

**ANALYSIS ON COVID-19
DATA SET USING POWER BI**

1 INTRODUCTION

1.1 Tool used for data analysis-power bi

- Power BI can help connect data sets, transform the data and clean the data into a data model and create charts ,graphs ,maps, scatter plot, to provide visuals of the data. Which is mainly used for visualization.
- Power bi mainly a business intelligence tool, which combines business intelligence and data visualization.
- The most common uses of power bi is connecting various data sources, such as excel sheets, data warehouse and cloud based data storage, and then transforming and produces useful reports.
- Power bi simple to use which gives the quick and easy access of data.
- Mainly the five major building blocks of power bi are reports,dashboards,workbook,dataset S and data flows.
- They are all organized into workspaces, and they created their on capabilities.
- The first version of power bi is released on 24 th July 2015.it was based on excel based add-ins such as pivot, view ,power query,and map
- The components of power bi is power query, power pivot, power view, power map, Powe bi service, powerbi q&a, data management gateway, data catalog.
- Power bi architecture has three types data integration, data processing, Data presentation.
- Secure report publishing: the person who working on power bi he can automate setup data refresh and publish reports that allowing all the users to avail the latest information.
- Business and data analyst, project and portfolio manager, it team and it professionals, data scientist.
- Powe bi can handle millions of rows of data.
- Power bi provides a wide range of data visualizations. That is bar chart, line chart, area chart, scatter plot, tree maps, pie chart ,donut chart, maps ,cards ,table.
- Which gives the real time dash board updates.
- It can be used in assisting companies in the identification of market trends.
- No specialized technical support required.

1.2 ABOUT THE DATASET

COVID-19 DATASET

- This data set provide the information related to the impact of covid 19 disease in the world wide.
- The data is collected from the online site worldo-meter [1] which gives daily updates of covid all over the world.
- The first data set to be cleaned and pre-processed ,after this analysis was done.
- In this data set which includes all the important information about covid that means country and other ,total cases, new cases, total deaths, new recovered, active cases, total tests, population .
- The data set contains 8 columns and 173 rows.

Country, Other	Total Cases	New Cases	Total Deaths	New Recovered	Active Cases	Total Tests	Population
1 USA	104620361	24548	1137929	99,396	1,651,583	1161492751	334805269
2 India	44683748	109	530748	111	1,781	916215668	1406631776
3 France	39552108	3991	164500	4,950	79,804	271490188	65584518
4 Germany	37879714	18011	166526	15,200	227,588	122332384	83883596
5 Brazil	36907890	19899	697583	19,946	180,468	63776166	215353593
6 Japan	32846656	32969	69962	1,830	11,162,792	93017895	125584838
7 S. Korea	30297315	14664	33646	27,529	314,388	15804065	51329899
8 Italy	25488166	0	187272	0	227,985	266073786	60262770
9 UK	24293752	0	204898	2,638	46,168	522526476	68497907
10 Russia	22022832	12301	395406	8,104	225,983	273400000	145805947
11 Turkey	17042722	0	101492	0	0	162743369	85561976
12 Spain	13740531	0	118712	0	52,322	471036328	46719142
13 Vietnam	11526610	17	43186	5	868,826	85826548	98953541
14 Australia	11312904	0	18828	0	33,445	78835048	26068792
15 Argentina	10040329	0	130437	1,231	15,003	35716069	46010234
16 Taiwan	9733086	20920	16849	18,354	448,553	30426150	23888595
17 Netherlands	8585025	0	22992	743	9,292	25984435	17211447
18 Iran	7565144	109	144771	64	82,377	55034937	86022837
19 Mexico	7390902	0	332483	3,472	423,703	19414006	131562772
20 Indonesia	6731959	220	160852	249	4,195	114158919	279134505
21 Poland	6385878	1170	118762	0	931,176	38155458	37739785
22 Colombia	6358068	0	142576	483	33,578	36951507	51512762
23 Austria	5812712	0	21768	2,651	38,904	211273524	9066710
24 Greece	5723715	0	35822	0	15,414	102228365	10316637
25 Portugal	5564925	0	26052	0	3,798	45931864	10140570
26 Ukraine	5373104	0	111063	387	6,072	32603805	43192122
27 Chile	5132118	0	63919	1,470	3,788	48216030	19250195
28 Malaysia	5038543	0	36946	279	9,892	67786489	33181072
29 Israel	4789872	0	12224	340	5,144	41373364	9326000
30 Thailand	4727236	0	33882	0	718	17270775	70078203

