

## Global Geographical Distribution of COVID-19: A Review

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### ABSTRACT

An urgent respiratory disease called novel coronavirus (SARS-CoV-2, previously known as 2019-nCoV) has spread throughout the globe. In this study, we investigated the pattern of distribution of COVID-19 in different continents of the global spread as at 18th December, 2020. An online sample of distribution was successfully recruited from Africa, America, Asia, Oceania and Europe. The pattern of geographical distribution across the globe was also reviewed and results show that all the continents of the world have reported at least a case. A total number of 75,641,366 cases of COVID-19 infection have been confirmed worldwide, with a total of 1,674,733 deaths and total recovery of 53,089,262. The Americas region has the highest number of reported cases (31,573,039), followed by Europe (22,884,885), South East Asia (11,537,081), Eastern Mediterranean (4,616,724), Africa (1,671,539) while Western pacific region has the least number of COVID-19 infections (991,931). Countries with the highest burden of the infection include the United States of America (17,669,508), India (9,989,130), Brazil (7,120,103), Russia (2,791,220) and France (2,427,316). There is urgent need to develop therapeutics and vaccines so as to prevent further global spread.

**Keywords:** Corona virus, Covid 19, Geographical distribution, pandemic, world

### INTRODUCTION

In late December 2019, there was an outbreak of a new Coronavirus infection in Wuhan, Hubei Province, China, which caused acute respiratory syndrome of unknown aetiology. The World Health Organization (WHO) named the virus Severe Acute Respiratory Syndrome Coronavirus-2

(SARS-CoV2) or COVID-19 and declared the infection a pandemic on the 11th of March 2020 [1]. The epidemiological pattern of COVID-19 suggests an incubation period of five to fourteen days [2], with a recent case report suggesting as high as twenty-four days [3]. The mode of transmission of the SARS-CoV-2 is via respiratory droplets; but has also been found in blood and stool. Severe manifestations are more common in males, particularly in the elderly [4,5]. In the world today 18.5% of the cases with COVID-19 developed to very bad stage, which is characterized by severe acute respiratory syndrome (SARS), septic shock, hard-to-tackle metabolic acidosis, bleeding and coagulation dysfunction fever, cough, difficulty breathing, muscle pain and tiredness [6]. The commonly reported laboratory-confirmed cases

showed common clinical symptoms like fever (88%), followed by a dry cough (68%), fatigue (38%), sputum production (33%), dyspnea (19%), sore throat (14%), headache (14%) and myalgia or arthralgia (15%) [7]. While mild symptoms are diarrhea (4%) and vomiting (5%). Around 80% of the reported cases worldwide had mild-to-moderate diseases (including non-pneumonia and pneumonia cases), 13.8% had severe disease and 6.1% were critical (respiratory failure, septic shock, and/or multiple organ dysfunction/failure) [8]. Empirical clinical data have shown that the fatality rate of COVID-19 is 2.3% in the world, much lower than those of SARS (9.5%), MERS (34.4%), and H7N9 (39.0%) [9].

### TRANSMISSION AND SYMPTOMS OF COVID-19

The first case of COVID-19 from China was reported to the WHO on the 31<sup>st</sup> of December, 2019. The infection was observed to spread relatively quickly to several other countries and by the 30<sup>th</sup> January 2020, the WHO declared COVID-19 a Public Health Emergency of International Concern [10] and announced the

new Coronavirus disease as COVID-19 on the 11<sup>th</sup> February 2020, [11] and thereafter, formally declared it a pandemic on 11<sup>th</sup> March 2020. The person to person transmission of SARS-CoV-2 is primarily through close contact with an infected person and through respiratory droplets, saliva or discharges from the nose when an infected person coughs or sneezes. The transmission of the virus is quite efficient and as a result, the virus rapidly spreads from person to persons. There is strong evidence that the virus can be transmitted by people who have a mild infection or those who are not showing symptoms of COVID-19. In addition, an indirect transmission has also been documented to occur through touching contaminated objects or surfaces. The incubation period of COVID-19 ranges from two to 14 days but averages about seven days [12, 13].

Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Individuals with COVID-19 present mainly with fever, a dry cough, dyspnoea, and bilateral infiltrates on chest imaging [14]. Other less severe symptoms include aches and pains, sore throat, diarrhoea, conjunctivitis, headache, the recent loss of taste or smell, a skin rash, or discolouration of fingers or toes. The COVID-19 virus infects people of all ages, though infection in children has been observed to be less common and less severe than in adults. A systematic review reported that about 1-5% of children were infected with the COVID-19 virus. The children were mostly reported to have mild respiratory symptoms and they rarely died from the disease [15]. However, the risk of severe infection is higher among older

people and those with underlying medical problems like cardiovascular diseases, diabetes mellitus, chronic respiratory diseases and cancers [8]. Some factors have been associated with the transmission of the virus. Emerging evidence suggests that cold and dry conditions appear to increase transmission while warm and humid conditions may reduce the rate of infection [16-18]. In some countries, high latitude has been associated with higher rates of cases and deaths [19].

### GLOBAL DISTRIBUTION OF COVID-19

According to WHO Coronavirus disease (COVID-19) situation report, tally on December 18<sup>th</sup>, 2020, a total number of 75,641,366 cases of COVID-19 infection has been confirmed worldwide, with a total of 1,674,733 deaths and total recovery of 53,089,262. In addition, over 218 countries and territories have reported at least a case of COVID-19 infection. The 10 countries with the highest burden of the infection include the United States of America (17,669,508), India (9,989,130), Brazil (7,120,103), Russia (2,791,220), France (2,427,316), Turkey (1,955,680), United Kingdom (1,948,660), Italy (1,906,377), Spain (1,805,633) and Argentina (1,524,372). All the continents of the world have reported at least a case. The Americas region has the highest number of reported cases (31,573,039) while Western pacific region has the least number of COVID-19 infections (991,931). Table 1 below represents the regional number of confirmed COVID-19 cases as of 18<sup>th</sup> December, 2020. The countries with the highest number of confirmed cases and death according to situation report by WHO as of December 18<sup>th</sup>, 2020, is presented in Table (2).

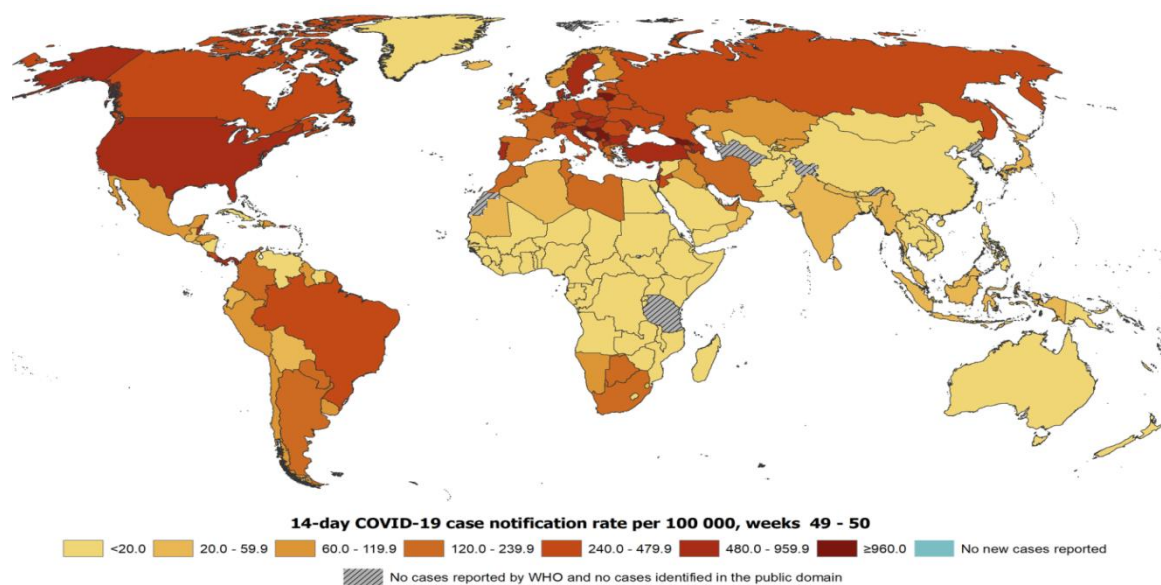


Figure1. 14 days Covid 19 cases notification rate per 100,000 as of 18<sup>th</sup> December, 2020 [20]

