# ASSIGNMENT

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Data Technician Bootcamp @ JustIt
MAY'24

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# Data Story

A Data is an information. It could be structured or unstructured. It could be number, string, date/time, picture etc. And analysis of the same is also differs person to person. Analysis could be in the form of a paragraph, detail report, or simple chart/visualisation. From these options Visualisation is more convenient/easy to understand for most of the audience. There are so many software for data analysis like Excel, PowerBi, Tableau, Looker, klipfolio etc.

## Scenario

We have excel file, The Wealth of nations.xlxs, which has data related to top GDP for different countries and years, top countries for highest smartphone users in year 2020 and life expectancy of different countries for year 2020.

Only reading this data/information we won't be able to conclude much. Instead using this data we can create different types of charts/visualisation which is easy to understand to end users and helpful for decision making.

Here we are going to create visualisation using Excel and Tableau for our data analysis.

## Policies & Procedures

It is important to note that regardless of whatever is the data it is essential for organisation to protect the data handling. Each organisation has different policies and procedures to handle data.

Policies provide clarity and consistency by communicating what people need to do and why. These policies cover areas such as data protection, records management, and information security. All policies and procedures should follow an agreed format and style and regularly review existing policies to keep data up-to-date and fit for purpose.

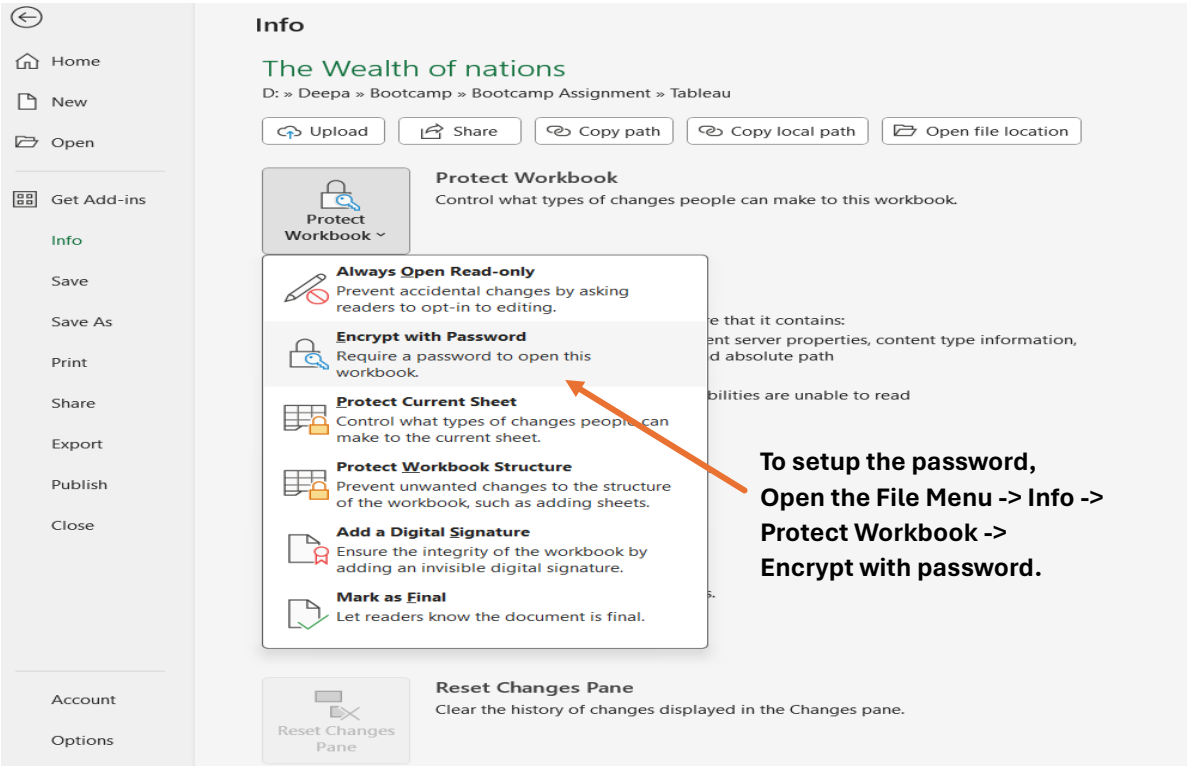
Along the side Protection of data is equally important. Things to consider while maintaining the safety of using data,

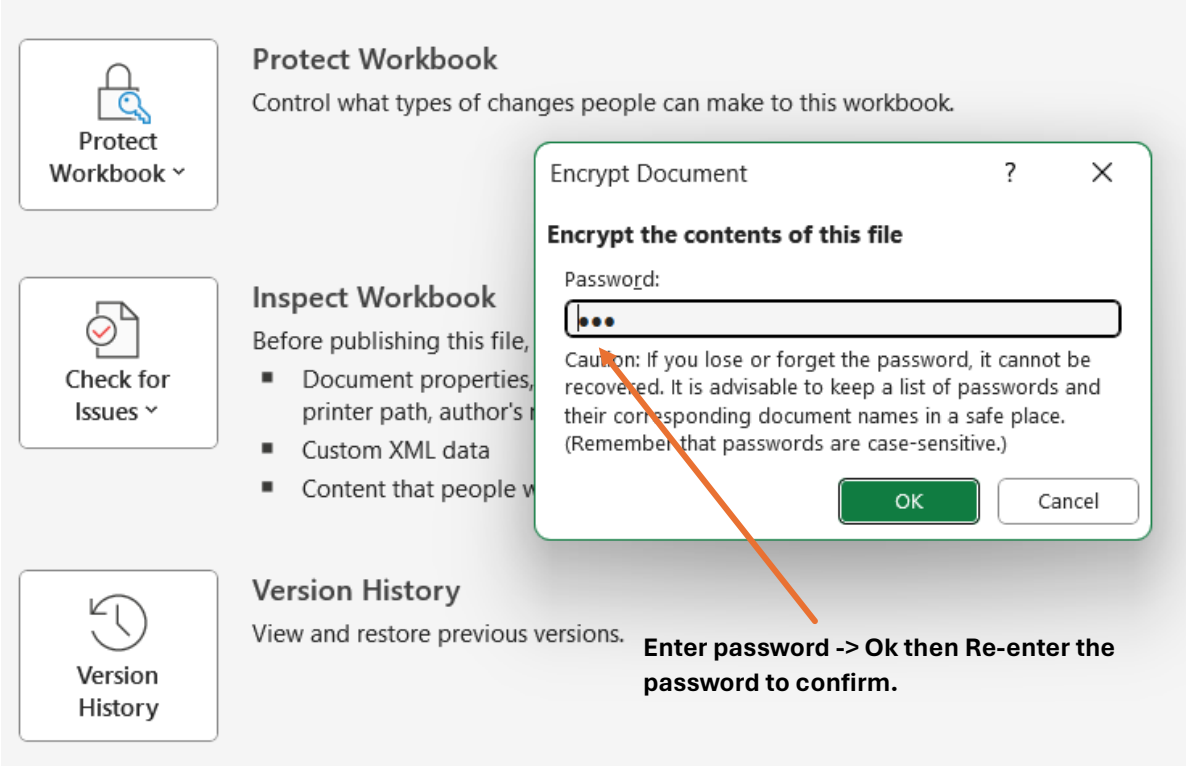
- specifying explicit purposes for data usage.
- Ensuring data is adequate, relevant, and limited to what is necessary.
- Keeping data accurate and up to date.
- Retaining data only as long as necessary.
- Handling data securely to prevent unauthorized access, loss, or damage.

# Excel

In Excel, I am going to work with 'The Wealth of nations.xlsx' file. This file has 3 different sheets and from that I am going to use data from 'GDP' sheet. So, let's begin,

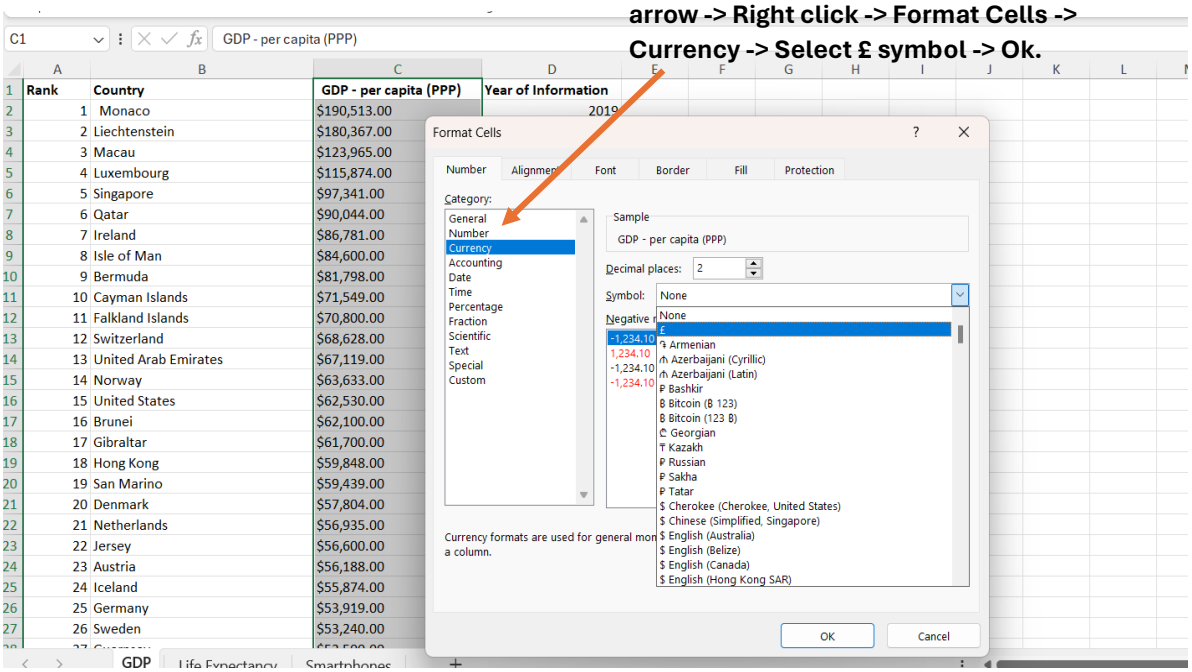
1. **Setting up the password,**



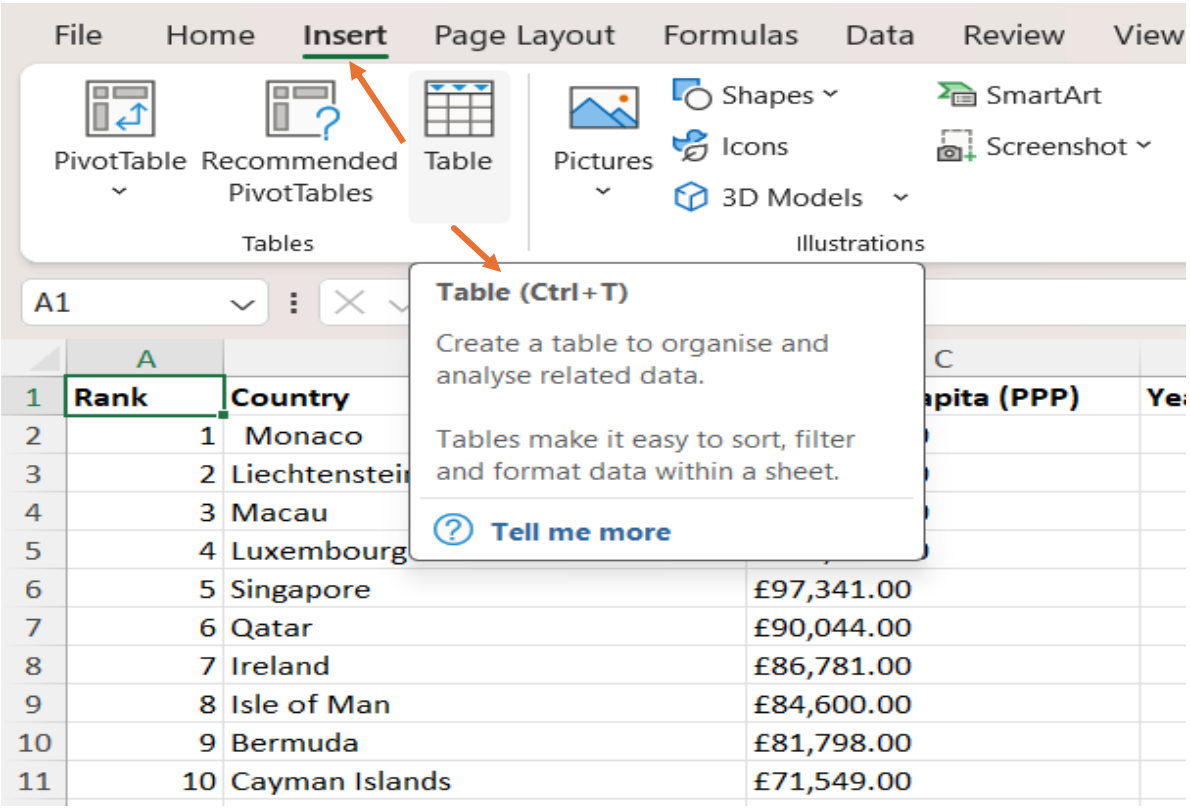



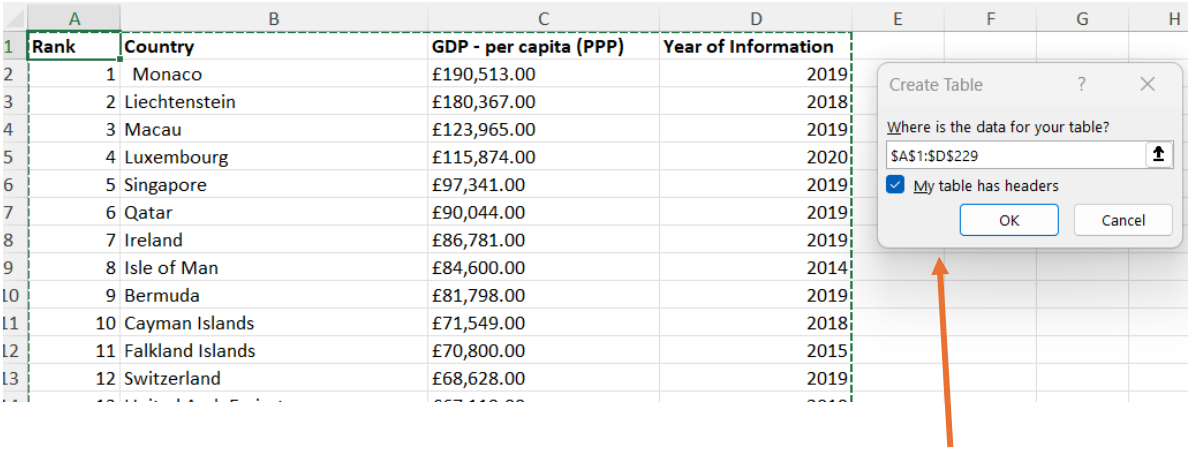
## 2. Change currency symbol,

**Select the column C -> ctrl+shift+down arrow -> Right click -> Format Cells -> Currency -> Select £ symbol -> Ok.**




## 3. Turn the GDP sheet into table,






| Rank | Country | GDP - per capita (PPP) | Year of Information |
|---|---|---|---|
| 1 | Monaco | £190,513.00 | 2019 |
| 2 | Liechtenstein | £180,367.00 | 2018 |
| 3 | Macau | £123,965.00 | 2019 |
| 4 | Luxembourg | £115,874.00 | 2020 |
| 5 | Singapore | £97,341.00 | 2019 |
| 6 | Qatar | £90,044.00 | 2019 |
| 7 | Ireland | £86,781.00 | 2019 |
| 8 | Isle of Man | £84,600.00 | 2014 |
| 9 | Bermuda | £81,798.00 | 2019 |
| 10 | Cayman Islands | £71,549.00 | 2018 |
| 11 | Falkland Islands | £70,800.00 | 2015 |
| 12 | Switzerland | £68,628.00 | 2019 |

**Select the range for table.**

| Rank | Country | GDP - per capita (PPP) | Year of Information |
|---|---|---|---|
| 1 | Monaco | £190,513.00 | 2019 |
| 2 | Liechtenstein | £180,367.00 | 2018 |
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| 9 | Bermuda | £81,798.00 | 2019 |
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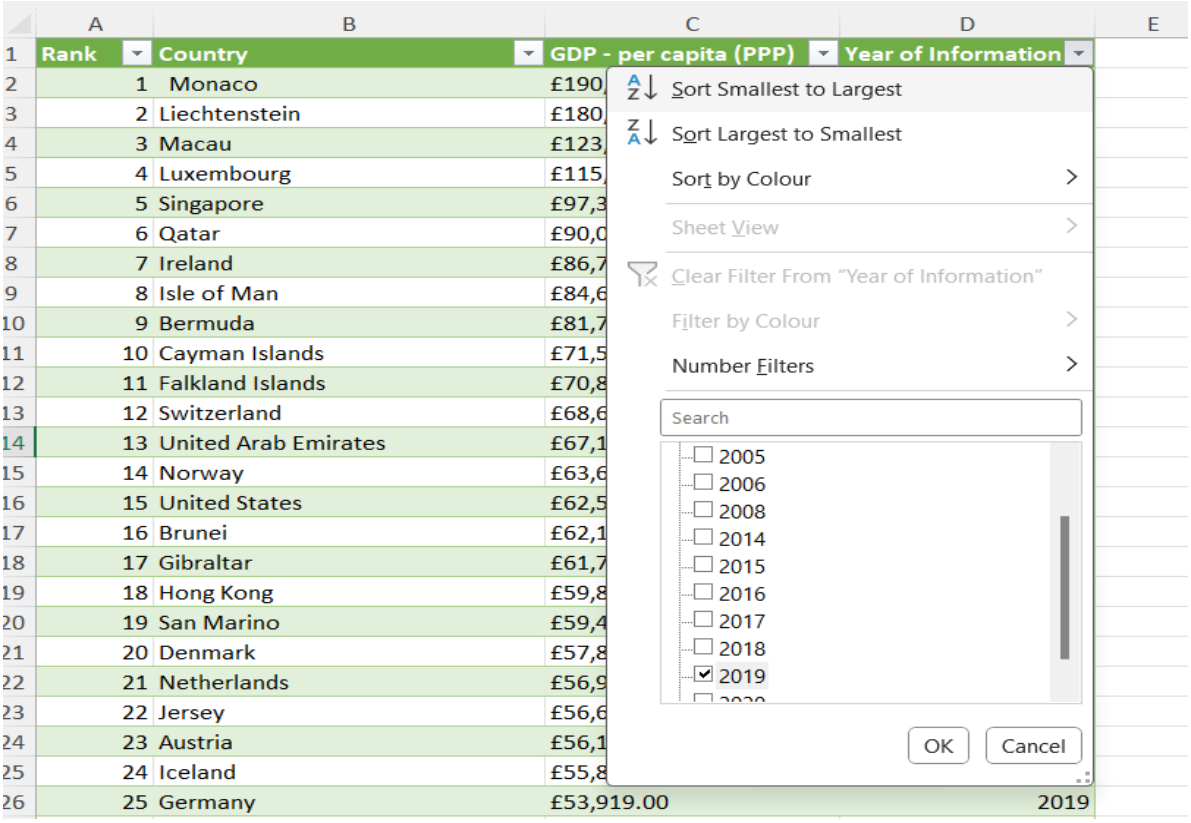
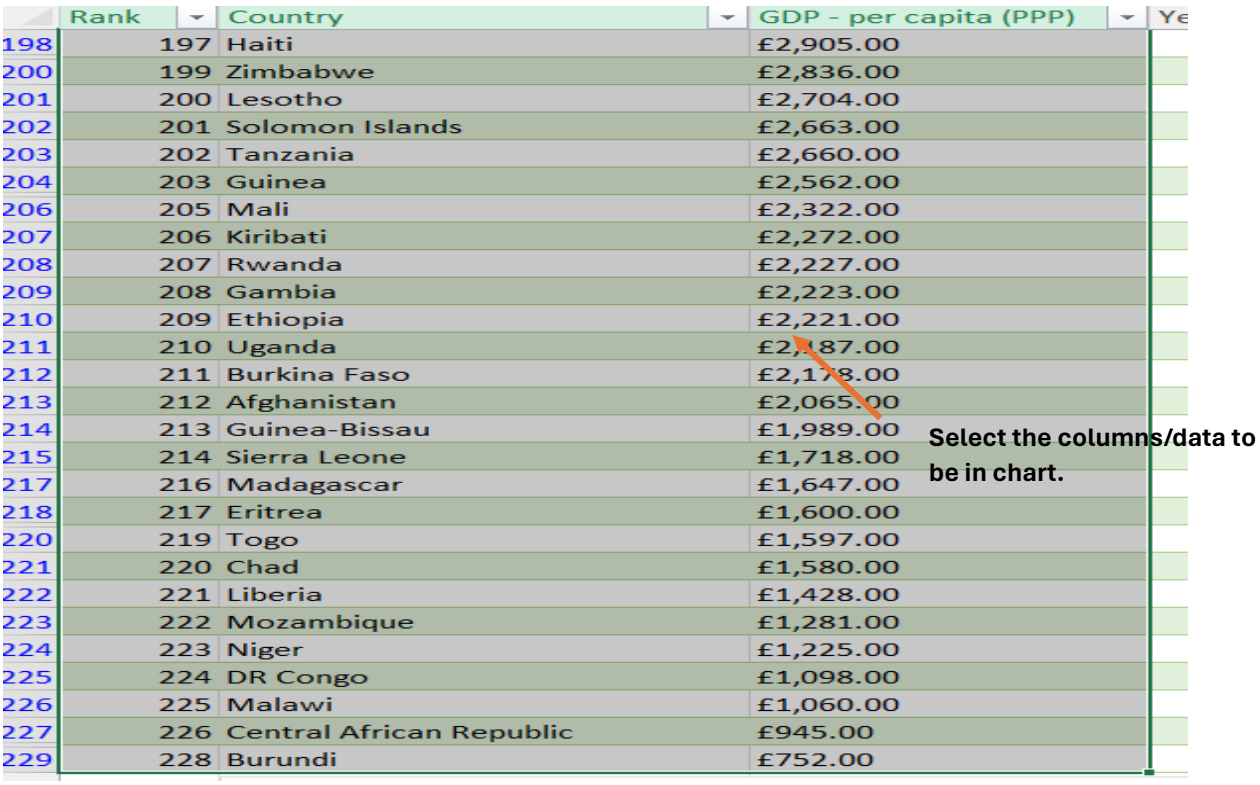
| 11 | Falkland Islands | £70,800.00 | 2015 |
| 12 | Switzerland | £68,628.00 | 2019 |
| 13 | United Arab Emirates | £67,119.00 | 2019 |
| 14 | Norway | £63,633.00 | 2019 |
| 15 | United States | £62,530.00 | 2019 |
| 16 | Brunei | £62,100.00 | 2019 |
| 17 | Gibraltar | £61,700.00 | 2014 |
| 18 | Hong Kong | £59,848.00 | 2019 |
| 19 | San Marino | £59,439.00 | 2018 |
| 20 | Denmark | £57,804.00 | 2019 |
| 21 | Netherlands | £56,935.00 | 2019 |
| 22 | Jersey | £56,600.00 | 2016 |
| 23 | Austria | £56,188.00 | 2019 |
| 24 | Iceland | £55,874.00 | 2019 |
| 25 | Germany | £53,919.00 | 2019 |
| 26 | Sweden | £53,240.00 | 2019 |

