Using pivot tables to take a deeper dive into COVID-19 data

In the previous tutorial, we sorted and filtered to learn more about the COVID-19 infection and death data. While these are excellent tools, they can only take us so far.

The pivot Tables becomes the next, logical step.

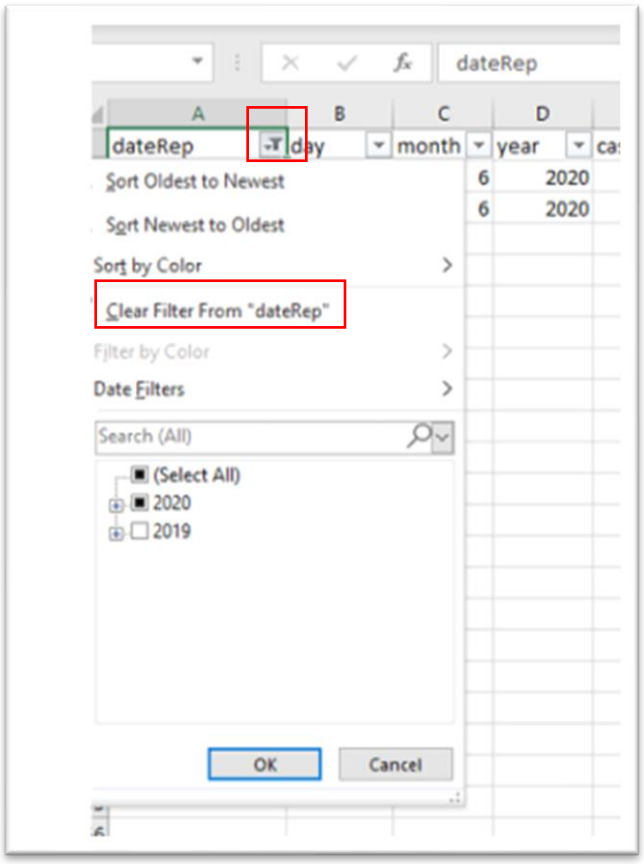
As we explain on page 69 of The Data Journalist, “pivot tables are arguably one of the most powerful and useful tools for journalists looking for patterns and stories in data.”

While the table we examined in the first exercise allowed us to use the filter to compare deaths in the United States, Canada and other countries on any given day, we were unable to easily group the countries, and sum the deaths. This can be done with a few clicks of the mouse in a pivot table.

Before creating the pivot table, we must clear the filters we applied in the first exercise to return to the original table.

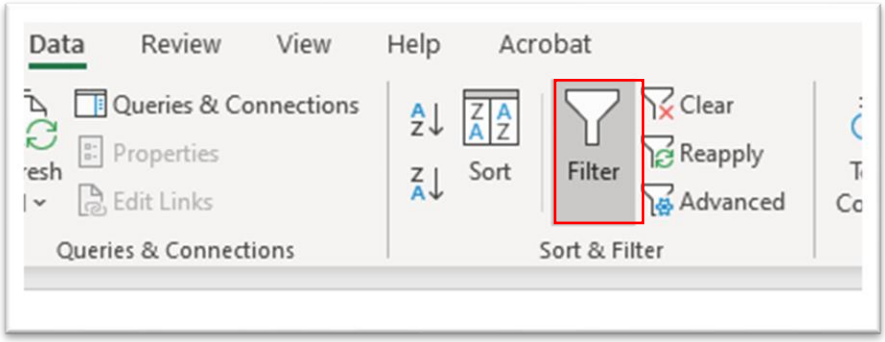
This can be accomplished two ways: clicking on the funnel-like icon the

filtered column and selecting the “Clear” option.



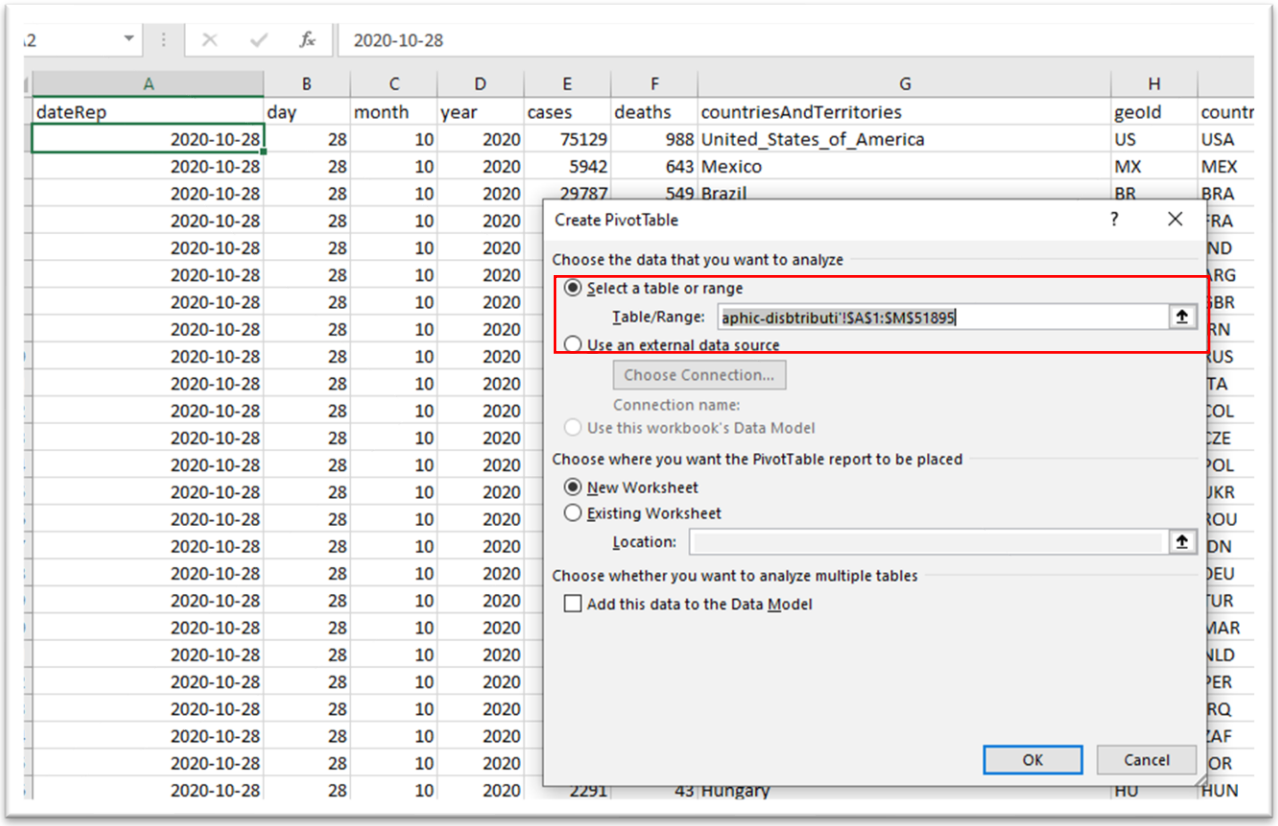
You would repeat this process for any other filtered column.

To lose all the filters simultaneously, click the funnel icon under the menu’s “Data” section.



Once you are back to the original table, place your cursor anywhere inside the table, go to “Insert” in your menu, and the “Pivot table” option. Mac users should find the pivot table option under “Data”.

Selecting the pivot table option produces a “Create Pivot Table” dialog box.



Before we select okay, a few important points to consider.

When creating pivot tables, always pay attention to the cell range to make sure you’ve have captured all the data in the original table. The cell-range information is contained in the highlighted box in the screengrab above to the right of “Table/Range.”

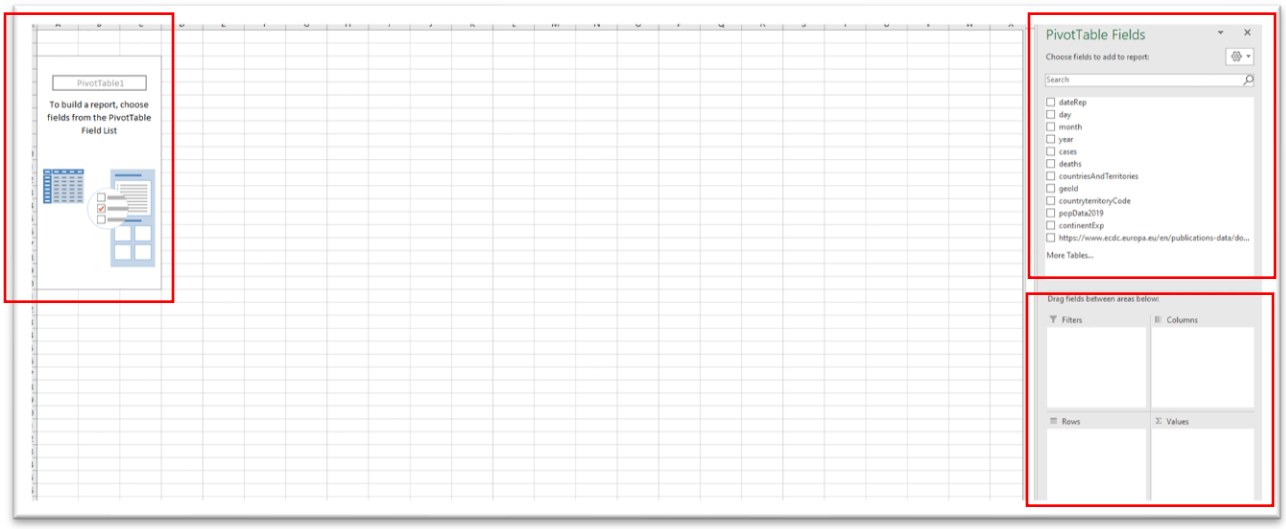
The “aphic-disbtributi….” Is the name of the worksheet that contains the table. The cell references are anchored by dollar signs on either side of the letter in the cell references, and go from A1, the first cell on the table’s top left-hand side to L51895, the last cell situated at the table’s bottom right-hand corner. The dollar signs bracketing the letter portion of the cell references are “anchors” designed to keep the cells in place.

(Chapter Four of The Data Journalist contains more information on anchors.) It's important to pay attention to the cell references because there are situations where the dialog box MAY NOT capture the entire table, such as when there's a blank row in the middle of your table. If this is the case, the pivot table will not expand beyond the blank row. Instead, your pivot table would only capture a subset of your data, rendering your analysis inaccurate. So, always pause and take a moment to analyse before clicking.

Under the next section of our dialog box, there's a choice between a new worksheet and the existing one. The former is the default position, which it is almost always preferable to accept. We want to create the pivot table in a new worksheet.

Okay, we're good to go.

Select OK.



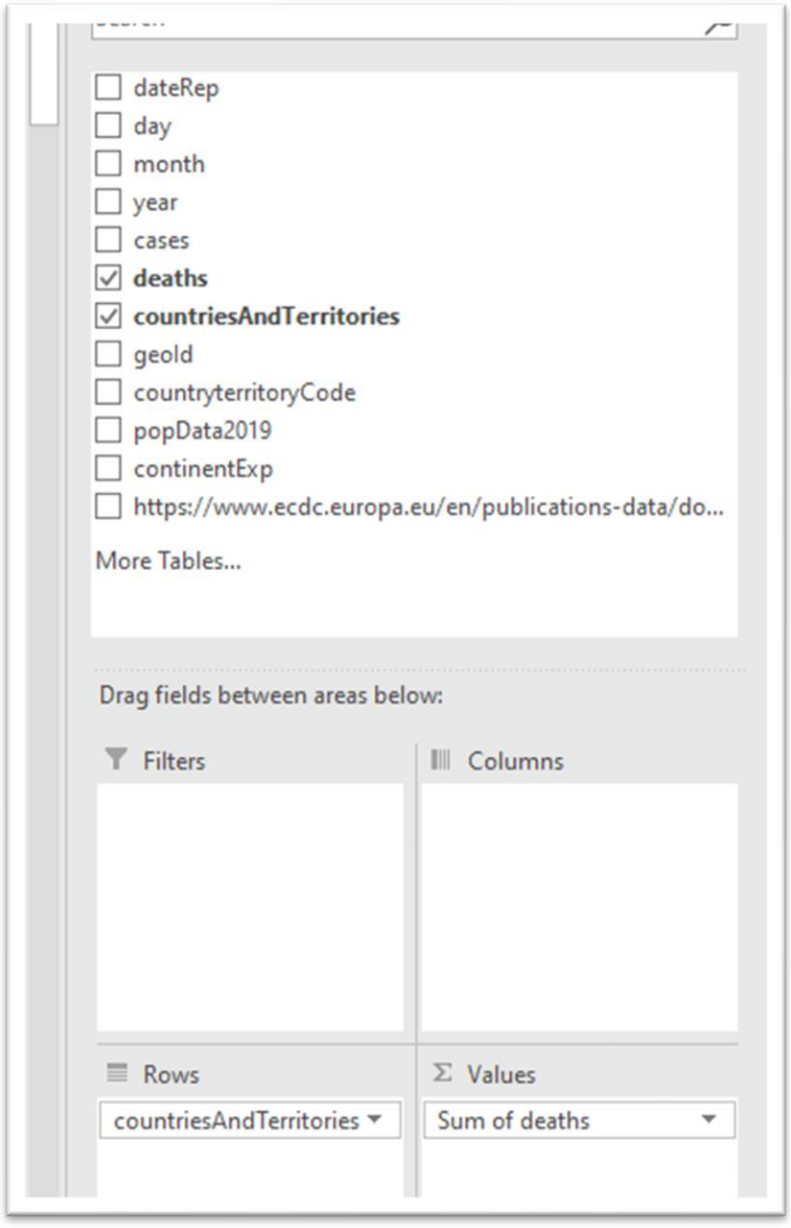
Your pivot table is on the left. The columns that will populate the table are on the right. You create the table by dragging the column titles into one of the four areas in the pane below your field list.

If you have never used a pivot table, it may take a while to get the hang of the concept. So, be patient if you initially struggle to understand. It will eventually make sense if you stick with it.

A good analogy is a deck of cards, which is comprised of colours, suits, numbers. The cards can be arranged in many ways, depending on what you want to find out. If you wanted to make sure that each suit had the correct number of cards, you would group the suits and count them. In the case of a pivot table, the grouping happens in the “Rows” section. Counting happens in the “Values” section.

In the case of our table, we might want to know which country has the highest number of deaths. To find this out, we must group the countries and sum the number of deaths.

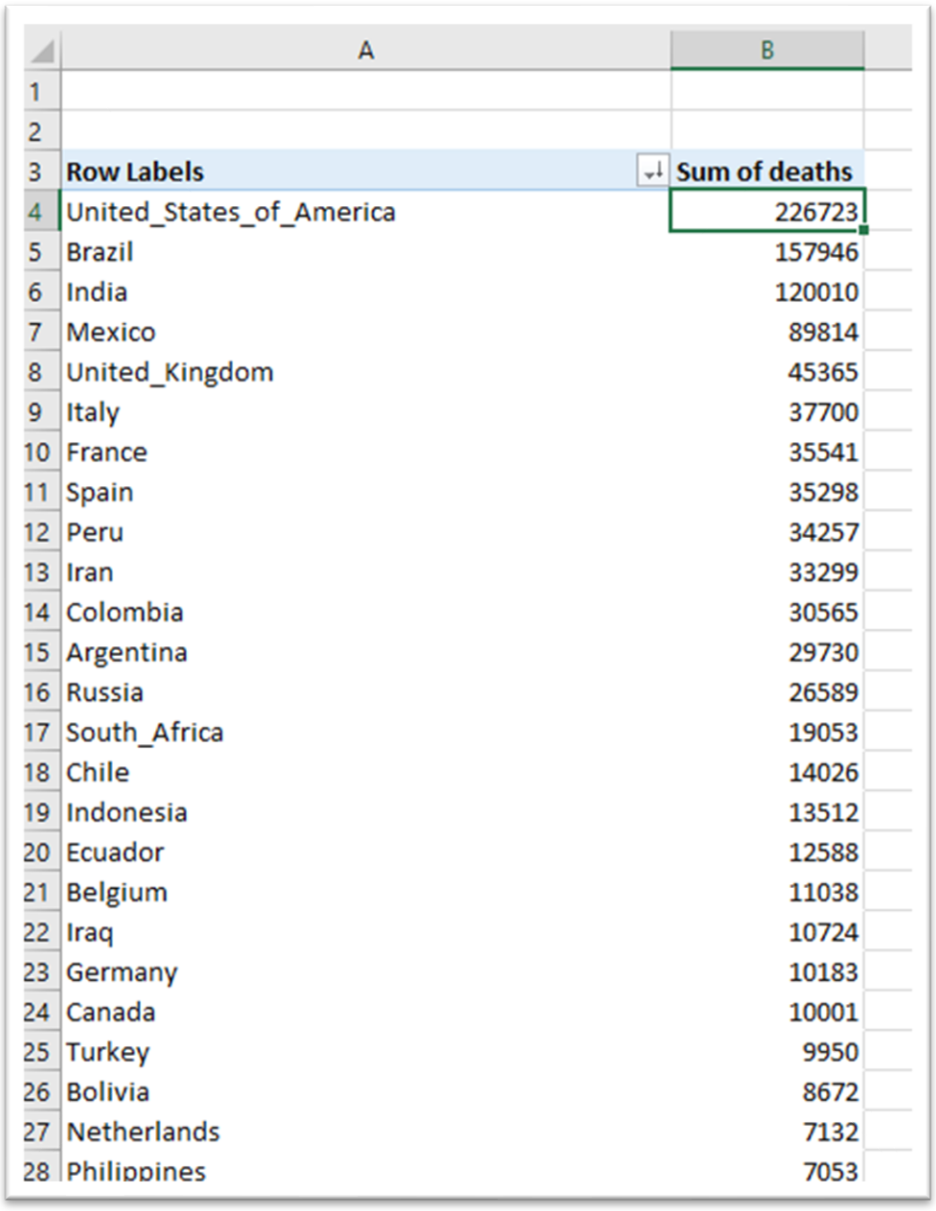
Drag the “countriesAndTerritories” column into “Rows”, and “deaths” into “Values.



You can see what that produces in your table to the left.

