingdom	6	232,112	3.3187	0.9343
South Korea	7	34,571,873	4.4696	66.7207	Peru	7	221,583	3.1681	4.8842
Japan	8	33,803,572	4.3703	27.2716	Italy	8	193,886	2.7721	0.7312
Italy	9	26,517,706	3.4283	44.9167	Germany	9	174,979	2.5018	0.4552
United Kingdom	10	24,843,591	3.2119	36.8004	France	10	167,985	2.4018	0.4308
Russia	11	23,608,723	3.0522	16.3141	Indonesia	11	161,965	2.3157	2.3745
Turkey	12	17,004,677	2.1984	19.9255	Iran	12	146,757	2.0983	1.9246
Spain	13	13,980,340	1.8074	29.3960	Colombia	13	142,727	2.0407	2.2352
Australia	14	11,710,216	1.5139	44.7341	Argentina	14	130,687	1.8685	1.2971
Viet Nam	15	11,624,000	1.5028	11.8387	China	15	121,889	1.7427	0.1227
Argentina	16	10,075,242	1.3026	22.1384	Spain	16	121,852	1.7422	0.8716
Netherlands	17	8,627,693	1.1154	49.1214	Poland	17	120,018	1.7160	1.8160
Mexico	18	7,702,809	0.9959	6.0412	Ukraine	18	109,918	1.5716	1.9911
Iran	19	7,625,463	0.9859	8.6114	South Africa	19	102,595	1.4669	2.5191
Indonesia	20	6,820,926	0.8818	2.4758	Turkey	20	101,419	1.4501	0.5964
Poland	21	6,609,092	0.8545	16.5820	Japan	21	74,694	1.0680	0.2210
Colombia	22	6,385,539	0.8255	12.3097	Romania	22	68,601	0.9808	1.9559
Austria	23	6,081,287	0.7862	68.0263	Philippines	23	66,795	0.9550	1.6004
Portugal	24	5,637,114	0.7288	54.8846	Chile	24	64,482	0.9219	1.2100
Greece	25	5,533,964	0.7155	53.2882	Canada	25	53,595	0.7663	1.1281
Ukraine	26	5,520,483	0.7137	13.9049	Hungary	26	48,917	0.6994	2.1997
Chile	27	5,329,103	0.6890	27.1841	Czechia	27	43,225	0.6180	0.9139
Malaysia	28	5,206,724	0.6731	15.3418	Viet Nam	28	43,206	0.6177	0.3717
Belgium	29	4,841,934	0.6260	41.5405	Bulgaria	29	38,613	0.5521	2.9227
Israel	30	4,841,558	0.6259	51.2388	Greece	30	38,224	0.5465	0.6907

















Title Lines for Top 30 Total Cases AND for Top 30 Total Deaths Are Maximally Informative About Context

Top 30 Countries Ranked by COVID-19 Total Cases - 2020 to 2023
This SubTotal of 657,229,080 Cases Is 85.0% of the World Total
All 232 Countries had a Total of 773,490,126 Cases

Top 30 Countries Ranked by COVID-19 Total Deaths - 2020 to 2023
This SubTotal of 5,906,988 Mortalities Is 84.5% of the World Total
All 226 Countries had a Total of 6,994,144 Deaths

- ▶ The countries in these **Top 30** charts
account for **85% of total cases & of total deaths.**
- ▶ **Subsetted Ranking Reports CAN suffice to deliver
the most significant information.**

Everything you need to know about Cases at the detail level

	Rank	Cases		% of World Cases	Case Rate
United States of America	1	103,436,829		13.3727	30.5764
China	2	99,322,525		12.8408	6.9657
India	3	45,010,891		5.8192	3.1761
France	4	38,997,490		5.0418	57.5074
Germany	5	38,437,756		4.9694	46.1051
Brazil	6	37,519,960		4.8507	17.4257
South Korea	7	34,571,873		4.4696	66.7207
Japan	8	33,803,572		4.3703	27.2716
Italy	9	26,517,706		3.4283	44.9167
United Kingdom	10	24,843,591		3.2119	36.8004
Russia	11	23,608,723		3.0522	16.3141
Turkey	12	17,004,677		2.1984	19.9255
Spain	13	13,980,340		1.8074	29.3960
Australia	14	11,710,216		1.5139	44.7341
Viet Nam	15	11,624,000		1.5028	11.8387

