

Introduction to Business Analytics

Lecture 5: Visualization in Tableau

Igor Vyshnevskyi

Woosong University

March 28 / April 3, 2023

Agenda

1. Introduction to Data Visualization
2. Importance of Data Visualization
3. Chart Types
4. Visual Cues
5. Introduction to Tableau
6. Loading the Table
7. First Chart
8. Filtering
9. Dashboards
10. More filter examples
11. In-class assignment

1. Introduction to Data Visualization

What is Data Visualization

- *Data visualization* is the process of representing data and information in a graphical format.
- The goal of data visualization is to communicate insights and patterns in a more effective and meaningful way.
- Data visualization allows analysts, researchers, and decision-makers to easily understand complex data sets.
- Effective data visualization leverages design principles such as color, shape, and layout to make information more accessible and understandable.
- Data visualization enables users to quickly and efficiently gain insights from data.

2. Importance of Data Visualization

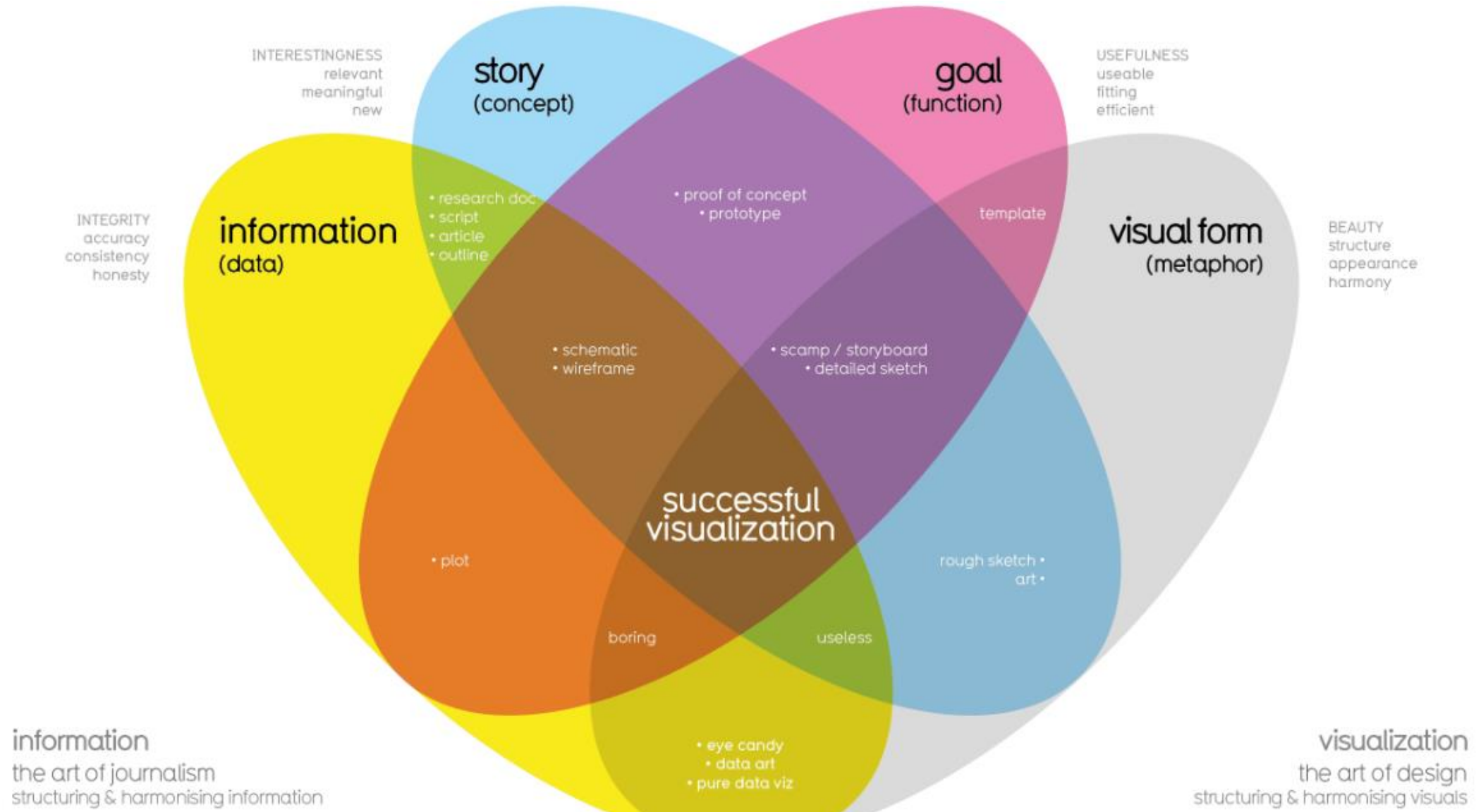
Effective data visualization:

- helps users to better understand patterns, trends, and relationships in data
- helps to identify outliers and anomalies in data that might be missed otherwise
- reveal hidden insights and relationships that are not immediately apparent in raw data
- helps to communicate findings and insights to stakeholders and decision-makers in a clear and compelling way
- helps to support data-driven decision-making by providing an intuitive and accessible view of data.

Pure data visualization can lead to:

- misleading interpretations and conclusions;
- oversimplification or obscuring of important details;
- confusion or misinterpretation of the data;
- biases or misrepresentations based on design choices;
- difficulty in visualizing certain types of data effectively;
- inaccessibility for users with visual impairments;
- incomplete or insufficient analysis due to a lack of context or nuance.

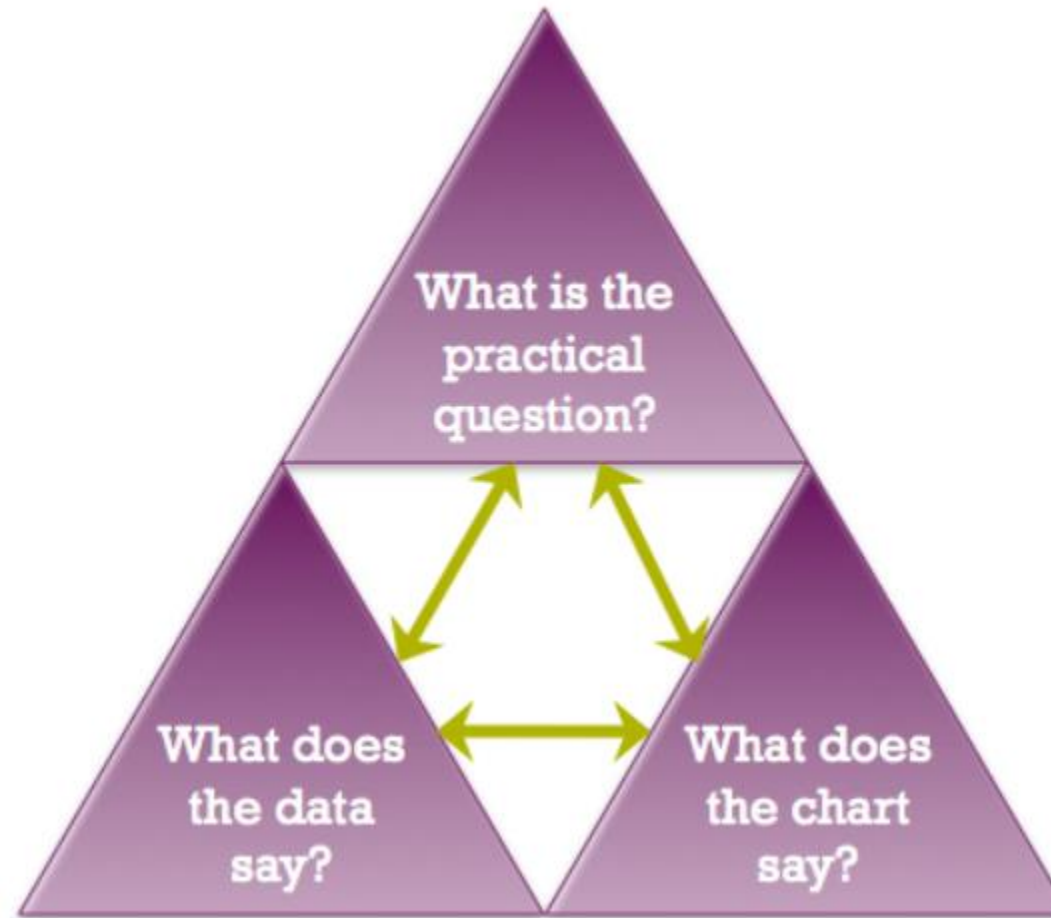
Four Elements of Good Data Visualization under the David McCandless method



- **Information (data):** The information or data that you are trying to convey is a key building block for your data visualization. Without information or data, you cannot communicate your findings successfully.
- **Story (concept):** Story allows you to share your data in meaningful and interesting ways. Without a story, your visualization is informative, but not really inspiring.
- **Goal (function):** The goal of your data visualization makes the data useful and usable. This is what you are trying to achieve with your visualization. Without a goal, your visualization might still be informative, but can't generate actionable insights.
- **Visual form (metaphor):** The visual form element is what gives your data visualization structure and makes it beautiful. Without visual form, your data is not visualized yet.