	A	B	C
1			
2			
3	**Row Labels**	**Sum of deaths**	
4	Afghanistan	1529	
5	Albania	487	
6	Algeria	1931	
7	Andorra	72	
8	Angola	270	
9	Anguilla	0	
10	Antigua_and_Barbuda	3	
11	Argentina	29730	
12	Armenia	1243	
13	Aruba	36	
14	Australia	905	
15	Austria	1006	
16	Azerbaijan	688	
17	Bahamas	132	
18	Bahrain	316	
19	Bangladesh	5838	
20	Barbados	7	
21	Belarus	965	
22	Belgium	11038	
23	Belize	51	
24	Benin	41	
25	Bermuda	9	
26	Bhutan	0	
27	Bolivia	8672	
28	Bonaire, Saint Eustatius and Saba	3	
29	Bosnia_and_Herzegovina	1104	
30	Botswana	21	
31	Brazil	157946	
32	British_Virgin_Islands	1	
33	Brunei_Darussalam	3	
34	Bulgaria	1161	
35	Burkina_Faso	67	
36	Burundi	1	

The pivot table has sorted the countries in alphabetical order – its default position. To sort the deaths from highest to lowest, select cell under the “Sum of deaths” title, go do “Data”, and sort in descending order (Z to A).

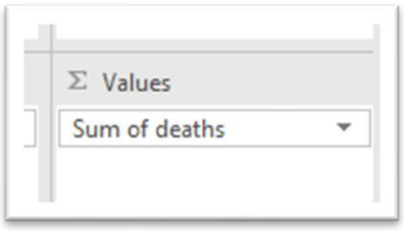


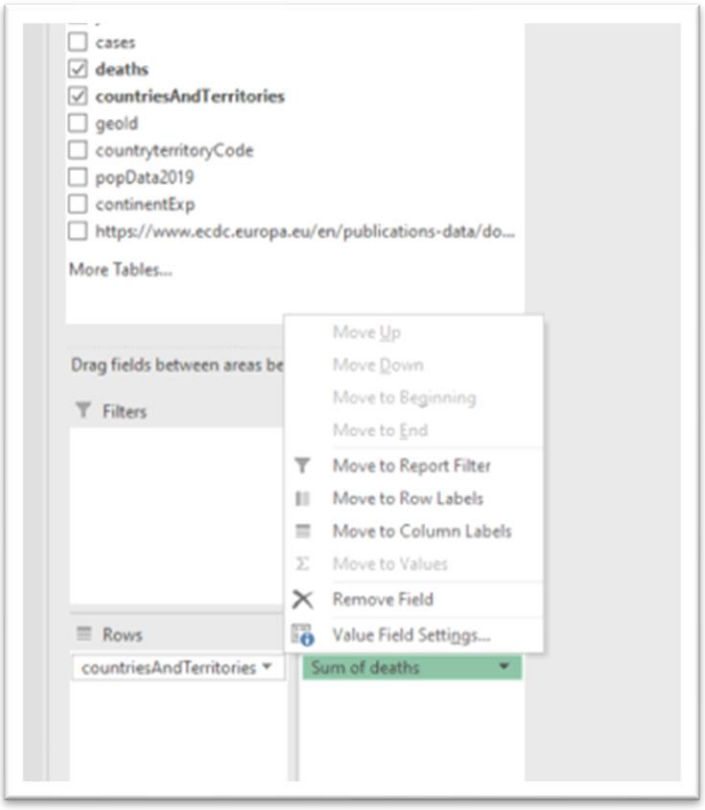
	A	B
1		
2		
3	**Row Labels**	**Sum of deaths**
4	United_States_of_America	226723
5	Brazil	157946
6	India	120010
7	Mexico	89814
8	United_Kingdom	45365
9	Italy	37700
10	France	35541
11	Spain	35298
12	Peru	34257
13	Iran	33299
14	Colombia	30565
15	Argentina	29730
16	Russia	26589
17	South_Africa	19053
18	Chile	14026
19	Indonesia	13512
20	Ecuador	12588
21	Belgium	11038
22	Iraq	10724
23	Germany	10183
24	Canada	10001
25	Turkey	9950
26	Bolivia	8672
27	Netherlands	7132
28	Philippines	7053

The U.S. tops the list. No huge surprise there.

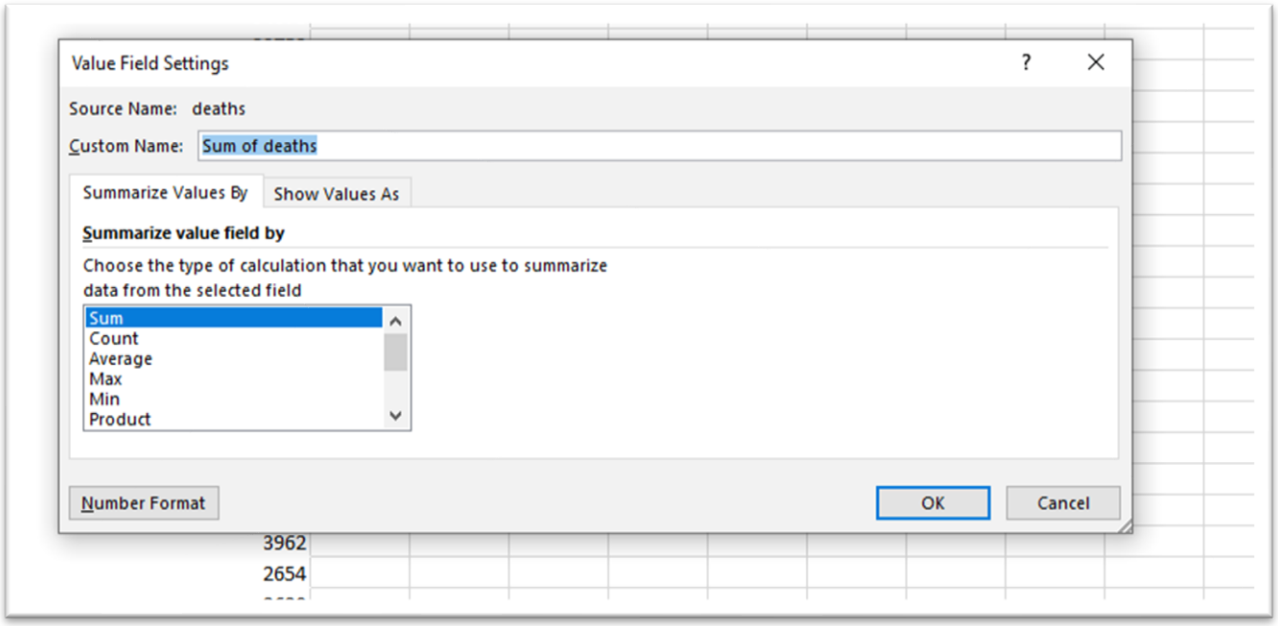
Add a decimal to the numbers to make them easier to read.

Go back over to the “Values” section and click the downward arrow or caret to the right of “Sum of deaths”.



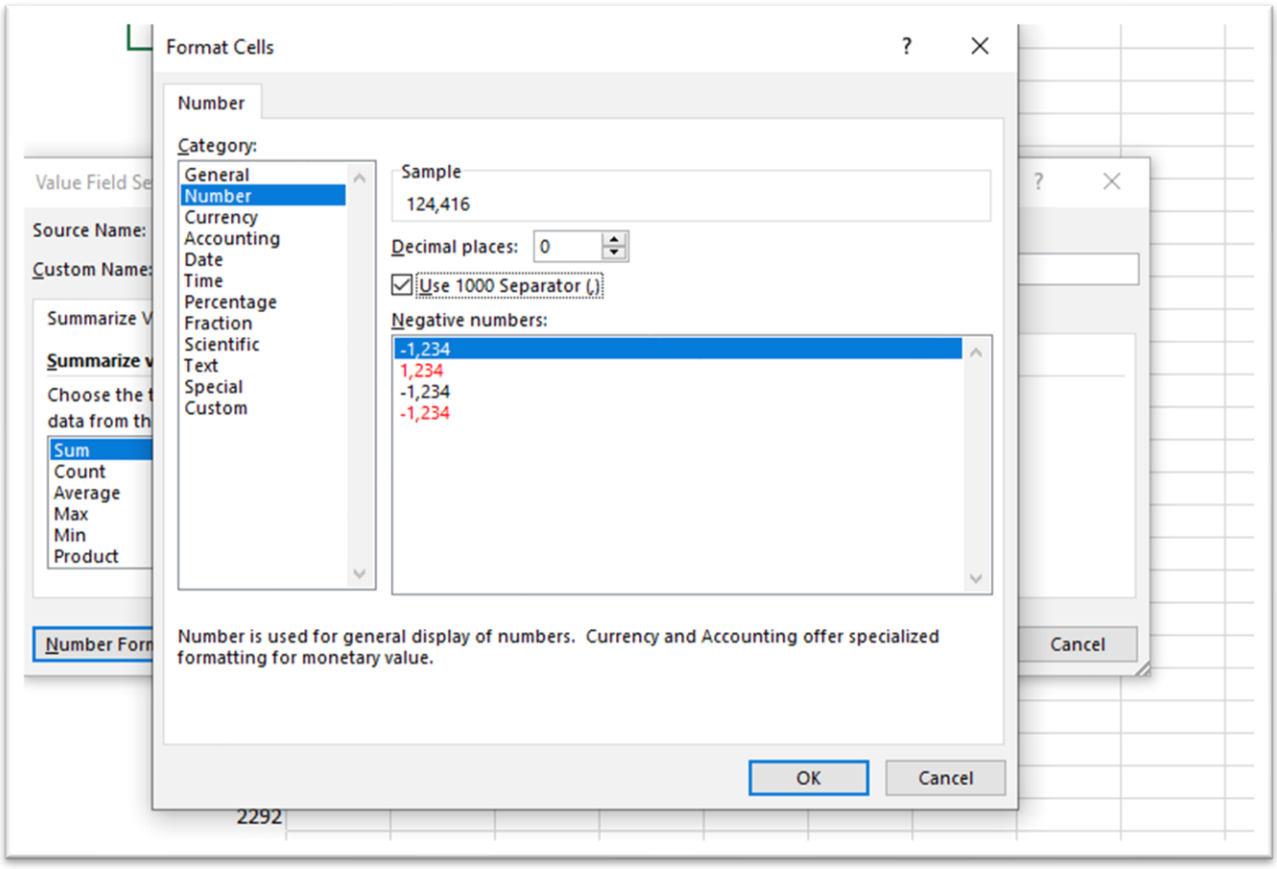


Select “Value Field Settings”. Mac users can click on a similar icon to produce a dialog box like the one in the screen grab below.

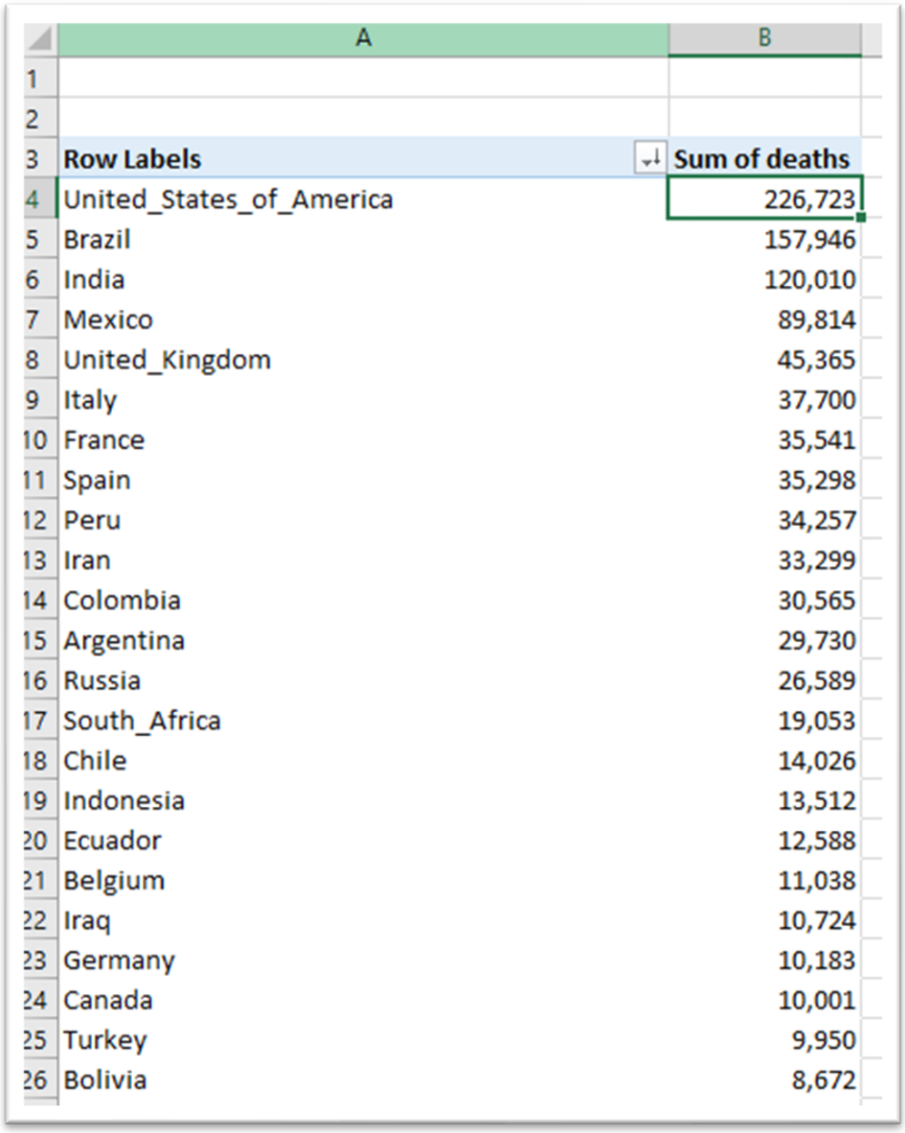


The pivot table has guessed correctly that we want to sum the number of deaths.

To format the number, select the “Number Format” tab.



Select “Number” under category, zero decimal places, check the “Use 1000 Separator” option, and OK.



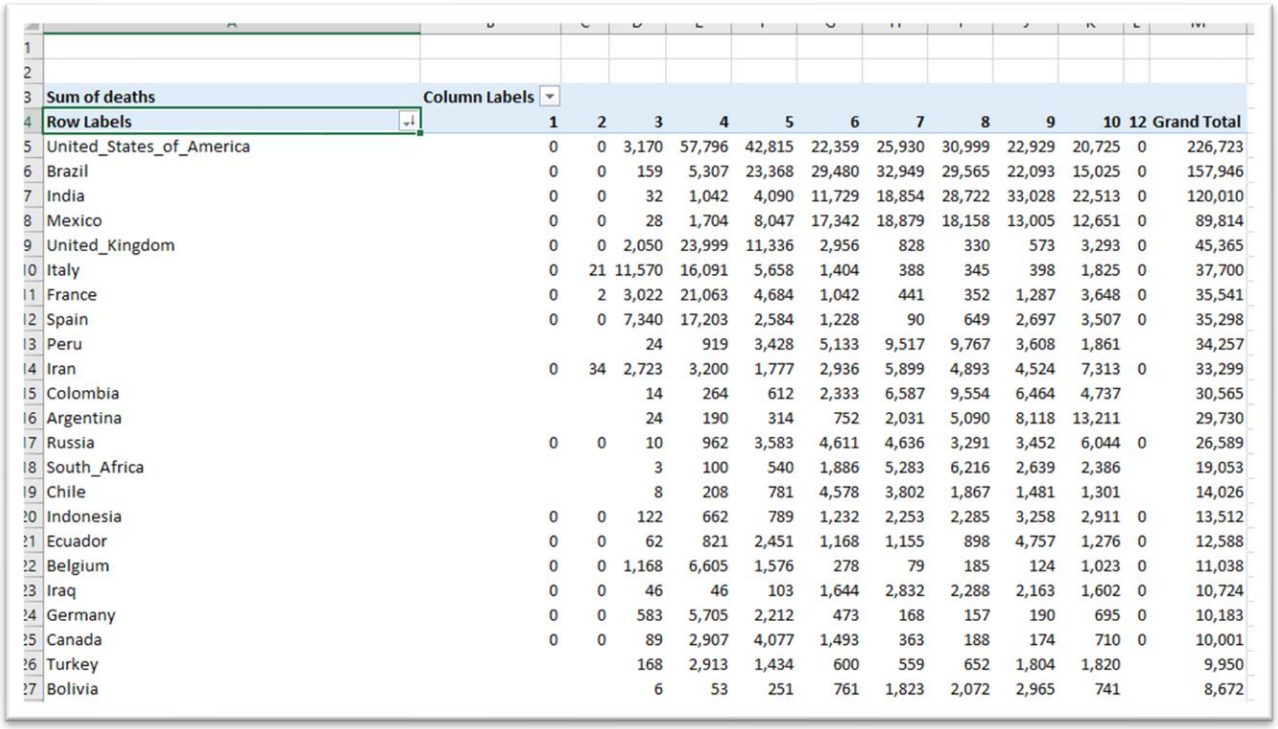
	A	B
1		
2		
3	**Row Labels**	**Sum of deaths**
4	United_States_of_America	226,723
5	Brazil	157,946
6	India	120,010
7	Mexico	89,814
8	United_Kingdom	45,365
9	Italy	37,700
10	France	35,541
11	Spain	35,298
12	Peru	34,257
13	Iran	33,299
14	Colombia	30,565
15	Argentina	29,730
16	Russia	26,589
17	South_Africa	19,053
18	Chile	14,026
19	Indonesia	13,512
20	Ecuador	12,588
21	Belgium	11,038
22	Iraq	10,724
23	Germany	10,183
24	Canada	10,001
25	Turkey	9,950
26	Bolivia	8,672

Much better. Especially if you want to create a visualization such as a bar chart.

Already, we can do much more with this data. For instance, there’s a top-ten list of countries from the U.S. to Iran, a country that has moved up the deadly rankings since July. Additionally, you can filter column A to compare individual countries.

But we can also do much more. The “Columns” section allows us to subdivide the data. In this case by month.

Drag the “month” field into “Columns”.