4. **Filter the table to display only information from year 2019,**

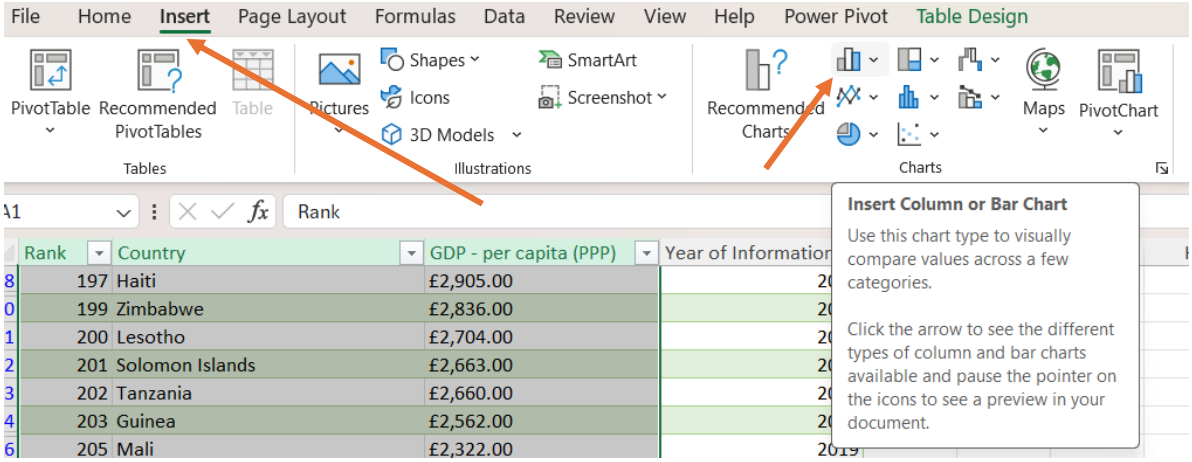



| Rank | Country | GDP - per capita (PPP) | Year of Information |
|---|---|---|---|
| 1 | Monaco | £190, | |
| 2 | Liechtenstein | £180, | |
| 3 | Macau | £123, | |
| 4 | Luxembourg | £115, | |
| 5 | Singapore | £97,3 | |
| 6 | Qatar | £90,0 | |
| 7 | Ireland | £86,7 | |
| 8 | Isle of Man | £84,6 | |
| 9 | Bermuda | £81,7 | |
| 10 | Cayman Islands | £71,5 | |
| 11 | Falkland Islands | £70,8 | |
| 12 | Switzerland | £68,6 | |
| 13 | United Arab Emirates | £67,1 | |
| 14 | Norway | £63,6 | |
| 15 | United States | £62,5 | |
| 16 | Brunei | £62,1 | |
| 17 | Gibraltar | £61,7 | |
| 18 | Hong Kong | £59,8 | |
| 19 | San Marino | £59,4 | |
| 20 | Denmark | £57,8 | |
| 21 | Netherlands | £56,9 | |
| 22 | Jersey | £56,6 | |
| 23 | Austria | £56,1 | |
| 24 | Iceland | £55,8 | |
| 25 | Germany | £53,919.00 | 2019 |

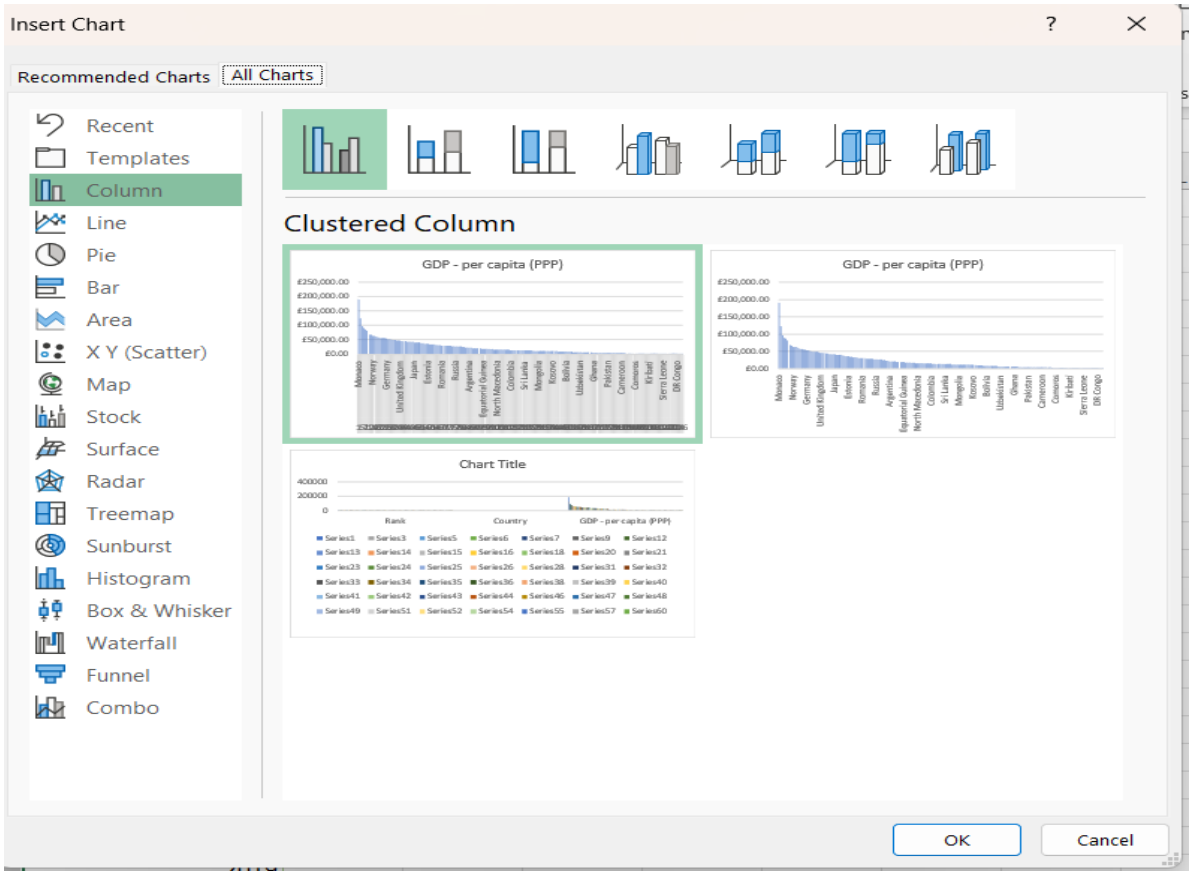
5. **Next create a chart that will only display the following data 'Rank, Country and GDP - per capita (PPP),**



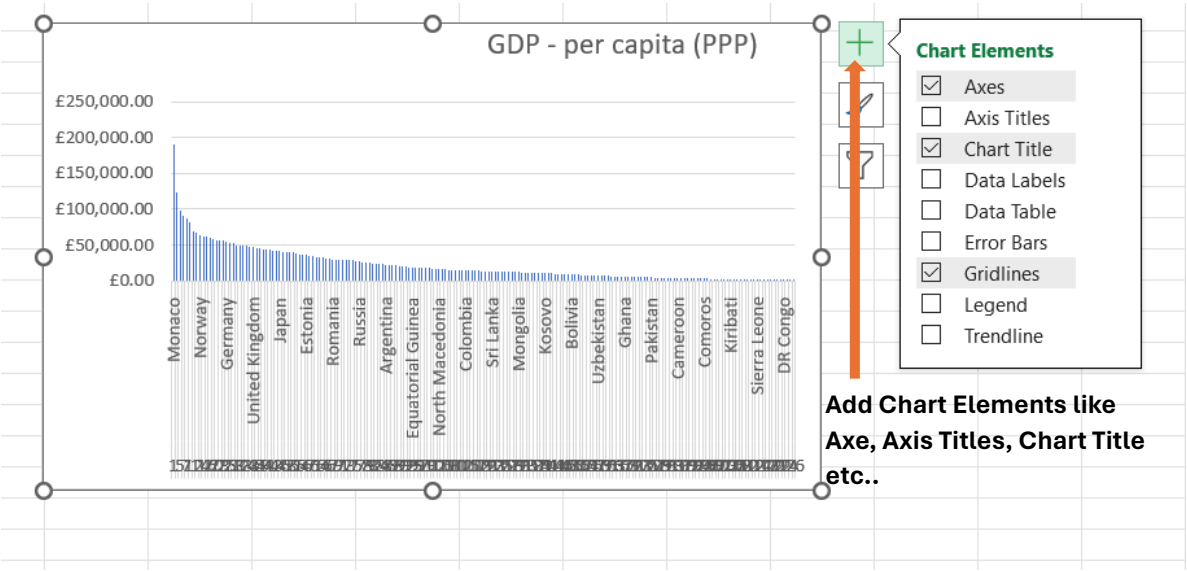

| Rank | Country | GDP - per capita (PPP) |
|---|---|---|
| 197 | Haiti | £2,905.00 |
| 199 | Zimbabwe | £2,836.00 |
| 200 | Lesotho | £2,704.00 |
| 201 | Solomon Islands | £2,663.00 |
| 202 | Tanzania | £2,660.00 |
| 203 | Guinea | £2,562.00 |
| 205 | Mali | £2,322.00 |
| 206 | Kiribati | £2,272.00 |
| 207 | Rwanda | £2,227.00 |
| 208 | Gambia | £2,223.00 |
| 209 | Ethiopia | £2,221.00 |
| 210 | Uganda | £2,187.00 |
| 211 | Burkina Faso | £2,178.00 |
| 212 | Afghanistan | £2,065.00 |
| 213 | Guinea-Bissau | £1,989.00 |
| 214 | Sierra Leone | £1,718.00 |
| 216 | Madagascar | £1,647.00 |
| 217 | Eritrea | £1,600.00 |
| 219 | Togo | £1,597.00 |
| 220 | Chad | £1,580.00 |
| 221 | Liberia | £1,428.00 |
| 222 | Mozambique | £1,281.00 |
| 223 | Niger | £1,225.00 |
| 224 | DR Congo | £1,098.00 |
| 225 | Malawi | £1,060.00 |
| 226 | Central African Republic | £945.00 |
| 228 | Burundi | £752.00 |




Select the appropriate chart to display Rank, GDP and Country,



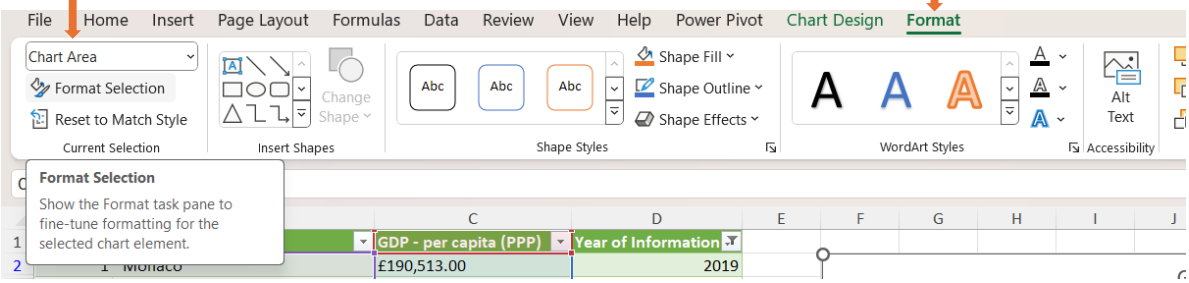
## 6. Formatting of Chart,



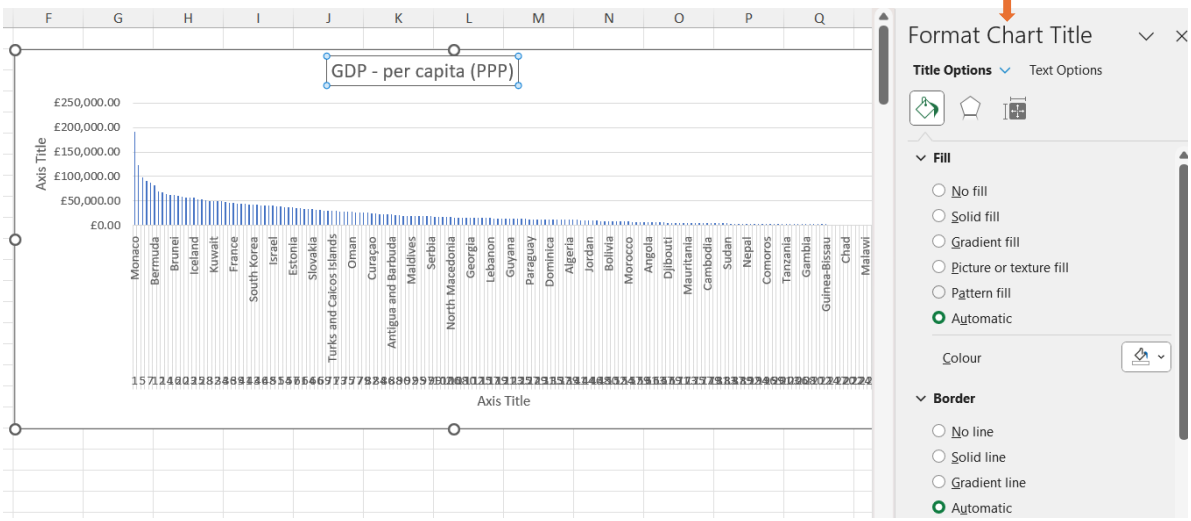

**Add Chart Elements like Axe, Axis Titles, Chart Title etc..**

**Select chart element to format.**

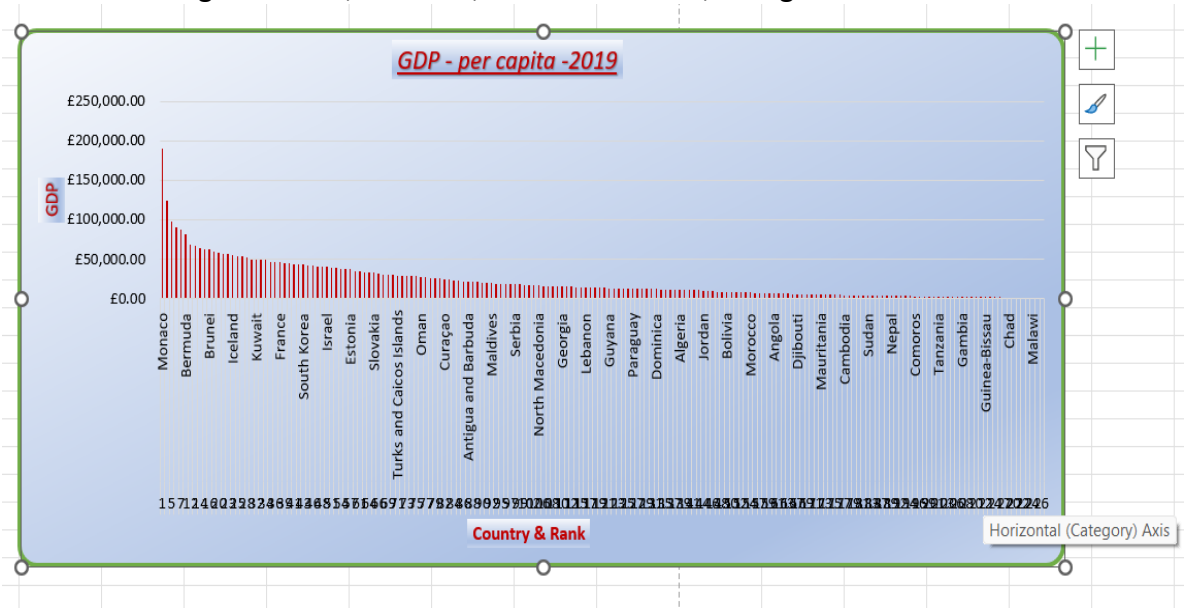
**Format Chart element using Format menu option.**



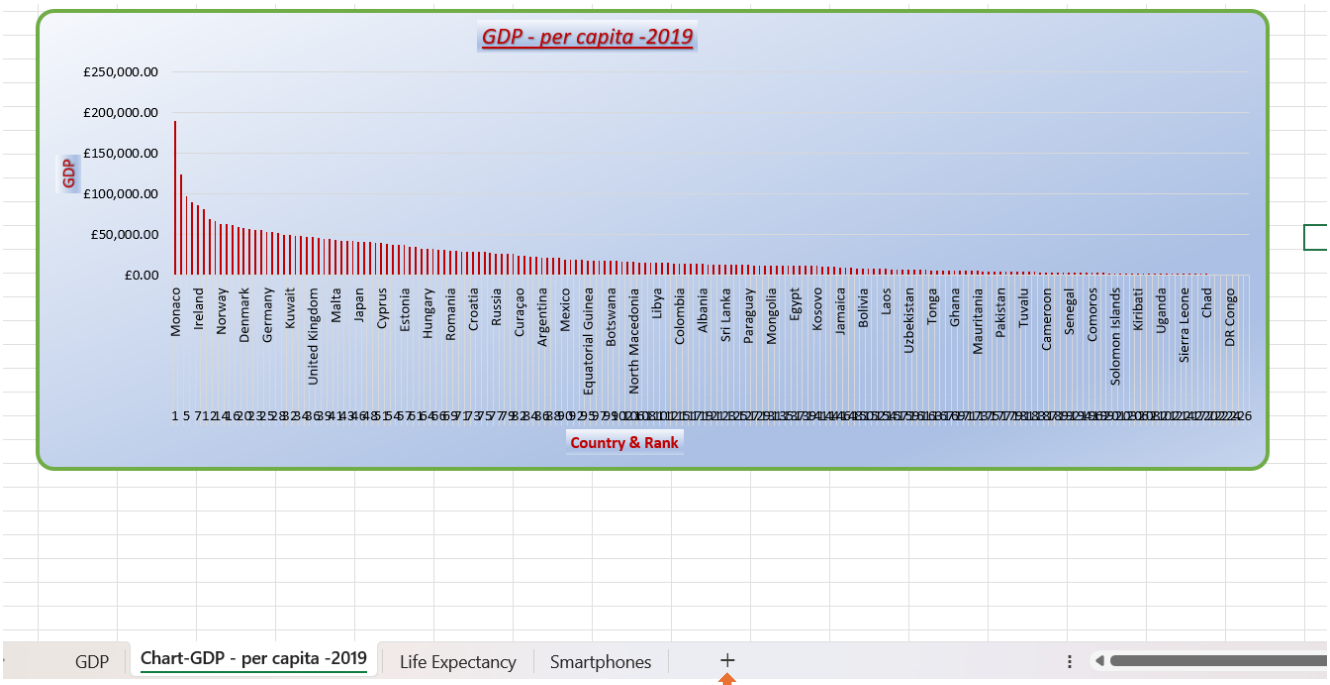

**Format the text color, border color etc**



After formatting chart title, Axis title, Bars of the chart, background etc..