Kaiser Fung's Junk Charts Trifecta Checkup

to estimate the effectiveness of data visualization



What to Avoid

| | |
|---|--|
| Cutting off the y-axis | Changing the scale on the y-axis can make the differences between different groups in your data seem more dramatic, even if the difference is actually quite small. |
| Misleading use of a dual y-axis | Using a dual y-axis without clearly labeling it in your data visualization can create extremely misleading charts. |
| Artificially limiting the scope of the data | If you only consider the part of the data that confirms your analysis, your visualizations will be misleading because they don't take all of the data into account. |
| Problematic choices in how data is binned or grouped | It is important to make sure that the way you are grouping data isn't misleading or misrepresenting your data and disguising important trends and insights. |
| Using part-to-whole visuals when the totals do not sum up appropriately | If you are using a part-to-whole visual like a pie chart to explain your data, the individual parts should add up to equal 100%. If they don't, your data visualization will be misleading. |
| Hiding trends in cumulative charts | Creating a cumulative chart can disguise more insightful trends by making the scale of the visualization too large to track any changes over time. |
| Artificially smoothing trends | Adding smooth trend lines between points in a scatterplot can make it easier to read that plot, but replacing the points with just the line can actually make it appear that the point is more connected over time than it actually was. |

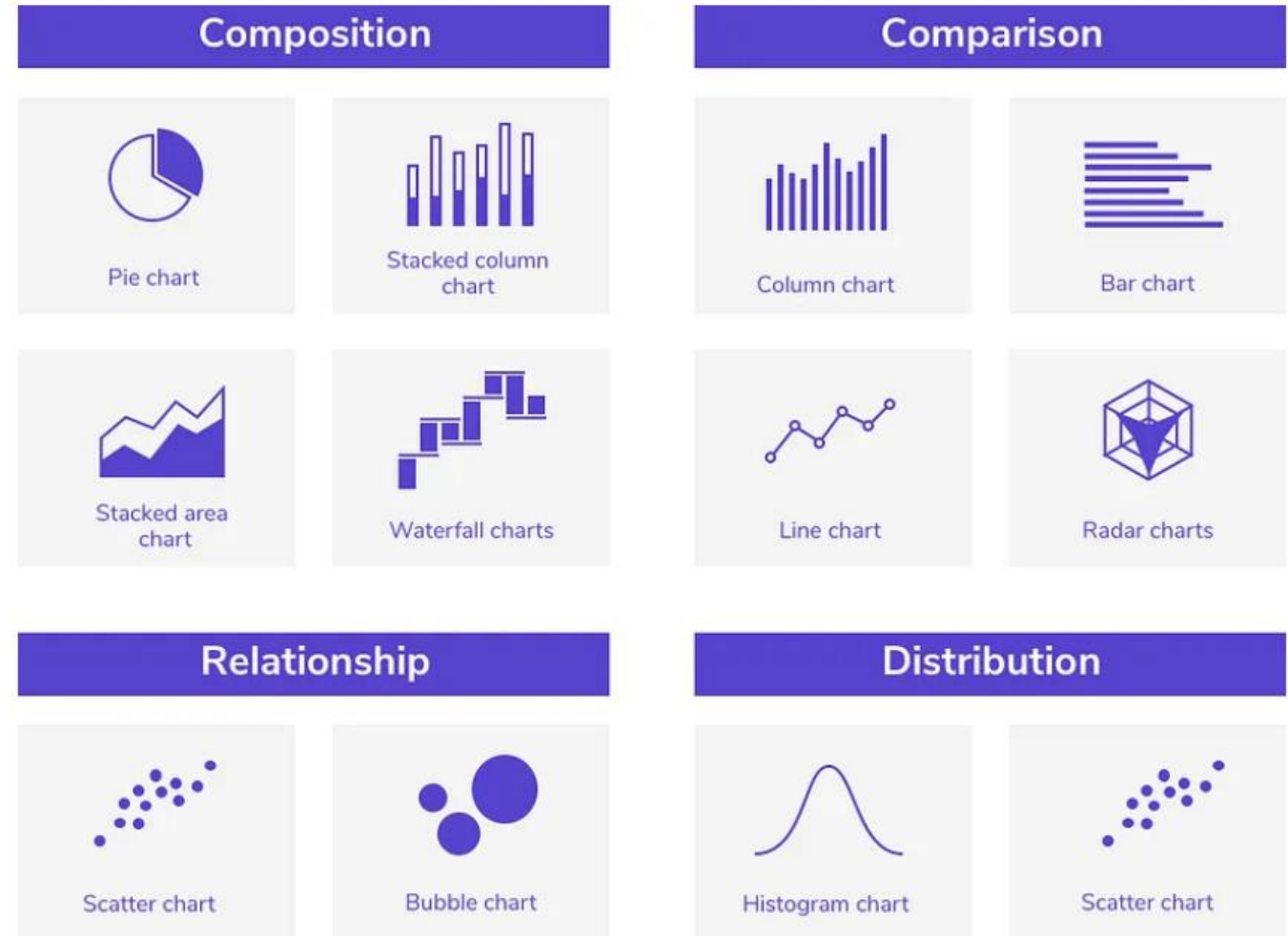
3. Chart Types

- Different types of visualization are better suited to different types of data and communication goals
- Choosing the right visualization can help you communicate your insights more effectively and support decision-making.

The example of detail interactive decision tree to make decisions based on key questions that you can ask yourself I highly recommend:

<https://www.data-to-viz.com/>

The Most Common Chart Types



Source: <https://uxplanet.org/data-heavy-applications-how-to-design-perfect-charts-c0c893fef6de>

- Different types of visualization are better suited to different types of data and communication goals
- Choosing the right visualization can help you communicate your insights more effectively and support decision-making.

The example of detail interactive decision tree to make decisions based on key questions that you can ask yourself I highly recommend:

<https://www.data-to-viz.com/>

4. Visual Cues

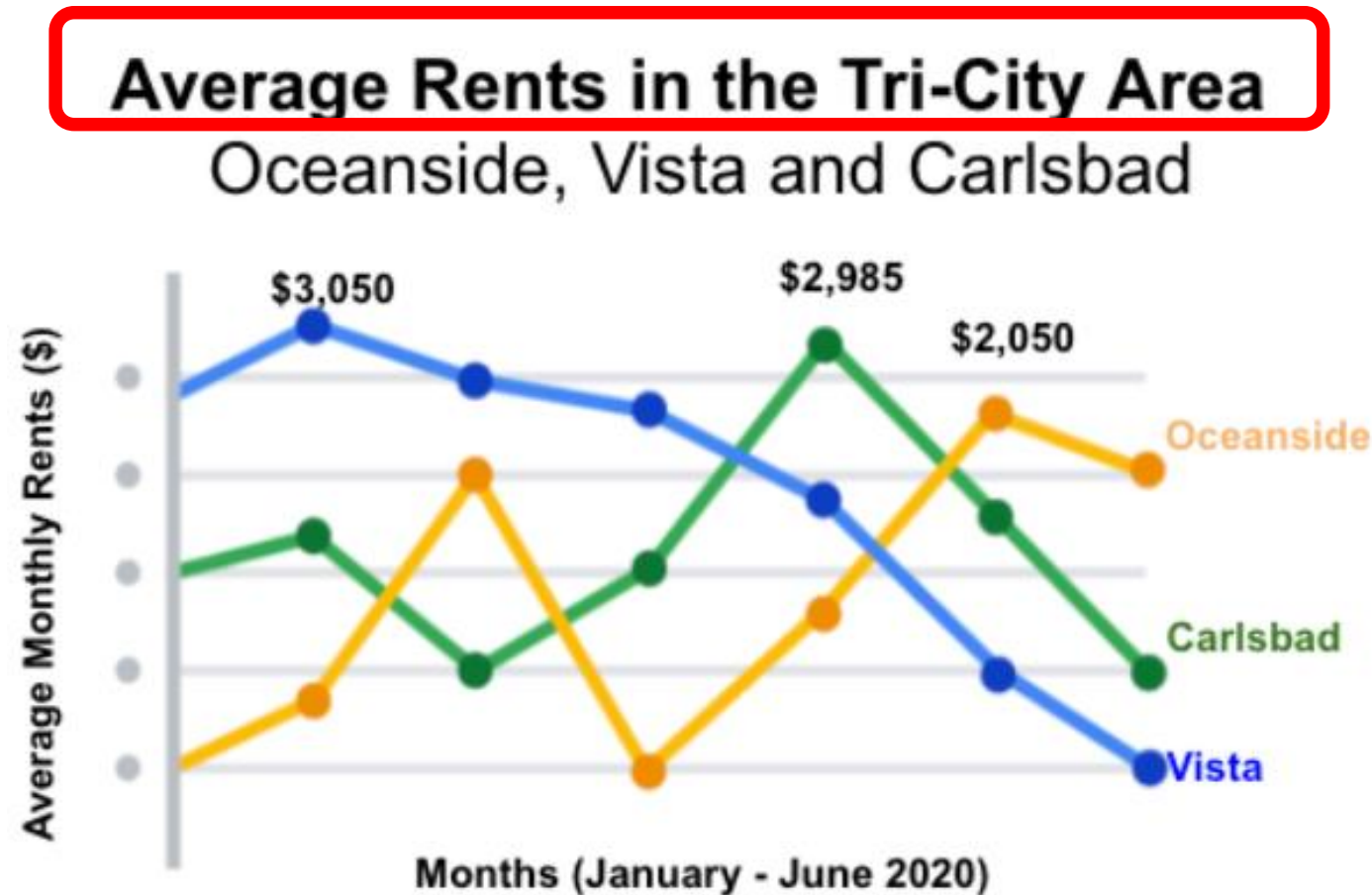
If you want to invite your audience into your presentation and keep them engaged, you have only **5 seconds** to catch their interest.

They should be able to process and understand the information you are trying to share with this extremely short time frame.

Effective visual cues are highly valuable for this purpose.