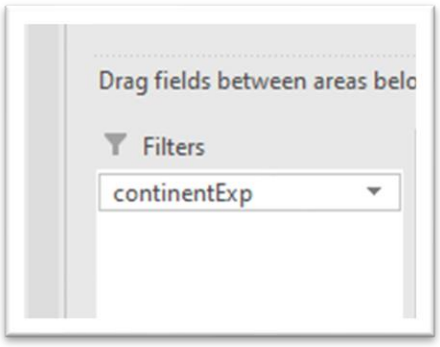
Sum of deaths	Column Labels											
Row Labels	1	2	3	4	5	6	7	8	9	10	12	Grand Total
United_States_of_America	0	0	3,170	57,796	42,815	22,359	25,930	30,999	22,929	20,725	0	226,723
Brazil	0	0	159	5,307	23,368	29,480	32,949	29,565	22,093	15,025	0	157,946
India	0	0	32	1,042	4,090	11,729	18,854	28,722	33,028	22,513	0	120,010
Mexico	0	0	28	1,704	8,047	17,342	18,879	18,158	13,005	12,651	0	89,814
United_Kingdom	0	0	2,050	23,999	11,336	2,956	828	330	573	3,293	0	45,365
Italy	0	21	11,570	16,091	5,658	1,404	388	345	398	1,825	0	37,700
France	0	2	3,022	21,063	4,684	1,042	441	352	1,287	3,648	0	35,541
Spain	0	0	7,340	17,203	2,584	1,228	90	649	2,697	3,507	0	35,298
Peru			24	919	3,428	5,133	9,517	9,767	3,608	1,861		34,257
Iran	0	34	2,723	3,200	1,777	2,936	5,899	4,893	4,524	7,313	0	33,299
Colombia			14	264	612	2,333	6,587	9,554	6,464	4,737		30,565
Argentina			24	190	314	752	2,031	5,090	8,118	13,211		29,730
Russia	0	0	10	962	3,583	4,611	4,636	3,291	3,452	6,044	0	26,589
South_Africa			3	100	540	1,886	5,283	6,216	2,639	2,386		19,053
Chile			8	208	781	4,578	3,802	1,867	1,481	1,301		14,026
Indonesia	0	0	122	662	789	1,232	2,253	2,285	3,258	2,911	0	13,512
Ecuador	0	0	62	821	2,451	1,168	1,155	898	4,757	1,276	0	12,588
Belgium	0	0	1,168	6,605	1,576	278	79	185	124	1,023	0	11,038
Iraq	0	0	46	46	103	1,644	2,832	2,288	2,163	1,602	0	10,724
Germany	0	0	583	5,705	2,212	473	168	157	190	695	0	10,183
Canada	0	0	89	2,907	4,077	1,493	363	188	174	710	0	10,001
Turkey			168	2,913	1,434	600	559	652	1,804	1,820		9,950
Bolivia			6	53	251	761	1,823	2,072	2,965	741		8,672

The numbers 1 to 10 are January to Oct. 28. December is represented by the number 12. If you were going to visualize this table, you would have to replace the numbers with month names. But this is good enough for our analysis. Subdividing by month conveys more information. April and May seemed to be the deadliest months for many countries such as Canada.

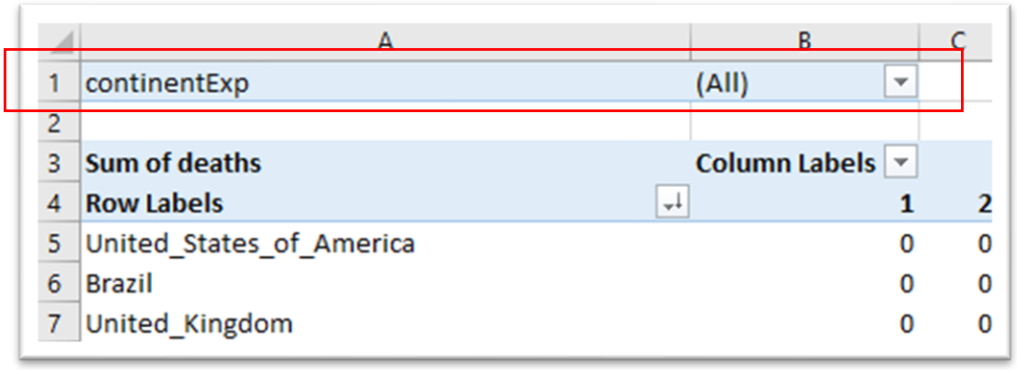
In April and May, countries like Sweden with relatively small populations are high on the list, which begs questions about their containment policies.

You can also use the filter to limit your selection to countries in a specific region.

Drag “continentExp” into “Filters.

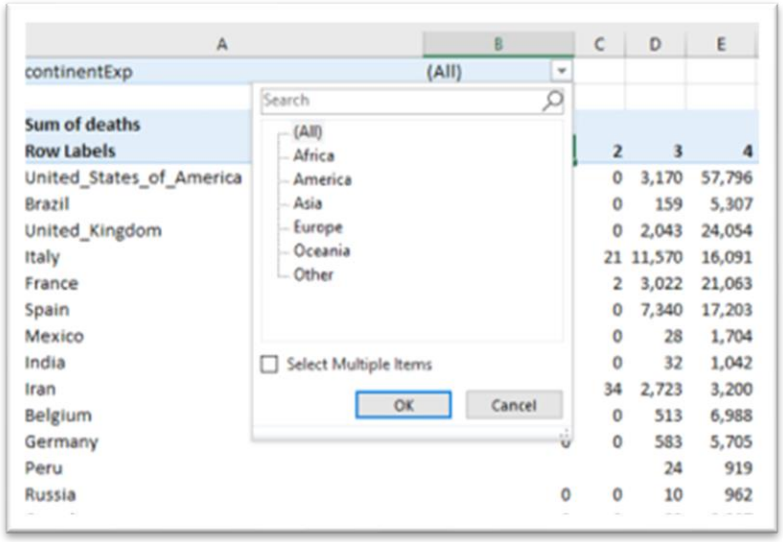


This produces a new section in your pivot table.



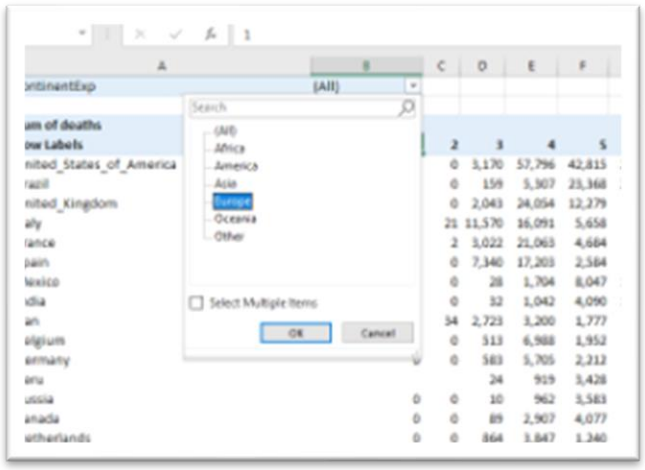
	A	B	C
1	continentExp	(All)	
2			
3	**Sum of deaths**	**Column Labels**	
4	**Row Labels**	**1**	**2**
5	United_States_of_America	0	0
6	Brazil	0	0
7	United_Kingdom	0	0

Select the arrow to obtain the drop-down menu.



You can select one or many.

Choose Europe.



A5 United_Kingdom

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	continentExp	Europe											
2													
3	**Sum of deaths**	**Column Labels**											
4	**Row Labels**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**12**	**Grand Total**
5	United_Kingdom	0	0	2,050	23,999	11,336	2,956	828	330	573	3,293	0	45,365
6	Italy	0	21	11,570	16,091	5,658	1,404	388	345	398	1,825	0	37,700
7	France	0	2	3,022	21,063	4,684	1,042	441	352	1,287	3,648	0	35,541
8	Spain	0	0	7,340	17,203	2,584	1,228	90	649	2,697	3,507	0	35,298
9	Russia	0	0	10	962	3,583	4,611	4,636	3,291	3,452	6,044	0	26,589
10	Belgium	0	0	1,168	6,605	1,576	278	79	185	124	1,023	0	11,038
11	Germany	0	0	583	5,705	2,212	473	168	157	190	695	0	10,183
12	Netherlands	0	0	864	3,847	1,240	156	33	75	169	748	0	7,132
13	Ukraine			11	239	446	451	526	854	1,538	2,525		6,590
14	Romania	0	0	44	631	578	381	670	1,274	1,214	1,782	0	6,574
15	Sweden	0	0	291	2,514	1,783	880	266	70	51	63	0	5,918
16	Poland			31	593	437	383	265	324	450	2,132		4,615
17	Czechia	0	0	24	203	92	29	31	44	213	1,911	0	2,547
18	Portugal			140	849	407	172	159	92	144	408		2,371
19	Switzerland	0	0	295	1,112	249	25	22	21	57	148	0	1,929
20	Ireland	0	0	54	1,136	460	85	28	14	26	87	0	1,890
21	Moldova			2	109	180	245	235	221	318	400		1,710
22	Hungary			16	296	212	61	11	18	151	813		1,578
23	Armenia	0	0	3	29	99	312	295	139	81	285	0	1,243
24	Bulgaria			8	56	76	83	151	239	201	347		1,161
25	Bosnia_and_Herzegovina			8	56	88	31	145	264	244	268		1,104

The U.K. comes out on top. Sweden move up from 30th place on the unfiltered list to 11th place on this one.

The nice thing about pivot tables, is you can create as many of them as you want.

The easiest two to do this is select the entire table and paste it into another worksheet by selecting a “worksheet” tab at the bottom of the table. You can create a new tab by either selecting a generically labeled sheet tab (“Sheet 2,3, etc”), or if you run out of sheets, the plus “+” sign.

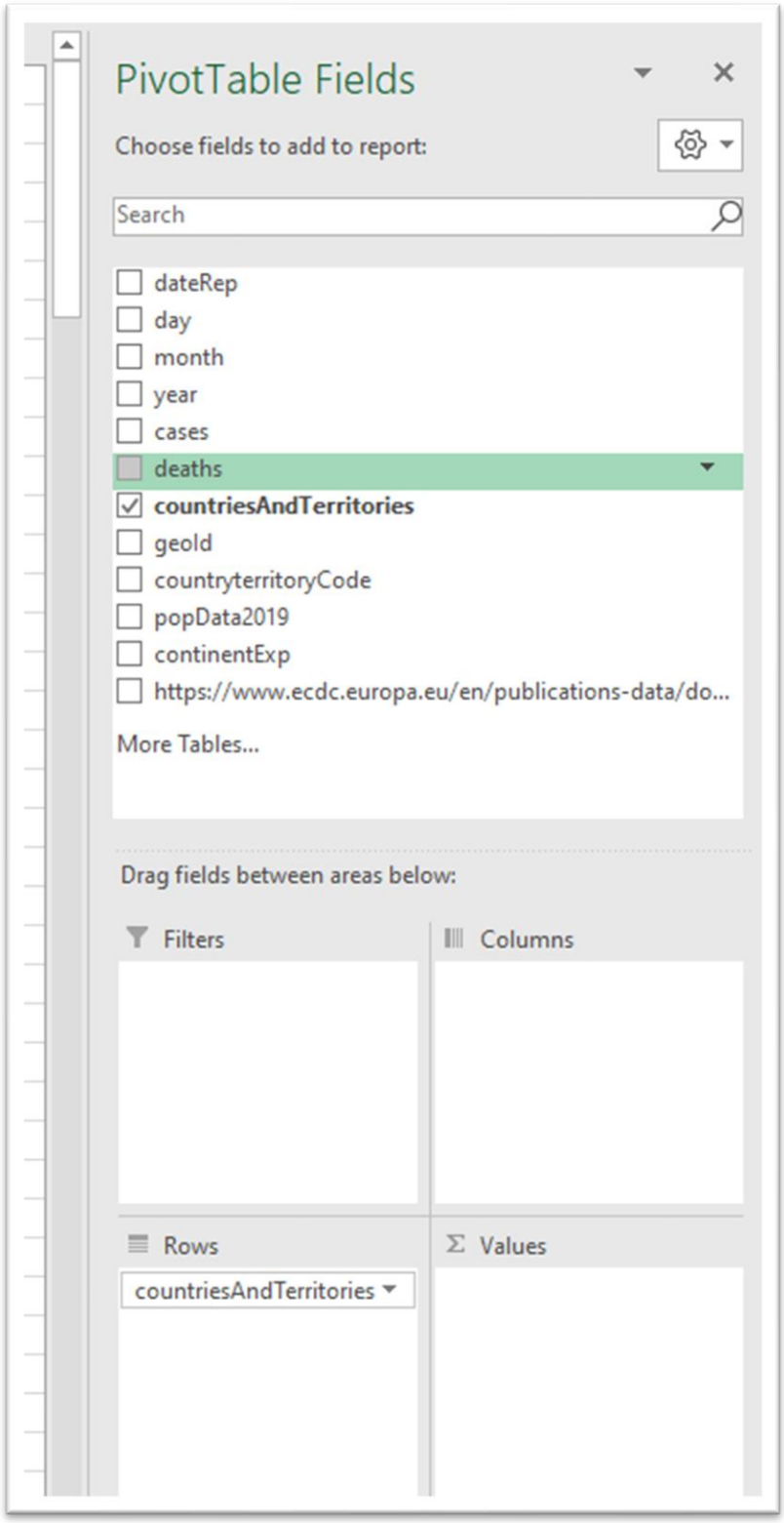
Once you are in a new worksheet, you can perform a different analysis, for example dragging “deaths” out of the values column and replacing it with “cases”. You will have to reformat the numbers and re-sort the “Grand Total” column.

As we mentioned in the previous tutorial, these numbers are illuminating, but more meaningful comparisons between countries are best illustrated by calculating rates: that is, the number of deaths divided by the population and multiplied by 100,000 to obtain a rate of frequency of deaths for every 100,000 people. Rates are common. In addition to death rate, think of birth rate, homicide rate, etc.

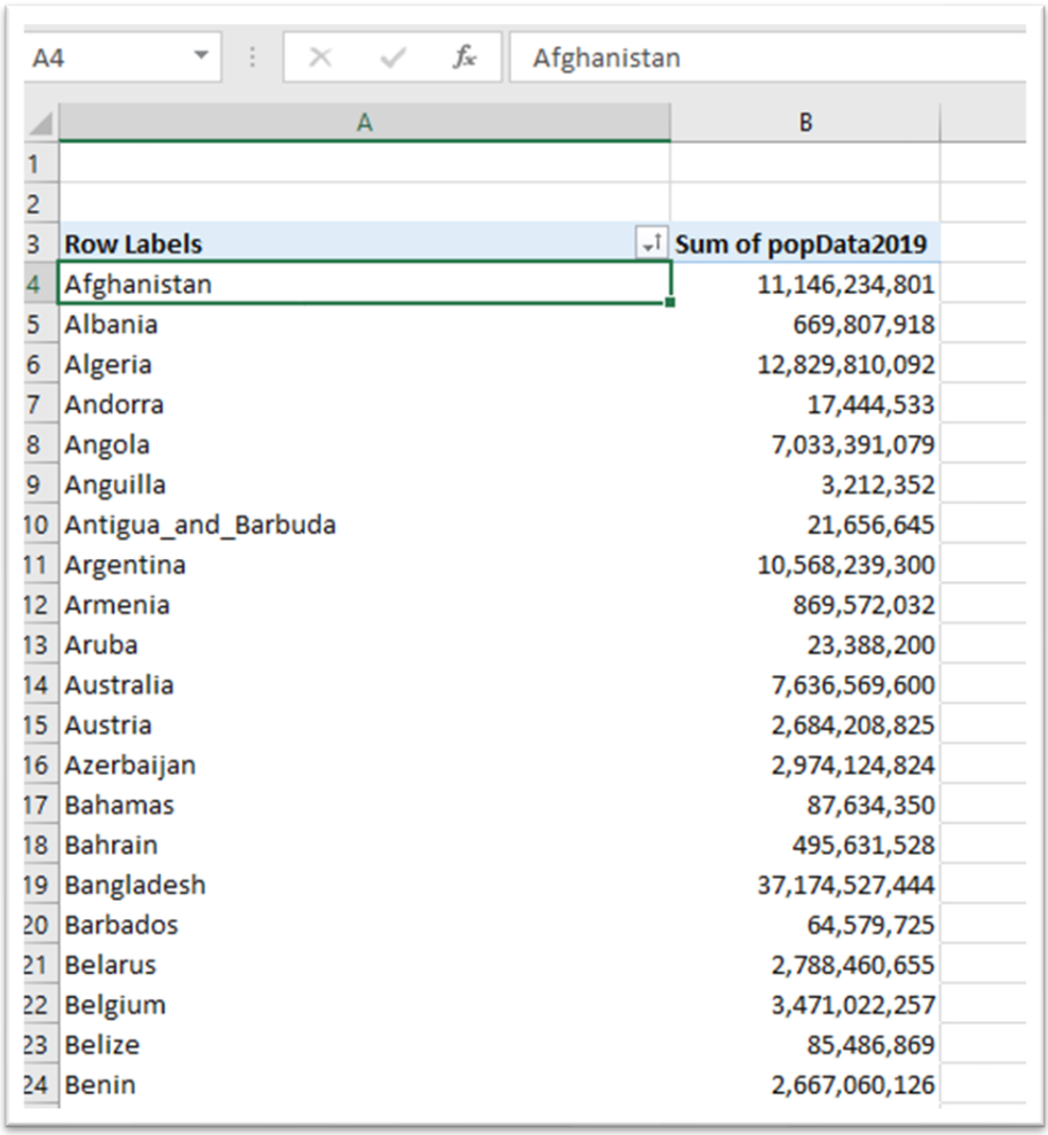
Create a third pivot table, using the technique described above.

In this pivot table, we will create two columns: A sum of deaths and a maximum population number for each country.

Remove all the columns from the Pivot Table Fields box's lower panel except for "countriesAndTerritories."