Some People Will Want To

ALSO See ALL of the Data

- ▶ For them,
provide an Alphabetic Order Table
(the table can include extra data)
for quick easy lookup,
but the table should include the Rank

- ▶ Table Options

- ▶ Linked Web Page
- ▶ Linked Excel Worksheet

Alphabetic Country Order WorkSheet (showing left end only)

SAS Output

File C:/WUSS%202024/!%20COVID-19/Output/BarChartsAndTable/AlphabeticOrderTableOfAllID... New Chrome available

COVID-19 2020 to 2023 Counts and Rates for Cases and Mortality in Alphabetic Order By Country
[Go To Bar Charts of Bottom 30 Case Rates and Bottom 30 Mortality Rates By Country](#)

Country	Continent	RankPopulationInWorld	Population	RankCaseRateInWorld	CaseRate	TotalCases	PctOfWorldCases	RankMortalityRateInWorld	MortalityRate
Afghanistan	Asia	36 of 236	41,128,772	194 of 232	0.5599	230,290	0.0298	10 of 226	3.4622
Albania	Europe	137 of 236	2,842,318	127 of 232	11.7705	334,555	0.0433	98 of 226	1.0773
Algeria	Africa	34 of 236	44,903,228	193 of 232	0.6058	272,010	0.0352	20 of 226	2.5297
American Samoa	Oceania	212 of 236	44,295	99 of 232	18.8712	8,359	0.0011	171 of 226	0.4067
Andorra	Europe	202 of 236	79,843	10 of 232	60.1368	48,015	0.0062	182 of 226	0.3311
Angola	Africa	42 of 236	35,588,996	210 of 232	0.2999	106,720	0.0138	53 of 226	1.8150
Anguilla	CentralAmerica	224 of 236	15,877	83 of 232	24.5890	3,904	0.0005	185 of 226	0.3074
Antigua and Barbuda	CentralAmerica	200 of 236	93,772	134 of 232	9.7108	9,106	0.0012	62 of 226	1.6033
Argentina	SouthAmerica	33 of 236	45,510,324	92 of 232	22.1384	10,075,242	1.3026	74 of 226	1.2971
Armenia	Europe	139 of 236	2,780,472	107 of 232	16.2330	451,353	0.0584	44 of 226	1.9433
Aruba	CentralAmerica	197 of 236	106,459	47 of 232	41.5409	44,224	0.0057	146 of 226	0.6603
Australia	Oceania	55 of 236	26,177,410	43 of 232	44.7341	11,710,216	1.5139	200 of 226	0.2057
Austria	Europe	99 of 236	8,939,617	4 of 232	68.0263	6,081,287	0.7862	179 of 226	0.3705
Azerbaijan	Europe	91 of 236	10,358,078	142 of 232	8.0535	834,183	0.1078	80 of 226	1.2411
Bahamas	CentralAmerica	175 of 236	409,989	137 of 232	9.2890	38,084	0.0049	32 of 226	2.2162
Bahrain	Asia	154 of 236	1,472,237	34 of 232	47.3167	696,614	0.0901	198 of 226	0.2205
Bangladesh	Asia	8 of 236	171,186,368	184 of 232	1.1953	2,046,256	0.2645	70 of 226	1.4405
Barbados	CentralAmerica	185 of 236	281,646	51 of 232	39.1104	110,153	0.0142	157 of 226	0.5383
Belarus	Europe	96 of 236	9,534,956	131 of 232	10.4252	994,037	0.1285	137 of 226	0.7161
Belgium	Europe	81 of 236	11,655,923	48 of 232	41.5405	4,841,934	0.6260	139 of 226	0.7092
Belize	CentralAmerica	176 of 236	405,285	101 of 232	17.6106	71,373	0.0092	104 of 226	0.9639
Benin	Africa	77 of 236	13,352,864	218 of 232	0.2100	28,036	0.0036	152 of 226	0.5814
Bermuda	CentralAmerica	205 of 236	64,207	70 of 232	29.3737	18,860	0.0024	112 of 226	0.8749
Bhutan	Asia	165 of 236	782,457	143 of 232	8.0128	62,697	0.0081	223 of 226	0.0335
Bolivia	SouthAmerica	80 of 236	12,224,114	133 of 232	9.9125	1,211,716	0.1567	50 of 226	1.8474
Bonaire, Sint Eustatius, and Saba	CentralAmerica	221 of 236	27,052	44 of 232	44.0707	11,922	0.0015	180 of 226	0.3439
Bosnia and Herzegovina	Europe	136 of 236	3,233,530	123 of 232	12.4776	403,468	0.0522	8 of 226	4.0593


























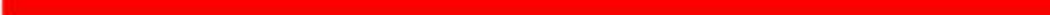




Next are four other ways to look at the rates and counts data—all using

Joint Rank: the sum of any pair of the four ranks

► Easiest way that **I** could think of
to identify countries with multiple high rankings

Your Idea? Send me an email.