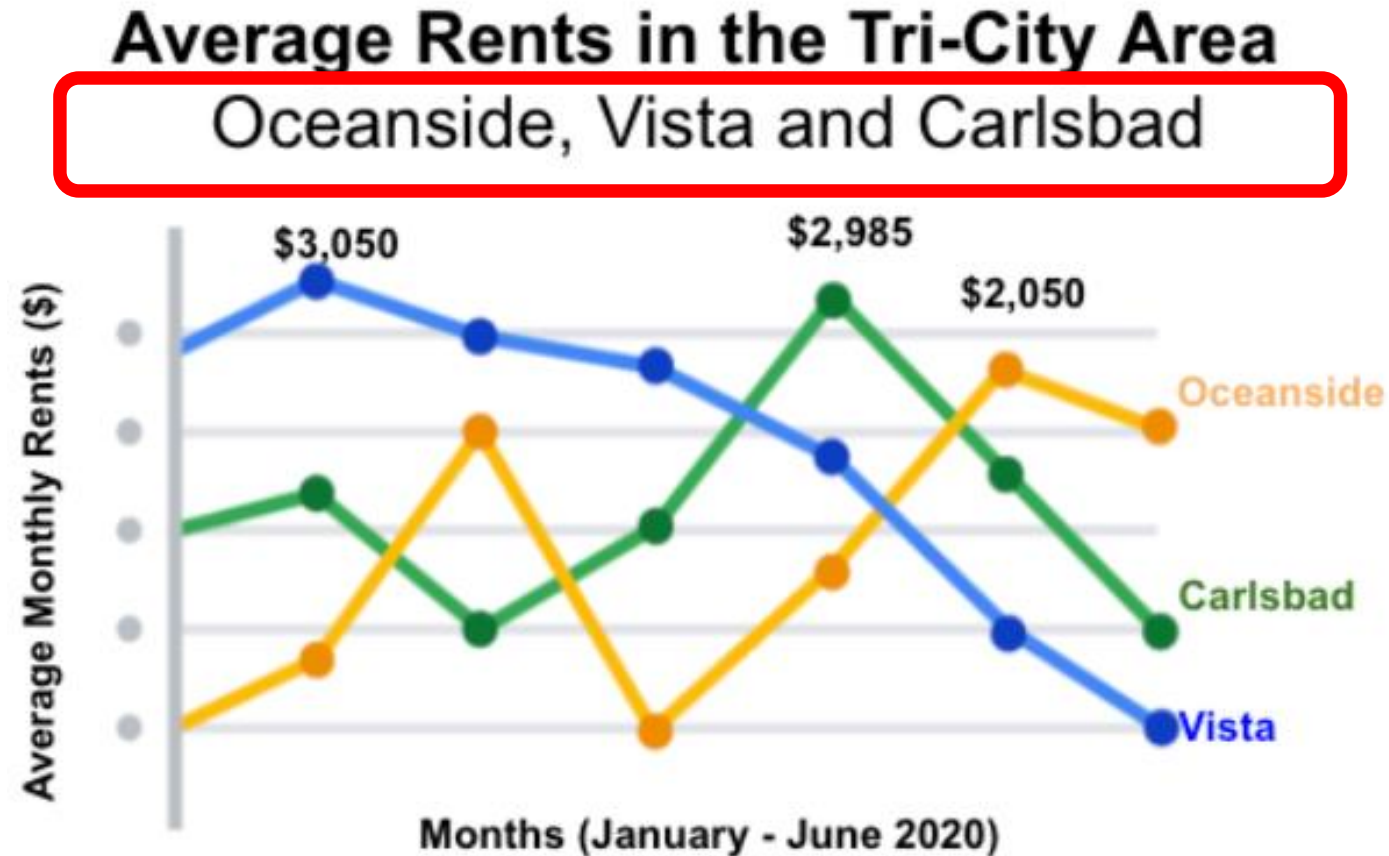
Effective Visual Cues

- Headlines that pop



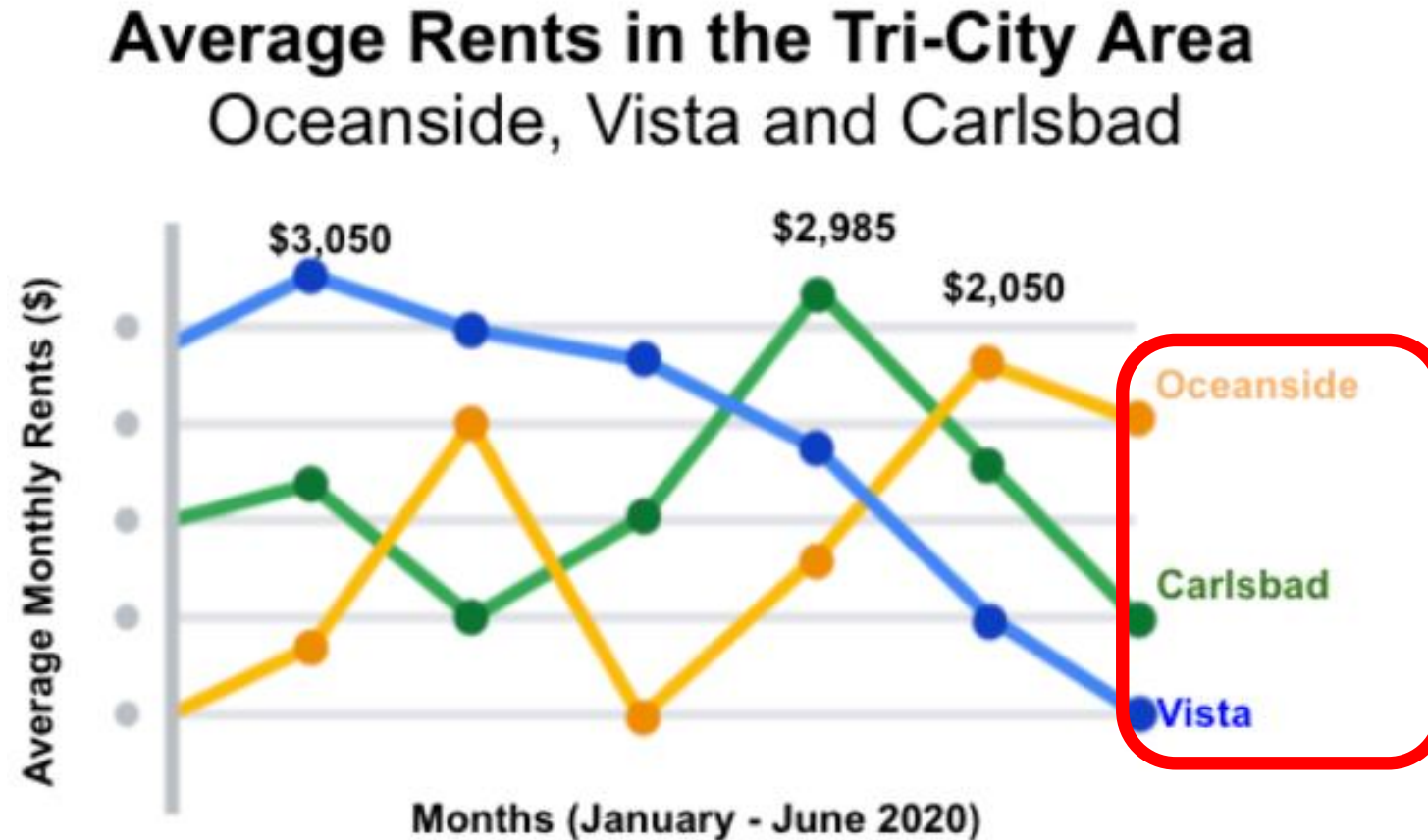
Effective Visual Cues

- Subtitles that clarify



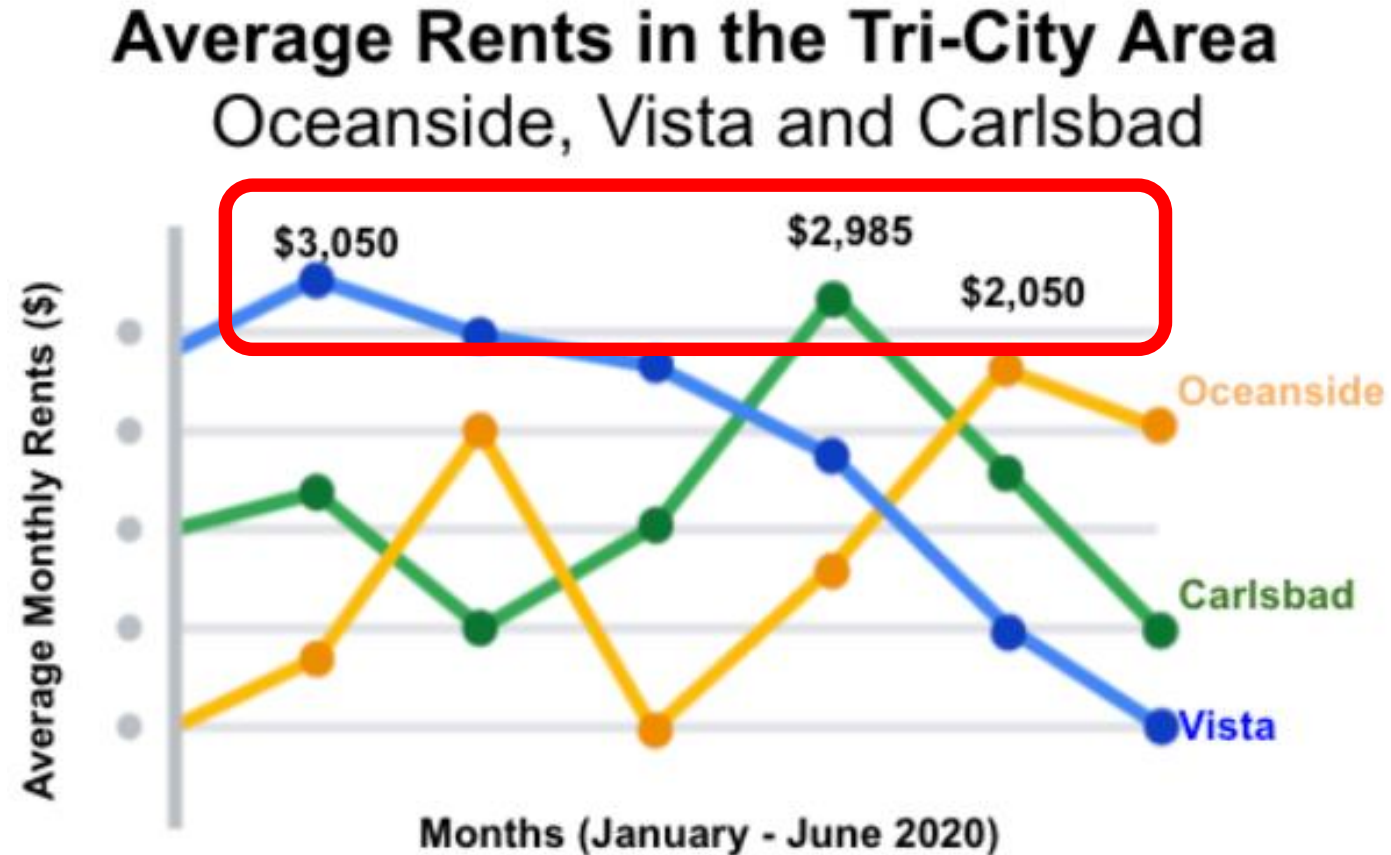
Effective Visual Cues

- Labels that identify



Effective Visual Cues

- Annotations that focus



5. Introduction to Tableau

Tableau is a free platform to publicly share and explore data visualizations online.

Key features of Tableau include:

- ✓ drag-and-drop interface,
- ✓ ability to connect to a wide range of data sources,
- ✓ interactive dashboards and visualizations, and
- ✓ support for collaboration and sharing.

Tableau is popular because it allows users to easily create visualizations and explore data in an intuitive and interactive way, without requiring extensive technical knowledge.

6. Loading the Table

1. Log in to Tableau Public.
2. Go to your profile. Hover over the circle in the upper-right corner and click **My Profile**.
3. Under the Getting Started header, click **Create a Viz**.
4. Load the file clicking **Upload from computer**.
5. Double-click on the file **amsterdam.csv** to load that file's data into the main part of the screen. You can also drag and drop the sheet into the area where it says **Drag tables here**.
6. Click **Update Now** to view the data of the file.
7. **Sheet 1** in the left bottom corner.