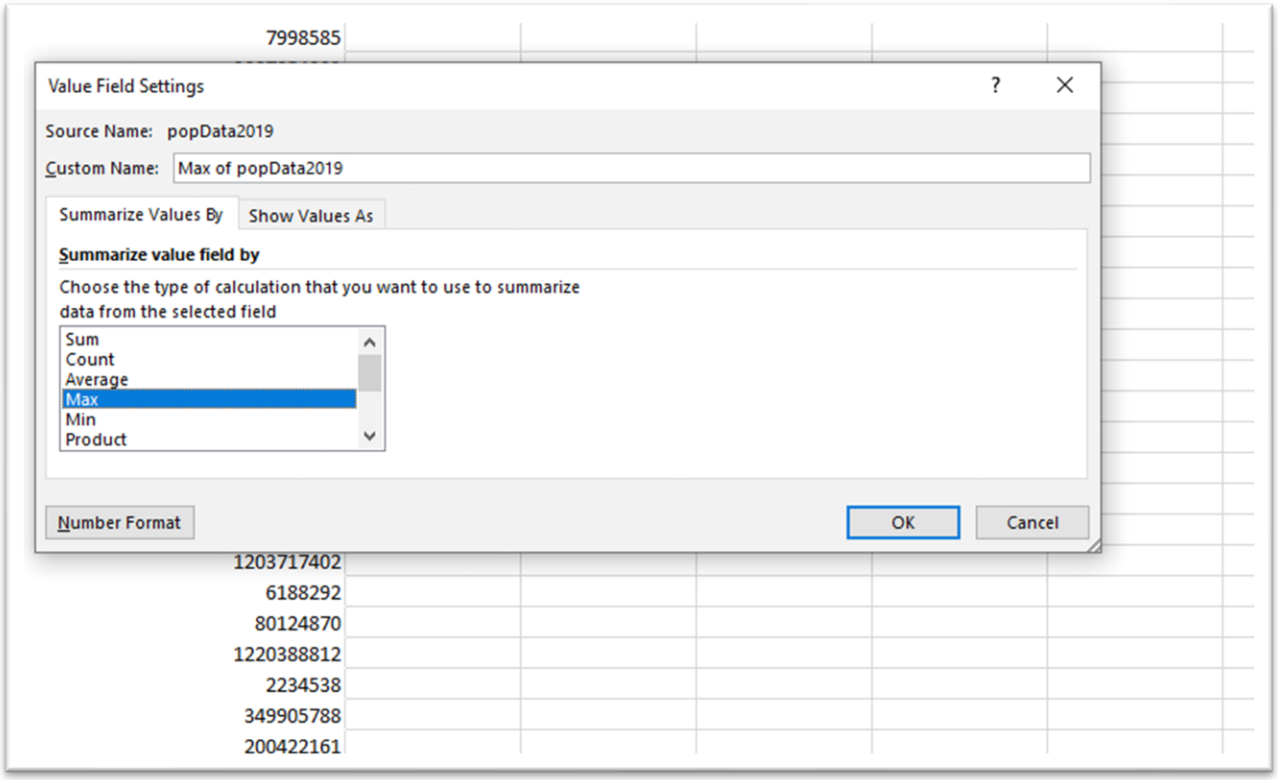
Add “popData2019” to Values.



	A	B
1		
2		
3	**Row Labels**	**Sum of popData2019**
4	Afghanistan	11,146,234,801
5	Albania	669,807,918
6	Algeria	12,829,810,092
7	Andorra	17,444,533
8	Angola	7,033,391,079
9	Anguilla	3,212,352
10	Antigua_and_Barbuda	21,656,645
11	Argentina	10,568,239,300
12	Armenia	869,572,032
13	Aruba	23,388,200
14	Australia	7,636,569,600
15	Austria	2,684,208,825
16	Azerbaijan	2,974,124,824
17	Bahamas	87,634,350
18	Bahrain	495,631,528
19	Bangladesh	37,174,527,444
20	Barbados	64,579,725
21	Belarus	2,788,460,655
22	Belgium	3,471,022,257
23	Belize	85,486,869
24	Benin	2,667,060,126

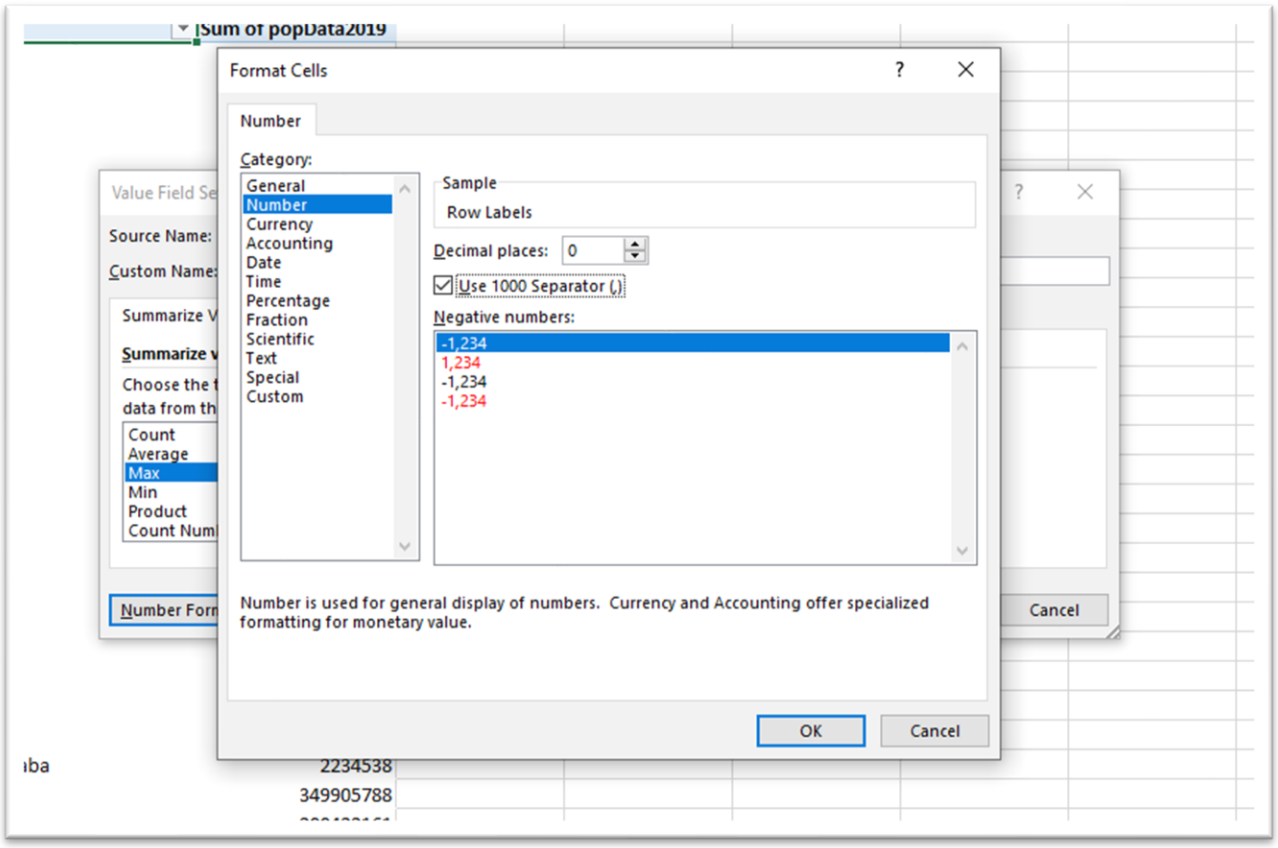
Clearly, Afghanistan does not have 11 billion people. What’s going on? You will recall that during our interviewing process when we first imported the data, we noticed that each row represented a daily snapshot, which included the population count. While it makes sense to sum all the deaths, or cases to get a total for the time period in question (Dec 31, 2019, to Oct. 28, 2020), it makes no sense to sum the population counts for each daily entry. We only need one population count. To obtain this result, we must trick the pivot table.

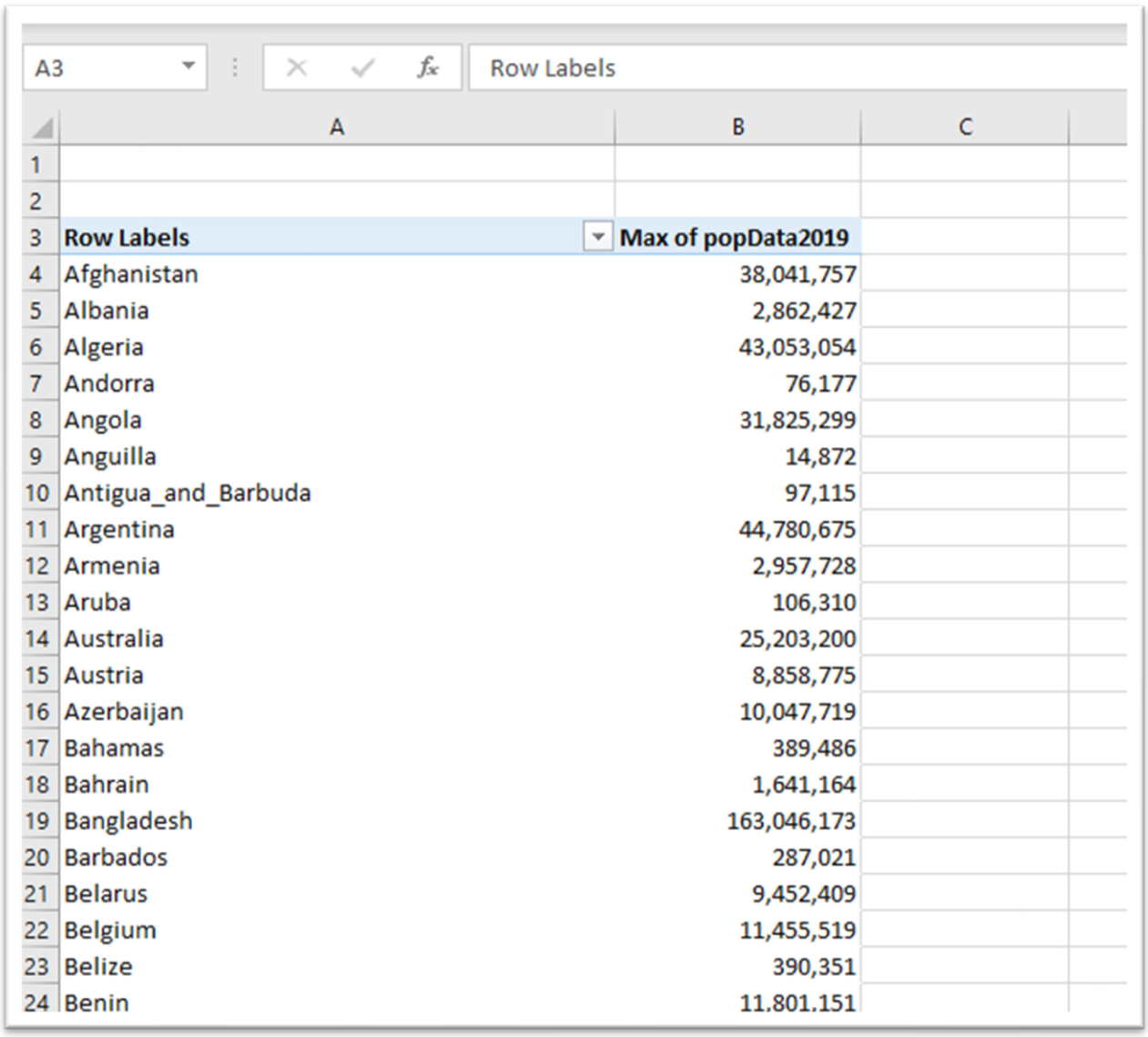
Click the same downward arrow in the “Values” section we used to reformat the numbers.



Here what we have done is change the selection from “SUM” to “Max.” Since we know that the daily population entry is the same for each country, the Max will provide one, accurate number. We could also use “Average.” Once again, if you’re still struggling to understand this, not to worry. It will make more sense once you become more familiar with pivot tables.

Also be sure to format your population numbers by adding a comma.

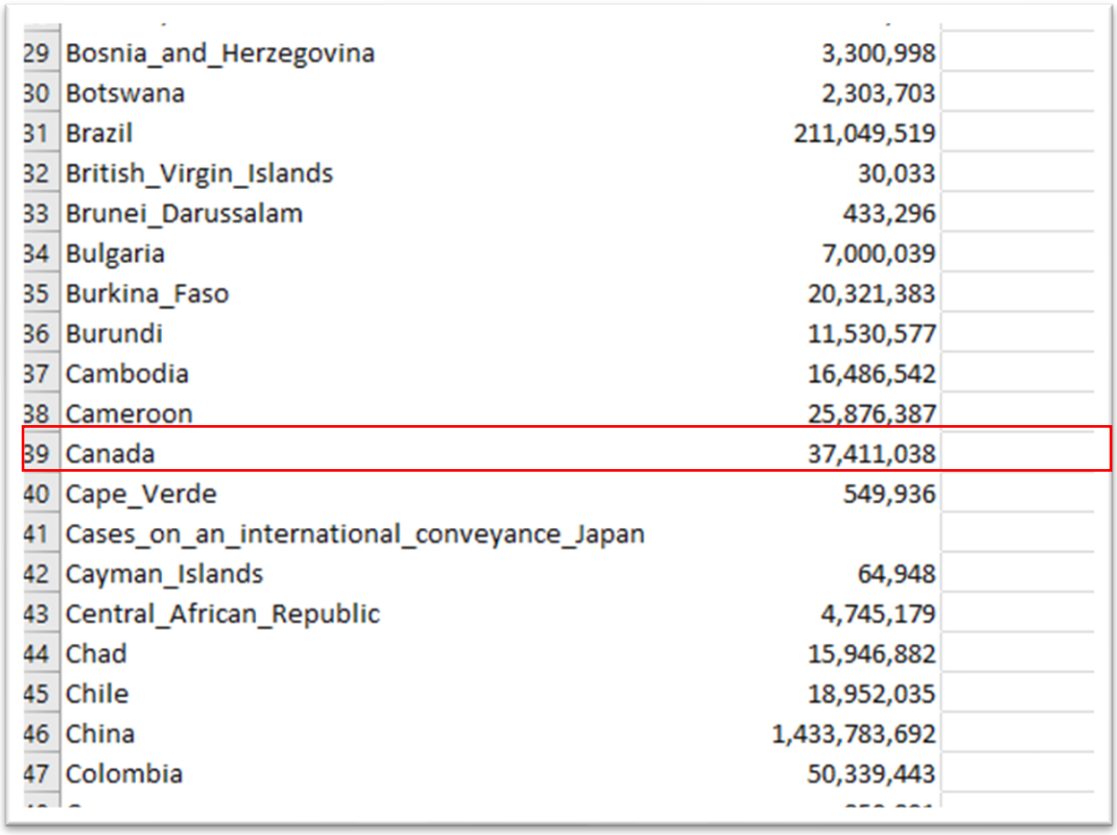




A3 | Row Labels

	A	B	C
1			
2			
3	**Row Labels**	**Max of popData2019**	
4	Afghanistan	38,041,757	
5	Albania	2,862,427	
6	Algeria	43,053,054	
7	Andorra	76,177	
8	Angola	31,825,299	
9	Anguilla	14,872	
10	Antigua_and_Barbuda	97,115	
11	Argentina	44,780,675	
12	Armenia	2,957,728	
13	Aruba	106,310	
14	Australia	25,203,200	
15	Austria	8,858,775	
16	Azerbaijan	10,047,719	
17	Bahamas	389,486	
18	Bahrain	1,641,164	
19	Bangladesh	163,046,173	
20	Barbados	287,021	
21	Belarus	9,452,409	
22	Belgium	11,455,519	
23	Belize	390,351	
24	Benin	11.801.151	

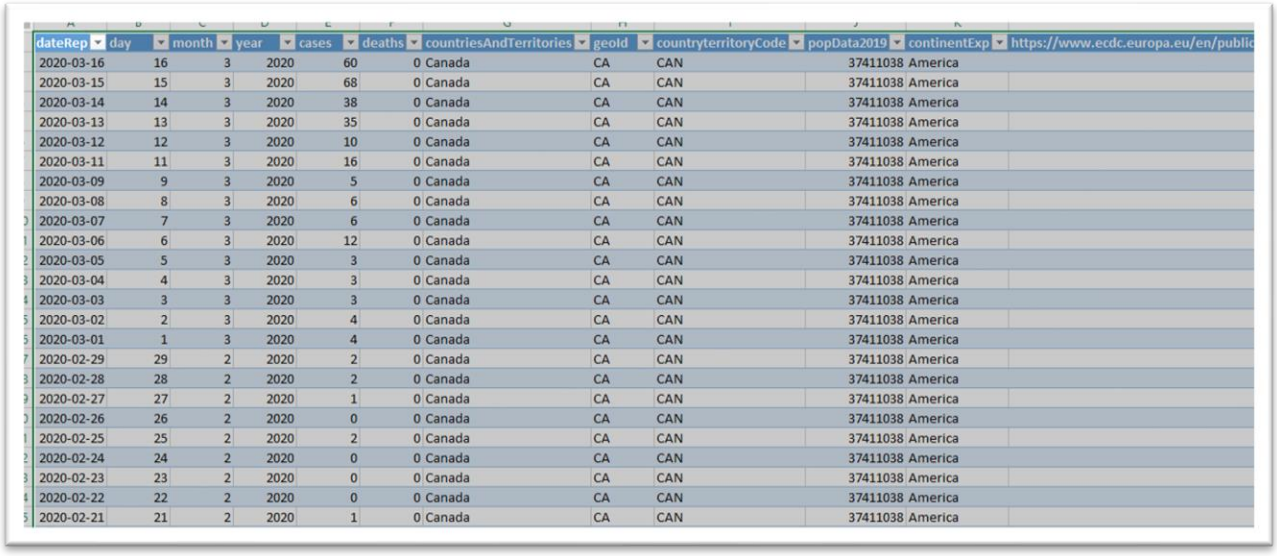
Much better. Afghanistan has a population of just over 38 million. Canada's is about 37.4 million.



29	Bosnia_and_Herzegovina	3,300,998
30	Botswana	2,303,703
31	Brazil	211,049,519
32	British_Virgin_Islands	30,033
33	Brunei_Darussalam	433,296
34	Bulgaria	7,000,039
35	Burkina_Faso	20,321,383
36	Burundi	11,530,577
37	Cambodia	16,486,542
38	Cameroon	25,876,387
39	Canada	37,411,038
40	Cape_Verde	549,936
41	Cases_on_an_international_conveyance_Japan	
42	Cayman_Islands	64,948
43	Central_African_Republic	4,745,179
44	Chad	15,946,882
45	Chile	18,952,035
46	China	1,433,783,692
47	Colombia	50,339,443

If you want to verify the population numbers, return to your main worksheet to see the population entry for the country in question. Or you could simply click the population number in column A which produces a new table containing the rows that comprise that number.