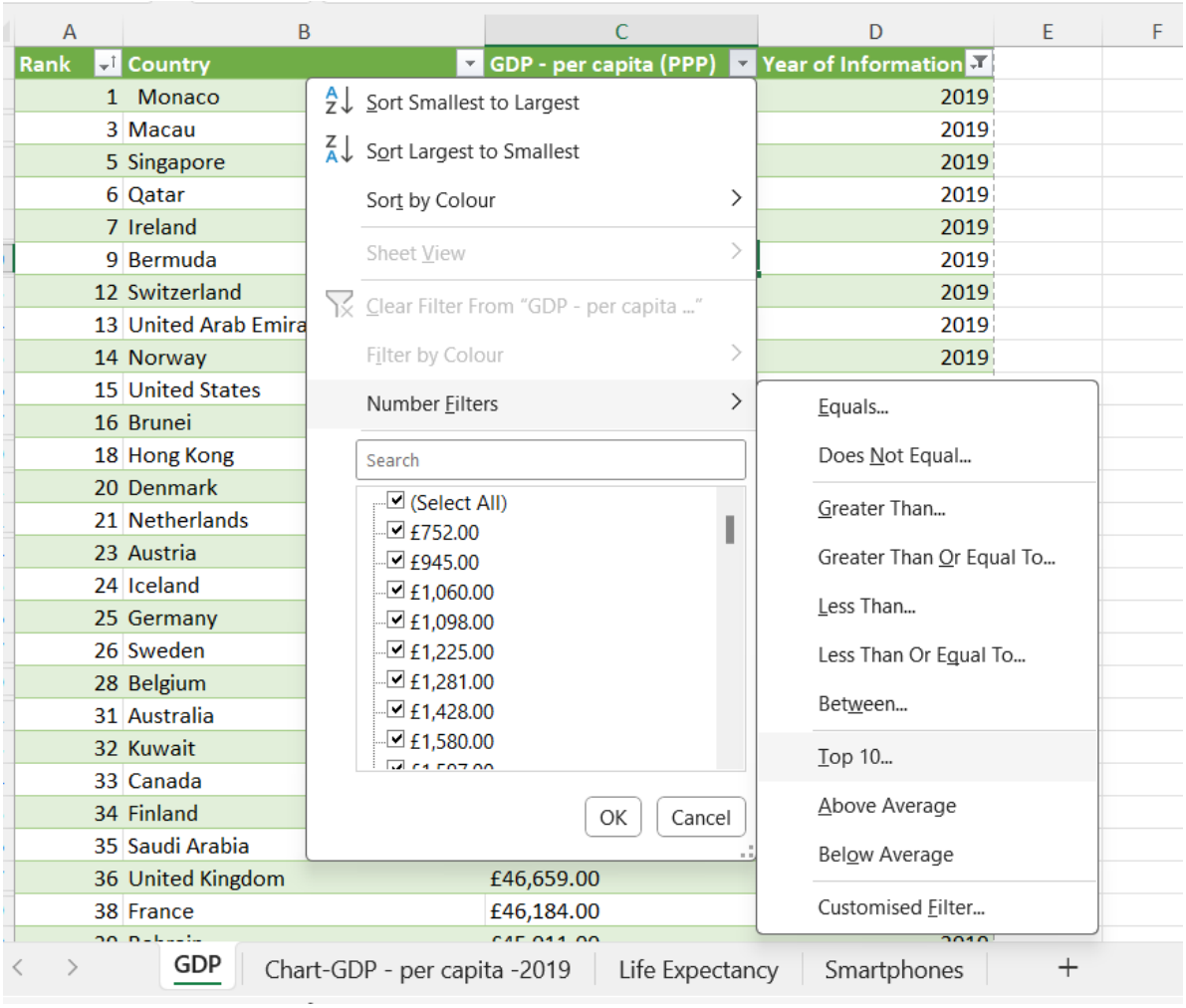


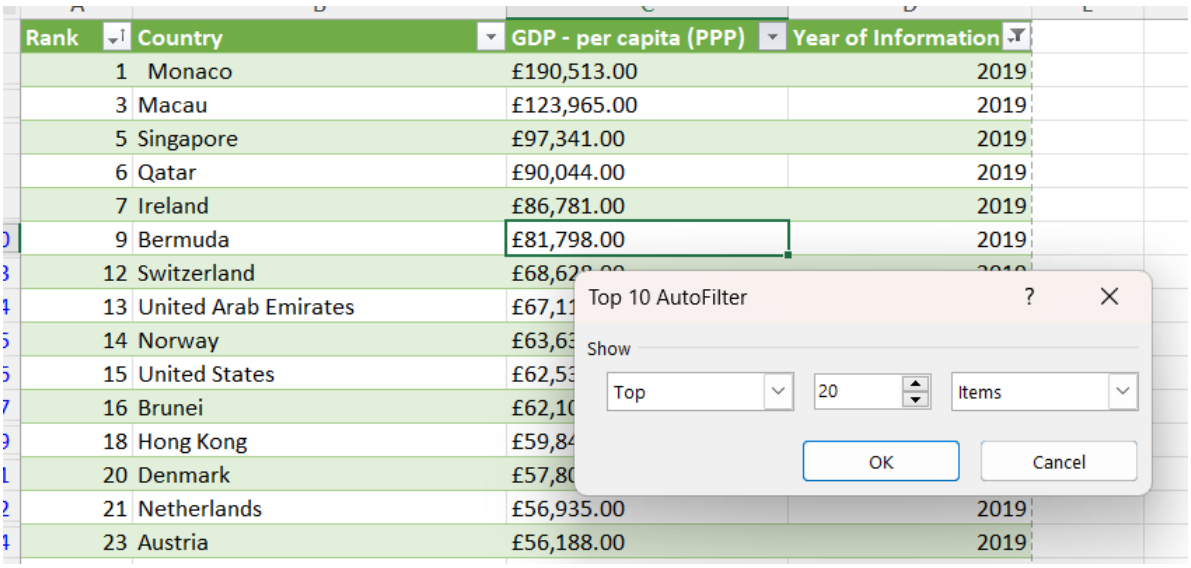

**7. Move the chart to a new sheet tab and label with a suitable name,**




**Add new sheet.**

## 8. Create a sort for the top 20 highest ranking counties,



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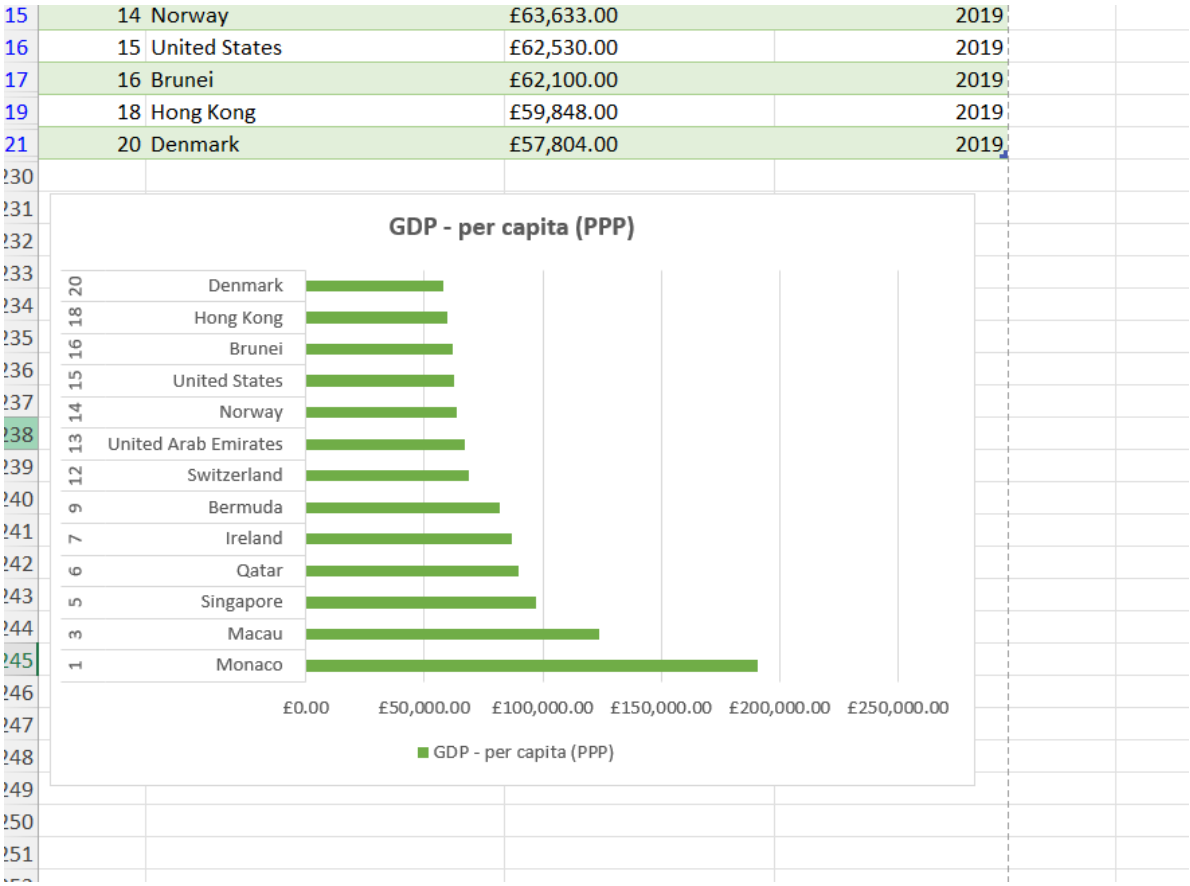
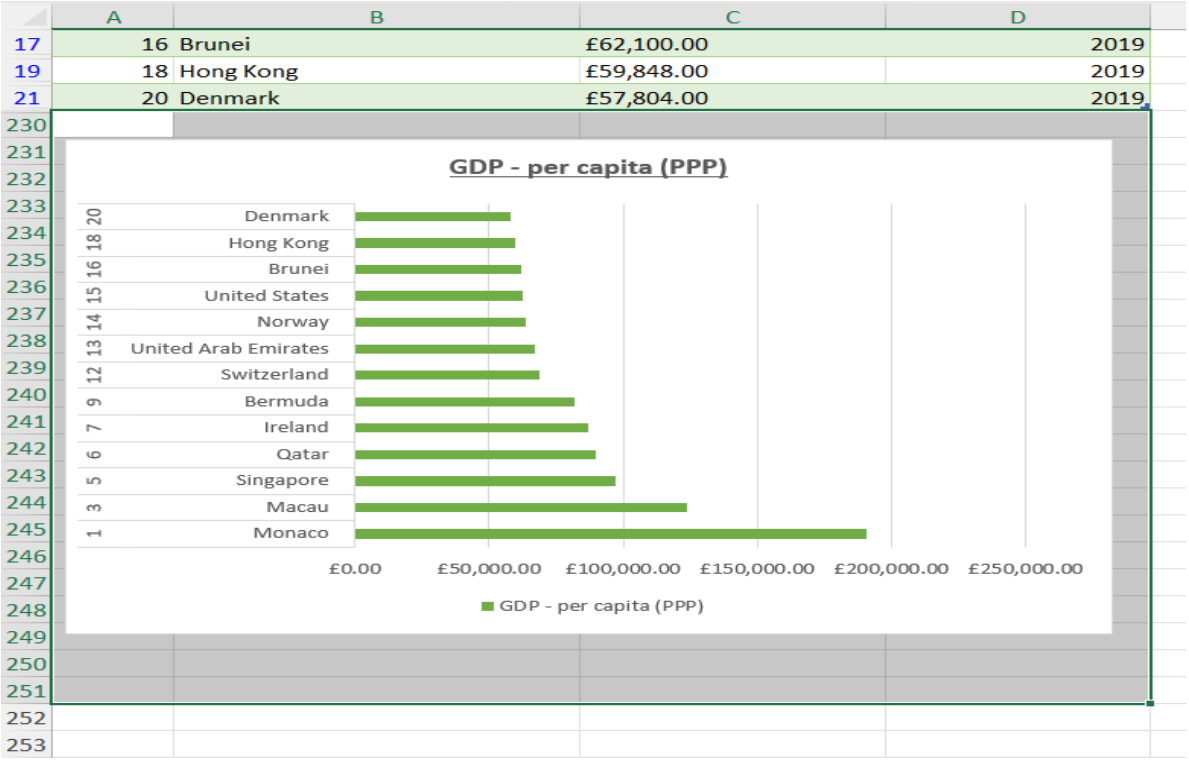
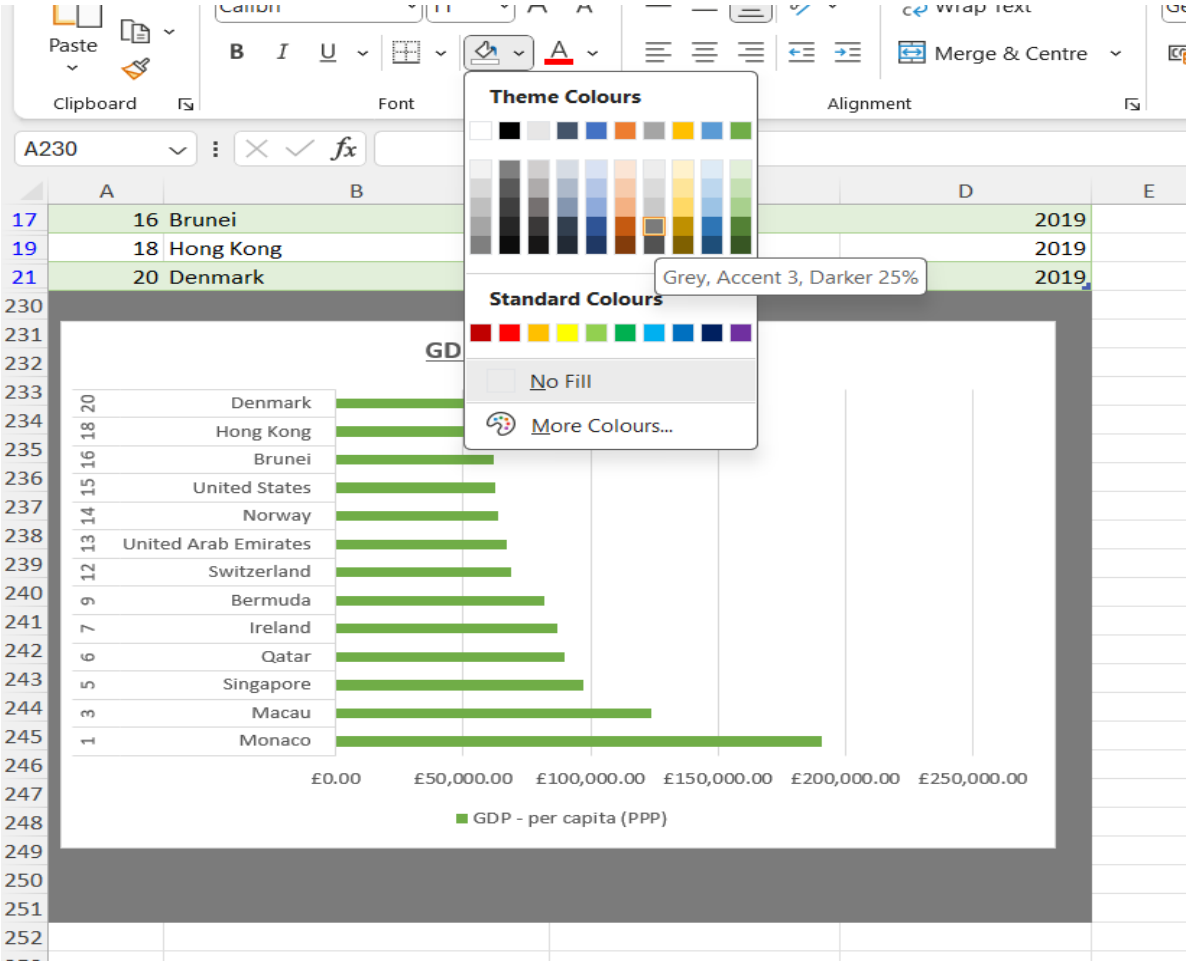
| 5 | Singapore | £97,341.00 | 2019 |
| 6 | Qatar | £90,044.00 | 2019 |
| 7 | Ireland | £86,781.00 | 2019 |
| 9 | Bermuda | £81,798.00 | 2019 |
| 12 | Switzerland | £68,628.00 | 2019 |
| 13 | United Arab Emirates | £67,119.00 | 2019 |
| 14 | Norway | £63,633.00 | 2019 |
| 15 | United States | £62,530.00 | 2019 |
| 16 | Brunei | £62,100.00 | 2019 |
| 18 | Hong Kong | £59,848.00 | 2019 |
| 20 | Denmark | £57,804.00 | 2019 |

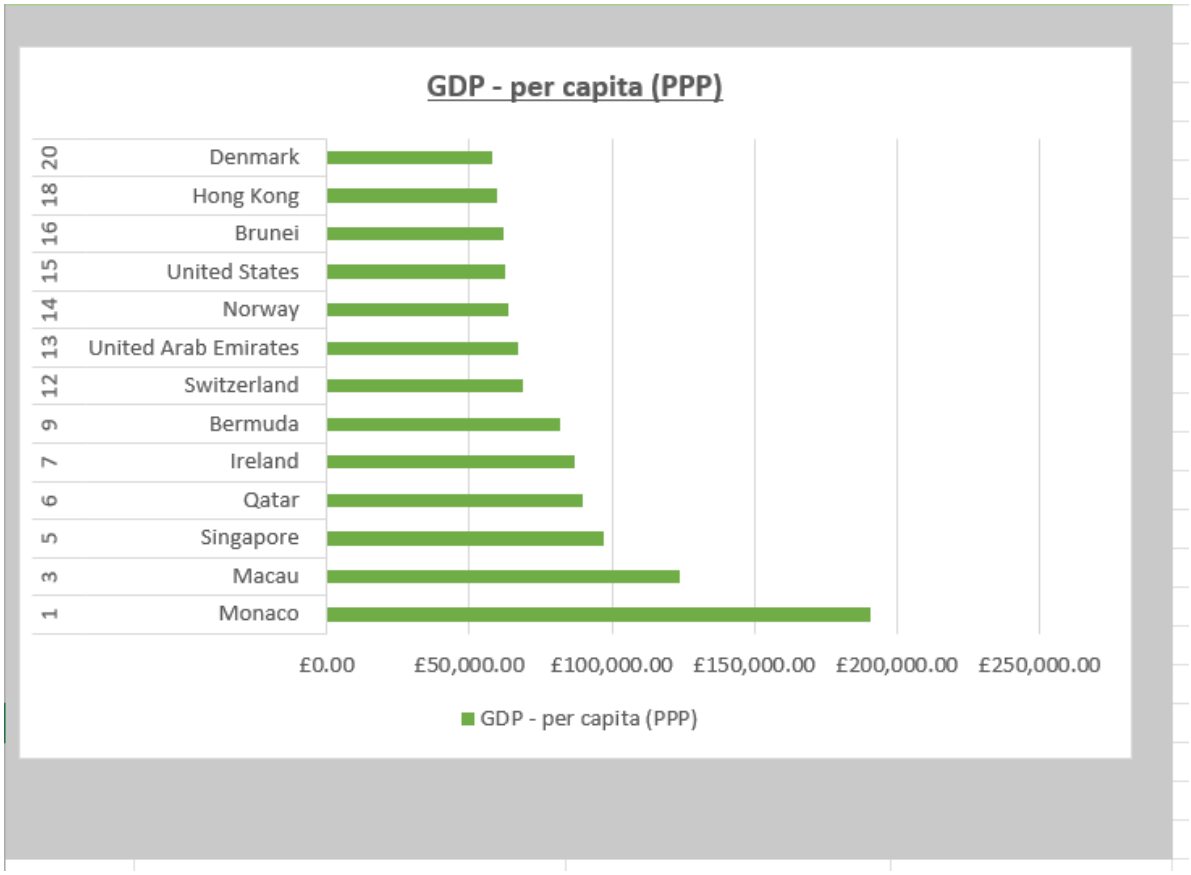
**9. Next create a new Bar chart to display the 20 highest ranking countries from your sort and then move the chart to be underneath the table,**



**10. Colour the background by highlighting the area underneath the table,**



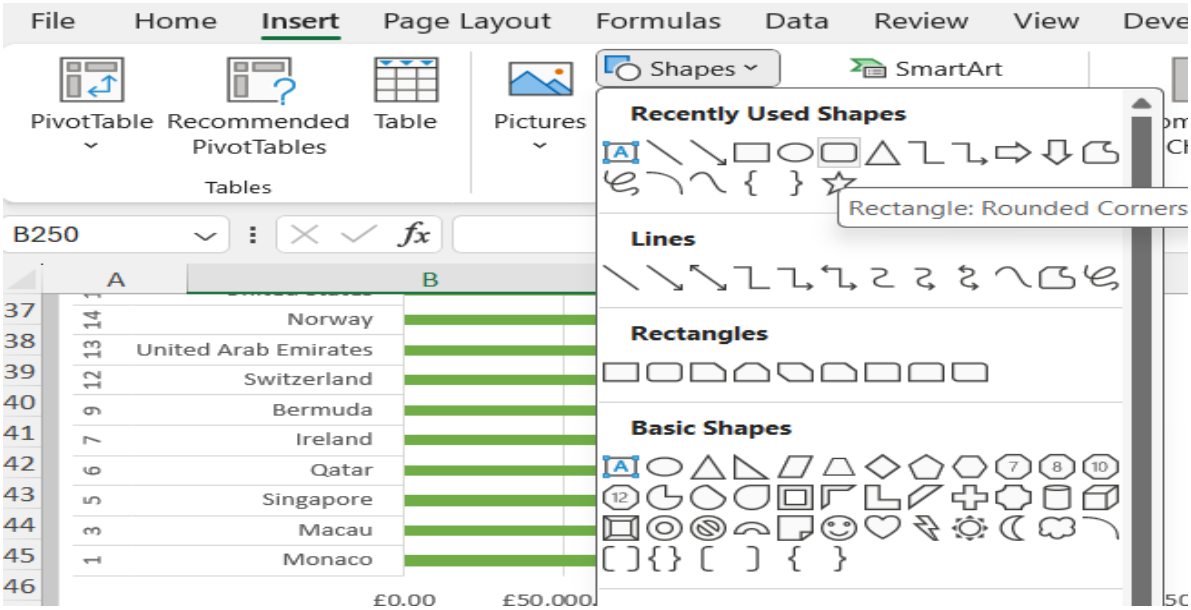

GDP - per capita (PPP)
20 Denmark
18 Hong Kong
16 Brunei
15 United States
14 Norway
13 United Arab Emirates
12 Switzerland
9 Bermuda
7 Ireland
6 Qatar
5 Singapore
3 Macau
1 Monaco
£0.00
£50,000.00
£100,000.00
£150,000.00
£200,000.00
£250,000.00
GDP - per capita (PPP)

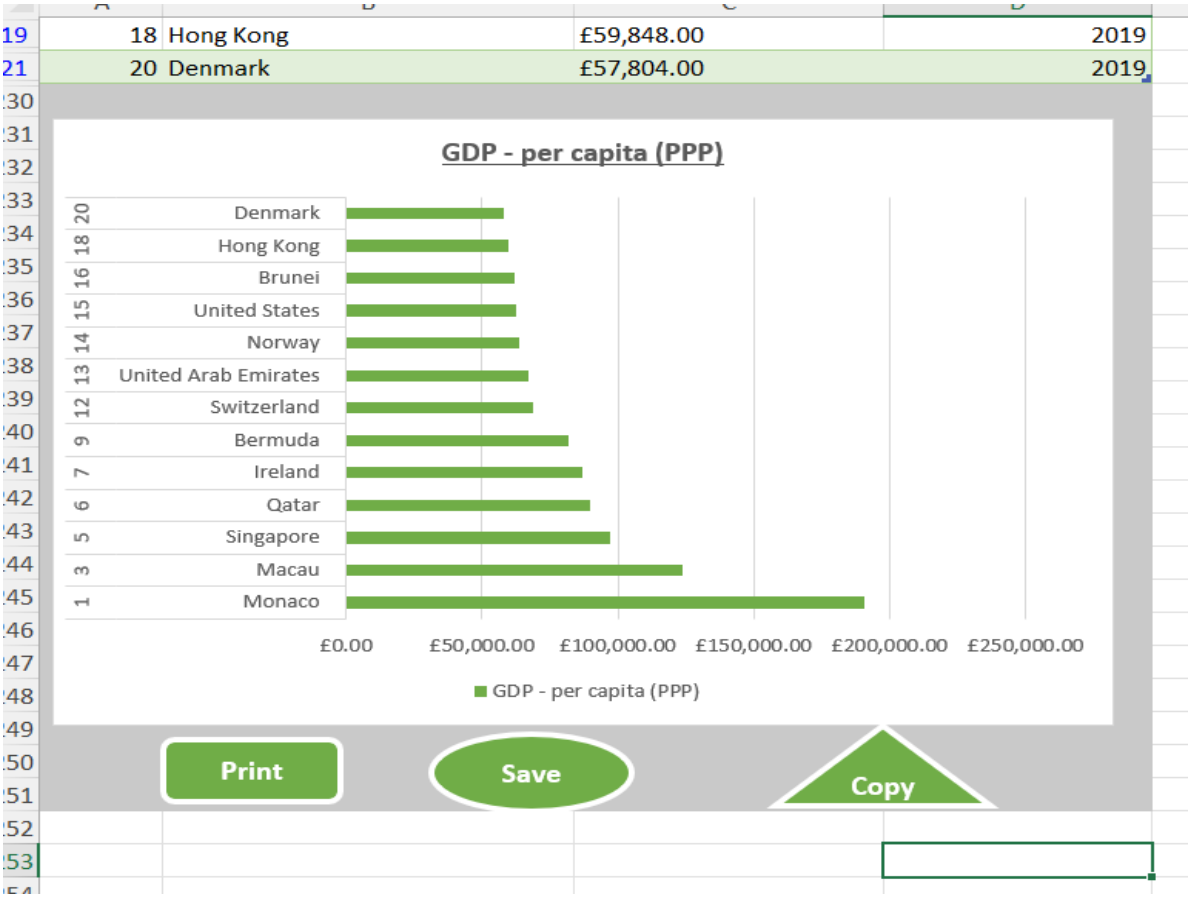
# Macros

**Now let's create Macro for Copy, Print and Save,**

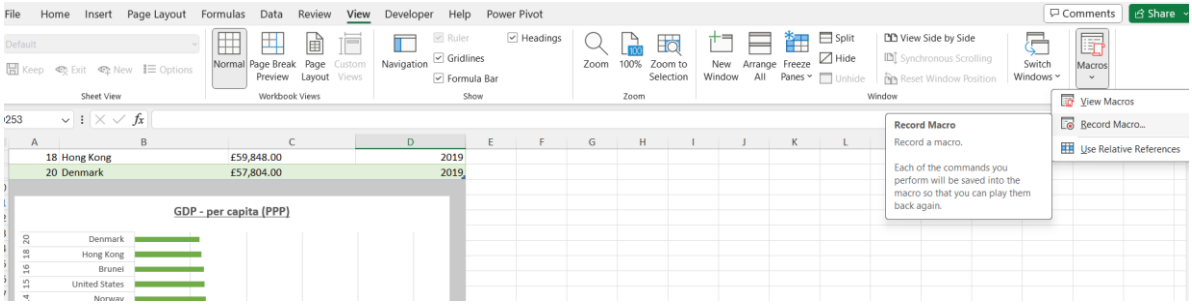
Macro is useful to perform repetitive action. Macro is a sequence of actions that combine together to perform automatically.

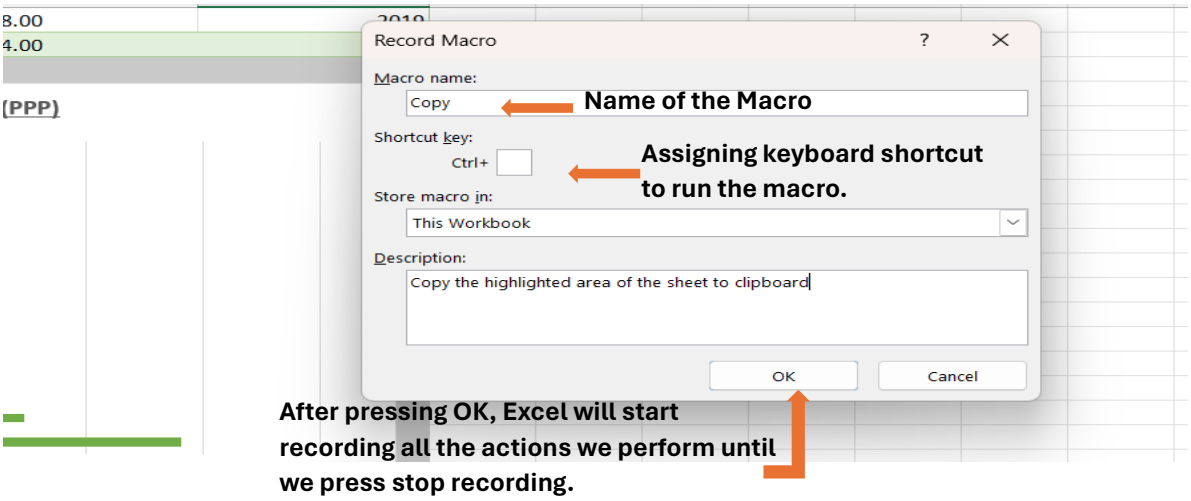
Let's start with creating 3 buttons to perform Macros.