7. First Chart

Tableau interprets the type of data in each column. The following icons, which are above in the column name, refer to how Tableau interprets the data type in the column.

Diagram illustrating data type interpretation icons above a table:

- Numeric data** (Blue line pointing to F1 and Id)
- String data** (Green line pointing to Neighbourhood and Room Type)
- Geographic data** (Purple line pointing to Latitude and Longitude)

| # amsterdam.csv F1 | # amsterdam.csv Id | Abc amsterdam.csv Neighbourhood | 🌐 amsterdam.csv Latitude | 🌐 amsterdam.csv Longitude | Abc amsterdam.csv Room Type | # amsterdam.csv Price |
|--------------------------|--------------------------|---------------------------------------|--------------------------------|---------------------------------|-----------------------------------|-----------------------------|
| 0 | 2818 | Oostelijk Havengebied - Indis... | 52.3657545 | 4.941419 | Private room | 59 |
| 1 | 3209 | Westerpark | 52.3902251 | 4.873924 | Entire home/apt | 160 |
| 2 | 20168 | Centrum-Oost | 52.3650870 | 4.893541 | Entire home/apt | 80 |
| 3 | 25428 | Centrum-West | 52.3731144 | 4.883668 | Entire home/apt | 125 |
| 4 | 27886 | 25428 Centrum-West | 52.3867273 | 4.892078 | Private room | 150 |
| 5 | 28658 | Bos en Lommer | 52.3753422 | 4.857289 | Private room | 65 |

7. To create chart click **Sheet 1** in the left bottom corner.

Dimensions

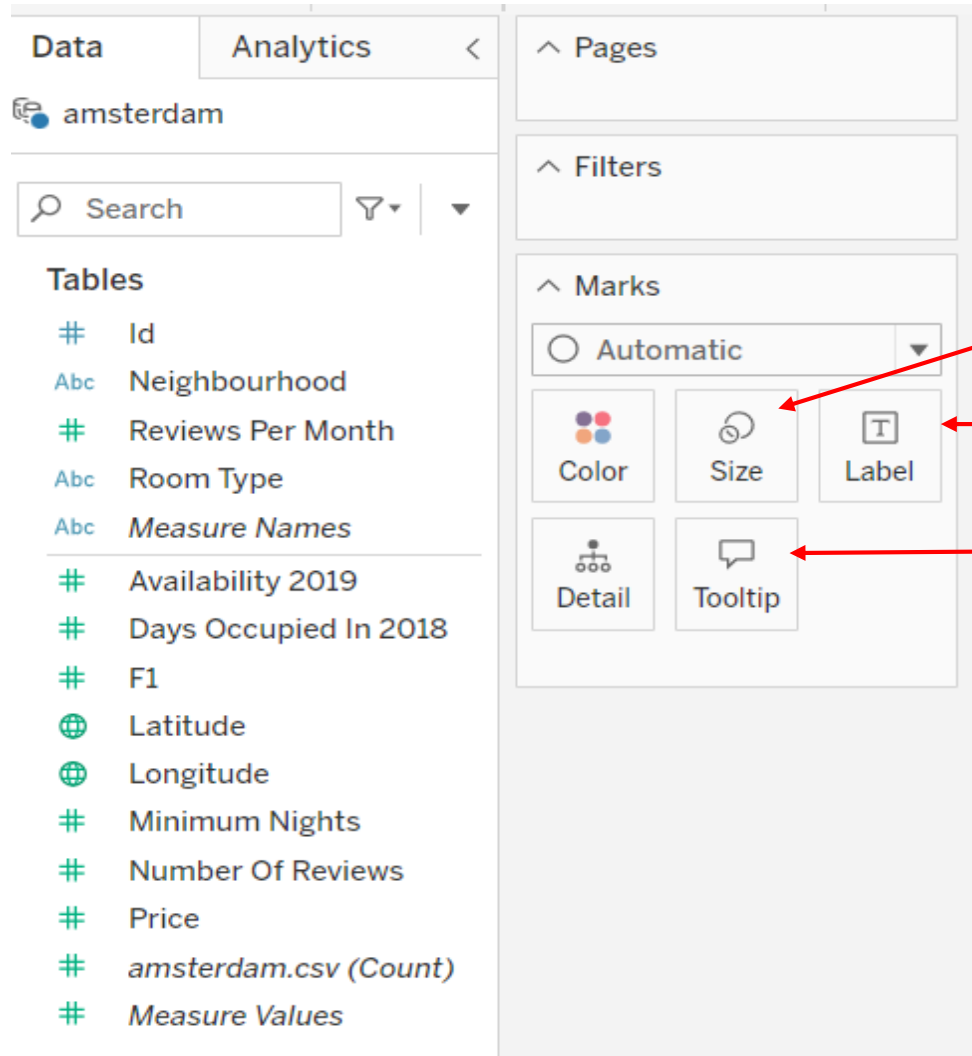
Measures that you can track for these dimensions

The screenshot shows the Tableau interface. On the left, the 'Data' pane is visible with a search bar and a list of fields. The fields are categorized into 'Dimensions' (Id, Neighbourhood, Reviews Per Month, Room Type, Measure Names) and 'Measures' (Availability 2019, Days Occupied In 2018, F1, Latitude, Longitude, Minimum Nights, Number Of Reviews, Price, amsterdam.csv (Count), Measure Values). A red arrow points from the 'Neighbourhood' dimension to the 'Color' icon in the 'Marks' card on the right. The 'Marks' card also shows 'Automatic' as the selected mark type, and 'Size' and 'Label' icons are also visible.

| Category | Field Name | Icon |
|------------|-----------------------|------|
| Dimensions | Id | # |
| Dimensions | Neighbourhood | Abc |
| Dimensions | Reviews Per Month | # |
| Dimensions | Room Type | Abc |
| Dimensions | Measure Names | Abc |
| Measures | Availability 2019 | # |
| Measures | Days Occupied In 2018 | # |
| Measures | F1 | # |
| Measures | Latitude | 🌐 |
| Measures | Longitude | 🌐 |
| Measures | Minimum Nights | # |
| Measures | Number Of Reviews | # |
| Measures | Price | # |
| Measures | amsterdam.csv (Count) | # |
| Measures | Measure Values | # |

8. Drop *Neighborhood* dimension to *Color* icon for Tableau to assign the color for each *Neighborhood*.

10. Double-click of Latitude and Longitude to see the *Neighborhood* spots on the map.
11. Double-click *Number of reviews* measure to assign the value for each *Neighborhood*.



The screenshot shows the Tableau Desktop interface. On the left, the 'Data' pane is active, displaying a list of tables and fields for the 'amsterdam' dataset. The 'Marks' card is selected on the right, showing the 'Automatic' mark type and five mark properties: Color, Size, Label, Detail, and Tooltip. Red arrows point from text annotations to the 'Size', 'Label', and 'Tooltip' properties.

Data | **Analytics** <

amsterdam

Search

Tables

- # Id
- Abc Neighbourhood
- # Reviews Per Month
- Abc Room Type
- Abc Measure Names
- # Availability 2019
- # Days Occupied In 2018
- # F1
- 🌐 Latitude
- 🌐 Longitude
- # Minimum Nights
- # Number Of Reviews
- # Price
- # amsterdam.csv (Count)
- # Measure Values