31	Belgium	4695403	0	33582	559 11,492	36583888	11668278
32	Czechia	4593279	644	42338	91 5,154	56916329	10736784
33	Canada	4560962	0	50629	2,358 50,329	66343123	38388419
34	Peru	4482852	184	219214	435 2,389	37829516	33684208
35	Switzerland	4408833	0	14452	363 25,185	23833472	8773637
36	Philippines	4074137	162	65886	90 9,324	34414509	11250894
37	South Africa	4057211	0	102595	0 42,110	26473049	60756135
38	Romania	3327805	0	67619	2,968 5,157	26460191	19031335
39	Denmark	3173845	81	8188	79 1,094	129162649	5834950
40	Hong Kong	2879961	307	13401	16,178 194,551	76127725	7604299
41	Sweden	2696168	0	23534	8 1,163	19426657	10218971
42	Serbia	2477183	0	17728	538 12,672	12230405	8653016
43	Iraq	2465545	0	25375	0 673	19544451	42164965
44	Singapore	2220534	0	1722	270 71,119	24756666	5943546
45	Hungary	2193272	0	48707	938 3,770	11394556	9606259
46	New Zealand	2191215	0	3806	0 7,533	7768604	4898203
47	Bangladesh	2037647	0	29444	0 13,690	15249261	167885689
48	Slovakia	1861309	72	20969	56 742	7393884	5460193
49	Georgia	1818861	0	16941	0 25,372	16920079	3968738
50	Jordan	1746997	0	14122	0 1,868	17201885	10300869
51	Ireland	1700817	0	8515	0 3,699	12997033	5020199
52	Pakistan	1576427	17	30640	0 7,098	30570862	229488994
53	Norway	1478208	0	5112	63 762	11002430	5511370
54	Finland	1460857	0	8821	138 3,157	12028400	5554960
55	Kazakhstan	1406335	78	13695	0 9,620	11575012	19205043
56	Slovenia	1323154	243	7062	379 3,118	2828074	2078034
57	Lithuania	1298900	387	9556	285 5,181	10357867	2661708
58	Bulgaria	1295748	47	38191	78 2,637	11006894	6844597
59	Morocco	1272310	11	16296	13 70	12946903	37772756
60	Croatia	1268018	56	17906	27 511	5488156	4059286
61	Guatemala	1230550	452	20137	605 1,906	6809135	18584039

62	Lebanon	1229771	216	10800	0 131,384	4795578	6684849
63	Costa Rica	1190377	0	9181	0 920,485	4659757	5182354
64	Bolivia	1190262	313	22354	528 17,077	2705422	11992656
65	UAE	1050000	63	2348	82 14,233	198810660	10081785
66	Uruguay	1033265	0	7614	0 716	6114822	3496016
67	Panama	1030214	0	8599	0 747	7491978	4446964
68	Mongolia	1007884	8	2179	5 22	4030048	3378078
69	Nepal	1001109	2	12020	1 5	6006114	30225582
70	Belarus	994037	0	7118	0 1,327	13646641	9432800
71	Latvia	975524	25	6223	22 328	7860270	1848837
72	Saudi Arabia	828356	62	9586	48 2,924	45077620	35844909
73	Azerbaijan	828137	31	10097	36 156	7500674	10300205
74	Paraguay	806662	0	19830	0	2657506	7305843
75	Bahrain	700835	0	1544	0 750	10688096	1783983
76	Sri Lanka	672004	1	16828	2 7	6486117	21575842
77	Kuwait	662858	0	2570	0 51	8455743	4380326
78	Dominican Republic	660339	0	4384	0 11,170	3740928	11056370
79	Cyprus	644160	0	1291	0 6,098	9640118	1223387
80	Myanmar	633850	4	19490	6 39	9973742	55227143
81	Palestine	621008	0	5404	0 159	3078533	5345541
82	Estonia	614198	0	2919	0 86,289	3663669	1321910
83	Moldova	599578	0	11957	0 83,479	3216305	4013171
84	Venezuela	551666	9	5851	13 513	3359014	29266991
85	Egypt	515666	21	24613	0 48,871	3693367	106156692
86	Libya	507166	0	6437	0 4	2483446	7040745
87	China	503302	0	5272	0 118,977	160000000	1448471400
88	Ethiopia	499714	25	7572	15 5,215	5469125	120812698
89	Qatar	492887	54	686	32 258	4065369	2979915
90	Réunion	486588	0	921	0 67,095	1603660	908061
91	Armenia	446309	301	8719	0 2,428	3242901	2971966
92	Oman	399449	0	4628	0 10,152	25000000	5323993