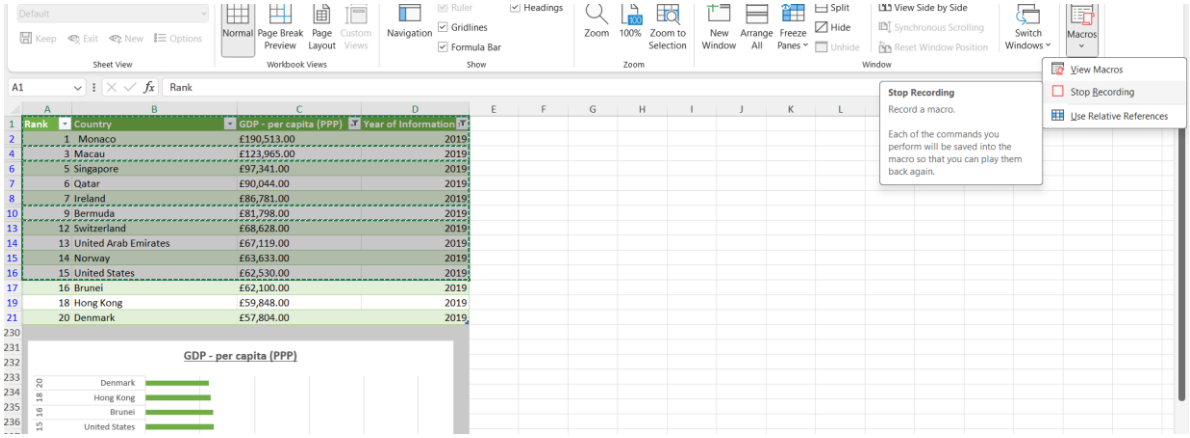


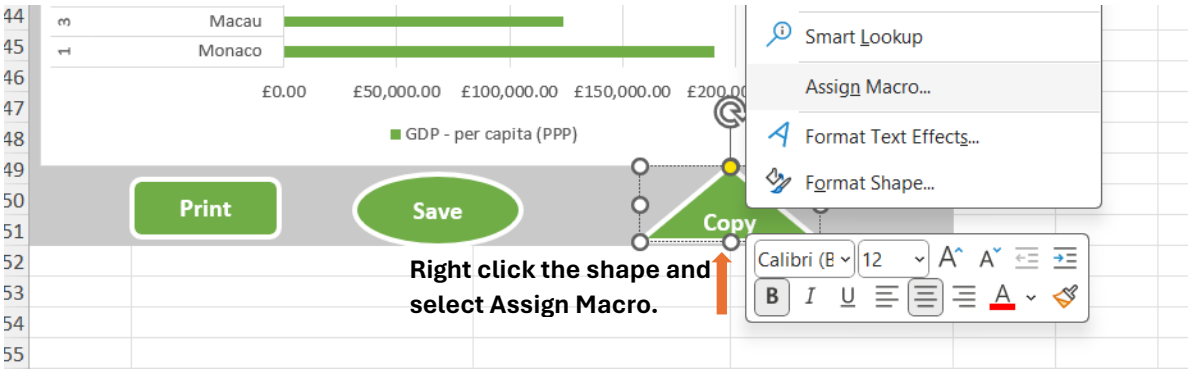



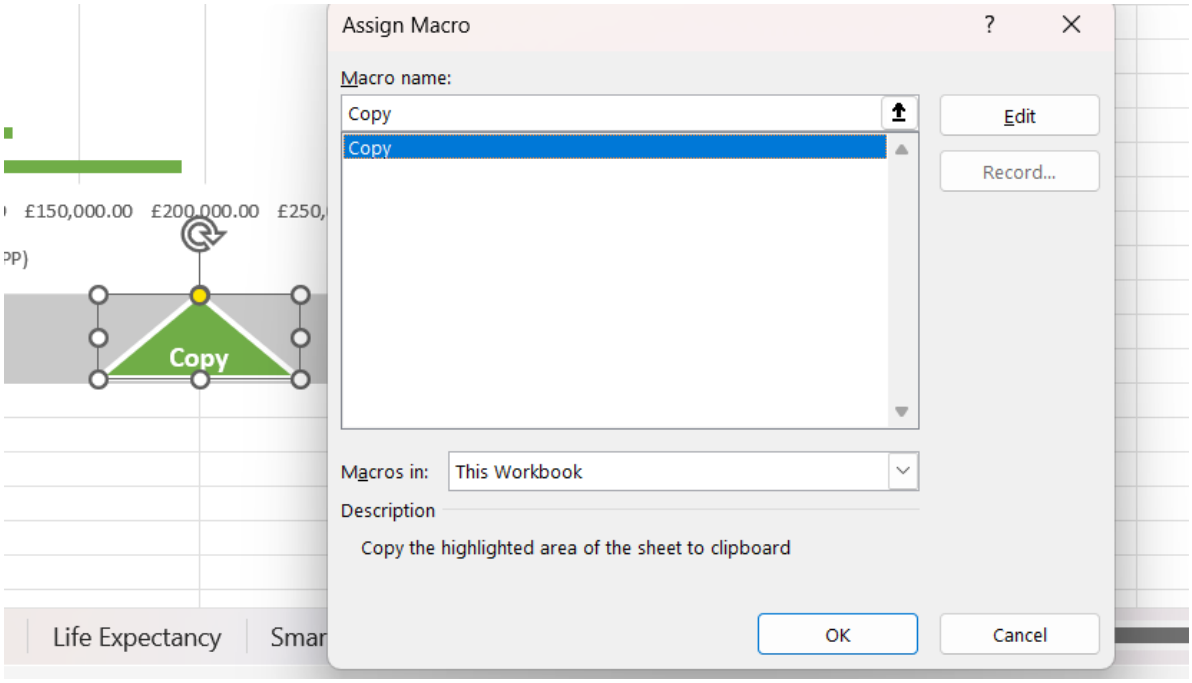
Next step is to record and assign Macro to the shapes created,

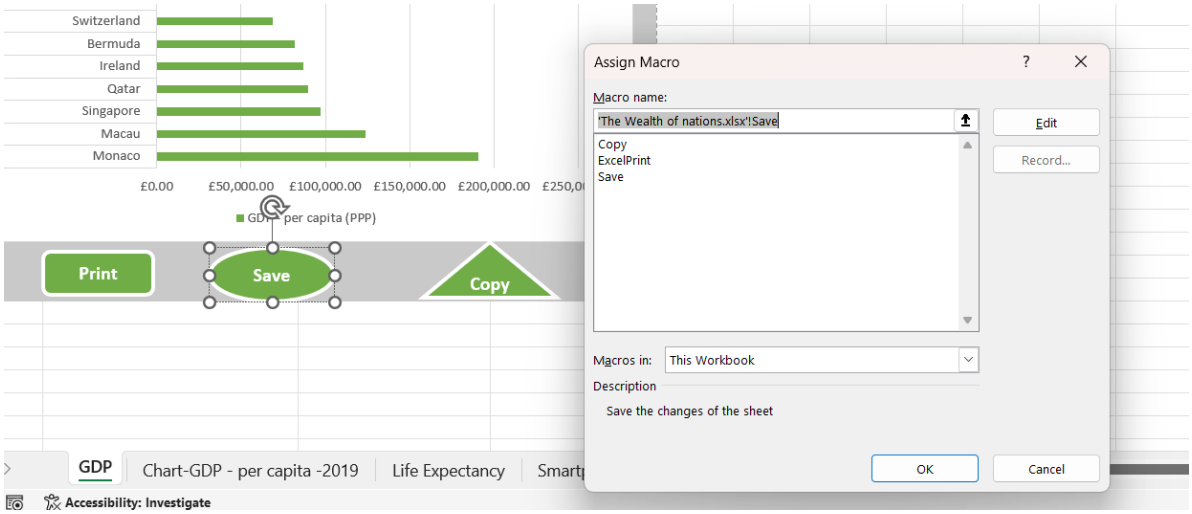


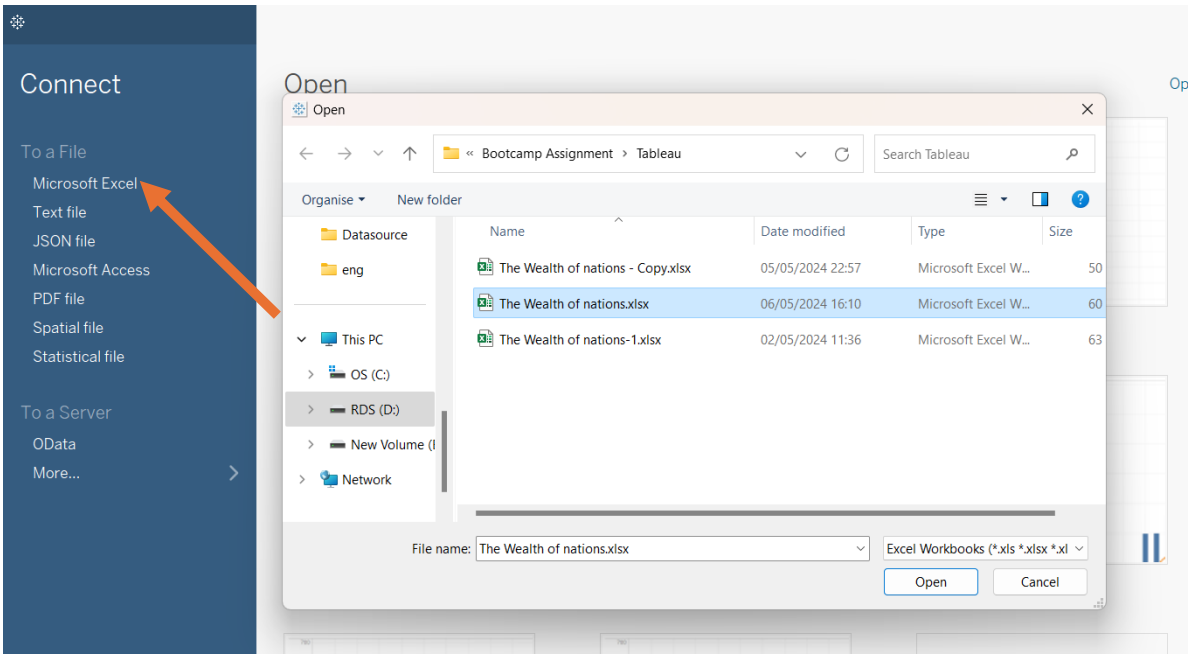



**Now we have created 3 macros name as Copy, ExcelPrint and Save and assigned the same to Copy, Print and Save shape.**
**ExcelPrint macro will print the current sheet.**
**Save macro will save the sheet/workbrook.**

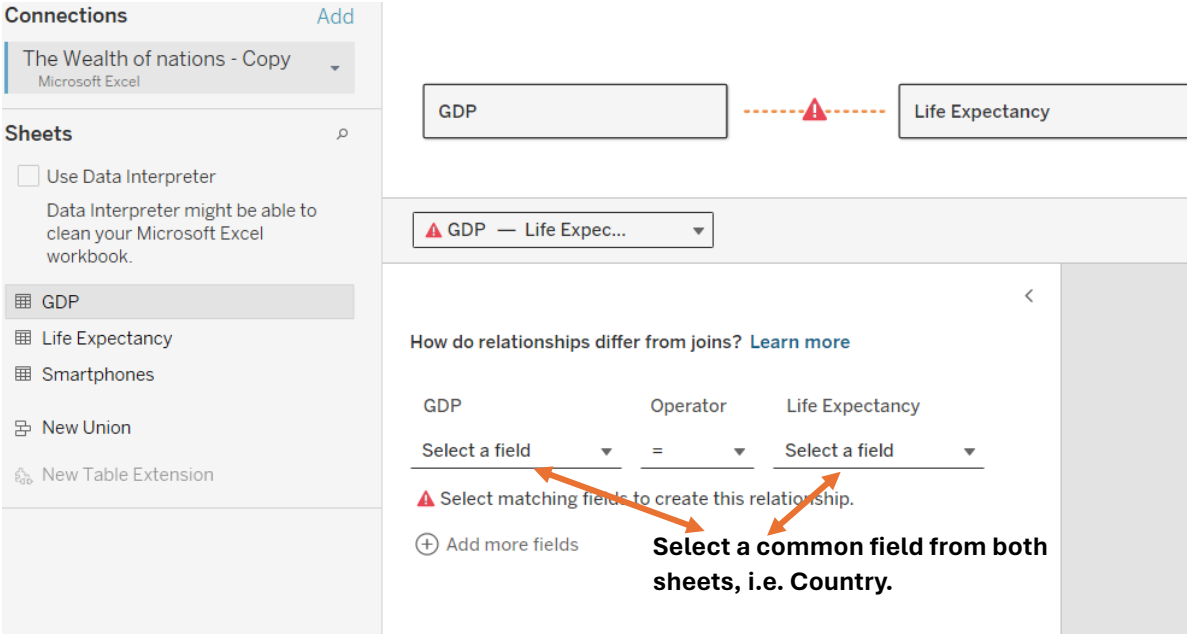
# Tableau

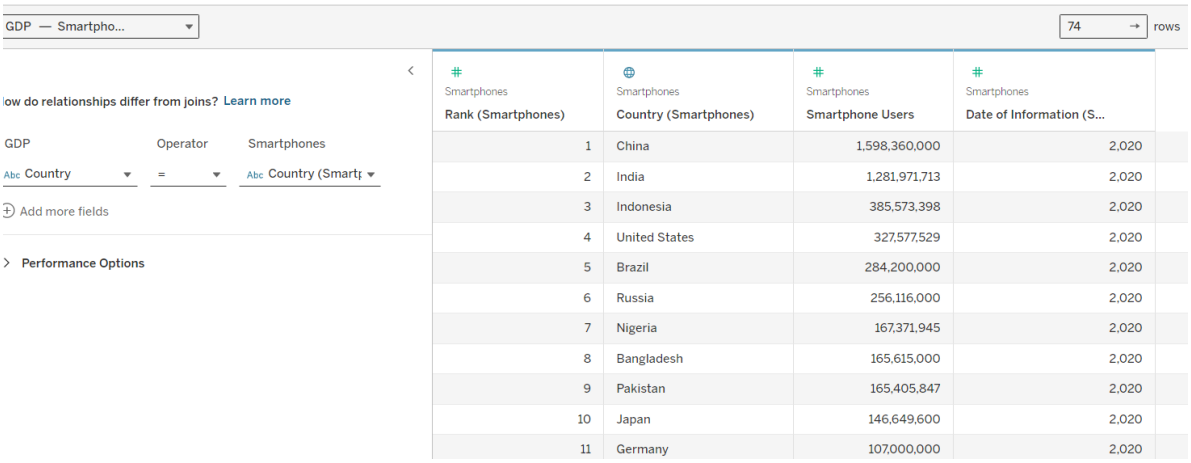
1. **Let's begin with loading the data from Excel file to perform all the visualisation,**




2. **Excel file has 3 sheets name as GDP, Life Expectancy and Smartphones, and all 3 sheet is connected using Country column. So, let's create relationship between these sheets.**

## 3. Drag the sheets from left to right canvas,

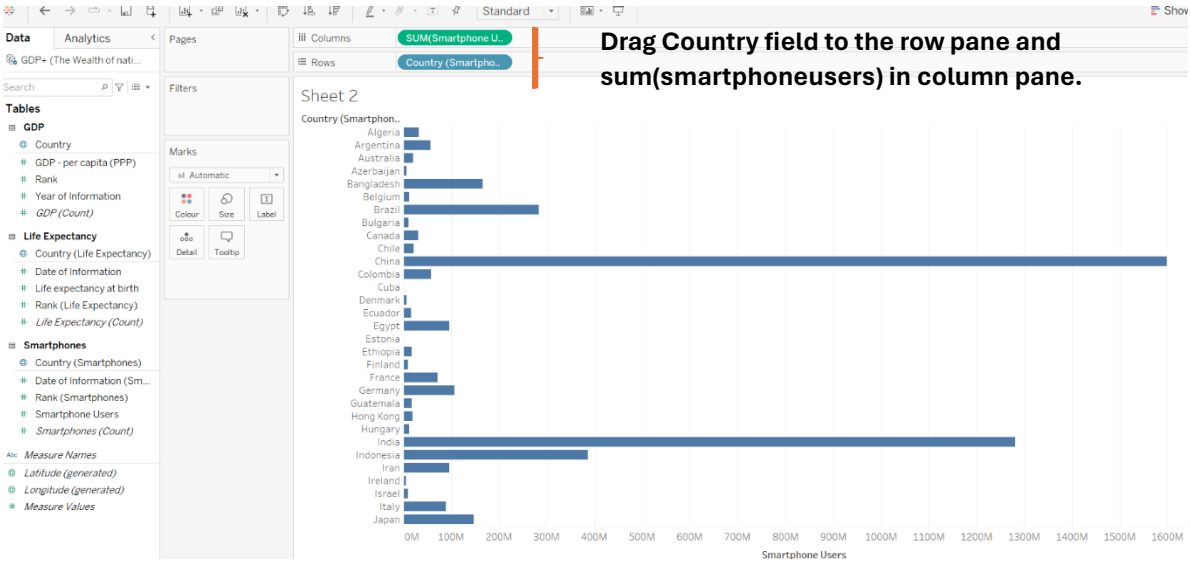




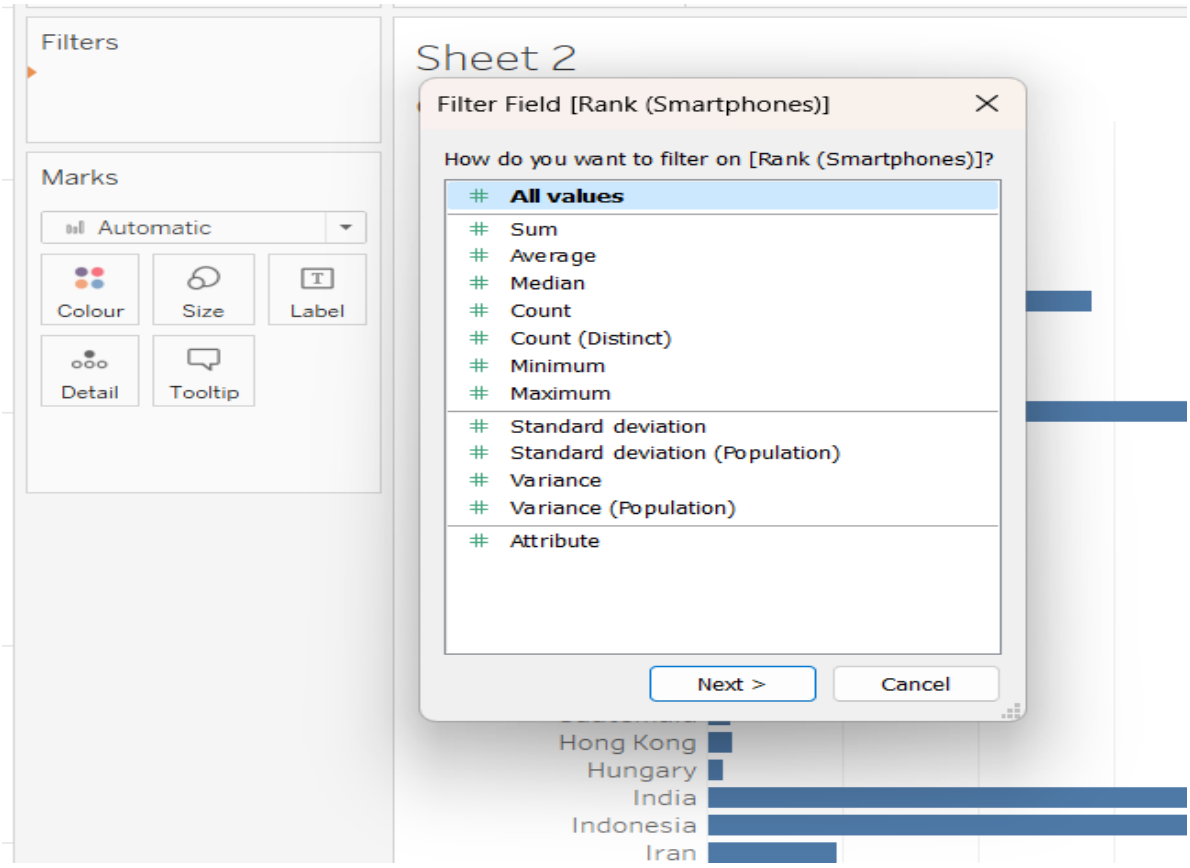

| Smartphones Rank (Smartphones) | Smartphones Country (Smartphones) | Smartphones Smartphone Users | Smartphones Date of Information (S... |
|---|---|---|---|
| 1 | China | 1,598,360,000 | 2,020 |
| 2 | India | 1,281,971,713 | 2,020 |
| 3 | Indonesia | 385,573,398 | 2,020 |
| 4 | United States | 327,577,529 | 2,020 |
| 5 | Brazil | 284,200,000 | 2,020 |
| 6 | Russia | 256,116,000 | 2,020 |
| 7 | Nigeria | 167,371,945 | 2,020 |
| 8 | Bangladesh | 165,615,000 | 2,020 |
| 9 | Pakistan | 165,405,847 | 2,020 |
| 10 | Japan | 146,649,600 | 2,020 |
| 11 | Germany | 107,000,000 | 2,020 |

4. **Now we are ready for our visualisation. So, let's begin,**

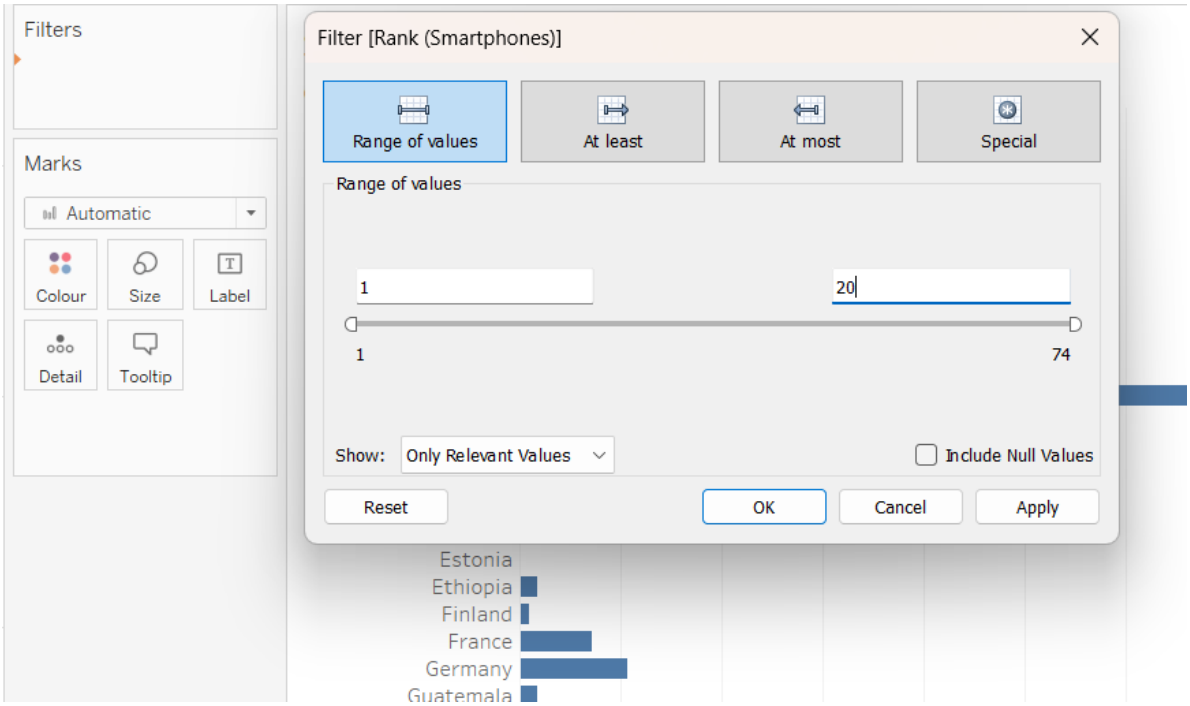
## Visualisation 1: **Display top 20 countries with highest smartphone users.**