^ Marks

○ Automatic

Color Size Label

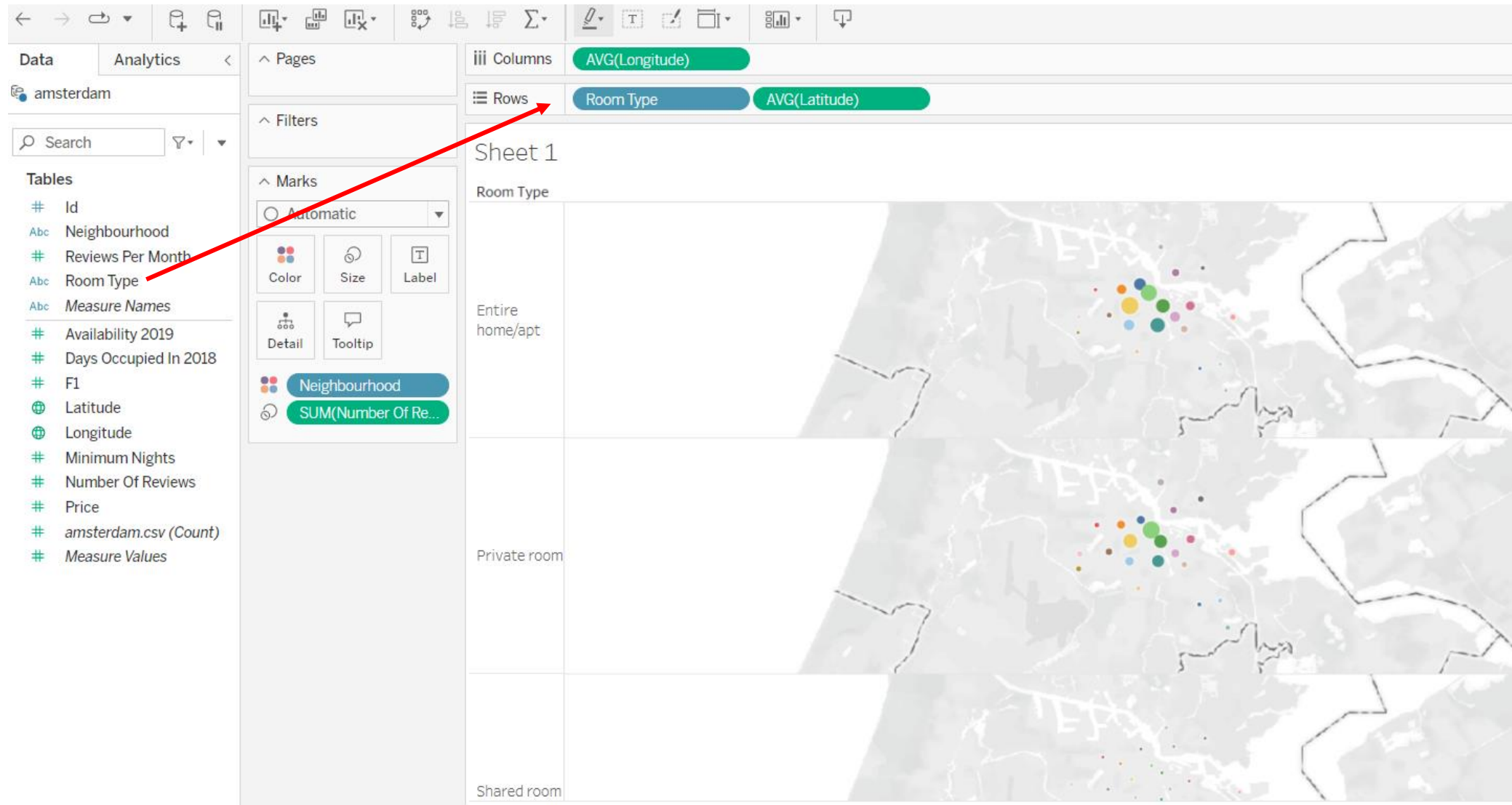
Detail Tooltip

Change the size of the drops

Add/modify the labels

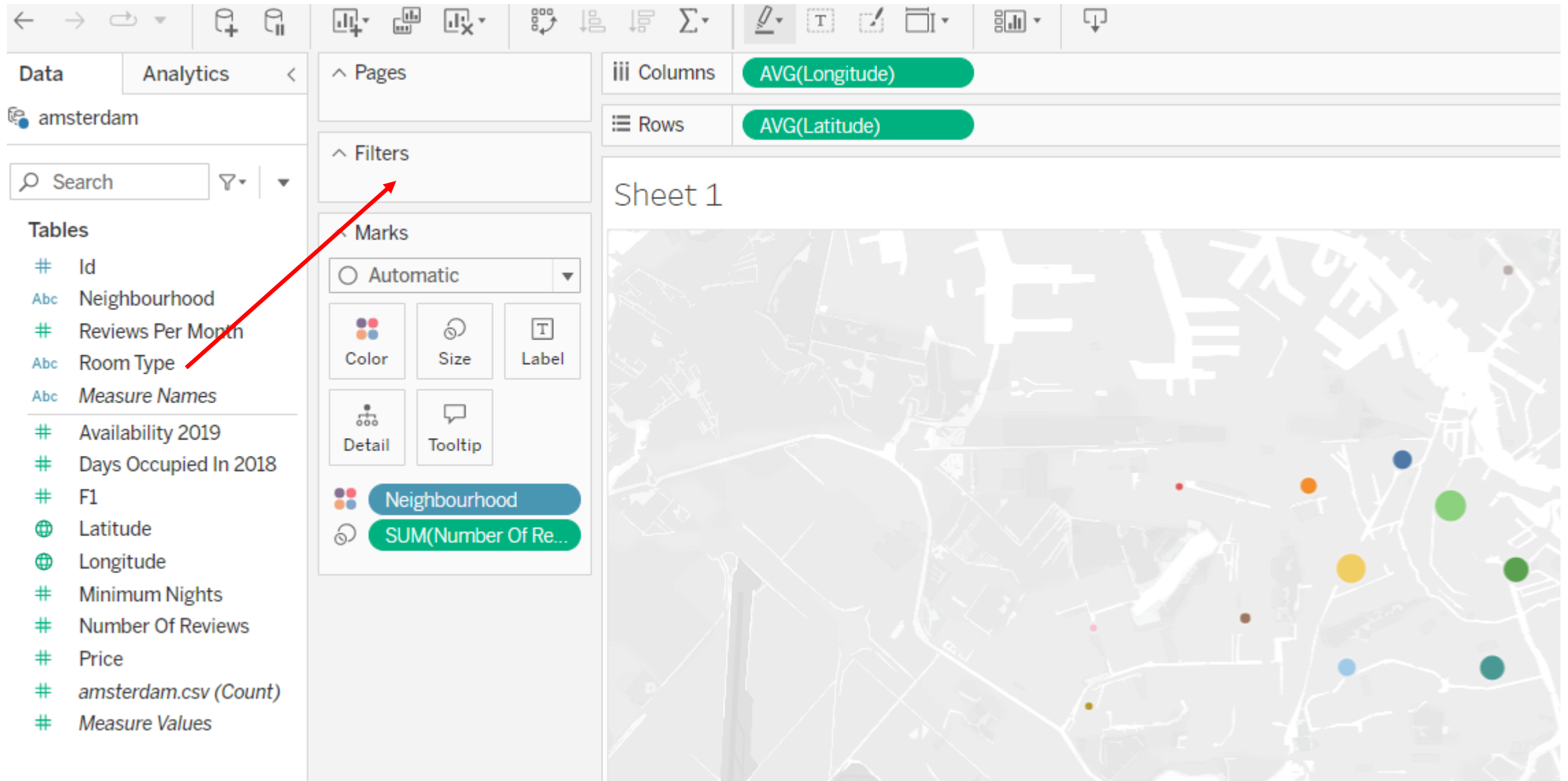
Add/modify the comments

If we double-click *Room Type*, we will see the distribution of *Number of Reviews* for each type of room.



8. Filtering

Let's filter data by Room Type.



Check the required Type of the Room.

The screenshot displays a data visualization tool interface. On the left, a sidebar shows a list of tables and fields for 'amsterdam'. The main area features a map of Amsterdam. A 'Filter [Room Type]' dialog is open on the right, with a red box highlighting the 'Private room' option under the 'List' section. The dialog also includes a 'Values' section set to 'All values in data set', a search bar, and a list of filter types (Wildcard, Condition, Top/Bottom). At the bottom, there are buttons for 'Reset', 'Apply', 'Cancel', and 'OK'.

Data | **Analytics**

amsterdam

Search

Tables

- # Id
- Abc Neighbourhood
- # Reviews Per Month
- Abc Room Type
- Abc Measure Names
- # Availability 2019
- # Days Occupied In 2018
- # F1
- # Latitude
- # Longitude
- # Minimum Nights
- # Number Of Reviews
- # Price
- # amsterdam.csv (Count)
- # Measure Values

Columns | **Rows**

Columns: AVG(Longitude)
Rows: AVG(Latitude)

Sheet 1

Filter [Room Type]

General

List: Select from list
Values: All values in data set

Search

- ☐ (All)
- ☐ Entire home/apt
- ☒ Private room
- ☐ Shared room

☐ Exclude selected values

> Wildcard
> Condition
> Top/Bottom

Summary

Selection: Selected 0 of 3 values
Wildcard: All
Condition: None
Limit: None

Reset Apply Cancel OK

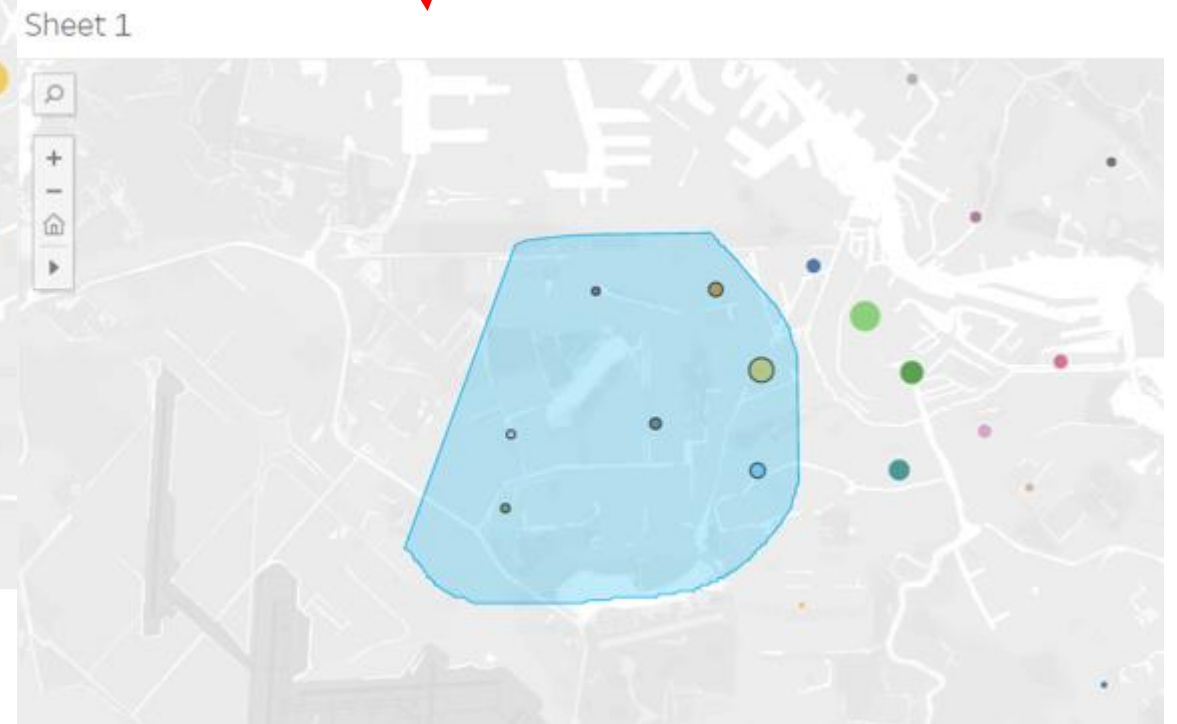
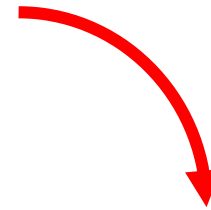
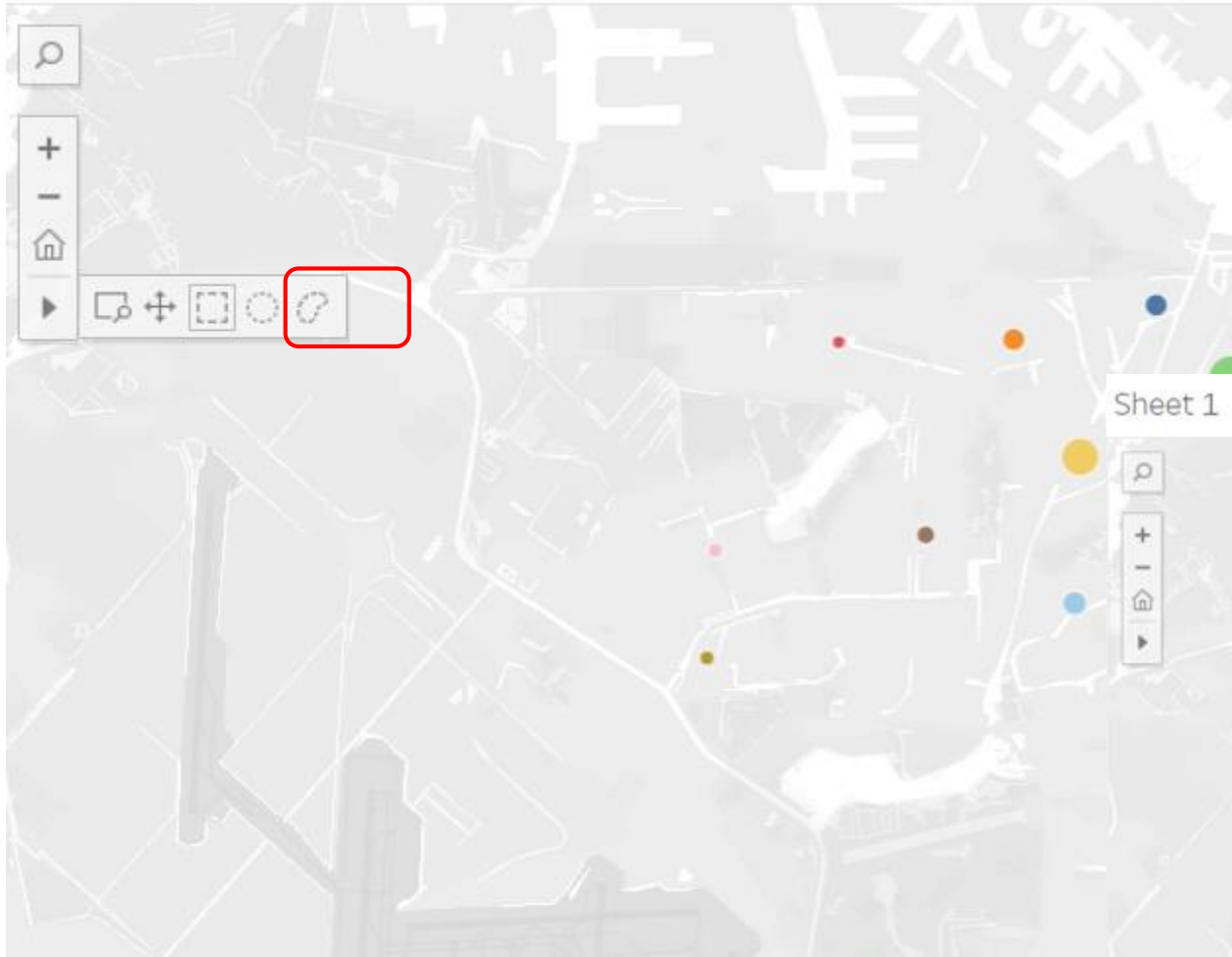
Make this filter option to the available to the user