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93	North Macedonia	346533	0	9641	0 148	2218852	2081304
94	Kenya	342817	0	5688	0 34	3967062	56215221
95	Zambia	341936	112	4049	110 1,340	3892752	19470234
96	Albania	334222	11	3595	7 1,624	1941032	2866374
97	Botswana	329494	0	2801	0 427	2026898	2441162
98	Luxembourg	297757	0	1133	0 7,633	4412567	642371
99	Montenegro	286674	57	2798	26 346	2702602	627950
100	Brunei	276825	0	225	0 32,999	717784	445431
101	Algeria	271403	4	6881	2 81,755	230861	45350148
102	Nigeria	266463	0	3155	0 3,458	5708974	216746934
103	Zimbabwe	263083	759	5659	542 1,454	2525756	15331428
104	Uzbekistan	250702	21	1637	0 7,579	1377915	34382084
105	Mozambique	232819	0	2237	0 1,777	1371127	33089461
106	Afghanistan	208721	17	7896	33 13,527	1190881	40754388
107	Kyrgyzstan	206599	0	2991	0 7,202	1907195	6728271
108	El Salvador	201785	0	4230	0 18,145	2610114	6550389
109	Trinidad and Tobago	187908	0	4326	0 318	888936	1406585
110	Maldives	185721	0	311	0 21,723	2213831	540985
111	Ghana	171140	0	1462	0 13	2528583	32395450
112	Namibia	170741	0	4088	0 201	1062663	2633874
113	Uganda	170400	0	3630	0 66,339	3012408	48432863
114	Jamaica	153629	0	3484	0 47,877	1183986	2985094
115	Cambodia	138700	2	3056	1 8	3091420	17168639
116	Rwanda	133090	0	1468	0 63	5959042	13600464
117	Cameroon	123993	0	1965	0 3,412	1751774	27911548
118	Malta	117166	0	826	0 605	2111209	444033
119	Barbados	106434	0	573	0 11	792463	288023
120	Angola	105184	0	1931	0 37	1499795	35027343
121	Channel Islands	101205	0	227	0 100	1252808	176463
122	French Guiana	98041	0	420	0 86,367	651257	314169