6	Burundi	11,530,577
7	Cambodia	16,486,542
8	Cameroon	25,876,387
9	Canada	37,411,038
0	Cape_Verde	549,936
1	Cases_on_an_international_conveyance_Japan	
2	Cayman_Islands	64,948
3	Central_African_Republic	4,745,179
4	Chad	15,946,882
5	Chile	18,952,035

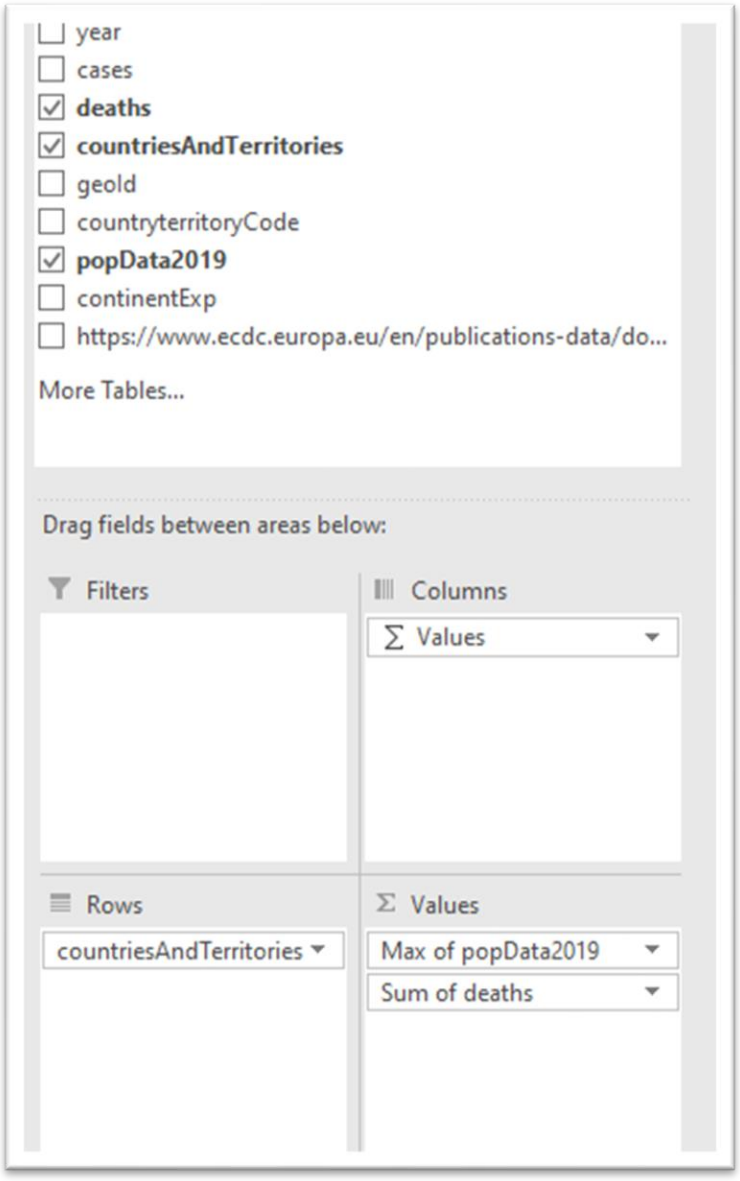


dateRep	day	month	year	cases	deaths	countriesAndTerritories	geoId	countryterritoryCode	popData2019	continentExp	https://www.ecdc.europa.eu/en/public
2020-03-16	16	3	2020	60	0	Canada	CA	CAN	37411038	America	
2020-03-15	15	3	2020	68	0	Canada	CA	CAN	37411038	America	
2020-03-14	14	3	2020	38	0	Canada	CA	CAN	37411038	America	
2020-03-13	13	3	2020	35	0	Canada	CA	CAN	37411038	America	
2020-03-12	12	3	2020	10	0	Canada	CA	CAN	37411038	America	
2020-03-11	11	3	2020	16	0	Canada	CA	CAN	37411038	America	
2020-03-09	9	3	2020	5	0	Canada	CA	CAN	37411038	America	
2020-03-08	8	3	2020	6	0	Canada	CA	CAN	37411038	America	
2020-03-07	7	3	2020	6	0	Canada	CA	CAN	37411038	America	
2020-03-06	6	3	2020	12	0	Canada	CA	CAN	37411038	America	
2020-03-05	5	3	2020	3	0	Canada	CA	CAN	37411038	America	
2020-03-04	4	3	2020	3	0	Canada	CA	CAN	37411038	America	
2020-03-03	3	3	2020	3	0	Canada	CA	CAN	37411038	America	
2020-03-02	2	3	2020	4	0	Canada	CA	CAN	37411038	America	
2020-03-01	1	3	2020	4	0	Canada	CA	CAN	37411038	America	
2020-02-29	29	2	2020	2	0	Canada	CA	CAN	37411038	America	
2020-02-28	28	2	2020	2	0	Canada	CA	CAN	37411038	America	
2020-02-27	27	2	2020	1	0	Canada	CA	CAN	37411038	America	
2020-02-26	26	2	2020	0	0	Canada	CA	CAN	37411038	America	
2020-02-25	25	2	2020	2	0	Canada	CA	CAN	37411038	America	
2020-02-24	24	2	2020	0	0	Canada	CA	CAN	37411038	America	
2020-02-23	23	2	2020	0	0	Canada	CA	CAN	37411038	America	
2020-02-22	22	2	2020	0	0	Canada	CA	CAN	37411038	America	
2020-02-21	21	2	2020	1	0	Canada	CA	CAN	37411038	America	

All the population numbers are the same. You can also use these tables for further analysis. But for the purposes of this tutorial, we'll keep going with the task at hand. You can delete this worksheet.

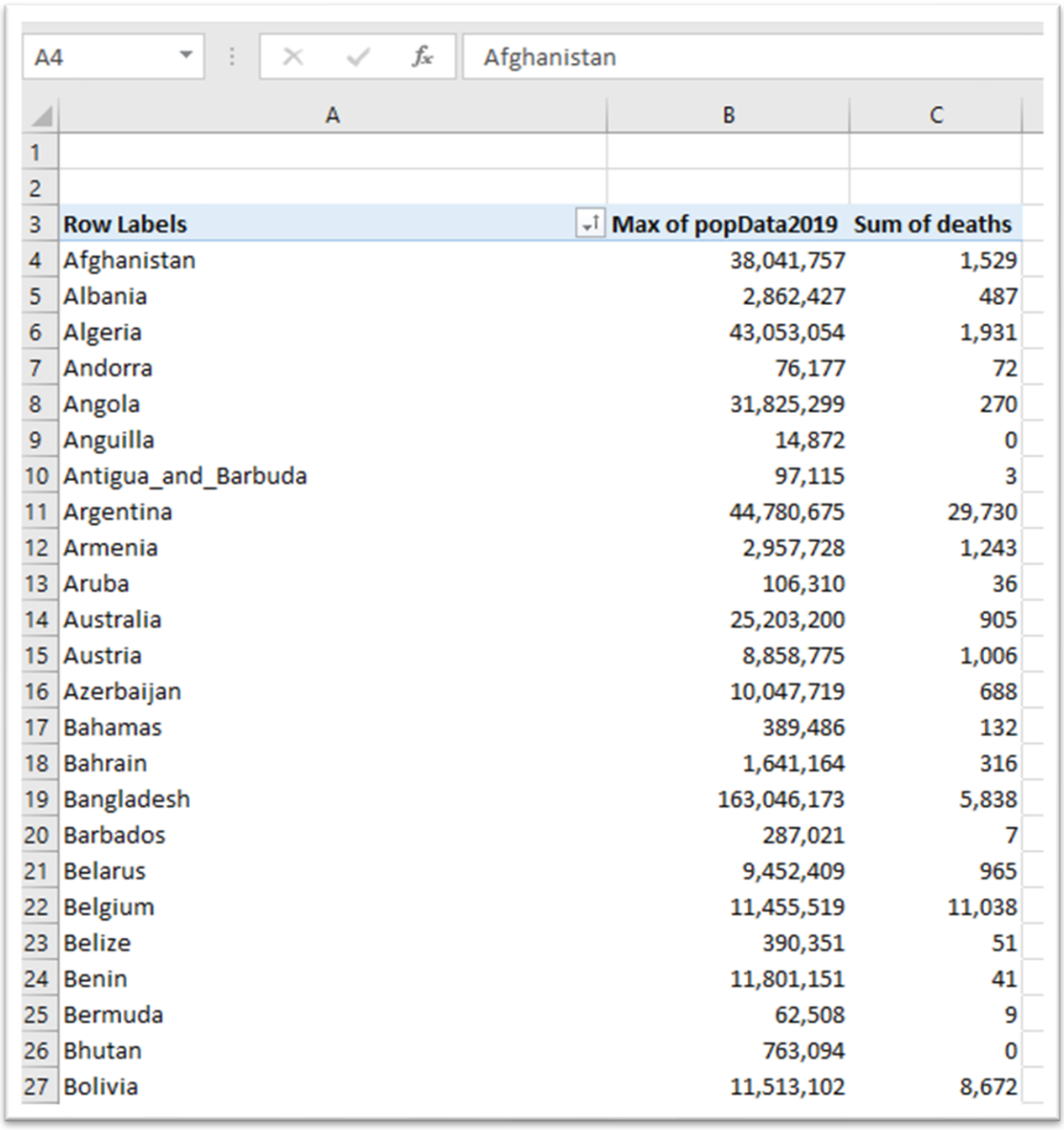
Return to the pivot table and scroll to the top.

Add deaths by dragging the “deaths” column into “Values,” which will create a second column.



Although we placed deaths in the Values section, the pivot table also recognizes it as a column for the AGGREGATE death totals for each

country.

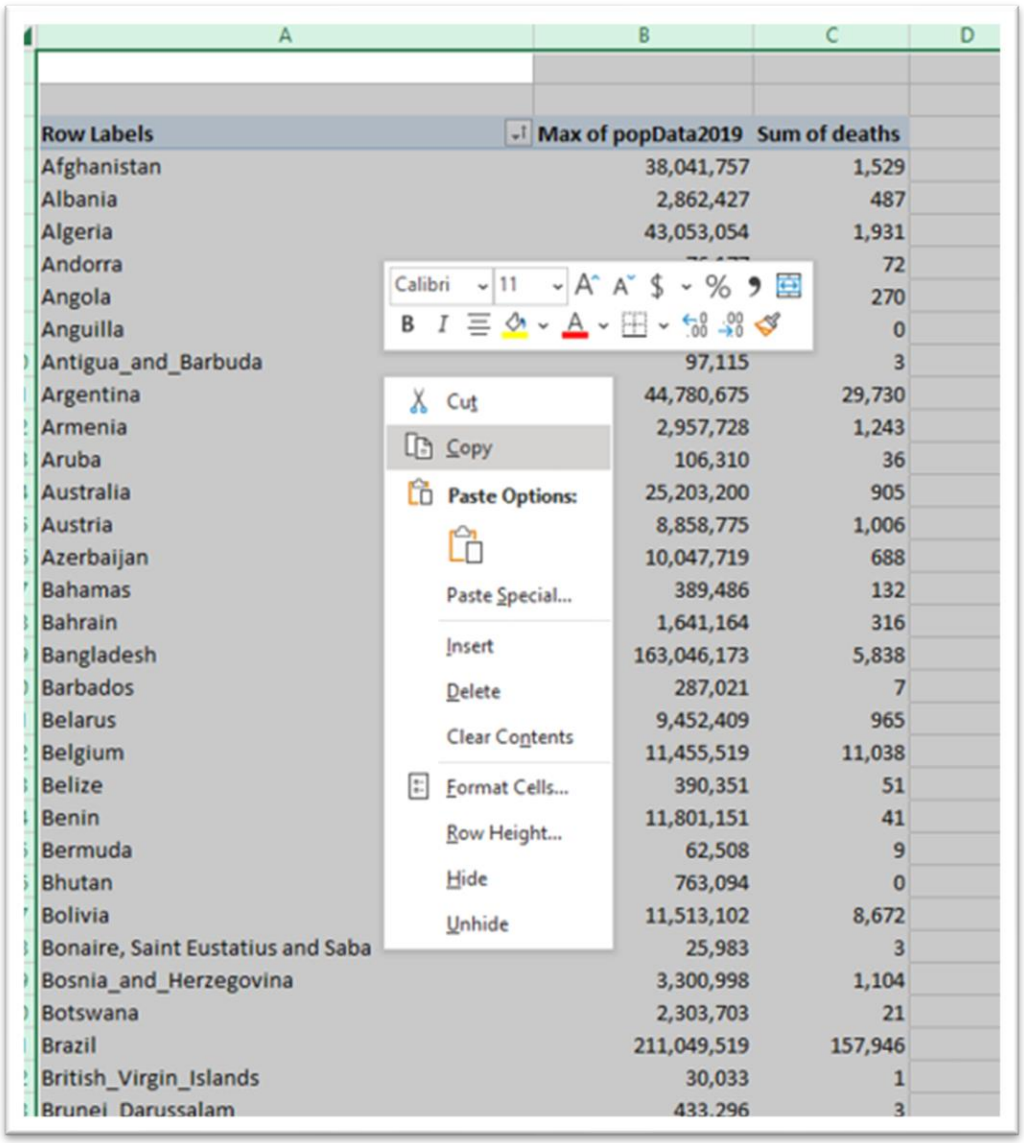


Row Labels	Max of popData2019	Sum of deaths
Afghanistan	38,041,757	1,529
Albania	2,862,427	487
Algeria	43,053,054	1,931
Andorra	76,177	72
Angola	31,825,299	270
Anguilla	14,872	0
Antigua_and_Barbuda	97,115	3
Argentina	44,780,675	29,730
Armenia	2,957,728	1,243
Aruba	106,310	36
Australia	25,203,200	905
Austria	8,858,775	1,006
Azerbaijan	10,047,719	688
Bahamas	389,486	132
Bahrain	1,641,164	316
Bangladesh	163,046,173	5,838
Barbados	287,021	7
Belarus	9,452,409	965
Belgium	11,455,519	11,038
Belize	390,351	51
Benin	11,801,151	41
Bermuda	62,508	9
Bhutan	763,094	0
Bolivia	11,513,102	8,672

Do not drag deaths directly into the Columns sections because the pivot table will attempt to create a SEPARATE column for each of the thousands of deaths and potentially crash your computer.

We will calculate the death rate in a separate worksheet.

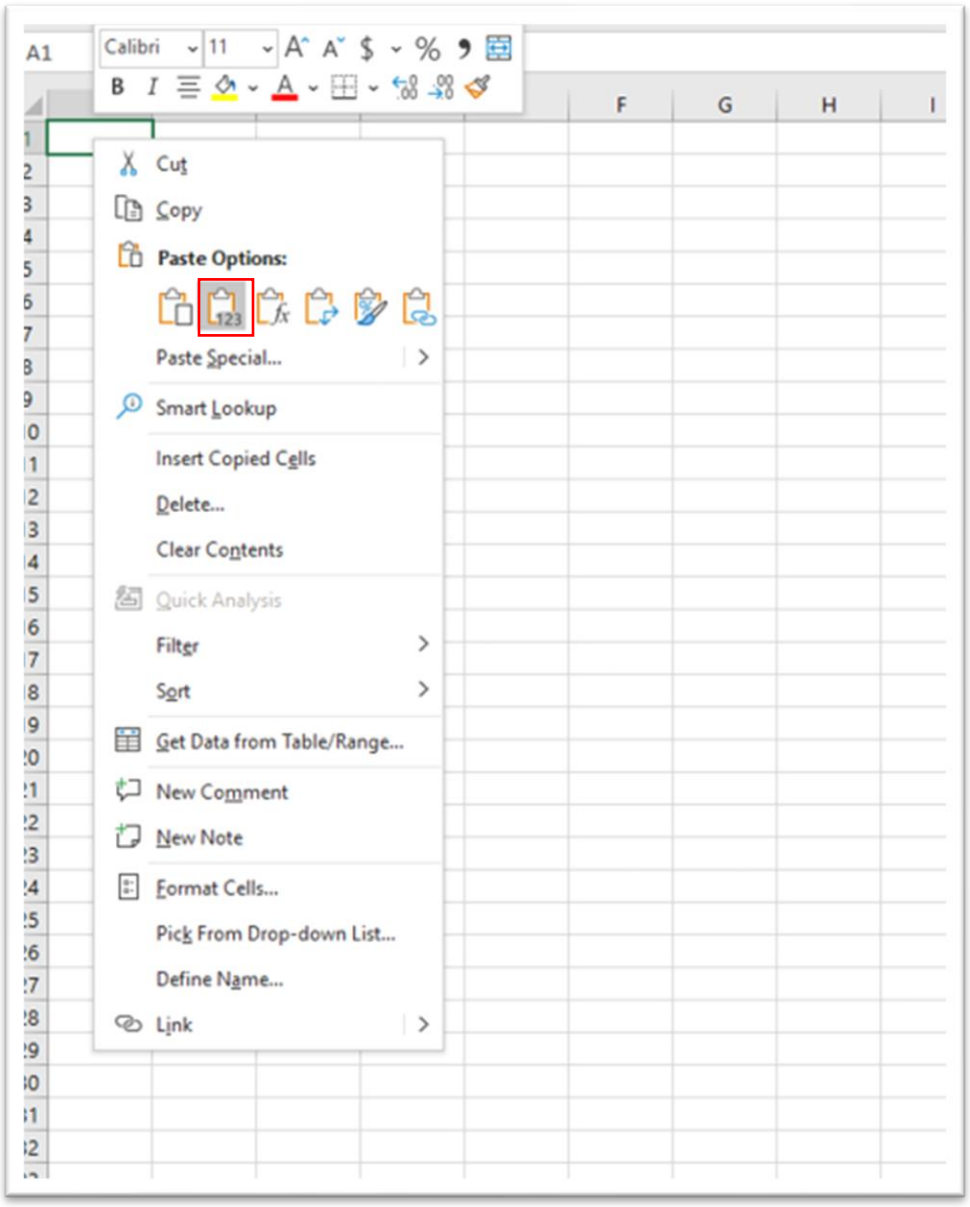
Select and copy this entire table.