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**Table1.** Number of confirmed COVID-19 cases and death as of 18<sup>th</sup> December, 2020 According to Region [20]

Region	Confirmed cases	Total death
Globally	75,641,366	1,674,733
Africa	1,671,539	58,120
Americas	31,573,039	783,446
Eastern Mediterranean	4, 616, 724	112,715
Europe	22,884,885	493,408
South-East Asia	11,537,081	174,156
Western Pacific	991,931	18,407

**Table2.** Countries with highest number of confirmed COVID-19, total death and recovery cases as of 18<sup>th</sup> December, 2020 [20]

Country	Confirmed cases	Total death	Recovered cases
United States of America	17,669,508	318,582	10,296,261
India	9,989,130	144,925	9,531,980
Brazil	7,120,103	184,992	6,177,702
Russia	2,791,220	49,762	2,286,633
France	2,427,316	59,619	181,506
Turkey	1,955,680	17,364	1,721,607
United Kingdom	1,948,660	66,052	
Italy	1,906,377	67,220	1,203,814
Spain	1,805,633	48,777	
Argentina	1,524,372	41,534	1,352,556

**Table3.** COVID-19 Report as of 16<sup>th</sup> December, 2020 [20]

Region	Countries	Sum of Cases	Sum of Deaths
Africa	Algeria	92102	2596
	Angola	16188	371
	Benin	3090	44
	Botswana	12873	38
	Burkina Faso	4030	71
	Burundi	729	1
	Cameroon	25359	445
	Cape Verde	11357	110
	Central African Republic	4936	63
	Chad	1770	102
	Comoros	628	7
	Congo	6200	100
	Cote D'Ivoire	21680	133
	Democratic Republic of the Congo	14512	355
	Djibouti	5728	61
	Egypt	121575	6920
	Equatorial Guinea	5195	85
	Eritrea	711	0
	Eswatini	6768	127
	Ethiopia	116769	1806
	Gabon	9351	63
	Gambia	3782	123
	Ghana	53014	327
	Guinea	13457	80
	Guinea Bissau	2447	44
	Kenya	91892	1587
	Lesotho	2285	44
	Liberia	1771	83
	Libya	90779	1299
	Madagascar	17638	258
	Malawi	6066	187
	Mali	5814	194
Mauritania	10971	225	
Mauritius	523	10	
Morocco	399609	6624	
Mozambique	16954	142	

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	Namibia	16536	160
	Niger	2258	80
	Nigeria	73175	1197
	Rwanda	6659	56
	Sao Tome and Principe	1009	17
	Senegal	17075	349
	Seychelles	202	0
	Sierra Leone	2445	75
	Somalia	4579	121
	South Africa	860964	23276
	South Sudan	3223	62
	Sudan	21386	1347
	Togo	3251	66
	Tunisia	111361	3894
	Uganda	27532	221
	United Republic of Tanzania	509	21
	Western Sahara	766	1
	Zambia	18274	367
	Zimbabwe	11246	307
America	Anguilla	10	0
	Antigua and Barbuda	148	5
	Argentina	1498160	40766
	Aruba	5049	46
	Bahamas	7674	163
	Barbados	296	7
	Belize	9295	195
	Bermuda	431	9
	Bolivia	147150	9018
	Bonaire, Saint Eustatius and Saba	173	3
	Brazil	6901952	181402
	British Virgin Islands	80	1
	Canada	460743	13431
	Cayman Islands	298	2
	Chile	571919	15886
	Colombia	1425774	39053
	Costa Rica	153169	1936
	Cuba	9423	137
	Curaçao	3624	11
	Dominica	88	0
	Dominican Republic	154692	2361
	Ecuador	202110	13875
	El Salvador	41880	1205
	Falkland Islands (Malvinas)	19	0
	Greenland	19	0
	Grenada	69	0
	Guatemala	129282	4423
	Guyana	5920	155
	Haiti	9565	234
	Honduras	114359	2975
	Jamaica	11710	273
	Mexico	1250044	113953
	Montserrat	13	1
Nicaragua	5887	162	
Panama	193007	3356	
Paraguay	93582	1953	
Peru	984973	36677	
Puerto Rico	107158	1272	
Saint Kitts and Nevis	28	0	
Saint Lucia	275	4	
Saint Vincent and the Grenadines	98	0	
Saint Maarten	1249	26	
Suriname	5353	117	
Trinidad and Tobago	6879	122	