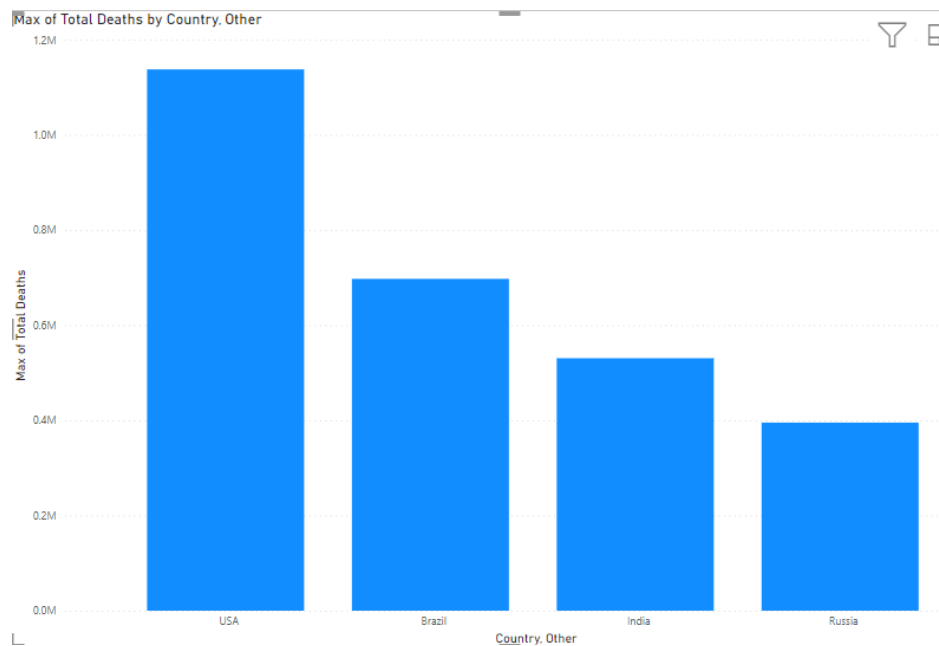
123	DRC	95585	0	1463	0 9,849	846704	95240792
124	Malawi	88559	0	2686	0 504	624784	20180839
125	Ivory Coast	88026	12	833	3 29	1673891	27742298
126	New Caledonia	79845	0	314	0 5	98964	290915
127	Eswatini	74143	0	1423	0 21	1048704	1184817
128	Guyana	73003	0	1296	0 89	719071	794045
129	Belize	70697	0	688	0 26	576016	412190
130	Fiji	68848	0	883	0 1,171	667953	909466
131	Madagascar	67842	0	1420	0 23	524209	29178077
132	Sudan	63759	0	5008	0 474	562941	45992020
133	Mauritania	63667	2	997	2 231	1009957	4901981
134	Cabo Verde	63235	2	413	2 59	401622	567678
135	Bhutan	62608	0	21	0 1,023	2303734	787941
136	Syria	57453	0	3164	0 0	146269	19364809
137	Burundi	53574	0	38	132 10	345742	12624840
138	Gabon	48981	0	306	0 1	1621909	2331533
139	Andorra	47850	0	165	0 122	249838	77463
140	Papua New Guinea	46750	0	670	0 2,098	249149	9292169
141	Curaçao	45986	0	295	0 971	496693	165529
142	Aruba	43993	0	236	0 1,319	177885	107609
143	Mauritius	41662	0	1043	0 652	358675	1274727
144	Togo	39358	0	290	0 2	807269	8680837
145	Guinea	38240	0	467	0 16	660107	13865691
146	Bahamas	37491	0	833	0 292	257839	400516
147	Lesotho	34790	0	723	0 8,087	431221	2175699
148	Haiti	34076	0	860	0 183	132422	11680283
149	Mali	32814	4	743	0 113	790993	21473764
150	Cayman Islands	31472	0	37	0 22,882	222773	67277
151	Saint Lucia	29882	0	409	0 378	210983	185113
152	Benin	27990	1	163	2 2	604310	12784726
153	Somalia	27322	0	1361	0 12,779	400466	16841795
154	Congo	25375	0	386	0 983	347815	5797805
155	San Marino	23427	0	122	0 29	157634	34085
156	Timor-Leste	23416	0	138	0 176	278529	1369429
157	Burkina Faso	22025	0	396	0 33	248995	22102838
158	Liechtenstein	21361	5	89	1 26	112457	38387
159	Gibraltar	20399	0	111	0 3,709	534283	33704
160	Grenada	19680	0	238	0 84	182981	113475
161	Bermuda	18785	14	158	5 15	1026304	61939
162	Nicaragua	18491	0	225	0 14,041	0	6779100
163	South Sudan	18368	0	138	0 115	410280	11618511
164	Equatorial Guinea	17212	2	183	0 146	365697	1496662
165	Tonga	16779	0	13	0 1,128	535009	107749
166	Samoa	16109	0	29	0 14,475	187397	202239
167	Saint Martin	12247	0	63	0 10,785	112382	39730
168	Vanuatu	12014	0	14	0 24	24976	321832
169	Greenland	11971	0	21	0 9,189	164926	56973
170	Yemen	11945	0	2159	0 662	329592	31154867
171	Caribbean Netherlands	11661	0	38	0 1,147	30126	26647
172	Sint Maarten	11014	0	91	0 18	62056	43966
173	Niger	9931	0	312	0 729	254538	26083660