Row Labels	Max of popData2019	Sum of deaths
Afghanistan	38,041,757	1,529
Albania	2,862,427	487
Algeria	43,053,054	1,931
Andorra		72
Angola		270
Anguilla		0
Antigua_and_Barbuda	97,115	3
Argentina	44,780,675	29,730
Armenia	2,957,728	1,243
Aruba	106,310	36
Australia	25,203,200	905
Austria	8,858,775	1,006
Azerbaijan	10,047,719	688
Bahamas	389,486	132
Bahrain	1,641,164	316
Bangladesh	163,046,173	5,838
Barbados	287,021	7
Belarus	9,452,409	965
Belgium	11,455,519	11,038
Belize	390,351	51
Benin	11,801,151	41
Bermuda	62,508	9
Bhutan	763,094	0
Bolivia	11,513,102	8,672
Bonaire, Saint Eustatius and Saba	25,983	3
Bosnia_and_Herzegovina	3,300,998	1,104
Botswana	2,303,703	21
Brazil	211,049,519	157,946
British_Virgin_Islands	30,033	1
Brunei_Darussalam	433,296	3

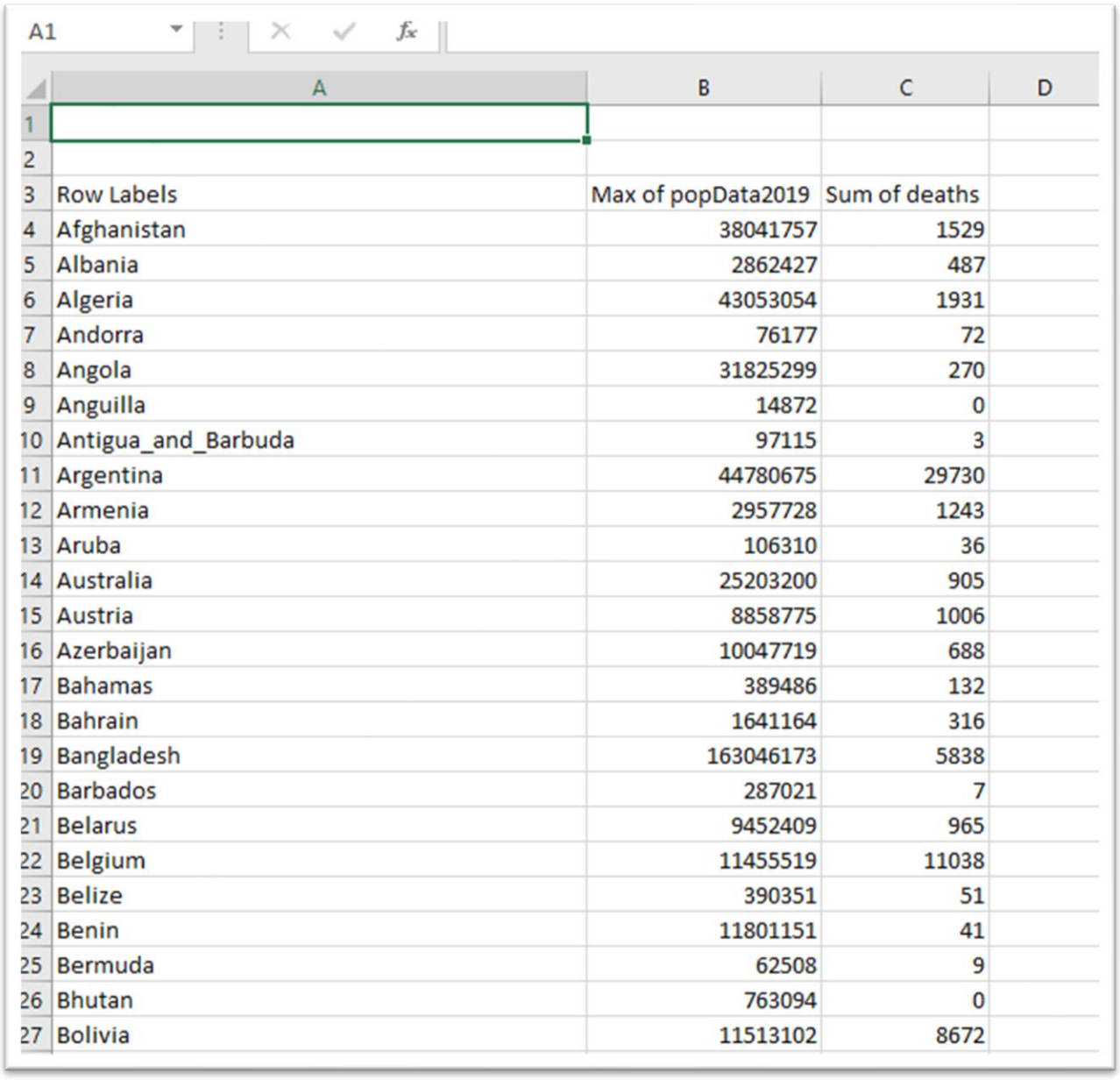
Select a new worksheet

We will use the “paste special” option.



To learn more about the paste special command, you can consult page 75 of The Data Journalist and its accompanying tutorial. Paste special is a useful option for analysing data that can also be uploaded to visualization programs such as Tableau, Infogram or Datawrapper. Essentially, paste special allows you to ONLY past the values in the table, not the formula Excel used to create the table. For Mac users,

you want to select the “values” option if you cannot find paste special.

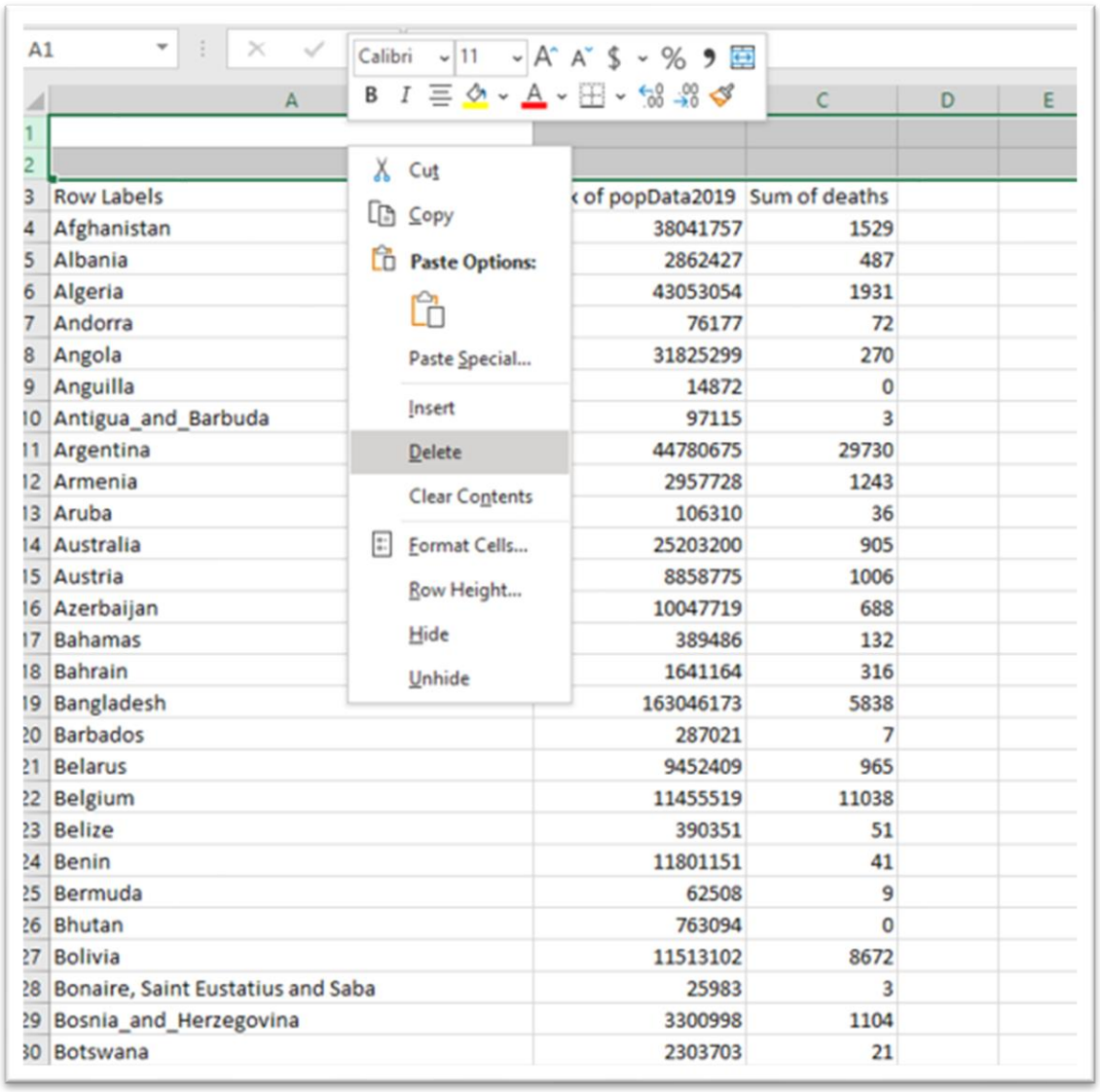


	A	B	C	D
1				
2				
3	Row Labels	Max of popData2019	Sum of deaths	
4	Afghanistan	38041757	1529	
5	Albania	2862427	487	
6	Algeria	43053054	1931	
7	Andorra	76177	72	
8	Angola	31825299	270	
9	Anguilla	14872	0	
10	Antigua_and_Barbuda	97115	3	
11	Argentina	44780675	29730	
12	Armenia	2957728	1243	
13	Aruba	106310	36	
14	Australia	25203200	905	
15	Austria	8858775	1006	
16	Azerbaijan	10047719	688	
17	Bahamas	389486	132	
18	Bahrain	1641164	316	
19	Bangladesh	163046173	5838	
20	Barbados	287021	7	
21	Belarus	9452409	965	
22	Belgium	11455519	11038	
23	Belize	390351	51	
24	Benin	11801151	41	
25	Bermuda	62508	9	
26	Bhutan	763094	0	
27	Bolivia	11513102	8672	

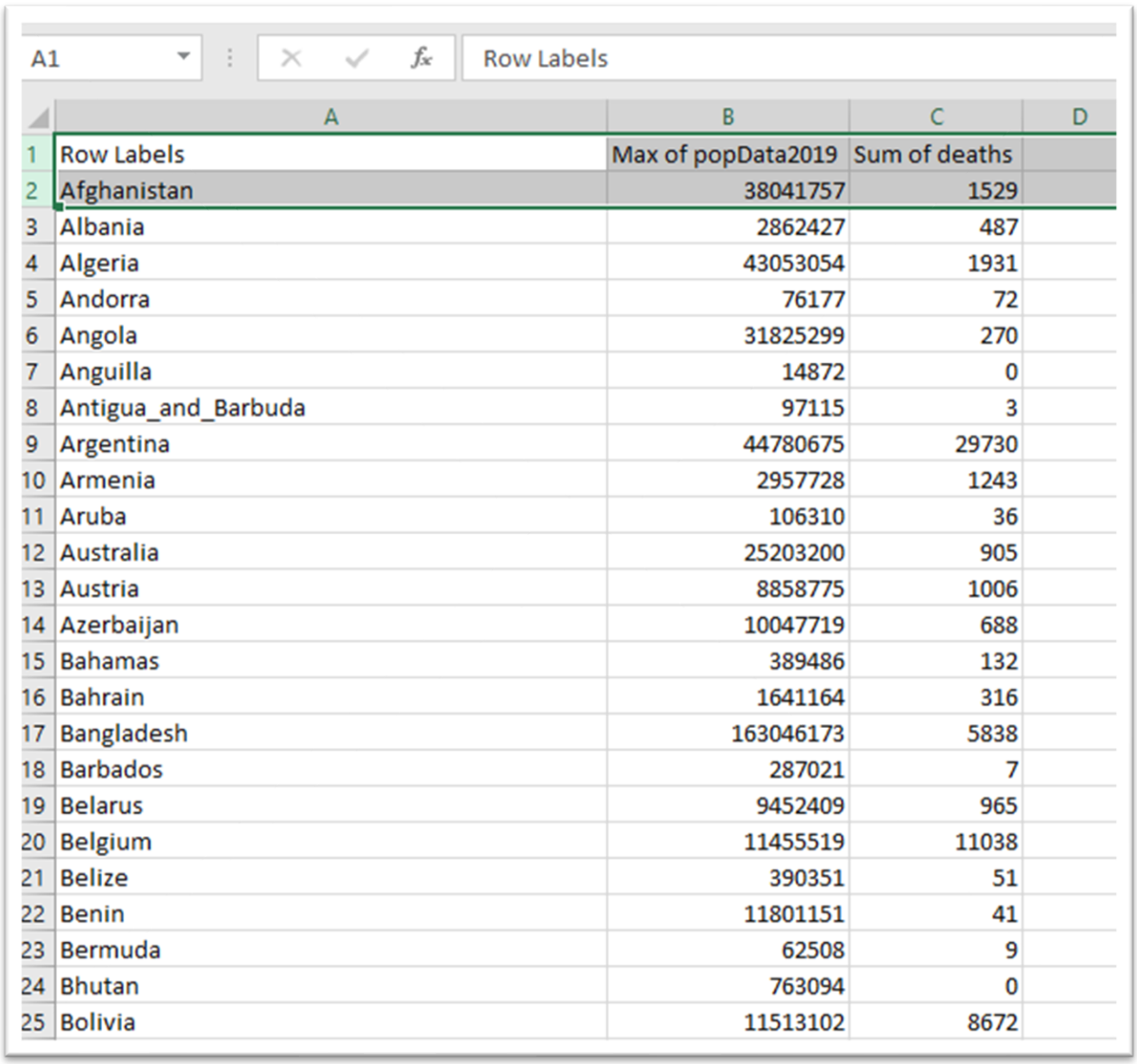
The paste special has also stripped all the formatting used to add commas to the numbers.

Time for clean-up.

Delete the first two rows.



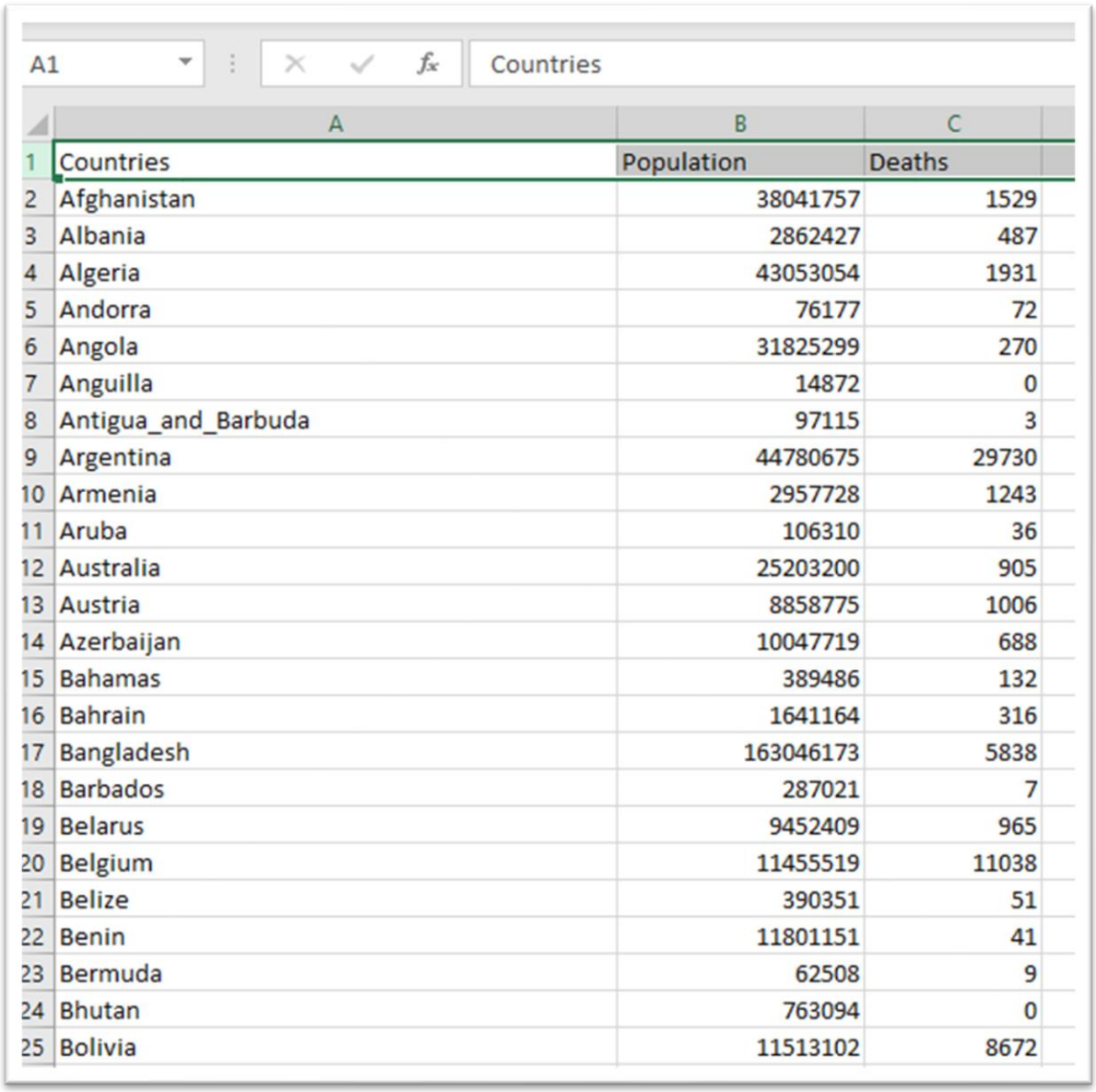
Row Labels	k of popData2019	Sum of deaths
Afghanistan	38041757	1529
Albania	2862427	487
Algeria	43053054	1931
Andorra	76177	72
Angola	31825299	270
Anguilla	14872	0
Antigua_and_Barbuda	97115	3
Argentina	44780675	29730
Armenia	2957728	1243
Aruba	106310	36
Australia	25203200	905
Austria	8858775	1006
Azerbaijan	10047719	688
Bahamas	389486	132
Bahrain	1641164	316
Bangladesh	163046173	5838
Barbados	287021	7
Belarus	9452409	965
Belgium	11455519	11038
Belize	390351	51
Benin	11801151	41
Bermuda	62508	9
Bhutan	763094	0
Bolivia	11513102	8672
Bonaire, Saint Eustatius and Saba	25983	3
Bosnia_and_Herzegovina	3300998	1104
Botswana	2303703	21



A1 | Row Labels

	A	B	C	D
1	Row Labels	Max of popData2019	Sum of deaths	
2	Afghanistan	38041757	1529	
3	Albania	2862427	487	
4	Algeria	43053054	1931	
5	Andorra	76177	72	
6	Angola	31825299	270	
7	Anguilla	14872	0	
8	Antigua_and_Barbuda	97115	3	
9	Argentina	44780675	29730	
10	Armenia	2957728	1243	
11	Aruba	106310	36	
12	Australia	25203200	905	
13	Austria	8858775	1006	
14	Azerbaijan	10047719	688	
15	Bahamas	389486	132	
16	Bahrain	1641164	316	
17	Bangladesh	163046173	5838	
18	Barbados	287021	7	
19	Belarus	9452409	965	
20	Belgium	11455519	11038	
21	Belize	390351	51	
22	Benin	11801151	41	
23	Bermuda	62508	9	
24	Bhutan	763094	0	
25	Bolivia	11513102	8672	

Rename the columns.