Top 30 Countries Ranked by Joint COVID-19 Sum of Rank of Total Cases and Rank of Total Deaths - 2020 to 2023

Rank		Total Cases Rank	Total Deaths Rank	Total Cases	Total Deaths	Joint Rank	
1	United States of America	1	1	103,436,829	1,144,877	2	
2	India	3	3	45,010,891	533,346	6	
3	Brazil	6	2	37,519,960	702,116	8	
4	France	4	10	38,997,490	167,985	14	
5	Germany	5	9	38,437,756	174,979	14	
6	Russia	11	4	23,608,723	400,967	15	
7	United Kingdom	10	6	24,843,591	232,112	16	
8	China	2	15	99,322,525	121,889	17	
9	Italy	9	8	26,517,706	193,886	17	
10	Mexico	18	5	7,702,809	334,958	23	
11	Japan	8	21	33,803,572	74,694	29	
12	Spain	13	16	13,980,340	121,852	29	
13	Argentina	16	14	10,075,242	130,687	30	
14	Indonesia	20	11	6,820,926	161,965	31	
15	Iran	19	12	7,625,463	146,757	31	
16	Turkey	12	20	17,004,677	101,419	32	
17	Colombia	22	13	6,385,539	142,727	35	
18	Poland	21	17	6,609,092	120,018	38	
19	South Korea	7	33	34,571,873	35,934	40	
20	Peru	34	7	4,536,733	221,583	41	
21	Viet Nam	15	28	11,624,000	43,206	43	
22	Ukraine	26	18	5,520,483	109,918	44	
23	Chile	27	24	5,329,103	64,482	51	
24	Greece	25	30	5,533,964	38,224	55	
25	South Africa	37	19	4,072,636	102,595	56	
26	Australia	14	43	11,710,216	24,087	57	
27	Canada	32	25	4,750,768	53,595	57	
28	Malaysia	28	31	5,206,724	37,268	59	
29	Philippines	36	23	4,173,631	66,795	59	
30	Czechia	33	27	4,729,800	43,225	60	

Top 30 Countries Ranked by Joint COVID-19 Sum of Rank of Case Rate and Rank of Mortality Rate - 2020 to 2023

Rank		Case Rate Rank	Mortality Rate Rank	Case Rate	Mortality Rate	Joint Rank	
1	Bulgaria	96	16	19.4799	2.9227	112	<div></div>
2	North Macedonia	104	17	16.7270	2.8450	121	<div></div>
3	Peru	119	5	13.3239	4.8842	124	<div></div>
4	Hungary	91	34	22.3113	2.1997	125	<div></div>
5	Bosnia and Herzegovina	123	8	12.4776	4.0593	131	<div></div>
6	Croatia	62	71	31.8944	1.4382	133	<div></div>
7	Georgia	29	109	49.5486	0.9234	138	<div></div>
8	Moldova	97	46	19.2332	1.9328	143	<div></div>
9	Romania	100	43	17.8412	1.9559	143	<div></div>
10	Slovenia	7	136	63.8156	0.7181	143	<div></div>
11	Latvia	21	126	52.8300	0.7635	147	<div></div>
12	Paraguay	130	18	10.8569	2.7092	148	<div></div>
13	Czechia	40	110	45.0715	0.9139	150	<div></div>
14	Armenia	107	44	16.2330	1.9433	151	<div></div>
15	Brazil	102	49	17.4257	1.8713	151	<div></div>
16	Montenegro	50	101	40.0713	1.0562	151	<div></div>
17	Trinidad and Tobago	122	29	12.5076	2.2925	151	<div></div>
18	Slovakia	60	94	33.1948	1.1309	154	<div></div>
19	Tunisia	135	19	9.3343	2.5511	154	<div></div>
20	Ukraine	115	40	13.9049	1.9911	155	<div></div>
21	Colombia	125	31	12.3097	2.2352	156	<div></div>
22	Chile	75	82	27.1841	1.2100	157	<div></div>
23	Poland	105	52	16.5820	1.8160	157	<div></div>
24	Mexico	154	7	6.0412	4.3485	161	<div></div>
25	San Marino	1	160	75.0727	0.4982	161	<div></div>
26	United States of America	65	96	30.5764	1.1068	161	<div></div>
27	Gibraltar	8	155	62.8883	0.5499	163	<div></div>
28	Greece	20	143	53.2882	0.6907	163	<div></div>
29	Russia	106	58	16.3141	1.6984	164	<div></div>
30	United Kingdom	56	108	36.8004	0.9343	164	<div></div>