2, PREPROCESSING.

In data preprocessing and cleaning we removed the rows ,that had only null values. And other data that had null values and N/A values we replaced it with a global constant ‘0’ so that it would not make any difference to the analysis.

3, ANALYSIS

3.1,Analysis of which are the top four countries with maximum death reported.



This query was analysed using the bar chart, a bar chart represents categorical data in the form of bars with height or length is the respective frequency.

In this graph x axis represents country, and y axis represents the maximum of total deaths. USA, Brazil, India, Russia are the top four countries with maximum death reported compared to other countries, in USA 1137929 deaths was reported during covid 19, also India has 530748 deaths reported during covid 19, Brazil has 697583 deaths reported, and Russia has 395406 deaths reported. Then analysing this graph which gives USA maximum deaths reported compared to other countries.

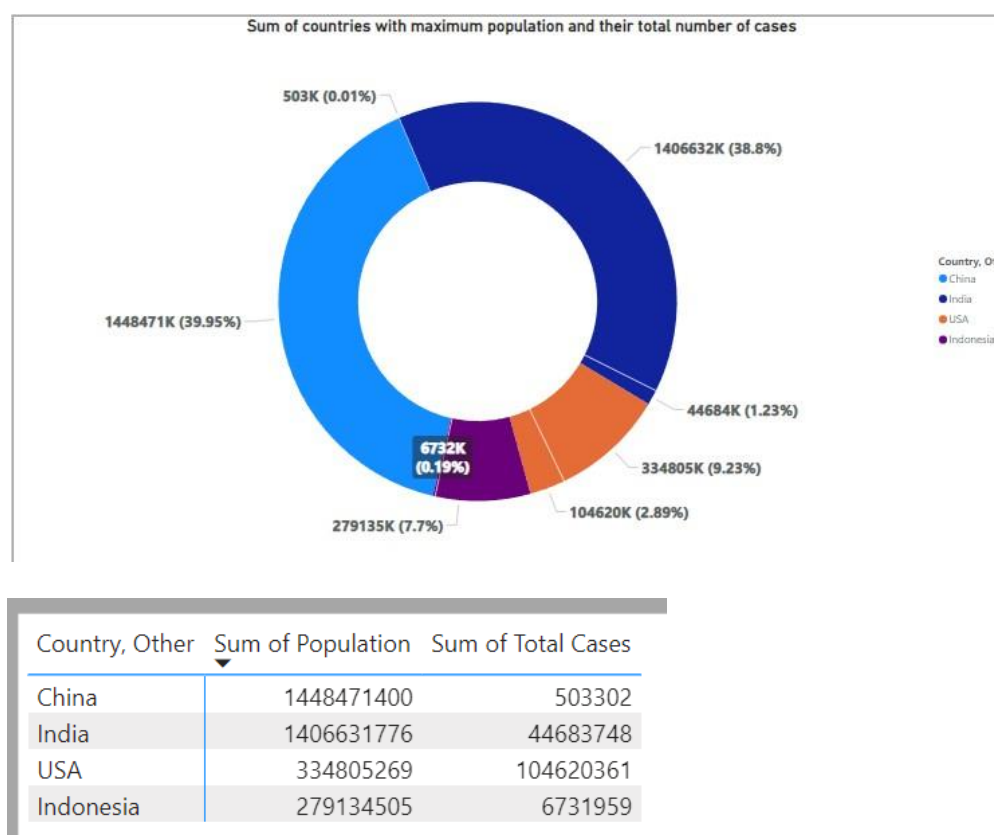
3.2, Analysis of maximum number of new cases reported by country during covid-19.