A1 | Countries

	A	B	C
1	Countries	Population	Deaths
2	Afghanistan	38041757	1529
3	Albania	2862427	487
4	Algeria	43053054	1931
5	Andorra	76177	72
6	Angola	31825299	270
7	Anguilla	14872	0
8	Antigua_and_Barbuda	97115	3
9	Argentina	44780675	29730
10	Armenia	2957728	1243
11	Aruba	106310	36
12	Australia	25203200	905
13	Austria	8858775	1006
14	Azerbaijan	10047719	688
15	Bahamas	389486	132
16	Bahrain	1641164	316
17	Bangladesh	163046173	5838
18	Barbados	287021	7
19	Belarus	9452409	965
20	Belgium	11455519	11038
21	Belize	390351	51
22	Benin	11801151	41
23	Bermuda	62508	9
24	Bhutan	763094	0
25	Bolivia	11513102	8672

Scroll to the bottom of the table and delete the “Grand Total” row.

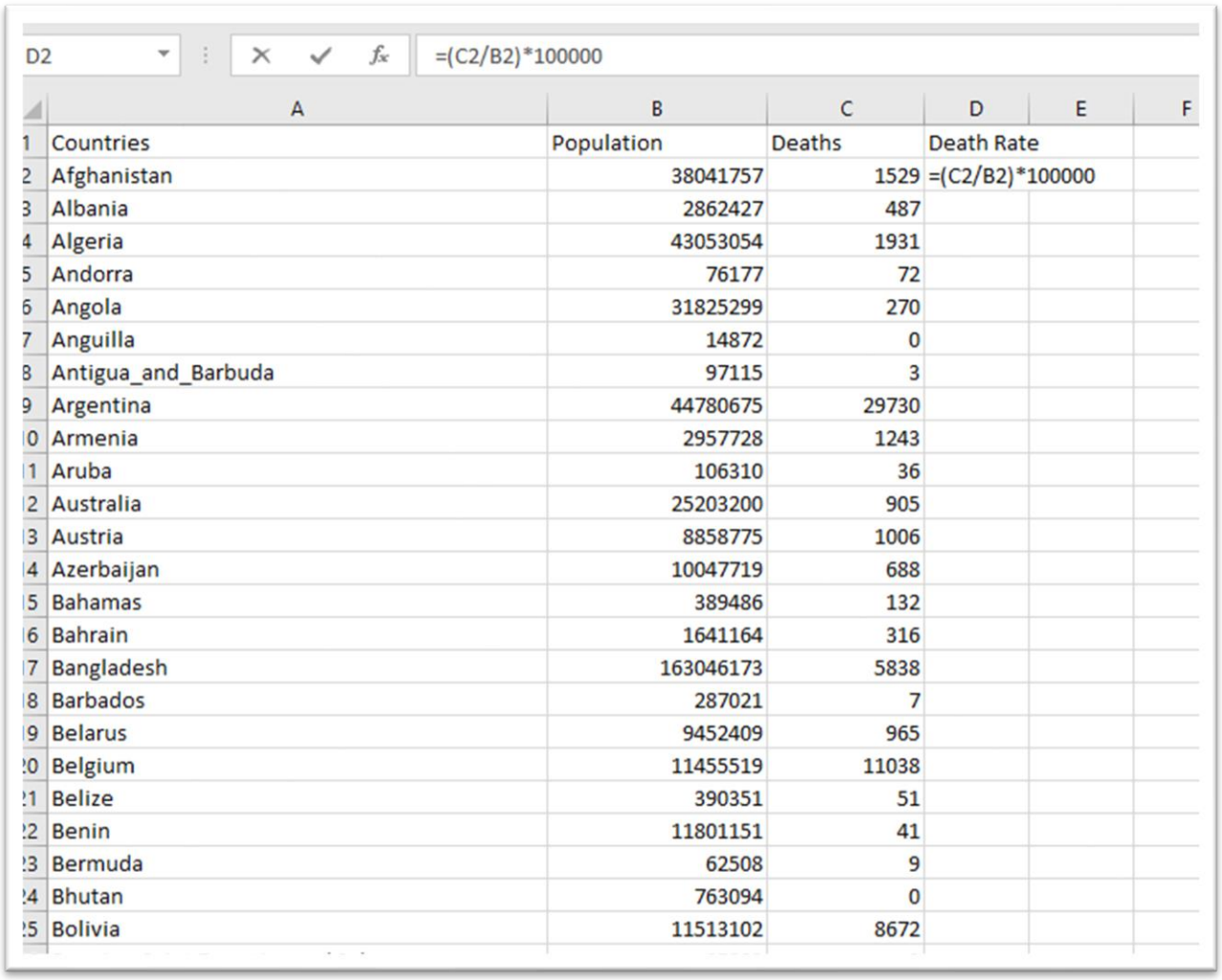
	A	B	C	D
86	Sweden	10230185	5918	
87	Switzerland	8544527	1929	
88	Syria	17070132	275	
89	Taiwan	23773881	7	
90	Tajikistan	9321023	81	
91	Thailand	69625581	59	
92	Timor_Leste	1293120	0	
93	Togo	8082359	54	
94	Trinidad_and_Tobago	1394969	106	
95	Tunisia	11694721	983	
96	Turkey	82003882	9950	
97	Turks_and_Caicos_islands	38194	6	
98	Uganda	44269587	103	
99	Ukraine	43993643	6590	
00	United_Arab_Emirates	9770526	482	
01	United_Kingdom	66647112	45365	
02	United_Republic_of_Tanzania	58005461	21	
03	United_States_of_America	329064917	226723	
04	United_States_Virgin_Islands	104579	21	
05	Uruguay	3461731	54	
06	Uzbekistan	32981715	557	
07	Venezuela	28515829	780	
08	Vietnam	96462108	35	
09	Wallis_and_Futuna		0	
10	Western_Sahara	582458	1	
11	Yemen	29161922	600	
12	Zambia	17861034	348	
13	Zimbabwe	14645473	242	
14	Grand Total	1433783692	1168076	
15				

This will avoid including the grand total value in our sort. To keep the “Grand Total” row, insert a space between it and Zimbabwe. Or you can delete row since we won’t need it in our calculation.

What we can now do is create a new, sortable field for death rate, something we could have done in a pivot table by creating a calculated field.

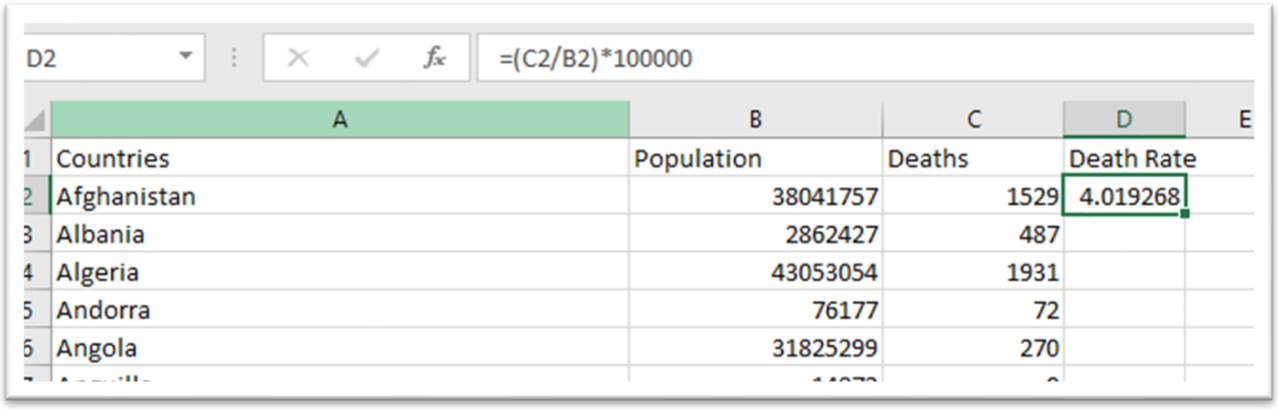
Type “Death Rate” into D1.

In D2 type the formula for death rate <<=(c2/b2)*100000>>



D2 =(C2/B2)*100000

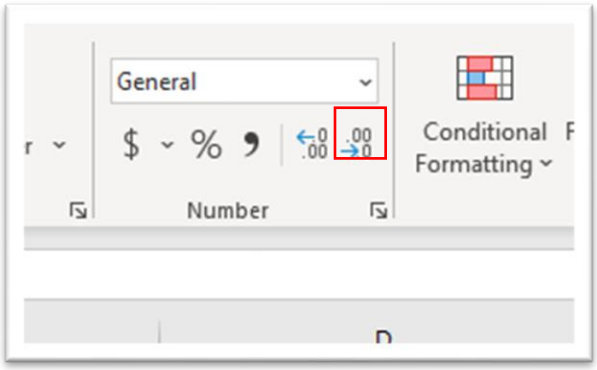
	A	B	C	D	E	F
1	Countries	Population	Deaths	Death Rate		
2	Afghanistan	38041757	1529	=(C2/B2)*100000		
3	Albania	2862427	487			
4	Algeria	43053054	1931			
5	Andorra	76177	72			
6	Angola	31825299	270			
7	Anguilla	14872	0			
8	Antigua_and_Barbuda	97115	3			
9	Argentina	44780675	29730			
10	Armenia	2957728	1243			
11	Aruba	106310	36			
12	Australia	25203200	905			
13	Austria	8858775	1006			
14	Azerbaijan	10047719	688			
15	Bahamas	389486	132			
16	Bahrain	1641164	316			
17	Bangladesh	163046173	5838			
18	Barbados	287021	7			
19	Belarus	9452409	965			
20	Belgium	11455519	11038			
21	Belize	390351	51			
22	Benin	11801151	41			
23	Bermuda	62508	9			
24	Bhutan	763094	0			
25	Bolivia	11513102	8672			

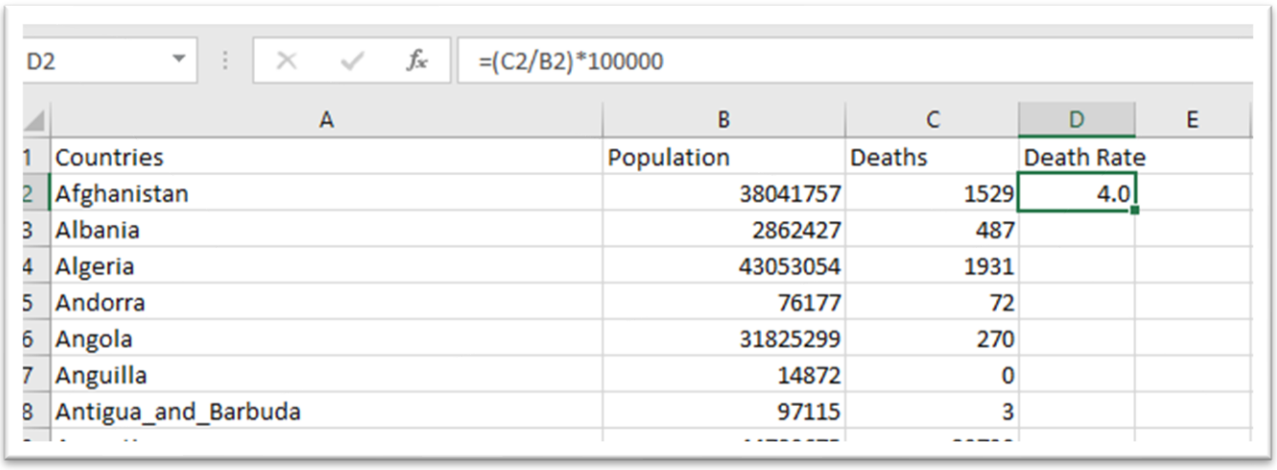


D2 =(C2/B2)*100000

	A	B	C	D	E
1	Countries	Population	Deaths	Death Rate	
2	Afghanistan	38041757	1529	4.019268	
3	Albania	2862427	487		
4	Algeria	43053054	1931		
5	Andorra	76177	72		
6	Angola	31825299	270		

Give the number one decimal place by using the decimal decrease icon number on the menu's "Number" section.

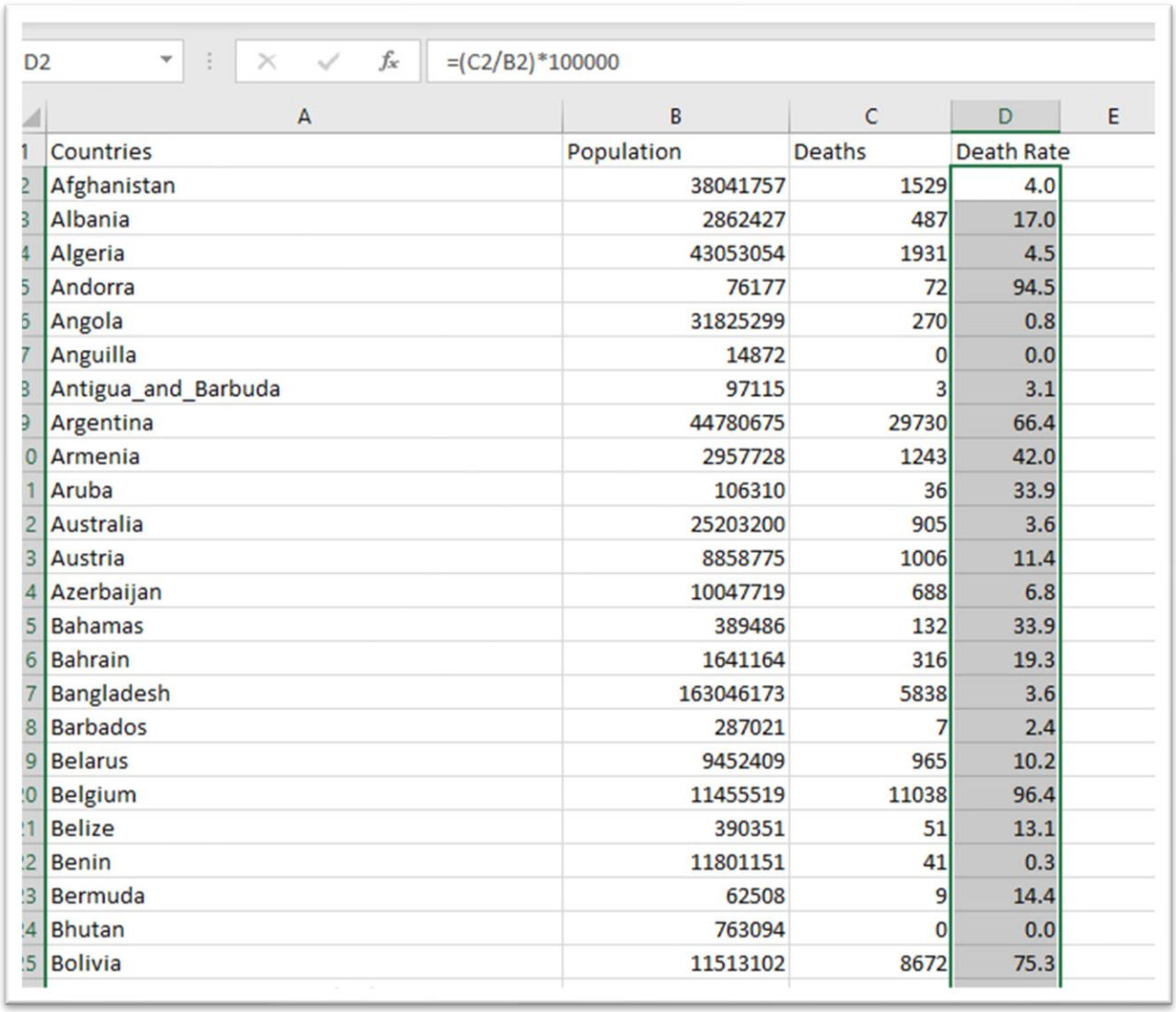




	A	B	C	D	E
1	Countries	Population	Deaths	Death Rate	
2	Afghanistan	38041757	1529	4.0	
3	Albania	2862427	487		
4	Algeria	43053054	1931		
5	Andorra	76177	72		
6	Angola	31825299	270		
7	Anguilla	14872	0		
8	Antigua_and_Barbuda	97115	3		

Copy the formula for the rest of the cells in column D, by placing your cursor over the thick black square at the bottom right-hand corner of the D2 cell reference, and double clicking once the cursor turns into a black cross. If it doesn't work, you can copy the formula, highlight the row to the bottom of the table and paste. Either method will populate

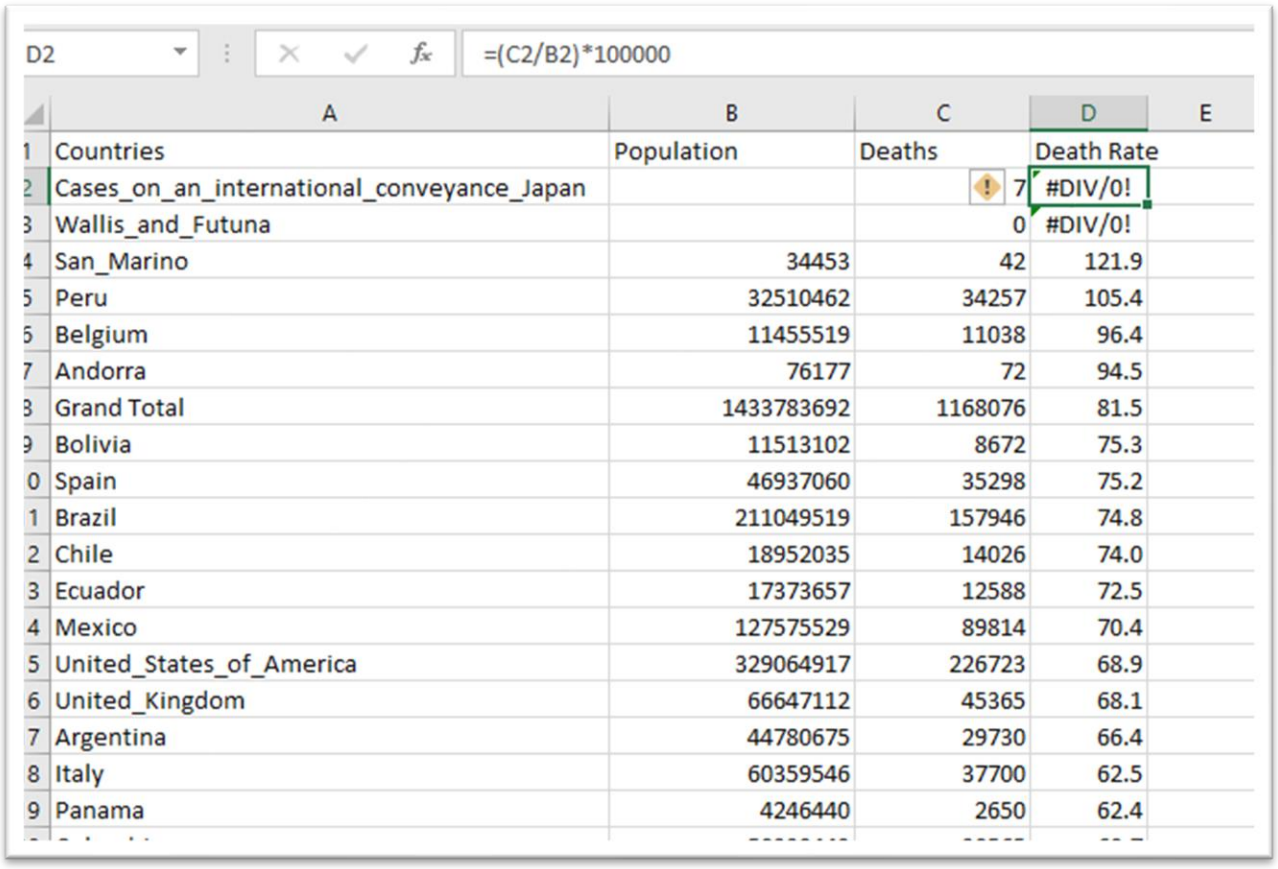
each cell in the column with the death rate number.