The screenshot shows a Power BI report titled 'amsterdam'. The main visual is a map of Amsterdam. The 'Columns' shelf contains 'AVG(Longitude)' and the 'Rows' shelf contains 'AVG(Latitude)'. The 'Filters' shelf contains 'Room Type: Private room'. A red box highlights the 'Show Filter' option in the 'Edit Filter...' menu. Another red box highlights the 'Room Type' filter card on the right, which shows the following options:

- ☐ (All)
- ☐ Entire home/apt
- ☒ Private room
- ☐ Shared room

You can leave only values you need by manually choosing the region on the map.

Sheet 1

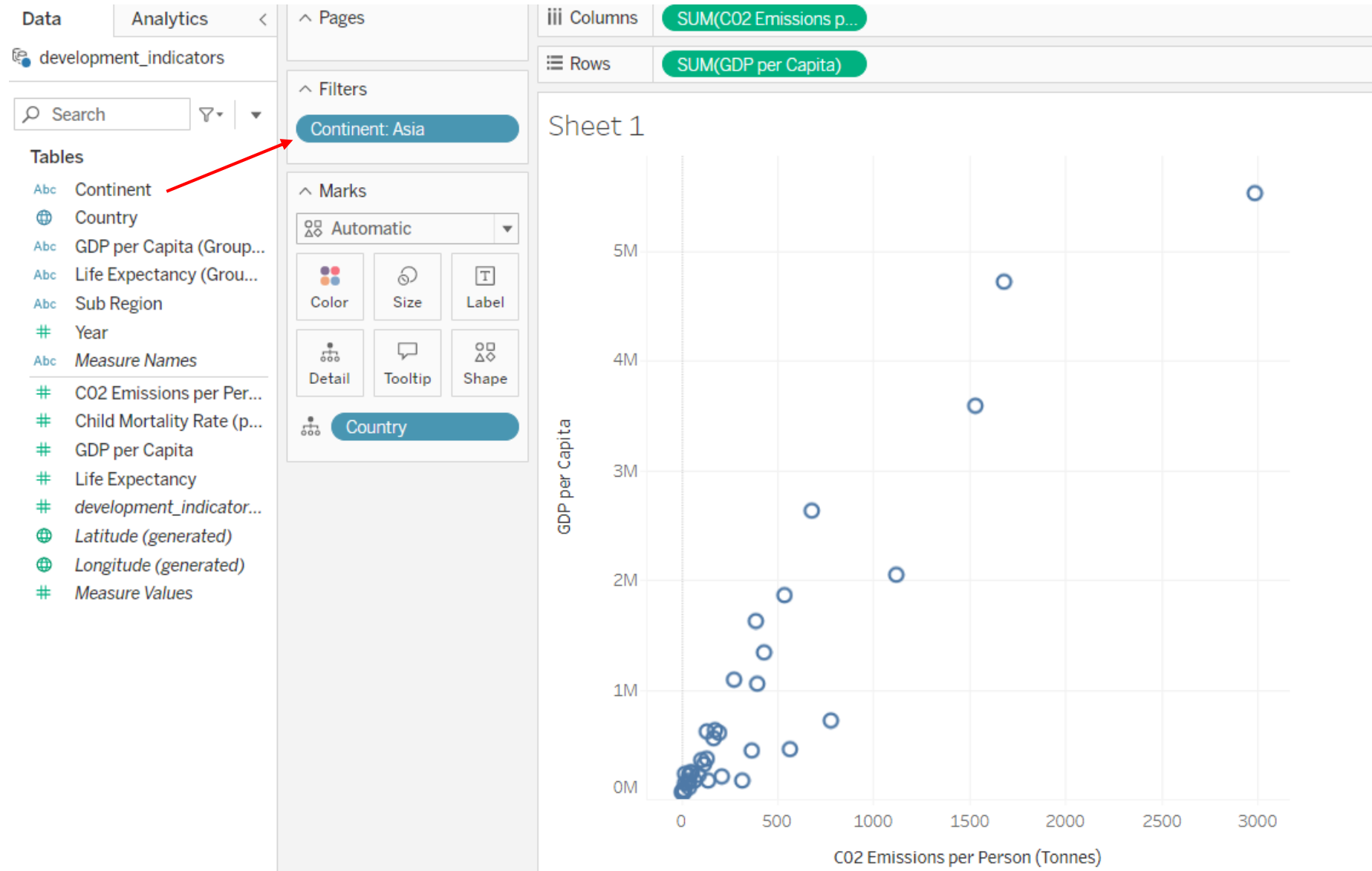


9. Dashboards

Load development_indicators file.

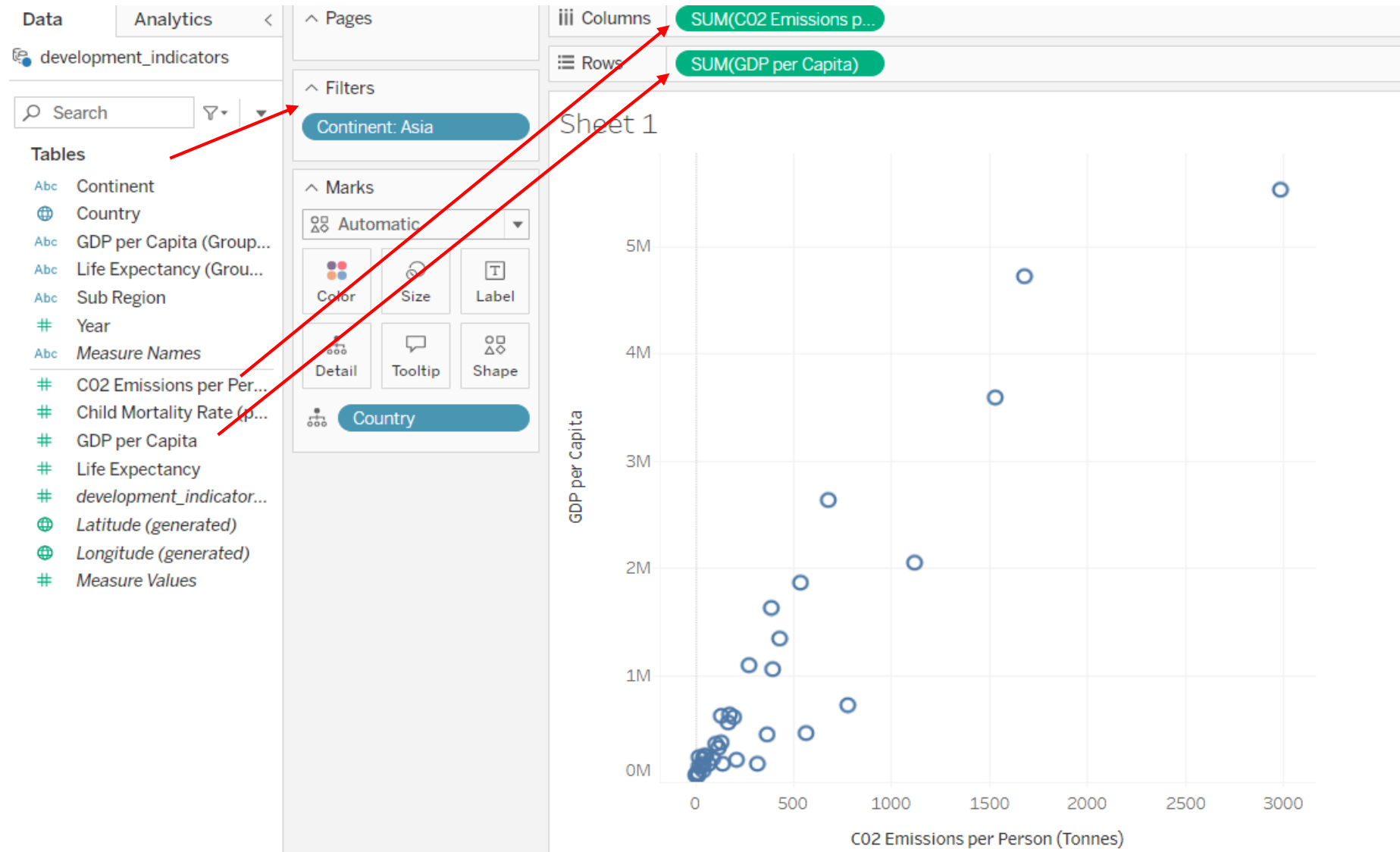
Let's say, we want to see the relation of GDP per capital with the level of CO2 Emission and GDP per capital with Life Expectancy in the countries of Asia.