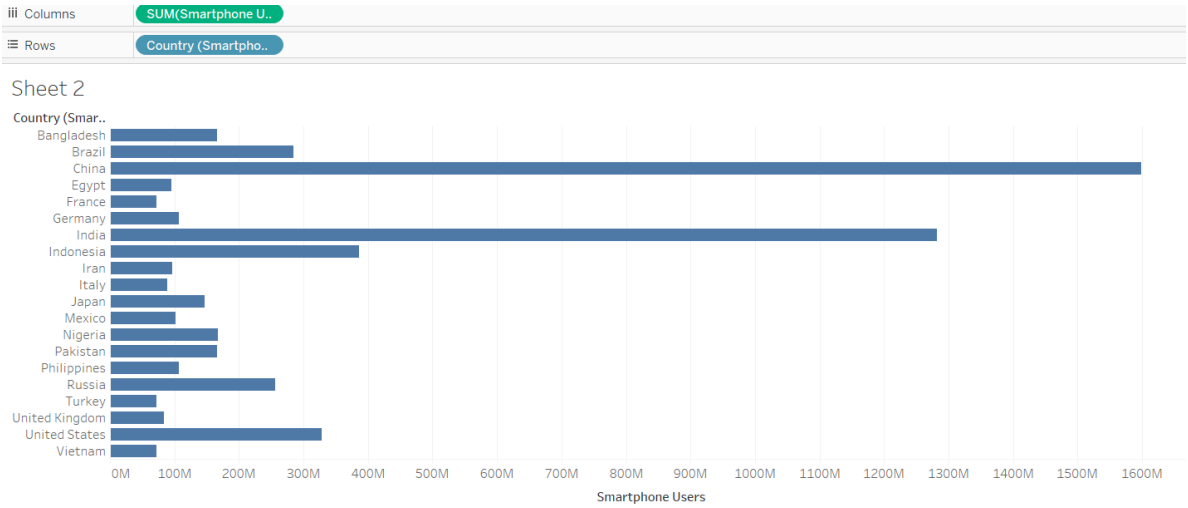

As we want to display only top 20 countries we need to add filter in Filter pane,



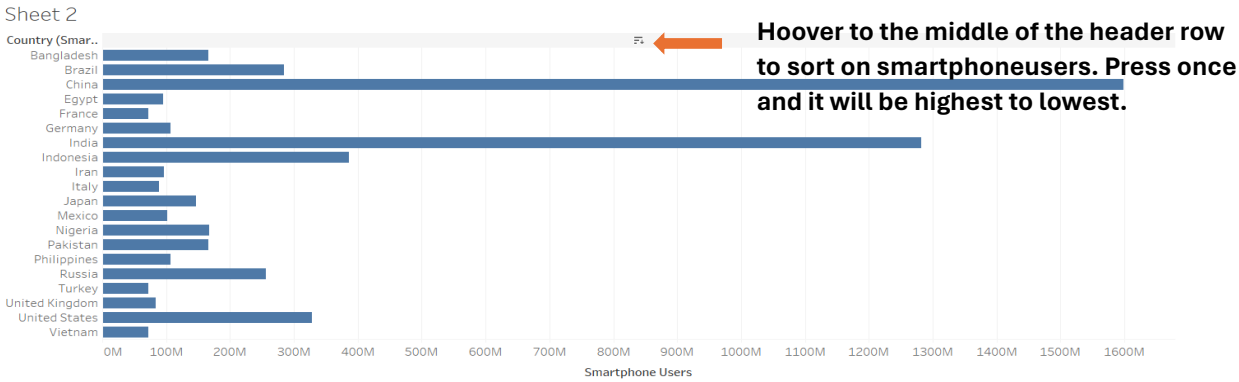

As we need to give range of 1 to 20 on all values, just press Next,



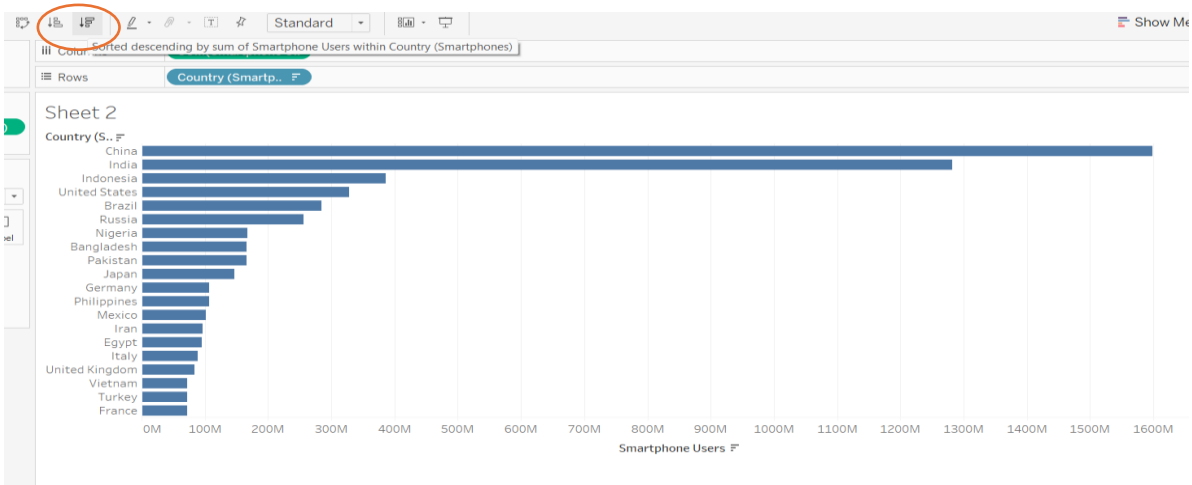

Press Apply and Ok,



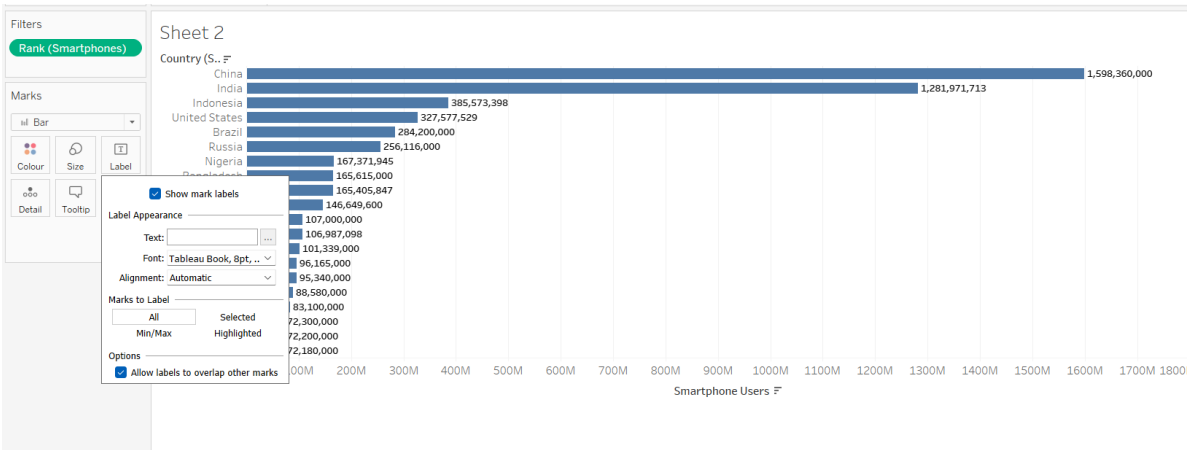

We need to display highest to lowest smartphone users, so let's do sorting on smartphoneusers field,