D2 =(C2/B2)*100000

	A	B	C	D	E
1	Countries	Population	Deaths	Death Rate	
2	Afghanistan	38041757	1529	4.0	
3	Albania	2862427	487	17.0	
4	Algeria	43053054	1931	4.5	
5	Andorra	76177	72	94.5	
6	Angola	31825299	270	0.8	
7	Anguilla	14872	0	0.0	
8	Antigua_and_Barbuda	97115	3	3.1	
9	Argentina	44780675	29730	66.4	
10	Armenia	2957728	1243	42.0	
11	Aruba	106310	36	33.9	
12	Australia	25203200	905	3.6	
13	Austria	8858775	1006	11.4	
14	Azerbaijan	10047719	688	6.8	
15	Bahamas	389486	132	33.9	
16	Bahrain	1641164	316	19.3	
17	Bangladesh	163046173	5838	3.6	
18	Barbados	287021	7	2.4	
19	Belarus	9452409	965	10.2	
20	Belgium	11455519	11038	96.4	
21	Belize	390351	51	13.1	
22	Benin	11801151	41	0.3	
23	Bermuda	62508	9	14.4	
24	Bhutan	763094	0	0.0	
25	Bolivia	11513102	8672	75.3	

Sort the “Death Rate” column in descending order.

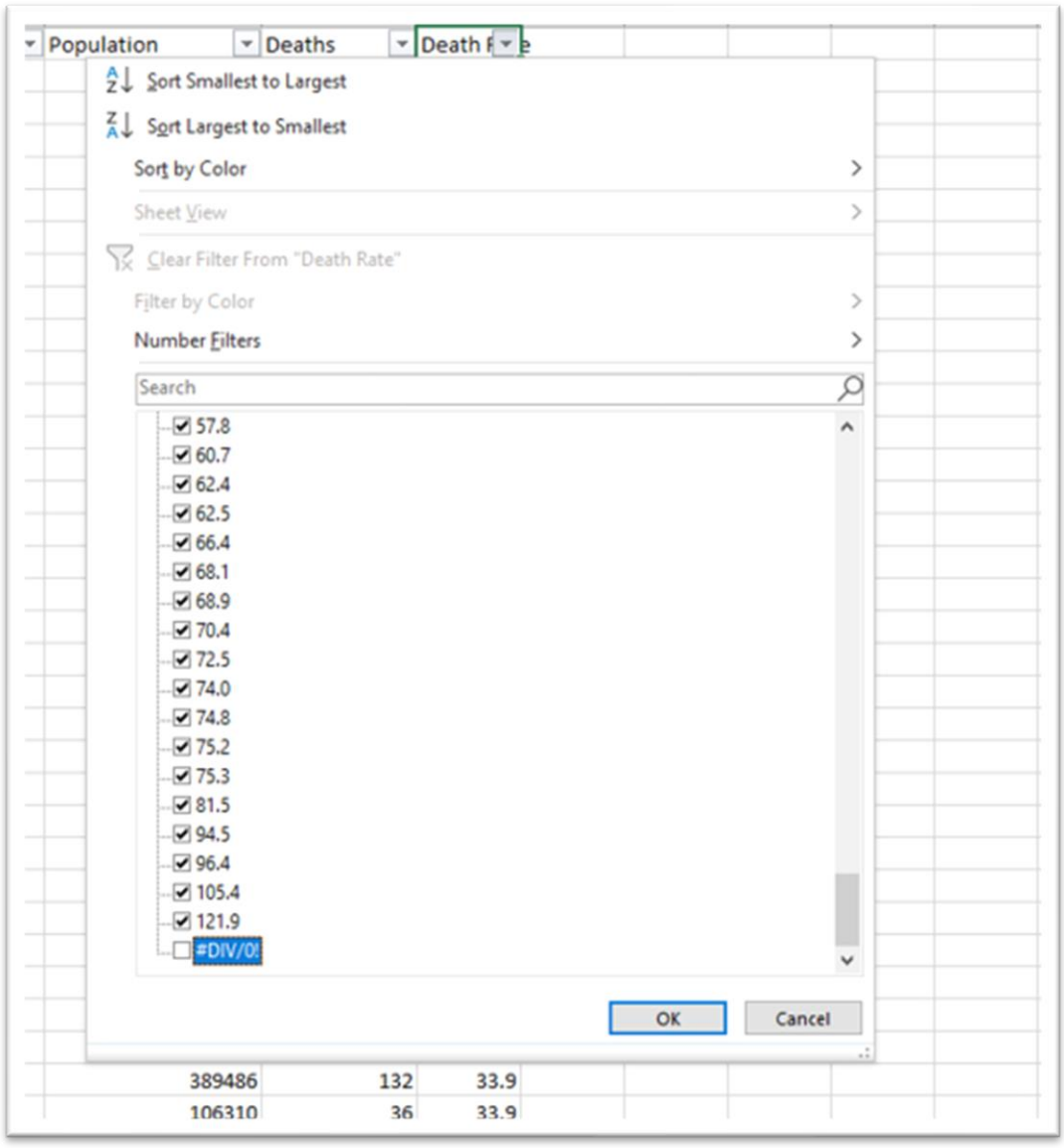


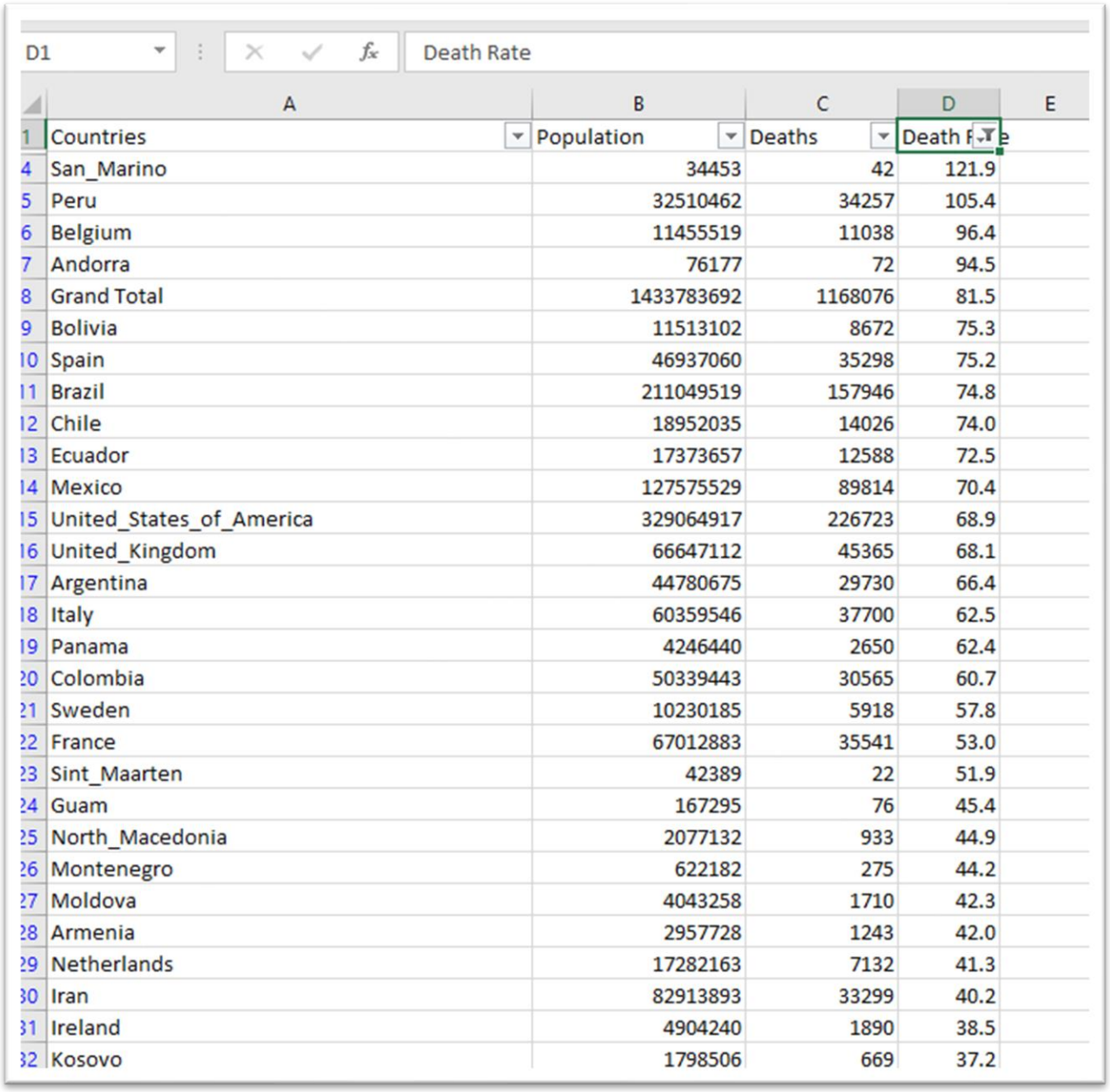
D2 =(C2/B2)*100000

	A	B	C	D	E
1	Countries	Population	Deaths	Death Rate	
2	Cases_on_an_international_conveyance_Japan		7	#DIV/0!	
3	Wallis_and_Futuna		0	#DIV/0!	
4	San_Marino	34453	42	121.9	
5	Peru	32510462	34257	105.4	
6	Belgium	11455519	11038	96.4	
7	Andorra	76177	72	94.5	
8	Grand Total	1433783692	1168076	81.5	
9	Bolivia	11513102	8672	75.3	
10	Spain	46937060	35298	75.2	
11	Brazil	211049519	157946	74.8	
12	Chile	18952035	14026	74.0	
13	Ecuador	17373657	12588	72.5	
14	Mexico	127575529	89814	70.4	
15	United_States_of_America	329064917	226723	68.9	
16	United_Kingdom	66647112	45365	68.1	
17	Argentina	44780675	29730	66.4	
18	Italy	60359546	37700	62.5	
19	Panama	4246440	2650	62.4	

Cells D1 and D2 contain the same error message: dividing by zero creates a null value.

Apply the filter and de-select the error message.



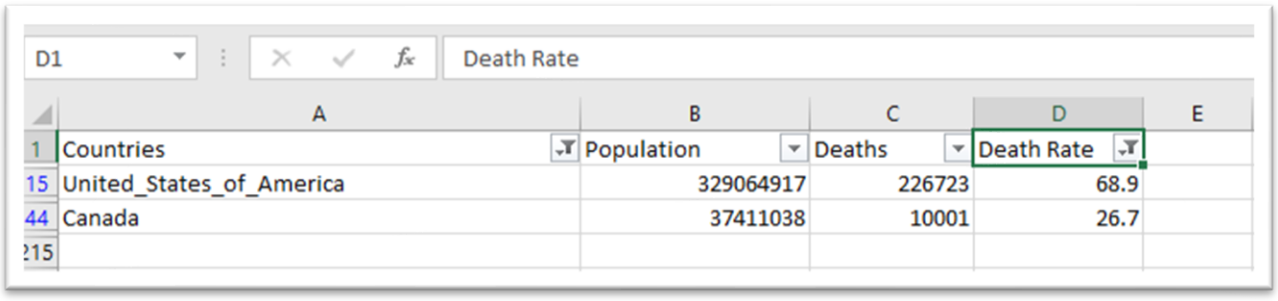


D1 | Death Rate

	A	B	C	D	E
1	Countries	Population	Deaths	Death R	
4	San_Marino	34453	42	121.9	
5	Peru	32510462	34257	105.4	
6	Belgium	11455519	11038	96.4	
7	Andorra	76177	72	94.5	
8	Grand Total	1433783692	1168076	81.5	
9	Bolivia	11513102	8672	75.3	
10	Spain	46937060	35298	75.2	
11	Brazil	211049519	157946	74.8	
12	Chile	18952035	14026	74.0	
13	Ecuador	17373657	12588	72.5	
14	Mexico	127575529	89814	70.4	
15	United_States_of_America	329064917	226723	68.9	
16	United_Kingdom	66647112	45365	68.1	
17	Argentina	44780675	29730	66.4	
18	Italy	60359546	37700	62.5	
19	Panama	4246440	2650	62.4	
20	Colombia	50339443	30565	60.7	
21	Sweden	10230185	5918	57.8	
22	France	67012883	35541	53.0	
23	Sint_Maarten	42389	22	51.9	
24	Guam	167295	76	45.4	
25	North_Macedonia	2077132	933	44.9	
26	Montenegro	622182	275	44.2	
27	Moldova	4043258	1710	42.3	
28	Armenia	2957728	1243	42.0	
29	Netherlands	17282163	7132	41.3	
30	Iran	82913893	33299	40.2	
31	Ireland	4904240	1890	38.5	
32	Kosovo	1798506	669	37.2	

Countries with small populations will have higher death rates. Still, this now allows for a better comparison.

Filter for Canada and the United States.

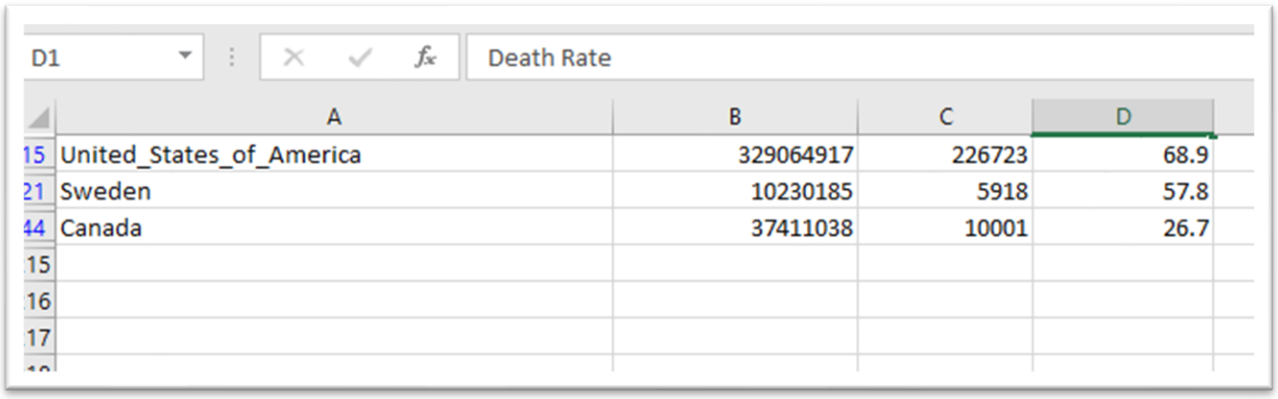


D1 | Death Rate

	A	B	C	D	E
1	Countries	Population	Deaths	Death Rate	
15	United_States_of_America	329064917	226723	68.9	
44	Canada	37411038	10001	26.7	
215					

The U.S. death rate is higher.

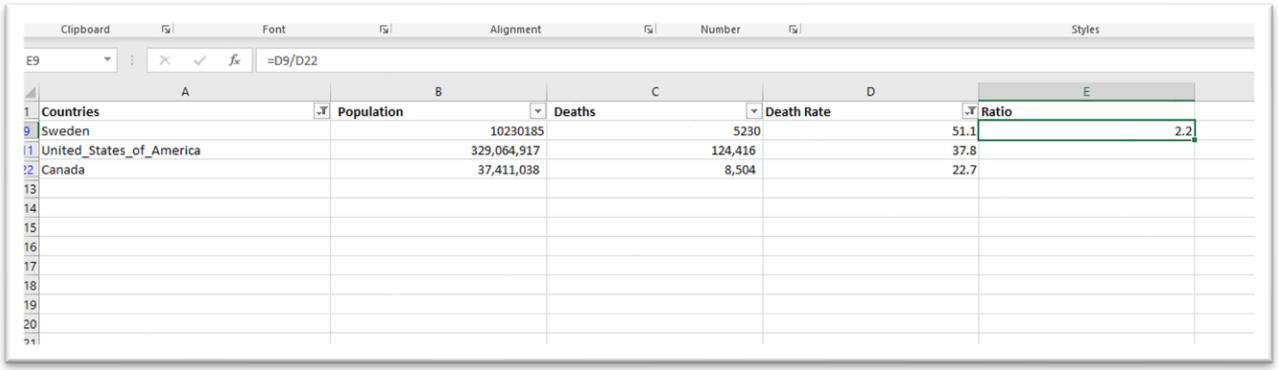
For good measure, throw Sweden into the mix.



D1 | Death Rate

	A	B	C	D
15	United_States_of_America	329064917	226723	68.9
21	Sweden	10230185	5918	57.8
44	Canada	37411038	10001	26.7
15				
16				
17				

There was a reason that country featured so prominently on our previous lists of death numbers. A much smaller country with a population (10.34 million) of less than a third of Canada's population has almost double the death rate.



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E9 | =D9/D22

	A	B	C	D	E
1	Countries	Population	Deaths	Death Rate	Ratio
9	Sweden	10230185	5230	51.1	2.2
11	United_States_of_America	329,064,917	124,416	37.8	
12	Canada	37,411,038	8,504	22.7	
13					
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We can see how pivot tables, the paste special and simple math to determine ratios allow for a deeper dive into the data for more meaningful analysis and story ideas.

You can use the data from Public Health Agency of Canada's website to practice the steps in this tutorial. The data is only available in csv format (highlighted in red), which you can see in the screen grab below.