Filter the continent

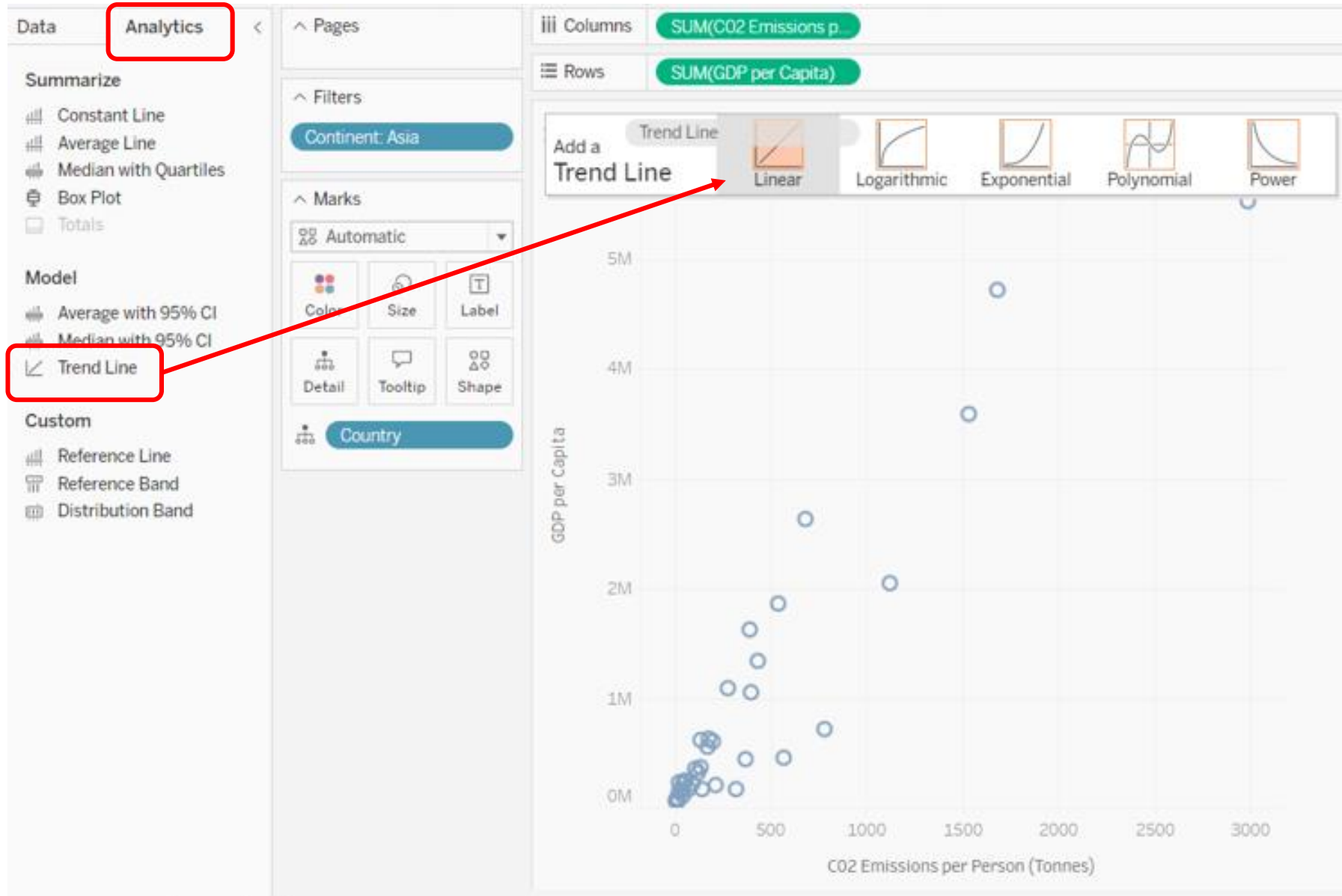


Filter the continent.

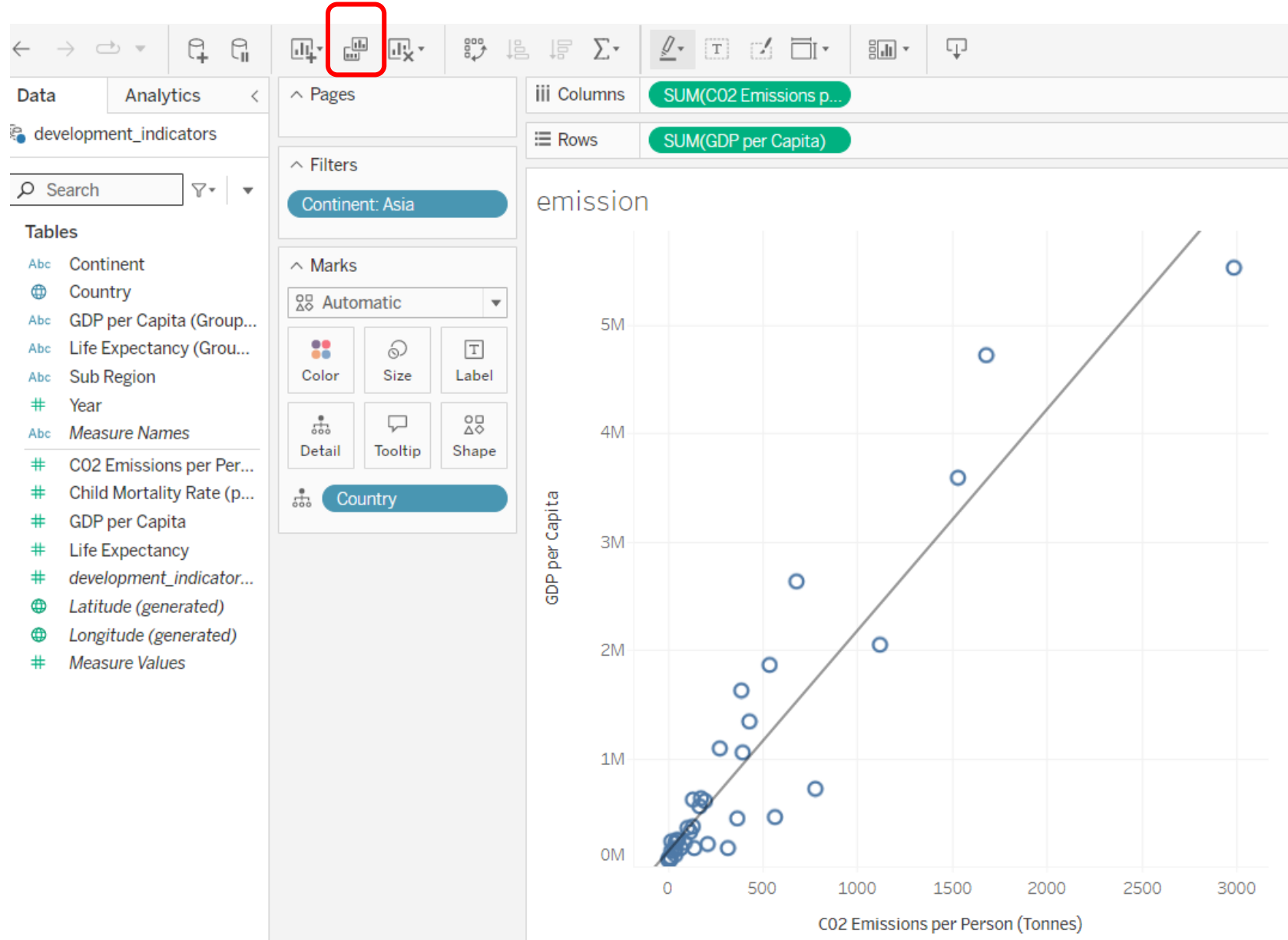
Add GDP per Capita to Rows shelf and CO2 Emissions to Columns shelf respectively.