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	Turks and Caicos islands	769	6
	United States of America	16256754	299177
	United States Virgin Islands	1828	23
	Uruguay	9708	92
	Venezuela	107177	949
Asia	Afghanistan	49273	1971
	Bahrain	89143	348
	Bangladesh	490533	7052
	Bhutan	438	0
	Brunei Darussalam	152	3
	Cambodia	359	0
	China	92021	4739
	India	9884100	143355
	Indonesia	617820	18819
	Iran	1108269	52196
	Iraq	574634	12579
	Israel	357859	2999
	Japan	179653	2585
	Jordan	259614	3365
	Kazakhstan	186277	2552
	Kuwait	146218	911
	Kyrgyzstan	77674	1312
	Laos	41	0
	Lebanon	146520	1200
	Malaysia	83475	415
	Maldives	13368	48
	Mongolia	912	0
	Myanmar	108342	2268
	Nepal	248423	1698
	Oman	126240	1471
	Pakistan	440787	8832
	Palestine	124657	1079
	Philippines	449400	8733
	Qatar	141121	241
	Saudi Arabia	359888	6048
	Singapore	58320	29
	South Korea	43484	587
	Sri Lanka	32790	152
Syria	9166	518	
Taiwan	740	7	
Tajikistan	12704	88	
Thailand	4237	60	
Timor Leste	31	0	
United Arab Emirates	184949	617	
Uzbekistan	75094	612	
Vietnam	1397	35	
Yemen	2083	606	
Europe	Albania	48530	1003
	Andorra	7338	79
	Armenia	148682	2503
	Austria	320036	4400
	Azerbaijan	175874	1922
	Belarus	160295	1263
	Belgium	611284	18170
	Bosnia and Herzegovina	101117	3336
	Bulgaria	179449	5688
	Croatia	175886	2640
	Cyprus	15101	78
	Czechia	581079	9609
	Denmark	109758	941
	Estonia	18055	149
	Faroe Islands	528	0
Finland	30810	461	

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	France	2376852	57911
	Georgia	191063	1839
	Germany	1337078	21975
	Gibraltar	1075	5
	Greece	124534	3625
	Guernsey	289	13
	Holy See	26	0
	Hungary	283870	7130
	Iceland	5557	28
	Ireland	76185	2124
	Isle of Man	373	25
	Italy	1843712	64520
	Jersey	1779	32
	Kosovo	46580	1198
	Latvia	25675	349
	Liechtenstein	1514	18
	Lithuania	95021	825
	Luxembourg	41272	396
	Malta	11254	174
	Moldova	126518	2572
	Monaco	668	2
	Montenegro	41426	582
	Netherlands	612746	10034
	North Macedonia	73638	2121
	Norway	41003	393
	Poland	1135676	22864
	Portugal	348744	5559
	Romania	556335	13385
	Russia	2653928	46941
	San Marino	1947	51
	Serbia	266432	2331
	Slovakia	132984	1175
	Slovenia	96314	1459
	Spain	1751884	48013
	Sweden	341029	7667
	Switzerland	372329	5378
	Turkey	995471	16199
	Ukraine	900666	15247
	United Kingdom	1849403	64170
Oceania	Australia	28031	908
	Fiji	46	2
	French Polynesia	15747	96
	Guam	7106	118
	Marshall Islands	4	0
	New Caledonia	36	0
	New Zealand	1740	25
	Northern Mariana Islands	113	2
	Papua New Guinea	725	8
	Solomon Islands	17	0
	Vanuatu	1	0
Wallis and Futuna	3	0	
<b>Total</b>		<b>75,554,018</b>	<b>1,613,671</b>

### CONCLUSION

The outbreak of the deadly coronavirus disease (COVID-19) that first emanated from China has spread quickly across the globe. The pattern of global distribution across continents showed a progressive increase in the order of Americas, Europe, Asia, Africa and Oceania. Scientists have also made extensive progress in controlling

the spread of the novel coronavirus, while solid data from more scientific trials are needed. However, queries remain unclear and more reports are urgently needed to explore more on the rate of transmission, development of vaccines and therapeutics to prevent further spread which provides the basis of future research.

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