This query was analysed using a tree map, a tree map is a map which displays the data in a nested rectangles. These are a relatively simple data visualization that can provide insight in a visually attractive form. Here we use some dimension to define the structure of the tree map and measure to define the size or colour of the individual rectangles.

This graph shows that the maximum number of COVID cases are reported in Japan as Japan has the largest size.

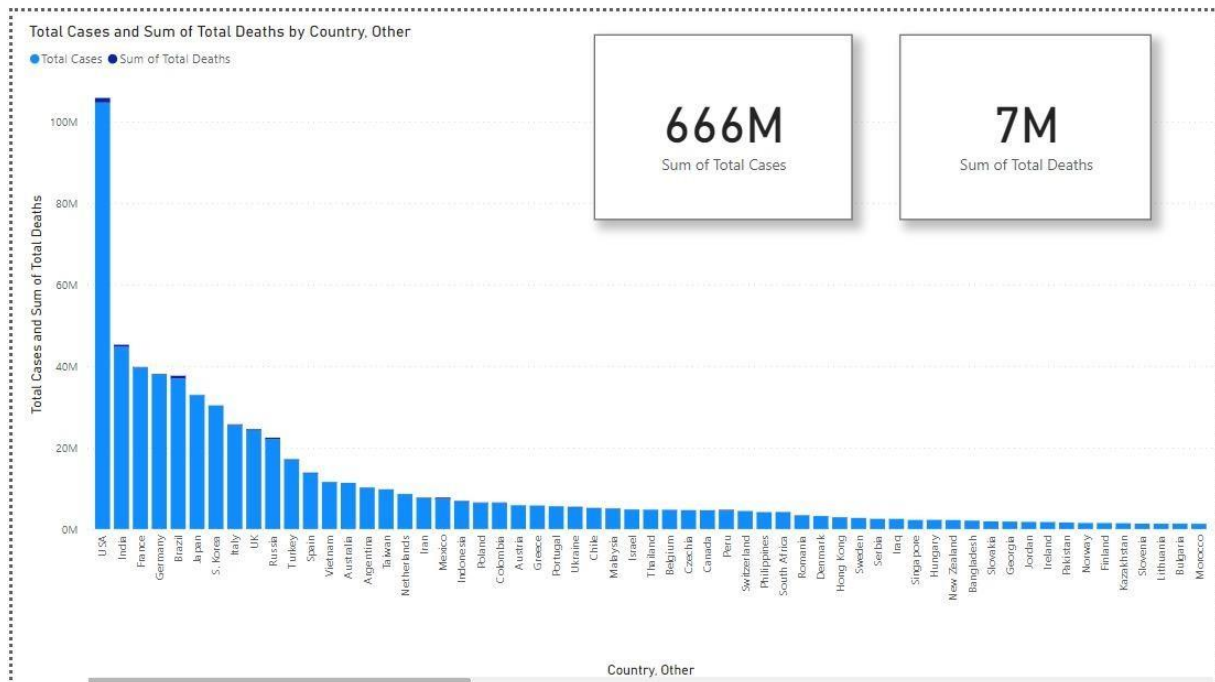
3.3, Analysis for countries with maximum population and their total number of cases.



This query was analysed using a donut chart, donut charts are usually used to visualize the proportions of categorical data, and the size of each piece represents the proportion of each type. In this chart, there is a hole in the centre.

From the given chart, we can analyse that China is the highest populated country and the total number of cases reported is 503,302. The second highest populated country is India with the total cases of 44,683,748, followed by the USA with a total case of 10,462,036, which is the highest number of cases reported by country, and Indonesia with a total case of 67,31,959.

3.4,Analysis of total cases and total death by country.