What can one infer from the conspicuous difference in the shape of the stack of bars for

Joint Cases and Deaths

VERSUS

Joint Case Rate and Mortality Rate?

Possible Answers:

► More Cases entail More Deaths

BUT

► High Case Rate need not entail High Mortality Rate—
if post-detection healthcare intervenes and succeeds.

Top 30 Countries Ranked by Joint COVID-19 Sum of Rank of Case Rate and Rank of Total Cases - 2020 to 2023

Rank		Case Rate Rank	Total Cases Rank	Case Rate	Cases	Joint Rank	
1	South Korea	5	7	66.7207	34,571,873	12	<div></div>
2	France	15	4	57.5074	38,997,490	19	<div></div>
3	Austria	4	23	68.0263	6,081,287	27	<div></div>
4	Germany	37	5	46.1051	38,437,756	42	<div></div>
5	Portugal	18	24	54.8846	5,637,114	42	<div></div>
6	Greece	20	25	53.2882	5,533,964	45	<div></div>
7	Netherlands	31	17	49.1214	8,627,693	48	<div></div>
8	Italy	42	9	44.9167	26,517,706	51	<div></div>
9	Denmark	13	39	58.2498	3,426,405	52	<div></div>
10	Israel	24	30	51.2388	4,841,558	54	<div></div>
11	Australia	43	14	44.7341	11,710,216	57	<div></div>
12	Switzerland	25	35	50.8184	4,441,768	60	<div></div>
13	Singapore	22	40	51.8805	2,924,515	62	<div></div>
14	Slovenia	7	56	63.8156	1,352,790	63	<div></div>
15	United Kingdom	56	10	36.8004	24,843,591	66	<div></div>
16	United States of America	65	1	30.5764	103,436,829	66	<div></div>
17	Czechia	40	33	45.0715	4,729,800	73	<div></div>
18	Belgium	48	29	41.5405	4,841,934	77	<div></div>
19	Georgia	29	48	49.5486	1,855,289	77	<div></div>
20	New Zealand	36	44	47.0634	2,440,375	80	<div></div>
21	Japan	74	8	27.2716	33,803,572	82	<div></div>
22	Spain	69	13	29.3960	13,980,340	82	<div></div>
23	Cyprus	2	82	73.9907	662,962	84	<div></div>
24	Lithuania	30	55	49.4255	1,359,230	85	<div></div>
25	Latvia	21	74	52.8300	977,701	95	<div></div>
26	Serbia	55	42	37.5966	2,583,470	97	<div></div>
27	Chile	75	27	27.1841	5,329,103	102	<div></div>
28	Brunei	3	102	73.6692	330,776	105	<div></div>
29	Slovakia	60	47	33.1948	1,873,332	107	<div></div>
30	Turkey	95	12	19.9255	17,004,677	107	<div></div>

Top 30 Countries Ranked by Joint COVID-19 Sum of Rank of Mortality Rate and Rank of Total Deaths - 2020 to 2023