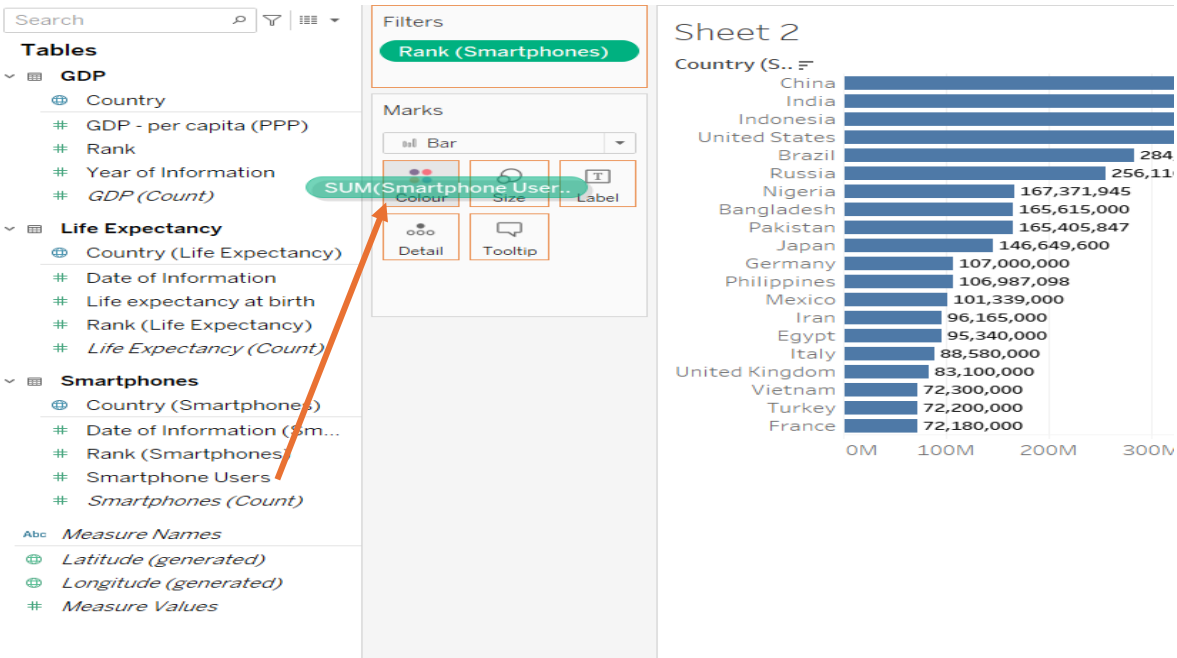
Another option for sorting is,

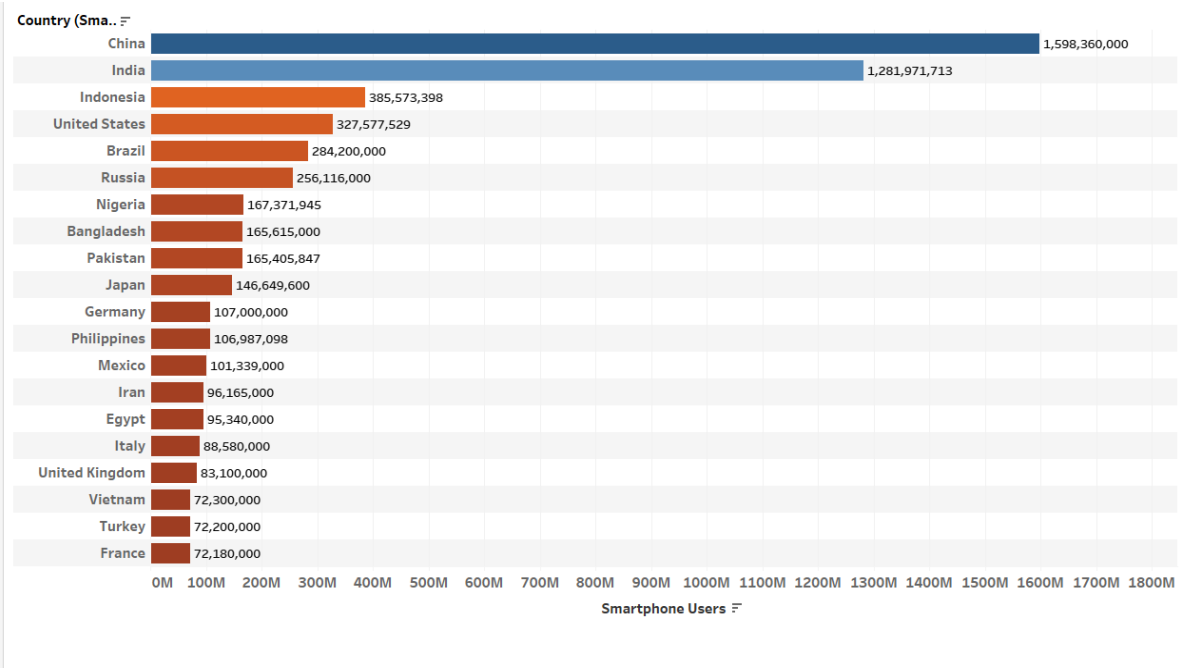



Let's add label,

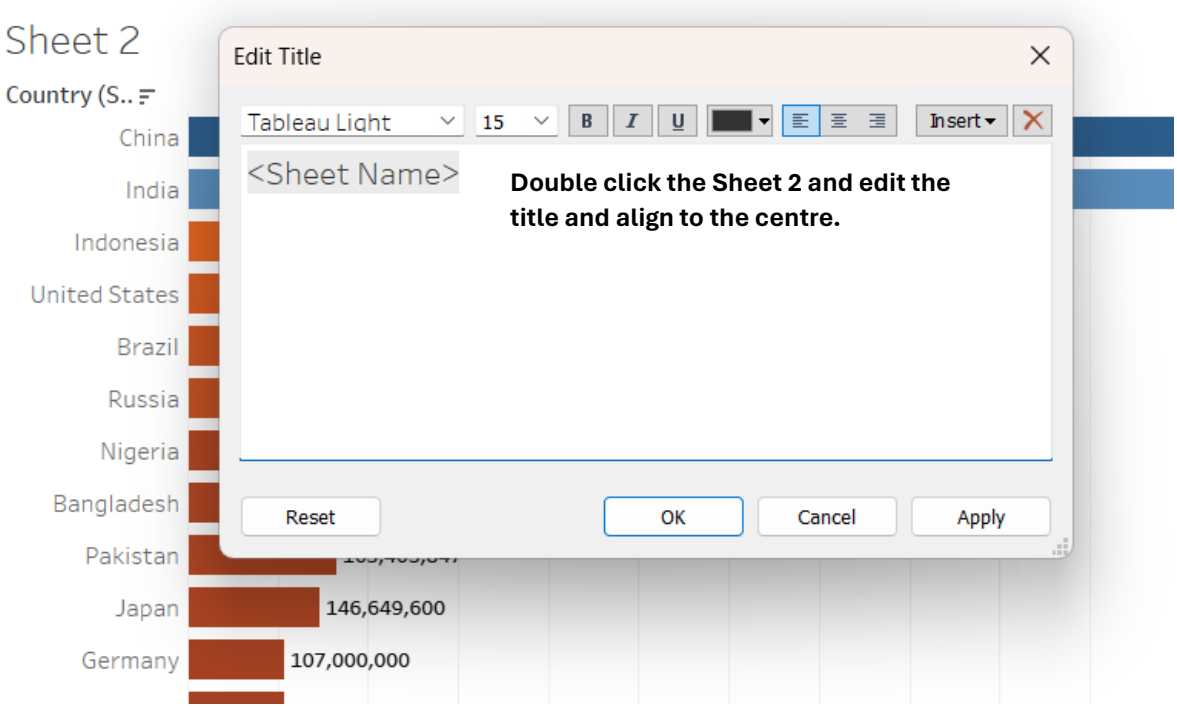


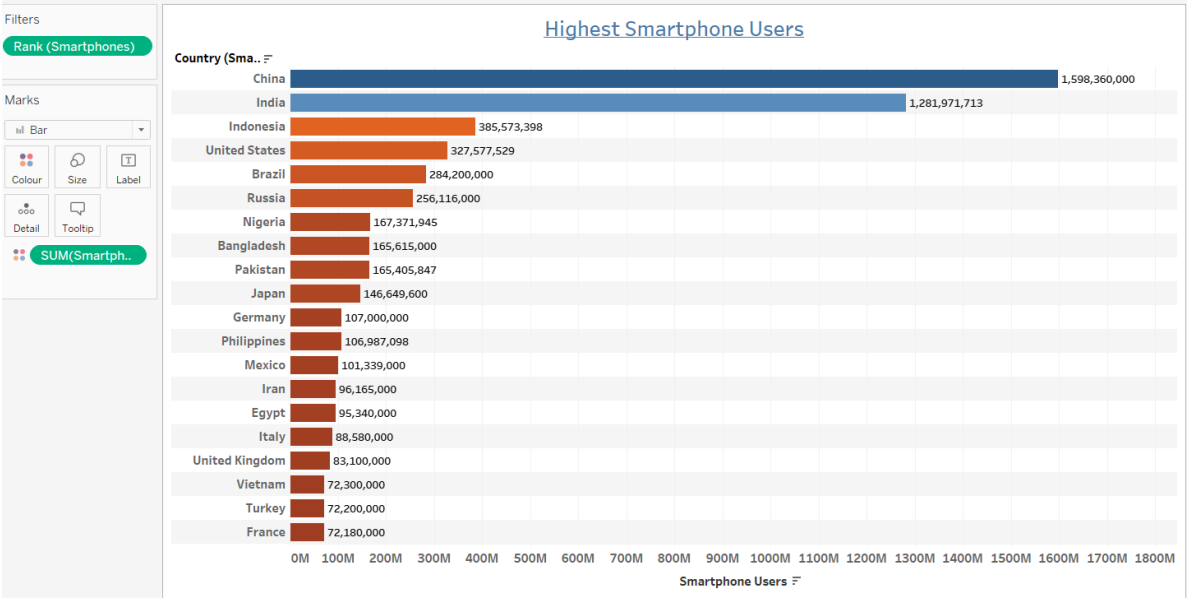

Let's change the colour of the bars,



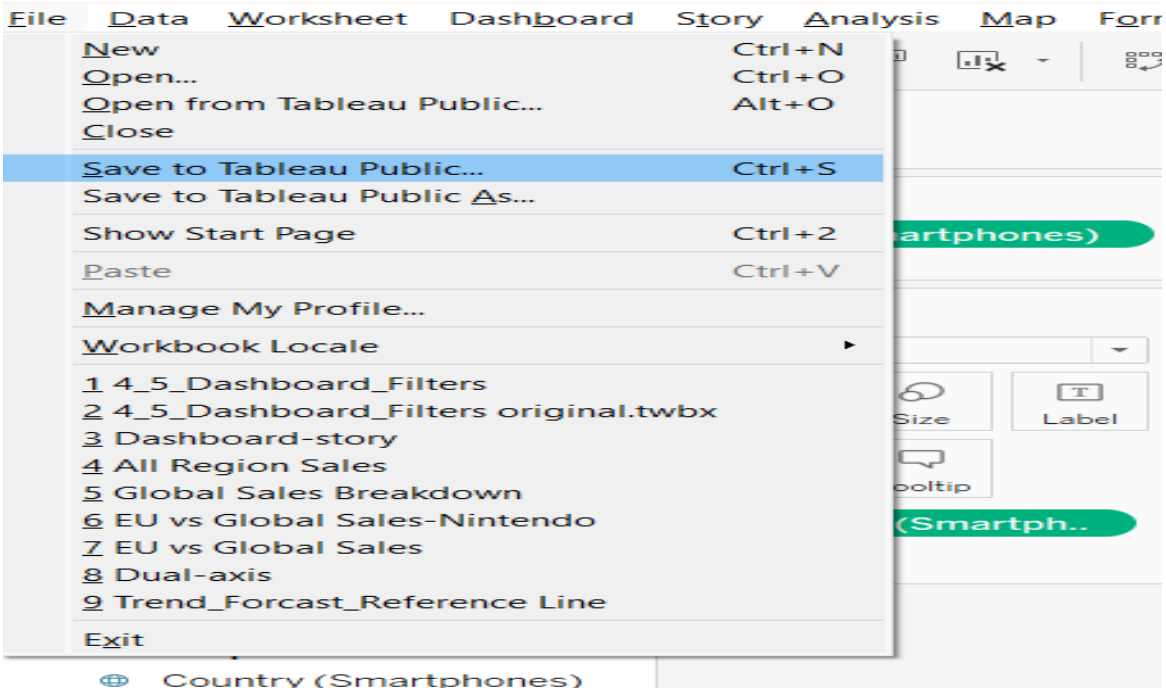



Add title to the visualisation,






We are ready to publish our first visualisation,




Signing to Tableau public,

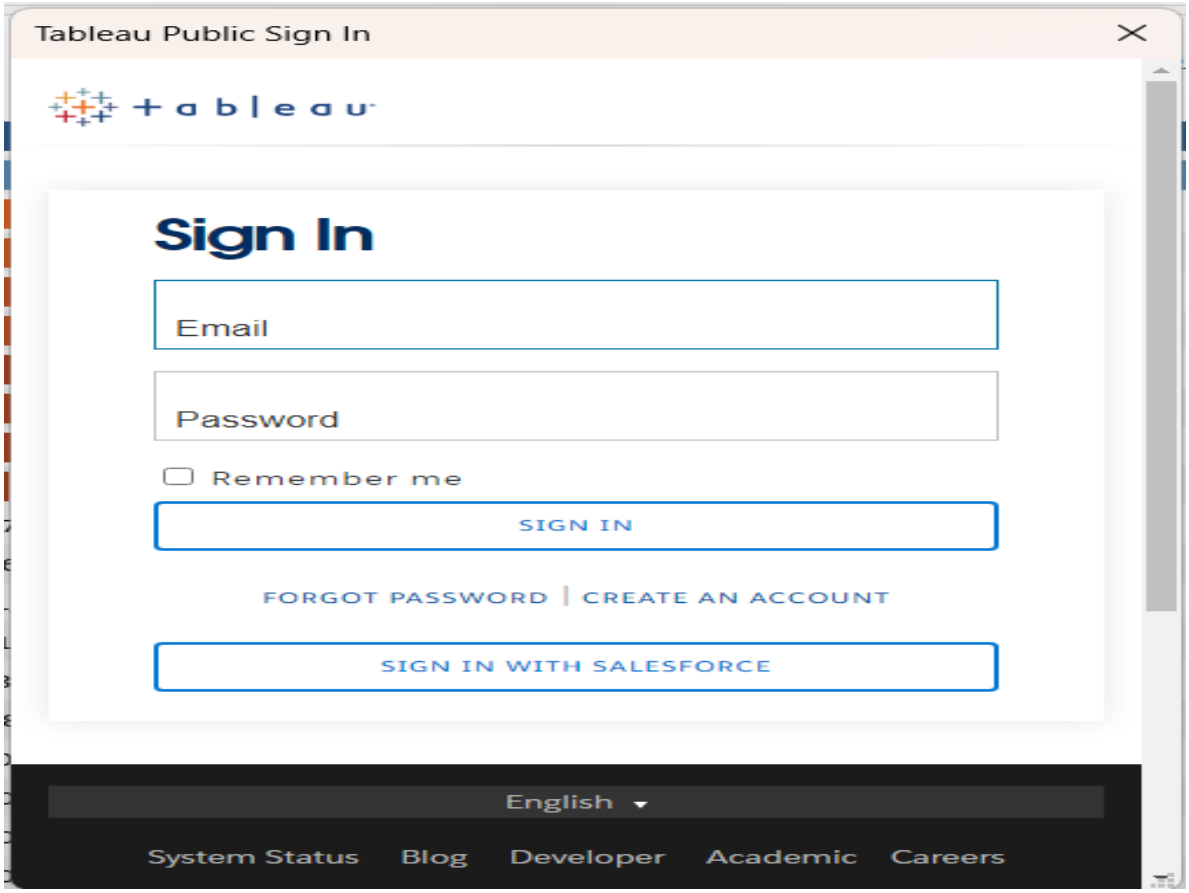
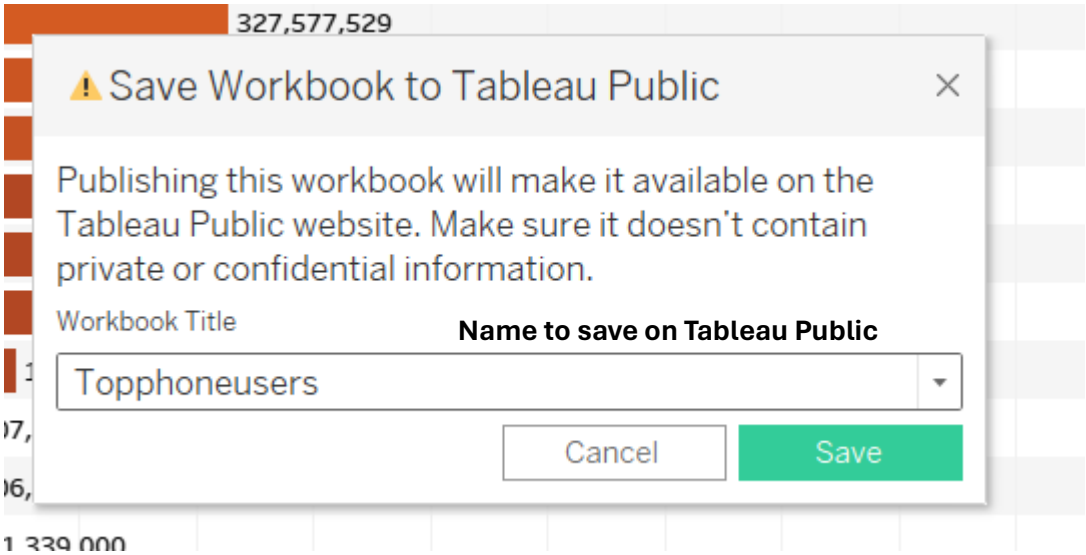
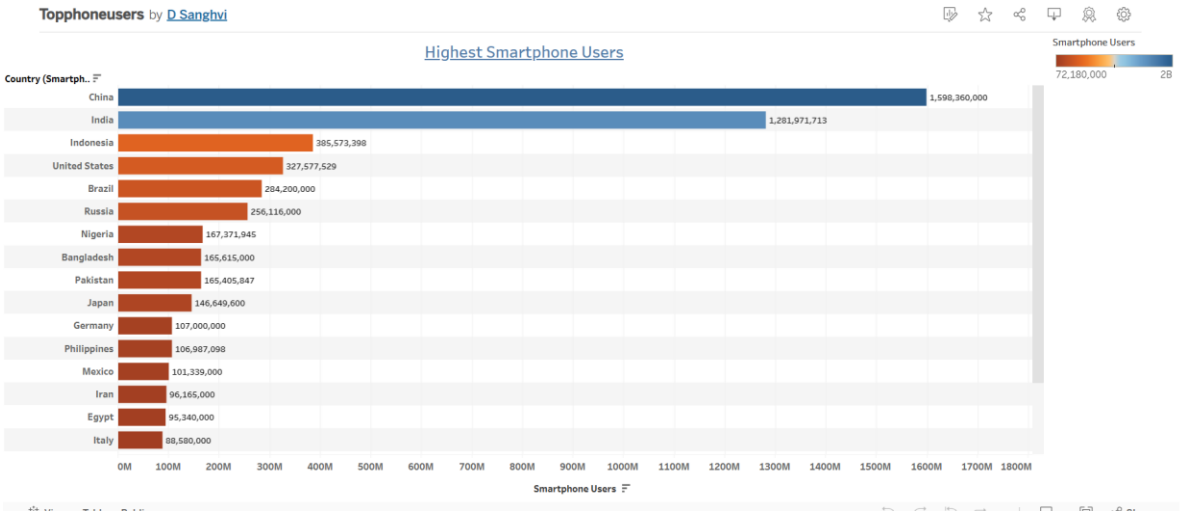


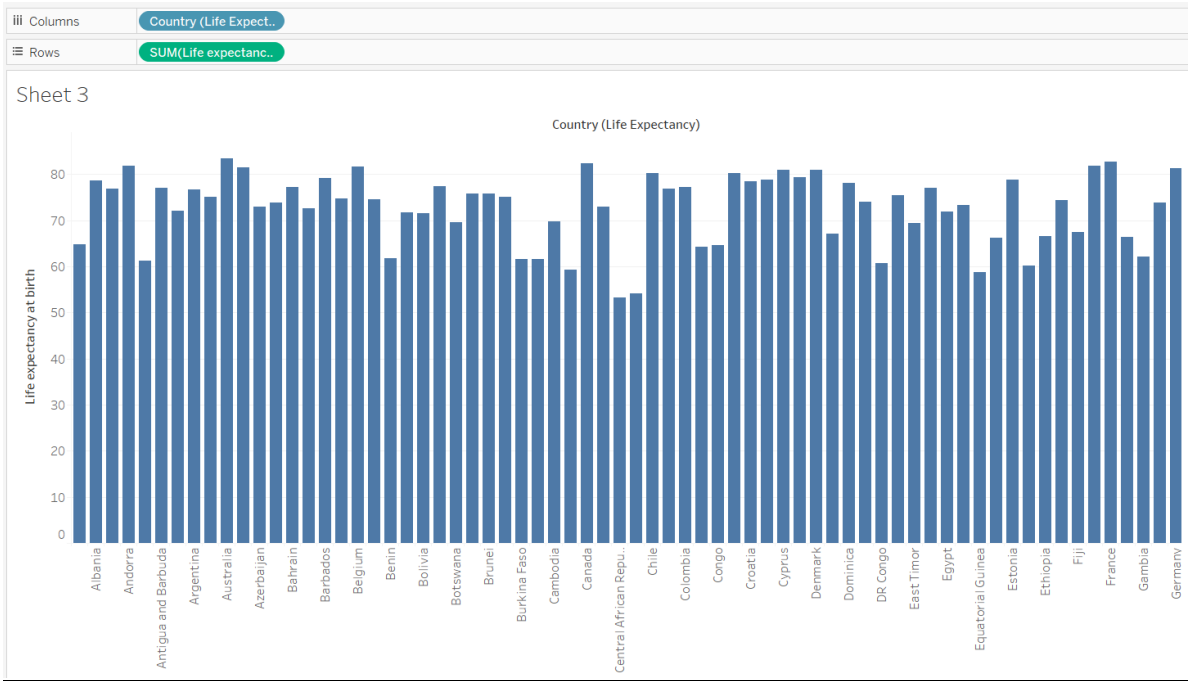
Tableau Public Sign In
tableau
Sign In
Email
Password
Remember me
SIGN IN
FORGOT PASSWORD | CREATE AN ACCOUNT
SIGN IN WITH SALESFORCE
English
System Status
Blog
Developer
Academic
Careers


327,577,529
Save Workbook to Tableau Public
Publishing this workbook will make it available on the Tableau Public website. Make sure it doesn't contain private or confidential information.
Workbook Title
Name to save on Tableau Public
Topphoneusers
Cancel
Save
1,339,000

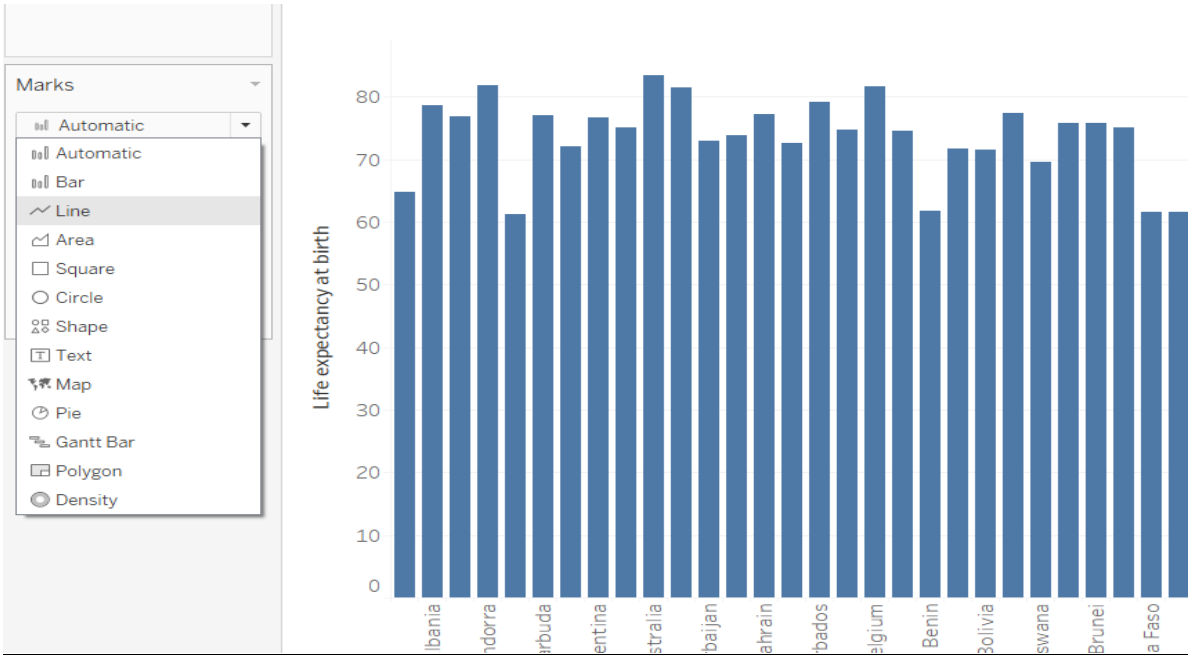



## Visualisation 2: **Display top 20 countries with life expectancy at birth vs average life expectancy.**

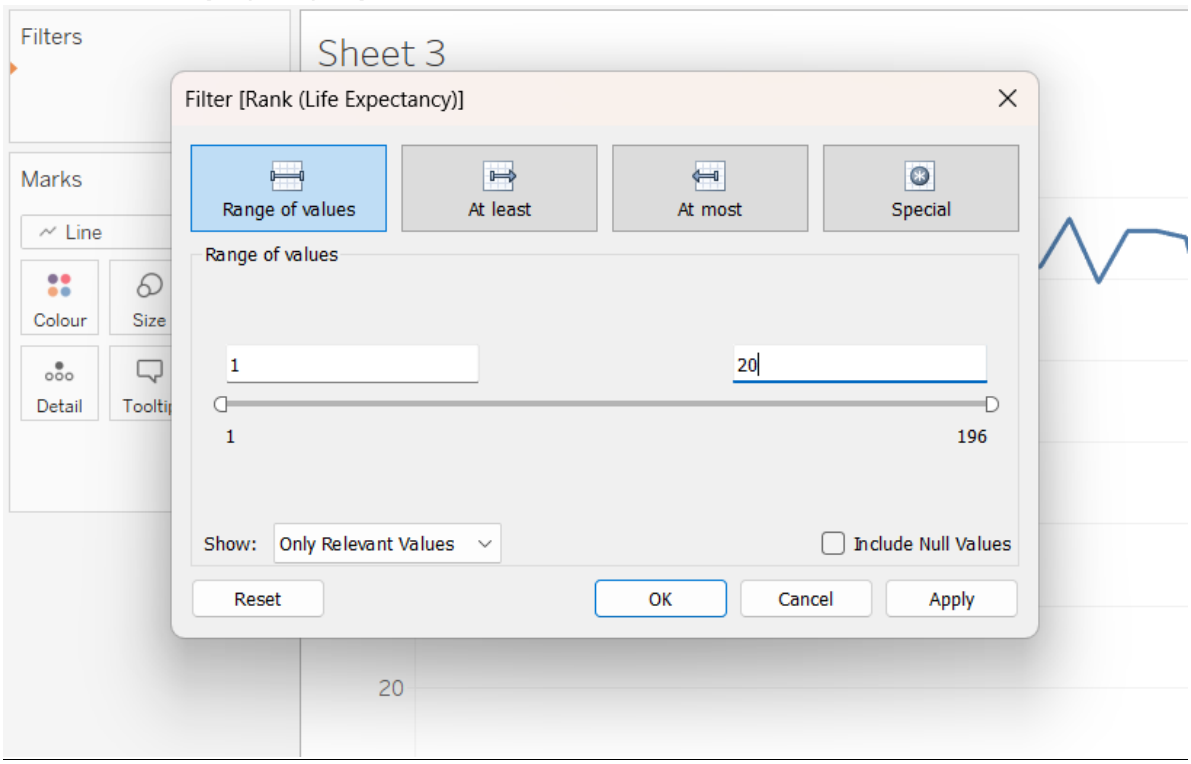
Drag Country and sum(lifeexpectancy) from Life Expectancy to columns and rows pane respectively.

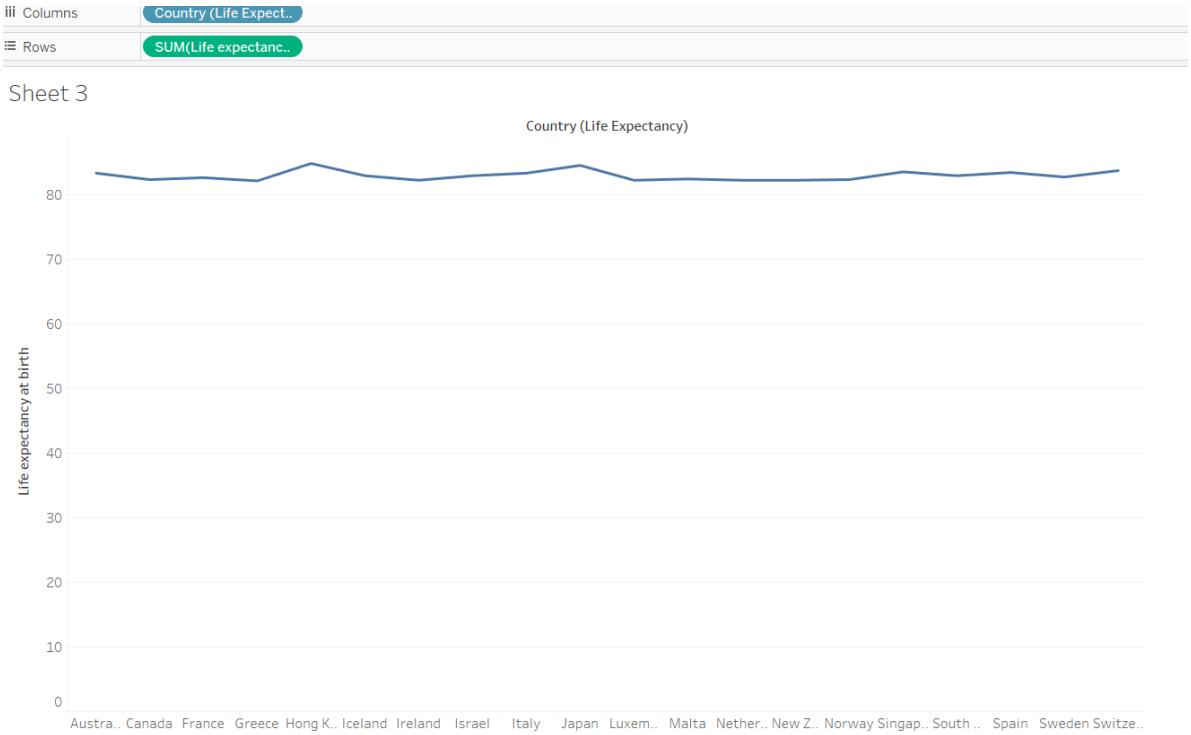


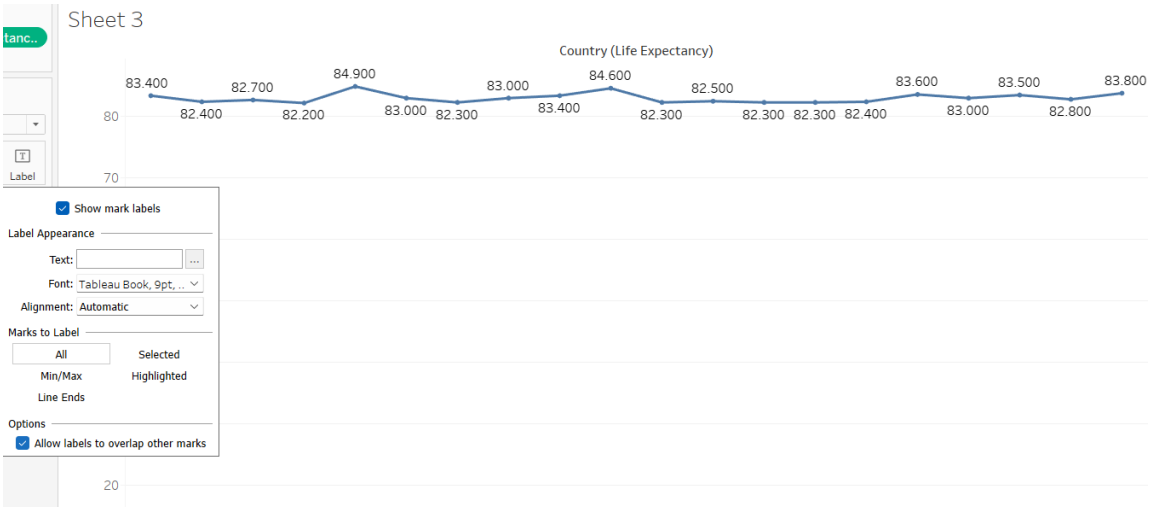

Change the visualization to Line instead of Automatic in Marks pane,




**Add filter to display only top 20 rank,**

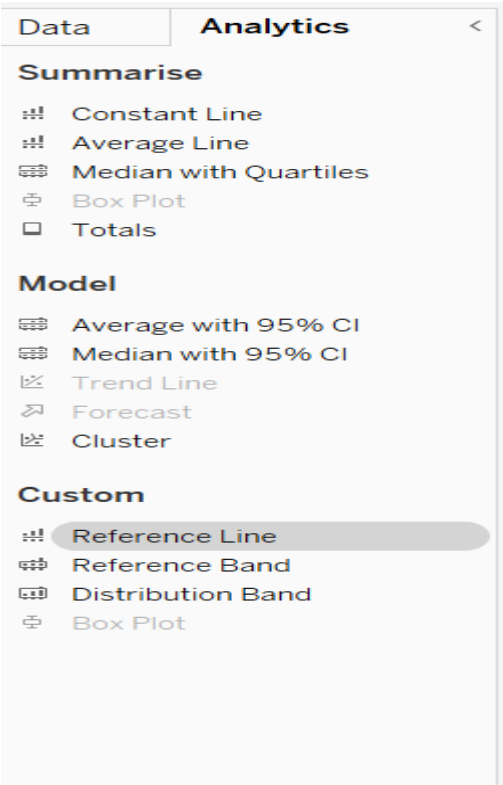




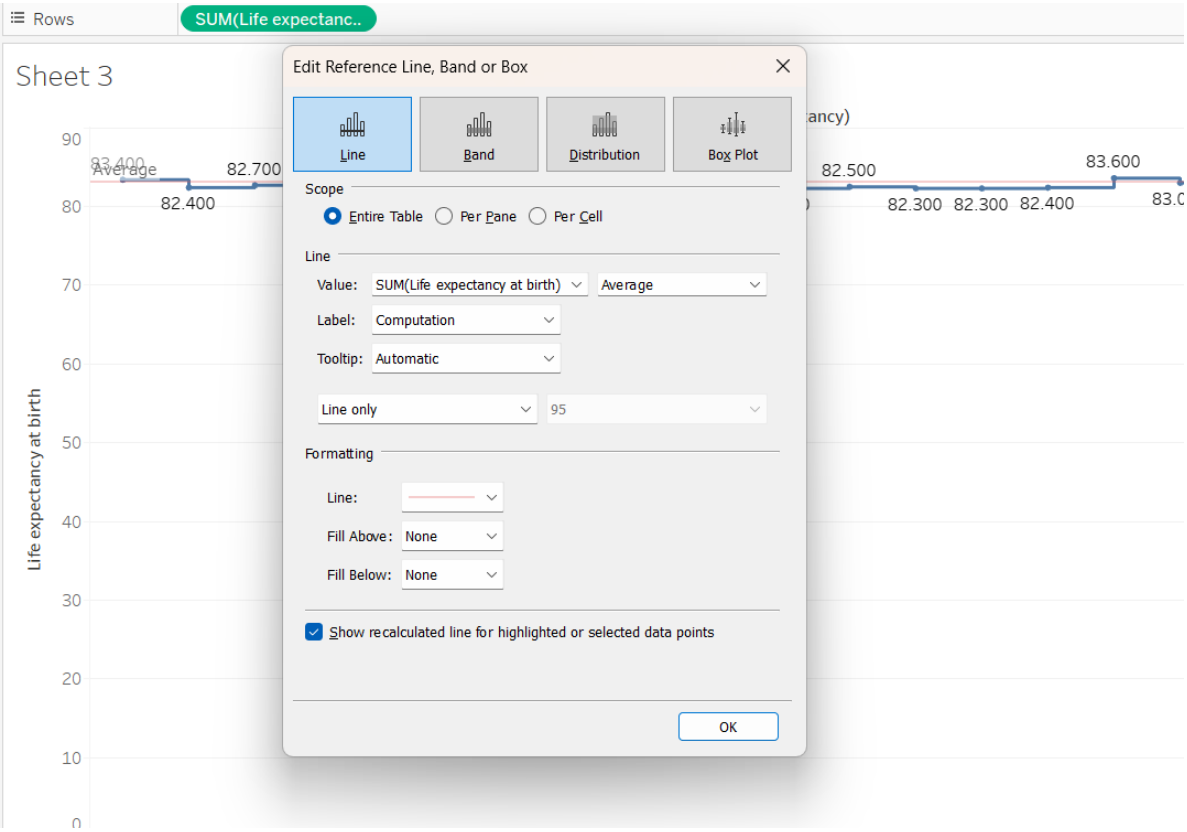




As we want to compare with average life expectancy let's add Reference line with average life expectancy,

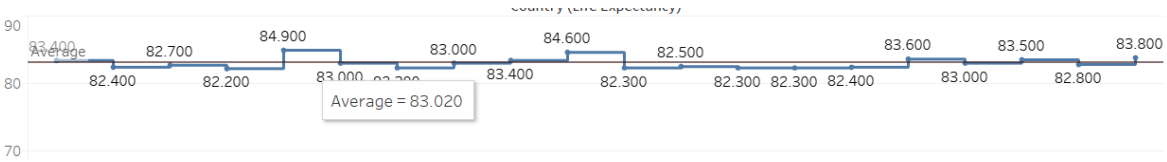
Go to Analytics -> Custom -> Reference Line