This query can be analysed using stacked column chart, this is a normal basic charts that allow the comparison of one category to another axis represents the countries axis represents the total cases and sum of total deaths,

USA had the highest total cases and was 10,53,372.57% higher than Niger, which had the lowest total cases at 9931.Total cases and total sum of total deaths are positively correlated with each other. USA accounted for 15.70% of total cases.

Total cases and sum of total deaths diverged the most when country. Other was USA .when total cases were 103482432 higher than sum of total deaths.

3.5,Analysis of total deaths, newly recovered, newly recovered and active cases by country.

The USA had the highest total deaths and was 87,53,200.00% higher than Tonga,which had the lowest total deaths at 13.

Total deaths and total new recovered are positively correlated with each other.

The USA accounted for 17.08% of total deaths ,across all 173 country, other ,total deaths ranged from 13 to 1137929,New recovered ranged from 0 to 99396 and active cases ranged from to 11162792.

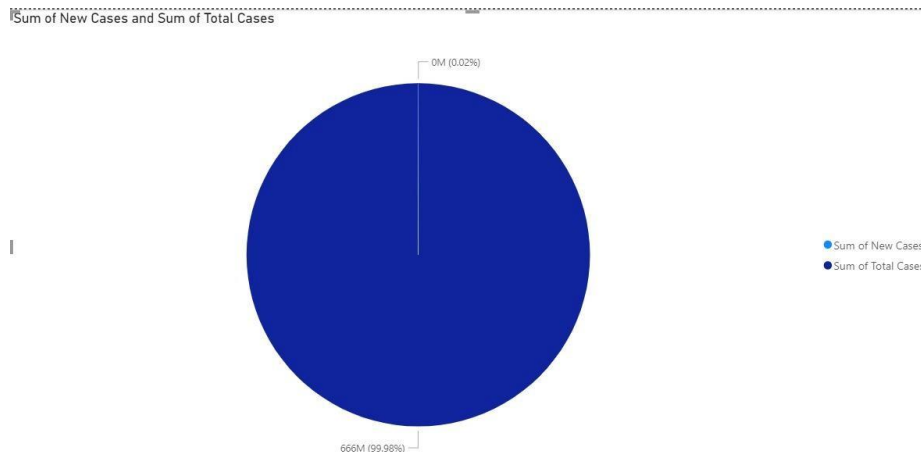
In this query we use the pie chart, pie chart is the a round shaped circle chart where each category data set is shown in a pie shaped based on the value of each data label, we analysed the sum of the total population in india is 1,406,631,776(96.92%) out of which 3.08% of the population has tested positive for covid-19 in the country.

3.7) Analysis of maximum number of active cases in the world.



Across 173 countries, other, max of active cases ranged from 0 to 11162792. Japan has the highest number of active cases with 1162792 .followed by the usa with 1651583 active cases reported. Then comes Poland, Vietnam, Taiwan, and Mexico with 931176,868826,448553,423703,active cases respectively.

3.8) Analysis on Sum of new cases report and sum of total cases report.



This is pie chart, which shows that, in all over the world the impact of covid 19 decreased because of in sum of total cases (99.98%) were 0.02% new cases only. That means the impact of covid -19 is decreased.

4,CONCLUSION

In this project we used the covid data set. which is the real time and daily updated data set. So using this data we analysed the different types of visualization. That is pie chart, donut, bar graph, tree map...etc. In this we clearly analysed the effect of corona virus all over the world.

USA has the highest number of covid 19 confirmed cases in the world. Japan has the highest number of active cases currently in the world. which also shows the impact of covid-19 worldwide, and Here we use the power bi tool for analysis .Power bi is a best tool for visualization and analysis.

5, REFERENCE:

- [1],Dataset: <https://www.worldometers.info/coronavirus/>
- [2], <https://ucsd.libguides.com/c.php?g=1007062&p=7535586>
- [3], <https://youtu.be/TZSpPEv1D0c>
- [4], <https://youtu.be/0BKlUySopU4>
- [5], https://en.m.wikipedia.org/wiki/Microsoft_Power_BI