Rank		Mortality Rate Rank	Total Deaths Rank	Case Rate	Cases	Joint Rank	
1	Mexico	7	5	4.3485	334,958	12	<div></div>
2	Peru	5	7	4.8842	221,583	12	<div></div>
3	Indonesia	26	11	2.3745	161,965	37	<div></div>
4	South Africa	22	19	2.5191	102,595	41	<div></div>
5	Ecuador	11	32	3.3792	36,036	43	<div></div>
6	Colombia	31	13	2.2352	142,727	44	<div></div>
7	Bulgaria	16	29	2.9227	38,613	45	<div></div>
8	Egypt	6	42	4.8118	24,830	48	<div></div>
9	Brazil	49	2	1.8713	702,116	51	<div></div>
10	Tunisia	19	38	2.5511	29,423	57	<div></div>
11	Ukraine	40	18	1.9911	109,918	58	<div></div>
12	Iran	47	12	1.9246	146,757	59	<div></div>
13	Hungary	34	26	2.1997	48,917	60	<div></div>
14	Russia	58	4	1.6984	400,967	62	<div></div>
15	Myanmar	13	50	3.0392	19,494	63	<div></div>
16	Bosnia and Herzegovina	8	56	4.0593	16,378	64	<div></div>
17	Romania	43	22	1.9559	68,601	65	<div></div>
18	Paraguay	18	49	2.7092	19,945	67	<div></div>
19	Poland	52	17	1.8160	120,018	69	<div></div>
20	Sri Lanka	23	55	2.5105	16,888	78	<div></div>
21	Pakistan	45	36	1.9395	30,656	81	<div></div>
22	North Macedonia	17	67	2.8450	9,963	84	<div></div>
23	Philippines	63	23	1.6004	66,795	86	<div></div>
24	Afghanistan	10	77	3.4622	7,973	87	<div></div>
25	Argentina	74	14	1.2971	130,687	88	<div></div>
26	India	87	3	1.1849	533,346	90	<div></div>
27	Honduras	27	64	2.3510	11,114	91	<div></div>
28	Sudan	2	90	7.8852	5,046	92	<div></div>
29	Bolivia	50	46	1.8474	22,385	96	<div></div>
30	United States of America	96	1	1.1068	1,144,877	97	<div></div>

Top 30 Countries Ranked by Joint COVID-19 Sum of Rank of Case Rate and Rank of Total Cases - 2020 to 2021

Rank		Case Rate Rank	Total Cases Rank	Case Rate	Cases	Joint Rank	
1	South Korea	5	7	66.7207	34,571,873	12	<div></div>
2	France	15	4	57.5074	38,997,490	19	<div></div>
3	Austria	4	23	68.0263	6,081,287	27	<div></div>
4	Germany	37	5	46.1051	38,437,756	42	<div></div>
5	Portugal	18	24	54.8846	5,637,114	42	<div></div>
6	Greece	20	25	53.2882	5,533,964	45	<div></div>
7	Netherlands	31	17	49.1214	8,627,693	48	<div></div>
8	Italy	42	9	44.9167	26,517,706	51	<div></div>
9	Denmark	13	39	58.2498	3,426,405	52	<div></div>
10	Israel	24	30	51.2388	4.841.558	54	<div></div>

Top 30 Countries Ranked by Joint COVID-19 Sum of Rank of Mortality Rate and Rank of Total Deaths - 2020 to 2021

Rank		Mortality Rate Rank	Total Deaths Rank	Case Rate	Cases	Joint Rank	
1	Mexico	7	5	4.3485	334,958	12	<div></div>
2	Peru	5	7	4.8842	221,583	12	<div></div>
3	Indonesia	26	11	2.3745	161,965	37	<div></div>
4	South Africa	22	19	2.5191	102,595	41	<div></div>
5	Ecuador	11	32	3.3792	36,036	43	<div></div>
6	Colombia	31	13	2.2352	142,727	44	<div></div>
7	Bulgaria	16	29	2.9227	38,613	45	<div></div>
8	Egypt	6	42	4.8118	24,830	48	<div></div>
9	Brazil	49	2	1.8713	702,116	51	<div></div>
10	Tunisia	19	38	2.5511	29.423	57	<div></div>

No countries on
both Top 10 lists

This presentation uses my software-independent principles for communication-effective graphic design and for communication-effective use of color.

For all of the principles, see Chapters 1 & 2 of my book:

Visual Data Insights Using SAS® ODS Graphics:

A Guide to Communication-Effective Data Visualization.

See the book for 327 examples (and code), using **every** tool in ODS Graphics, except vector plots.

**This is a presentation on Data Visualization,
not a report of firm conclusions.
I'm interested in YOUR conclusions,
and suggestions as to other ways to present the data.**

**Your Questions, Suggestions, Comments,
and Requests for Data and/or Code Are Welcome**

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