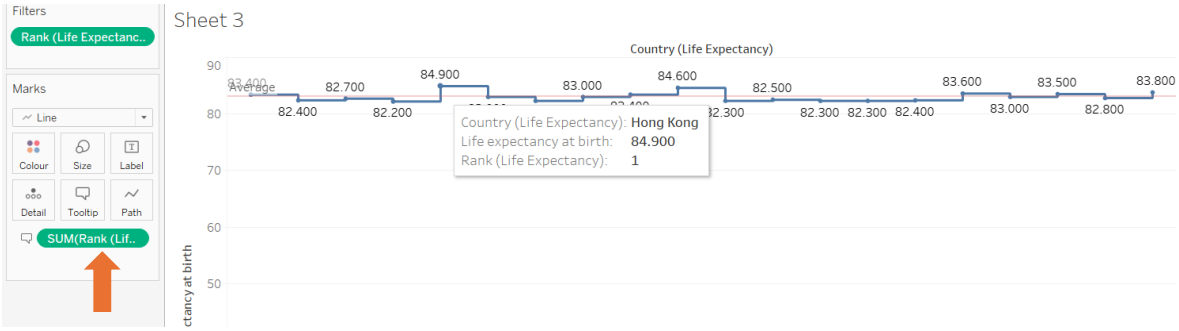

Drag Reference Line to the canvas and format the line as required,



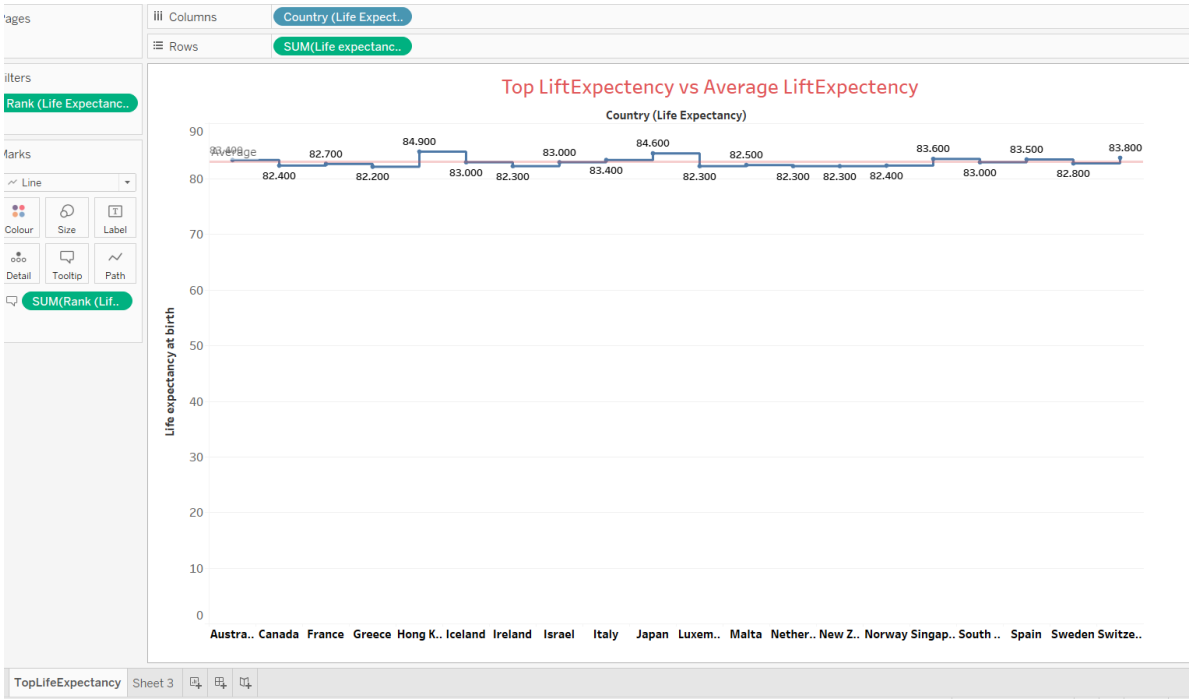

Average life expectancy is 83.020,



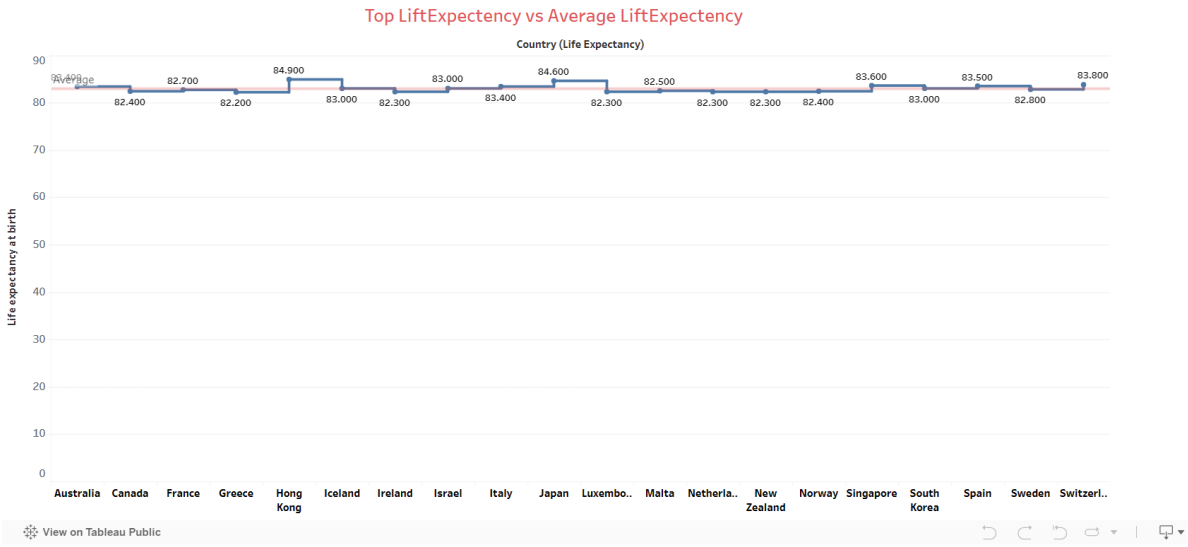

Let's display tooltip on the line graph, Rank, name of the country and life expectancy,




Add appropriate title to the visualization by double clicking the sheet name,

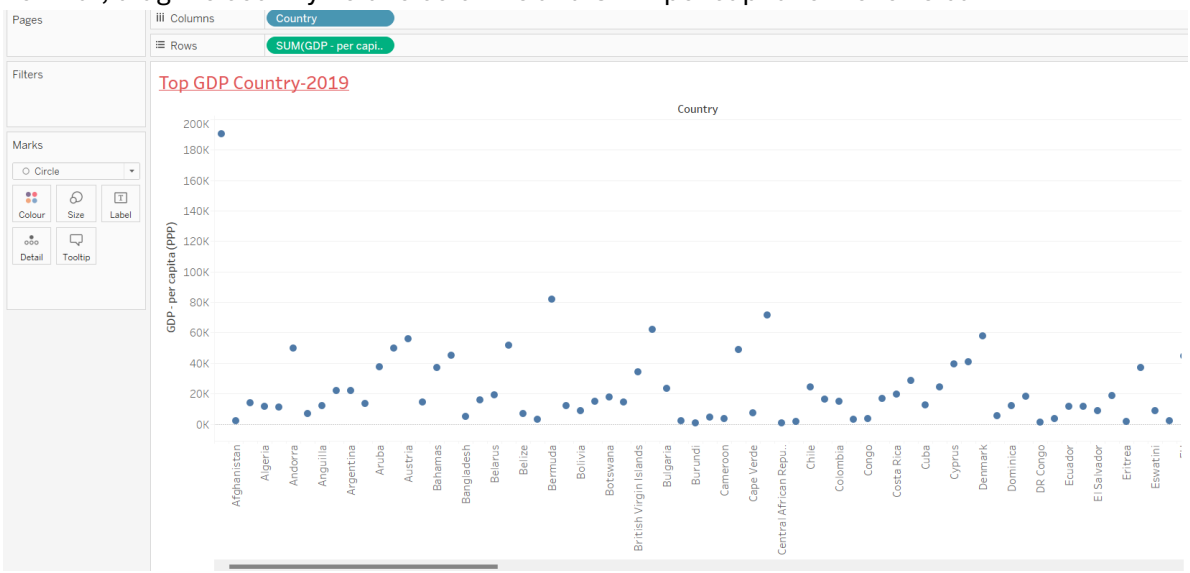



Our visualization is ready to publish now,

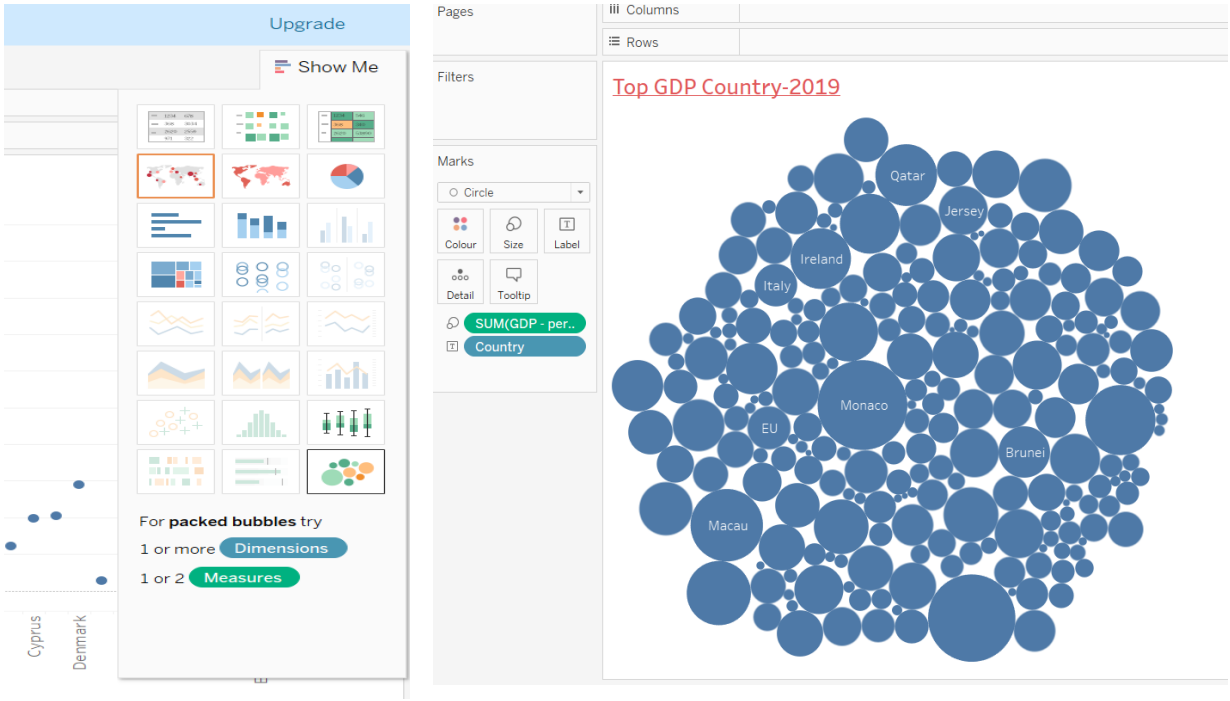



## Visualisation 3: **Display top 10 GDP countries of year 2019.**

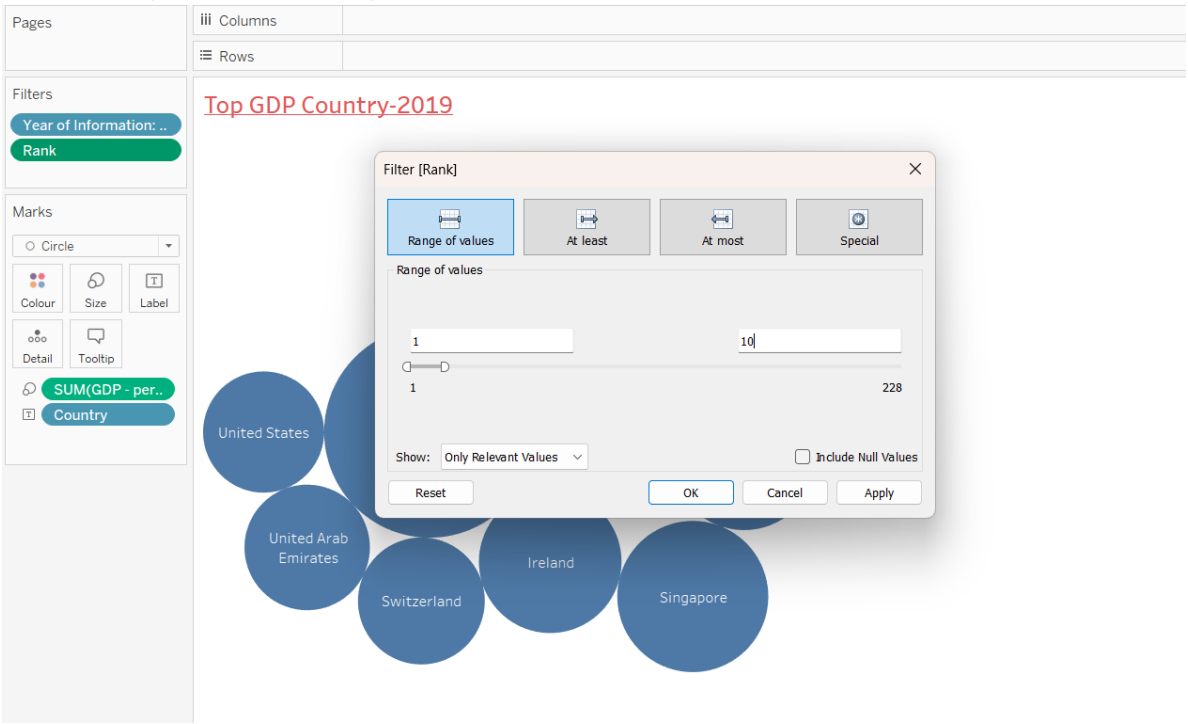
To display top GDP countries of 2019, we will create packed bubble chart with size of GDP. For that, drag the country field to columns and GDP- per capita to the rows bar.



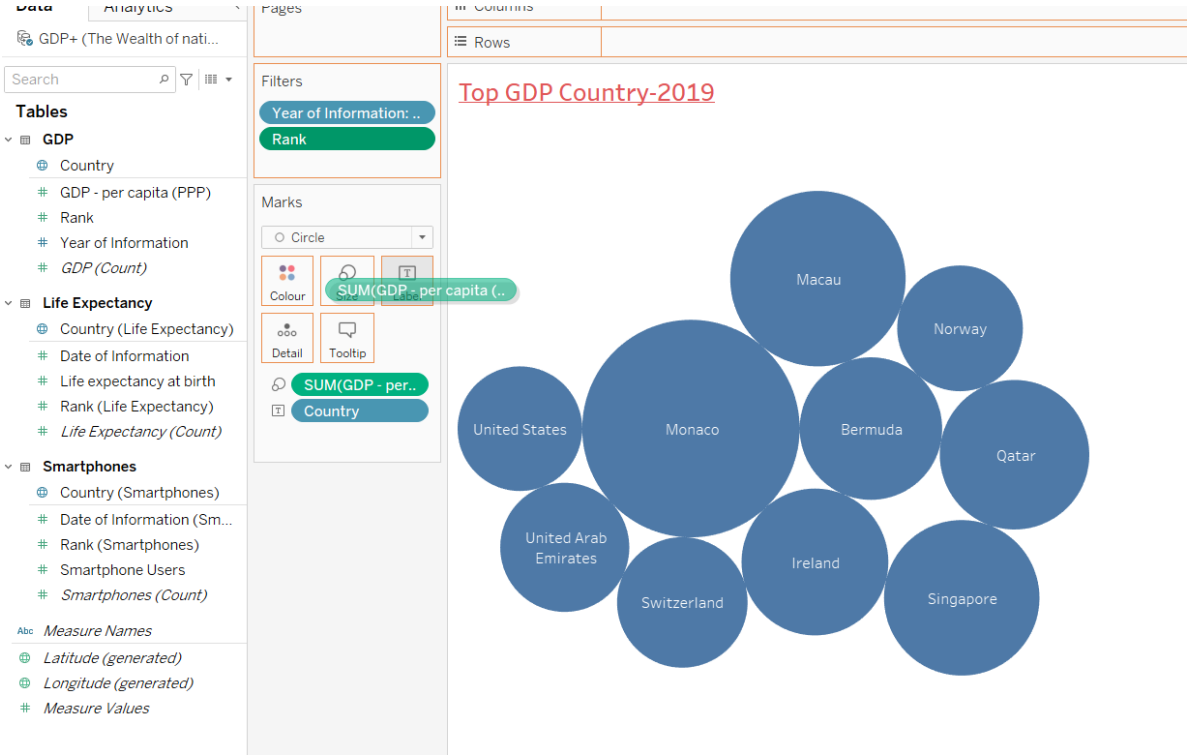

Change the visualization type to packed bubble,

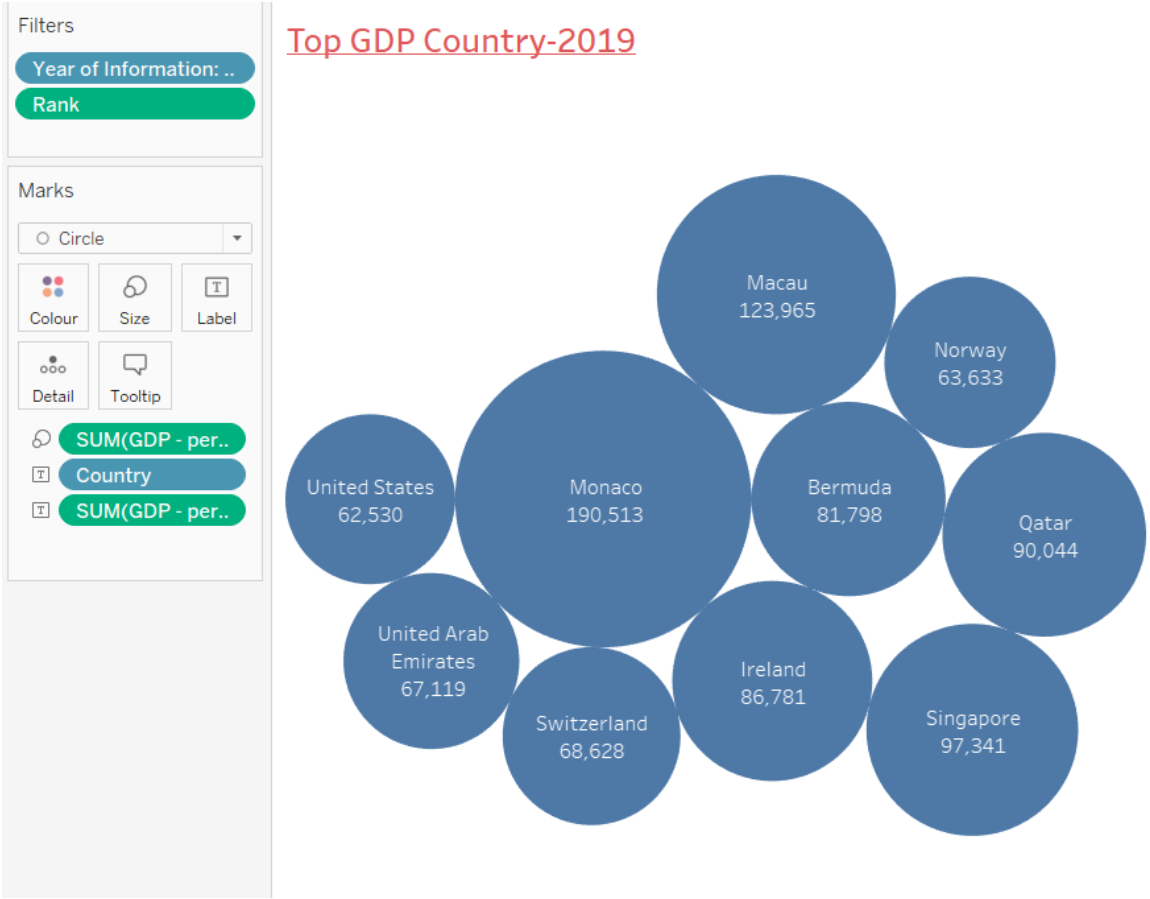



As we want year=2019 and top 10 rank, let's add the filter,



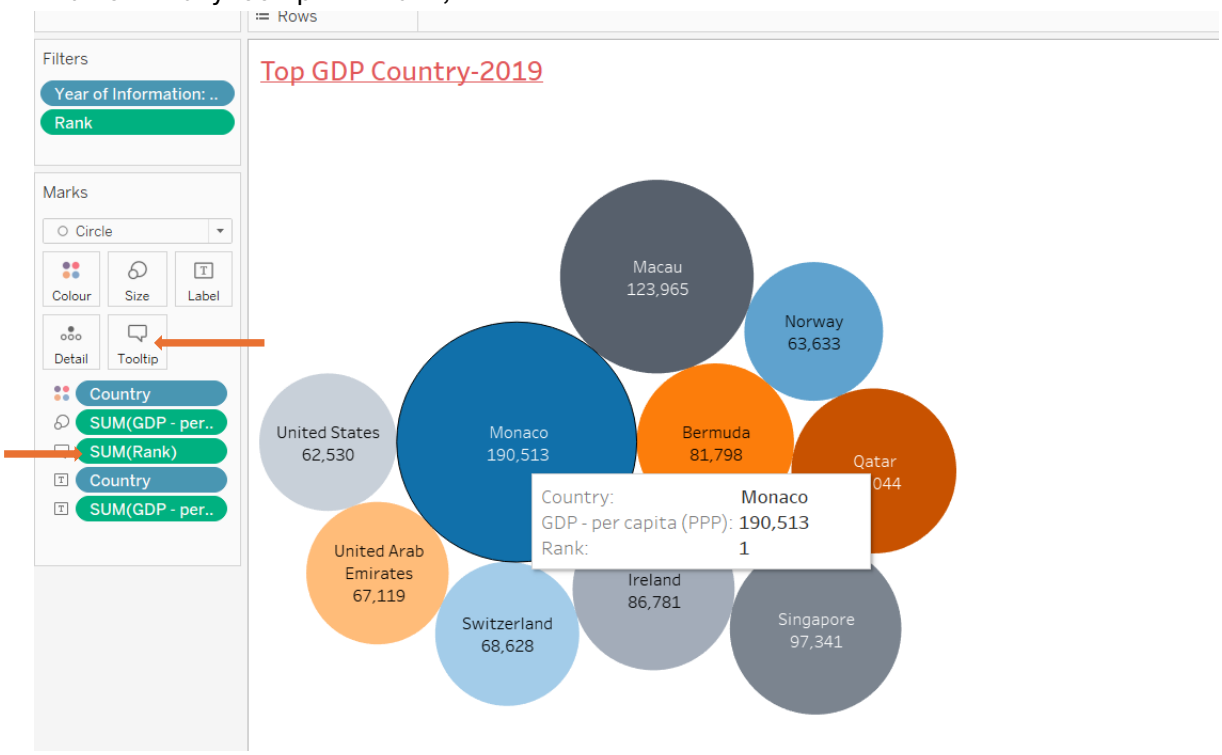

Let's add label of GDP along with country,


Data
Analytics
GDP+ (The Wealth of nati...
Search
Tables
GDP
Country
GDP - per capita (PPP)
Rank
Year of Information
GDP (Count)
Life Expectancy
Country (Life Expectancy)
Date of Information
Life expectancy at birth
Rank (Life Expectancy)
Life Expectancy (Count)
Smartphones
Country (Smartphones)
Date of Information (Sm...
Rank (Smartphones)
Smartphone Users
Smartphones (Count)
Measure Names
Latitude (generated)
Longitude (generated)
Measure Values
Pages
Filters
Year of Information: ..
Rank
Marks
Circle
Colour
Size
Label
SUM(GDP - per capita (..
Detail
Tooltip
SUM(GDP - per..
Country
Rows
Top GDP Country-2019
Macau
Norway
United States
Monaco
Bermuda
Qatar
United Arab Emirates
Ireland
Switzerland
Singapore


Filters
Year of Information: ..
Rank
Marks
Circle
Colour
Size
Label
Detail
Tooltip
SUM(GDP - per..
Country
SUM(GDP - per..
Top GDP Country-2019
Macau
123,965
Norway
63,633
United States
62,530
Monaco
190,513
Bermuda
81,798
Qatar
90,044
United Arab Emirates
67,119
Switzerland
68,628
Ireland
86,781
Singapore
97,341

Let’s assign color blind palate to bubbles,

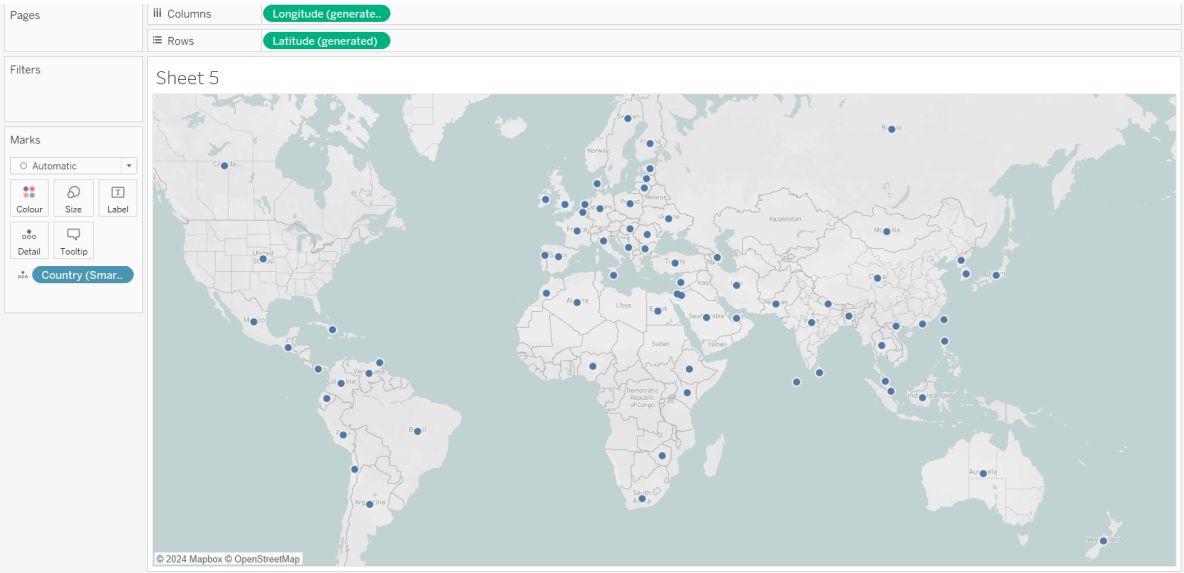
And now finally tooltip with Rank,



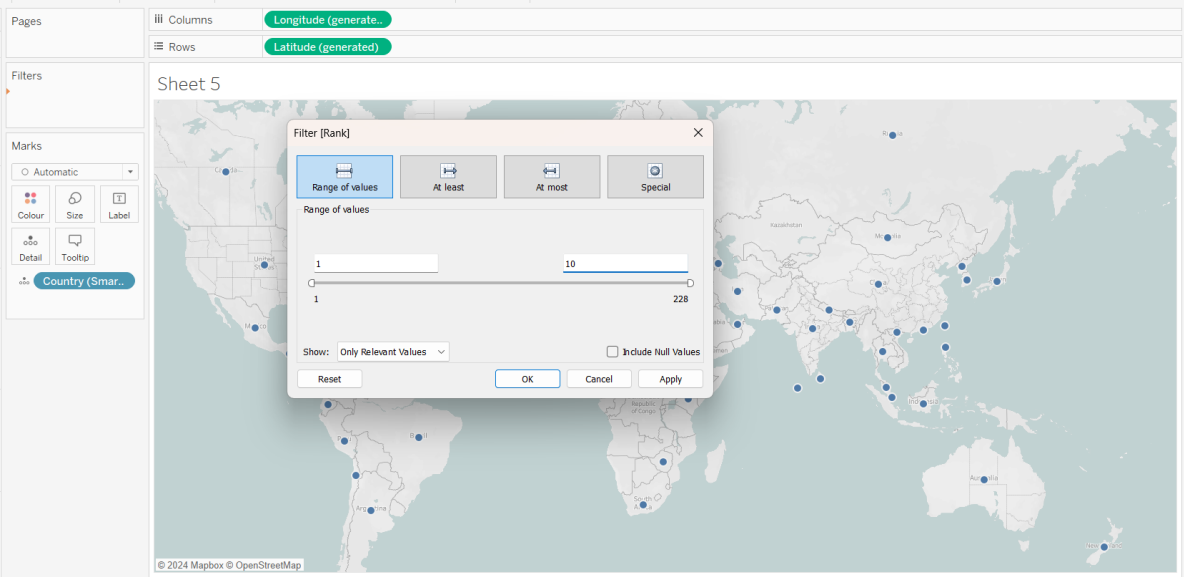

And it’s ready to publish..

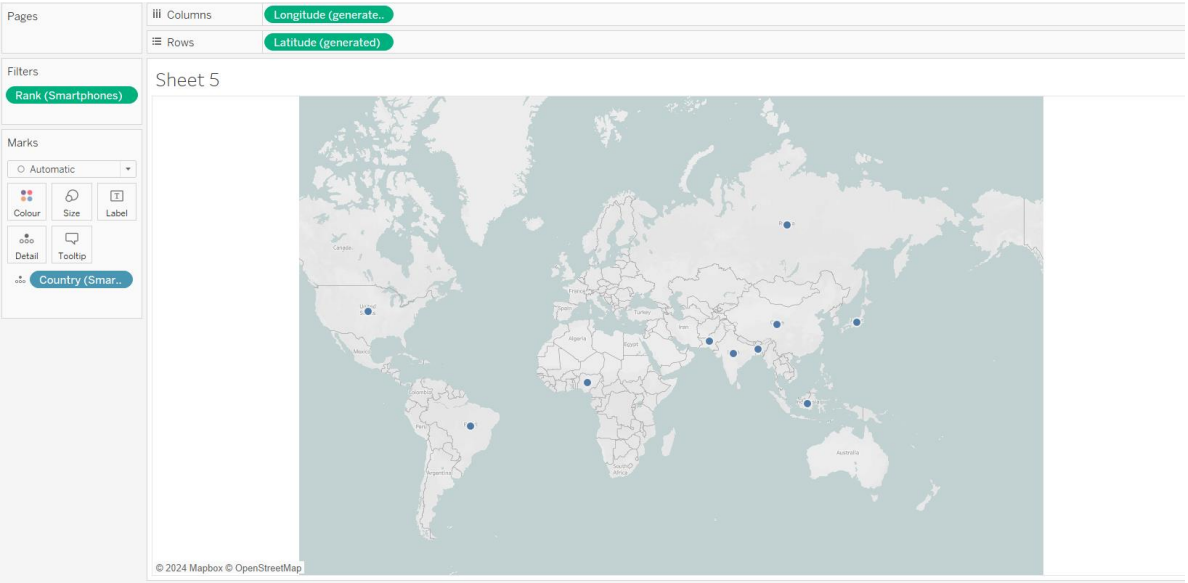
## Visualisation 4: **Map visualization of smartphone users.**

Drag the country field to canvas. As tableau identifies geographic information, it will automatically create map with name of the country with longitude as rows and columns.

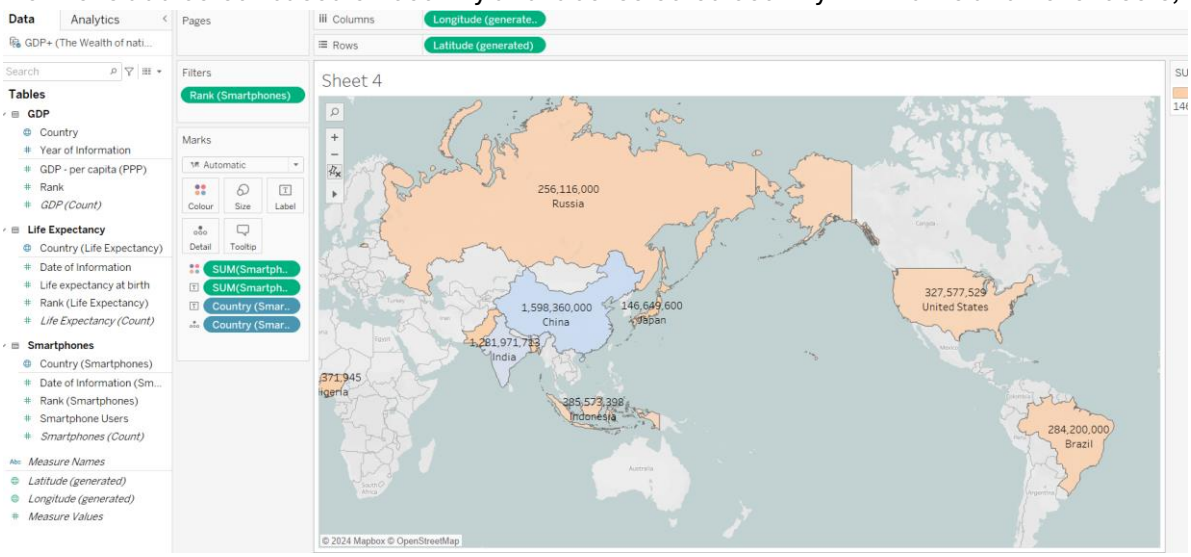



As we want top 10 countries we will add filter on Rank,

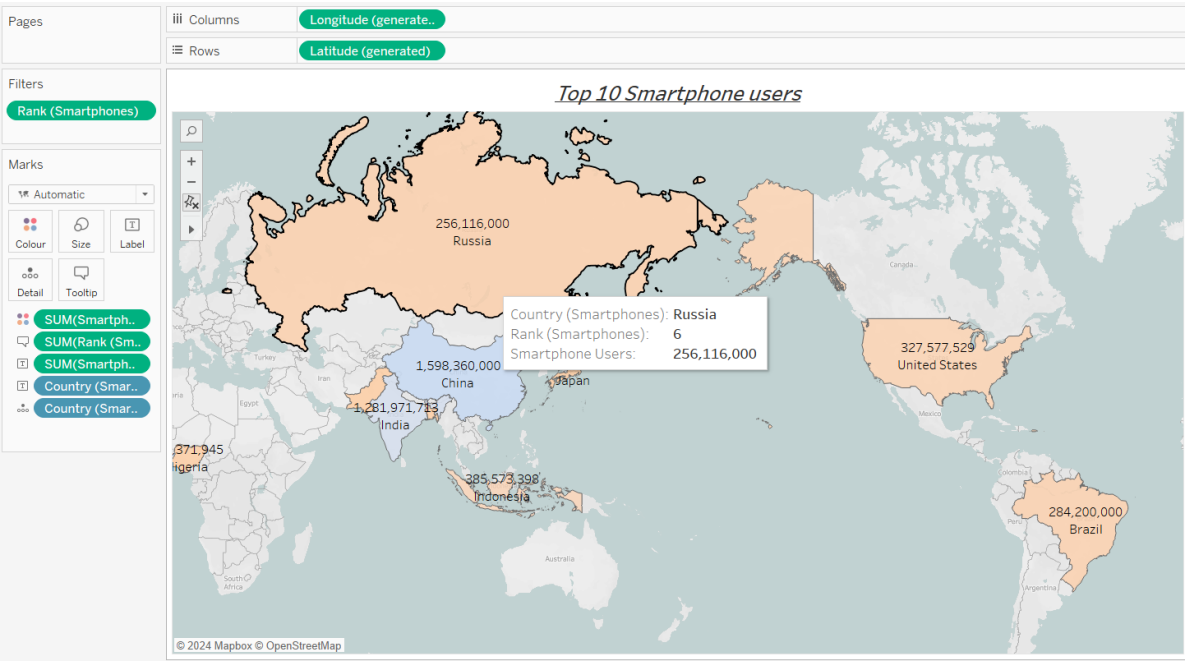





Now let's add colour based on country and label selected country with name and no. of users,

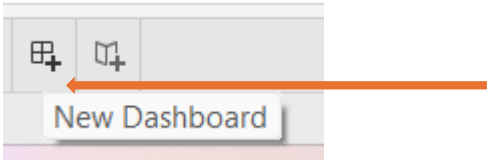



Now add the title to our visualization,



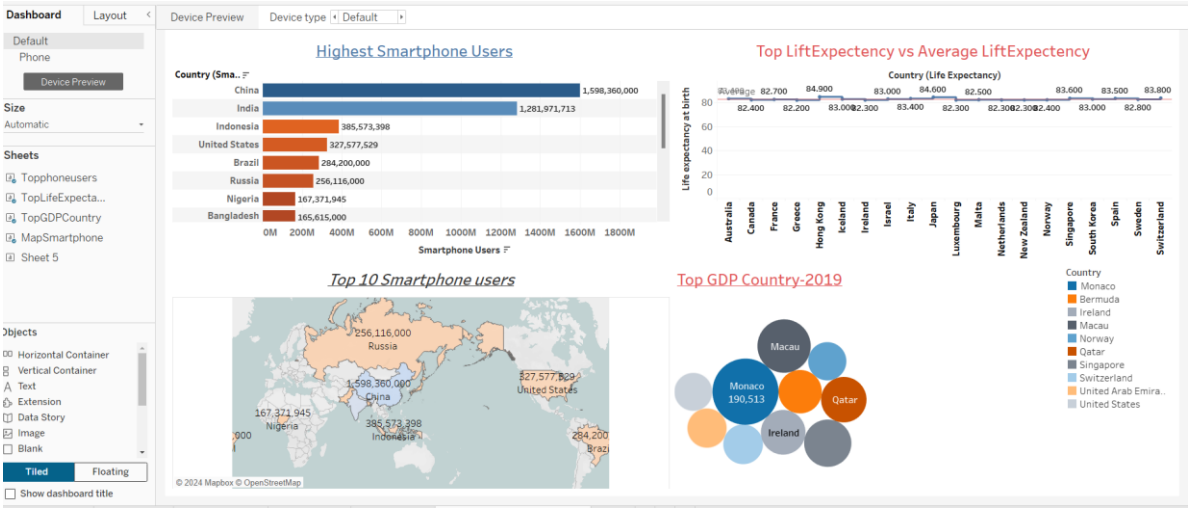

## Dashboard

As we have finished creating individual visualizations now it's time to create Dashboard for clear understanding in one page,

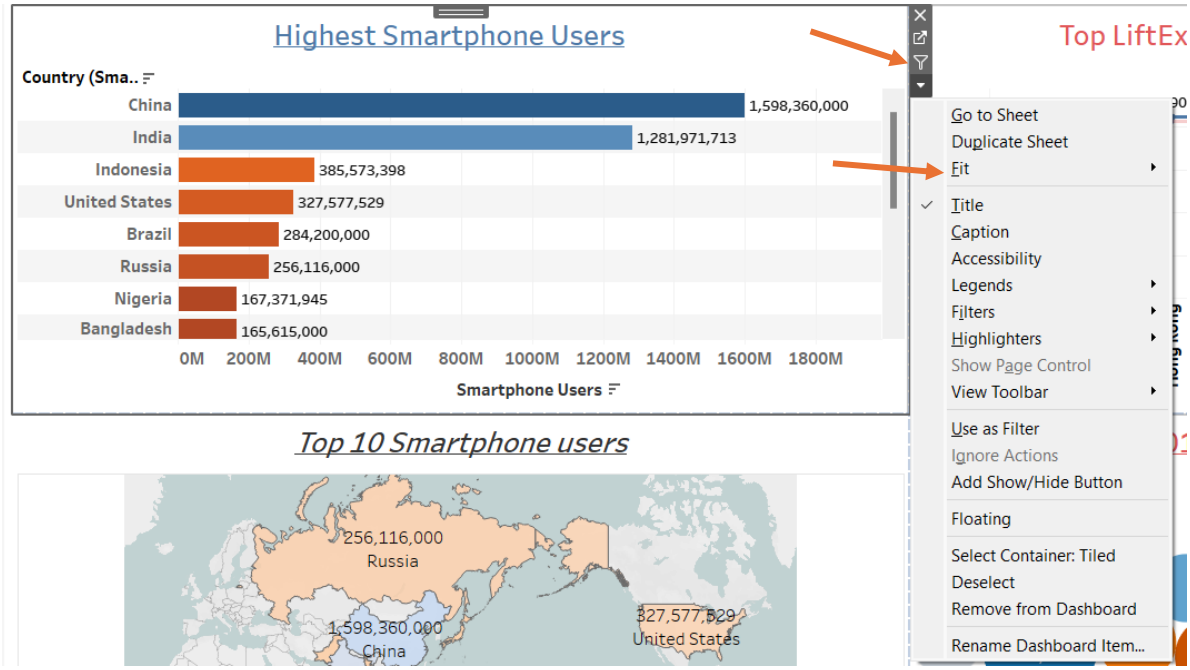



**Add new Dashboard and change name to relevant name, LifeExpectancy/GDP/Smartphoneusers**

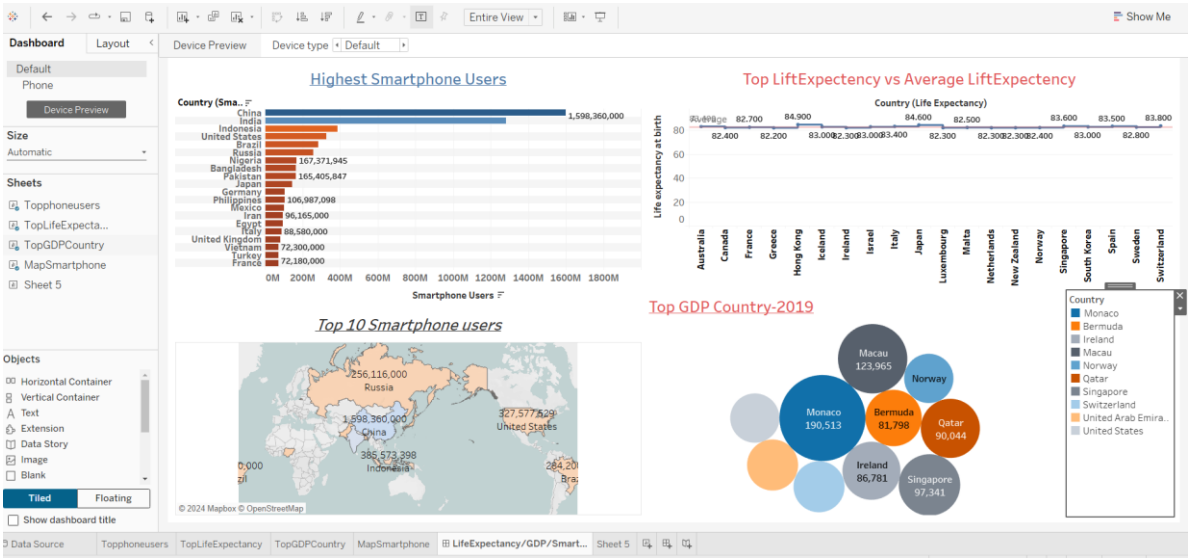
Drag the sheets on to the canvas and adjust size accordingly,



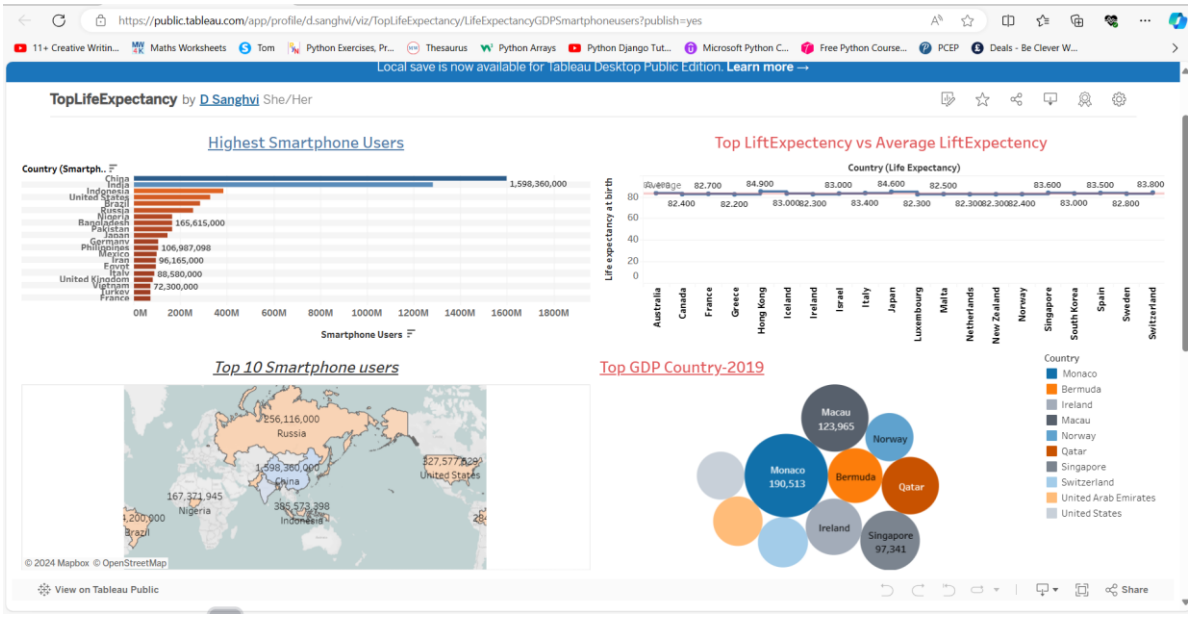

Adjust the individual visual to adjust the height/width for clear view and understand,




After adjusting the size of each visualization,




Let's publish the Dashboard,


https://public.tableau.com/app/profile/d.sanghvi/viz/TopLifeExpectancy/LifeExpectancyGDPSmartphoneusers?publish=yes
Local save is now available for Tableau Desktop Public Edition. Learn more →
TopLifeExpectancy by D Sanghvi She/Her
Highest Smartphone Users
Country (Smartph..
China
India
Indonesia
United States
Brazil
Russia
Nigeria
Bangladesh
Pakistan
Japan
Germany
Philippines
Mexico
Iran
Egypt
Italy
United Kingdom
Vietnam
Turkey
France
1,598,360,000
165,615,000
106,987,098
96,165,000
88,580,000
72,300,000
0M 200M 400M 600M 800M 1000M 1200M 1400M 1600M 1800M
Smartphone Users
Top LiftExpectency vs Average LiftExpectency
Country (Life Expectancy)
Life expectancy at birth
Average
82.700 84.900 83.000 84.600 82.500 83.600 83.500 83.800
82.400 82.200 83.000 82.300 83.400 82.300 82.300 82.300 82.400 83.000 82.800
0 20 40 60 80
Australia Canada France Greece Hong Kong Iceland Ireland Israel Italy Japan Luxembourg Malta Netherlands New Zealand Norway Singapore South Korea Spain Sweden Switzerland
Top 10 Smartphone users
256,116,000
Russia
1,598,360,000
China
167,371,945
Nigeria
385,573,398
Indonesia
327,577,529
United States
© 2024 Mapbox © OpenStreetMap
Top GDP Country-2019
Macau 123,965
Norway
Monaco 190,513
Bermuda
Qatar
Ireland
Singapore 97,341
Country
Monaco
Bermuda
Ireland
Macau
Norway
Qatar
Singapore
Switzerland
United Arab Emirates
United States
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