Add trend line to the chart

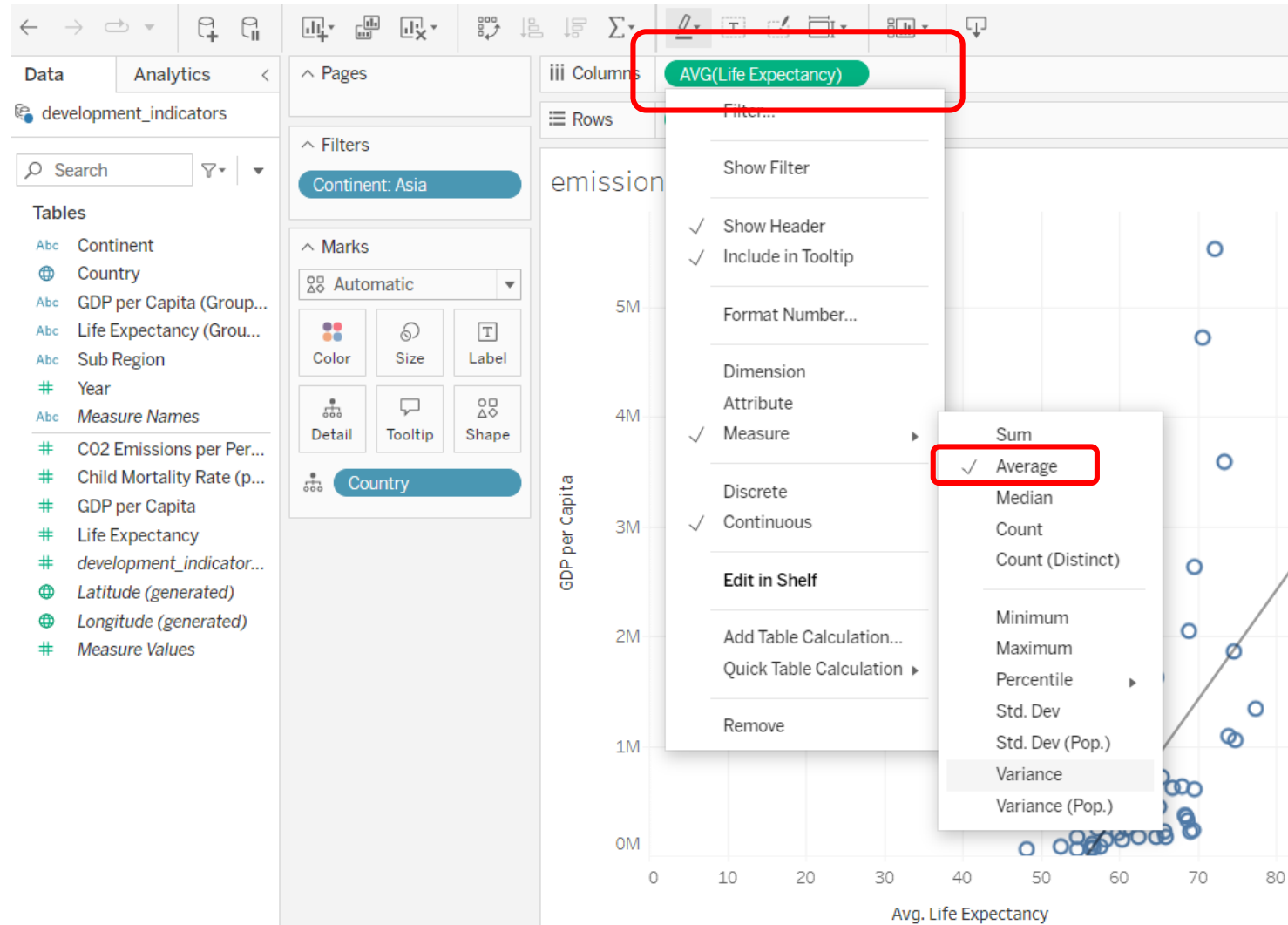


Make a copy of the chart.

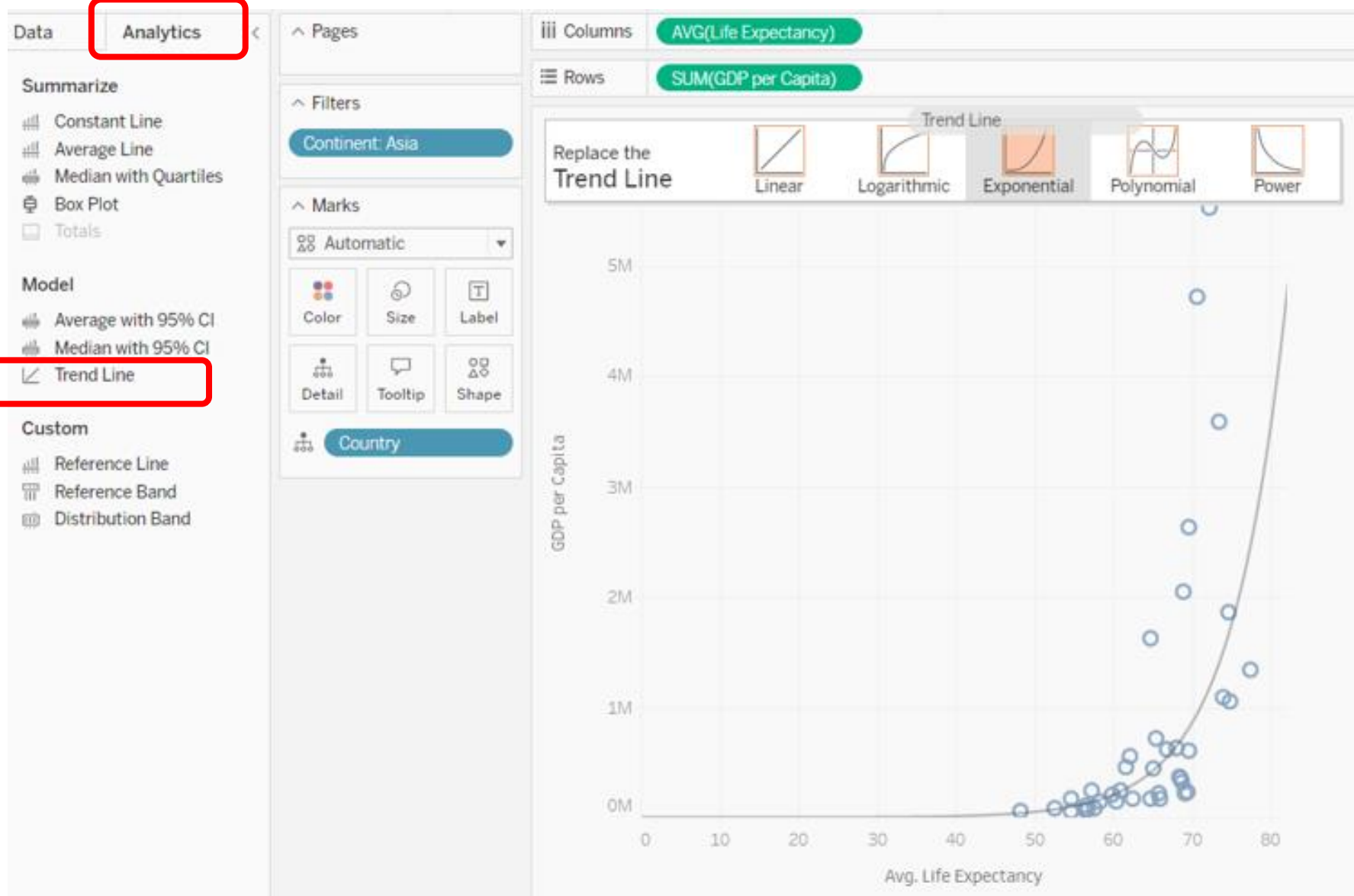


In the copied sheet change drag Life Expectancy instead of CO2 Emission in the Columns shelf.

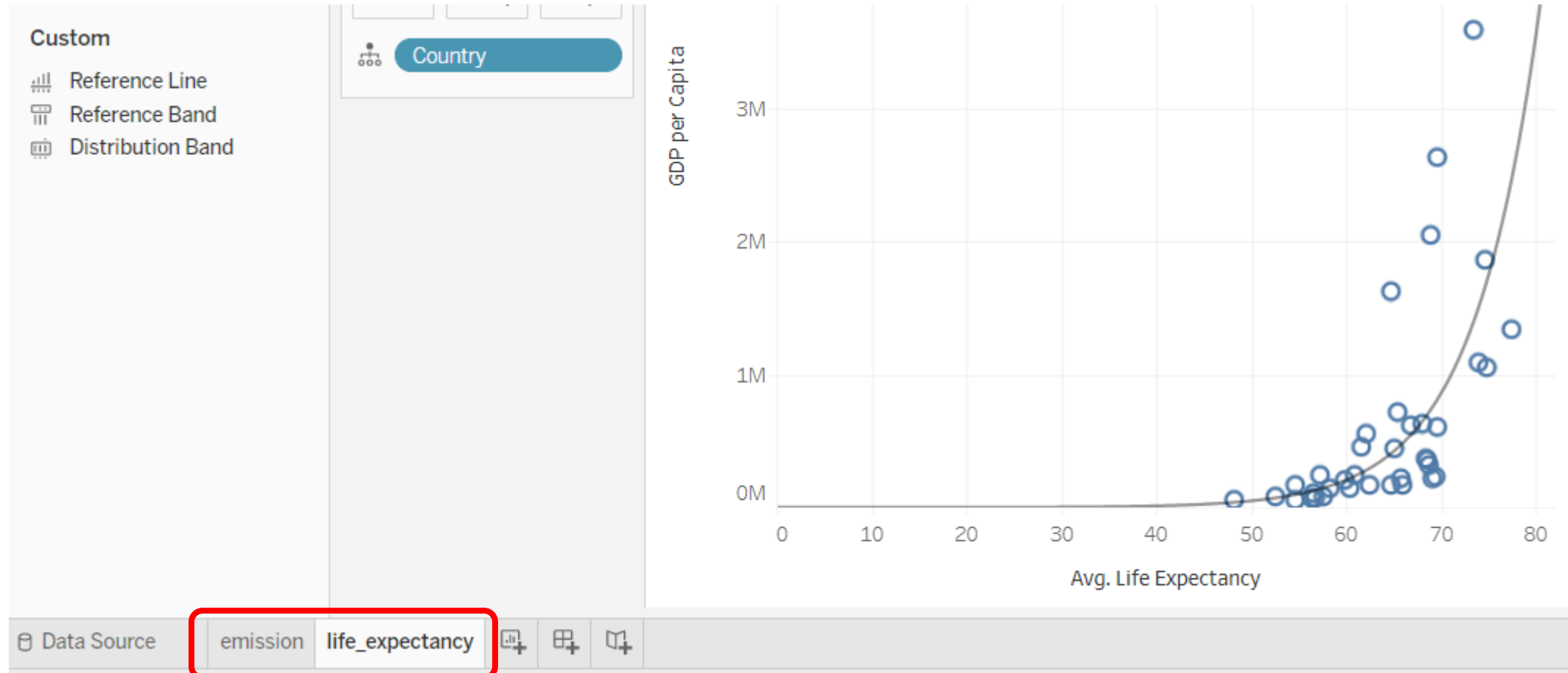
Do not forget to change the measure of Life Expectancy to average.



Change the trend line to Exponential.



Rename the sheet 1 by double-clicking on it.



Start to create Dashboard

The screenshot shows the Tableau Public interface for a workbook named 'development_indicators'. The 'Dashboard' menu is open, highlighting the 'New Dashboard' option. The background shows a scatter plot with 'Country' on the x-axis and 'Life Expectancy' on the y-axis. The plot displays three data points for Asia, with a trend line. The y-axis is labeled 'Life Expectancy' and has major gridlines at 4M and 5M. The x-axis is labeled 'Country' and has a major gridline at 'Continent: Asia'.

development_indicators (Tableau Public)

File Data Worksheet **Dashboard** Analysis Map Format Help

New Dashboard

Add Phone Layouts to Existing Dashboards

✓ Add Phone Layouts to New Dashboards

Copy Dashboard Item

Search

Tables

- Continent
- Country
- GDP per Capita (Group...)
- Life Expectancy (Grou...)
- Sub Region
- Year
- Measure Names
- C02 Emissions per Per...
- Child Mortality Rate (p...
- GDP per Capita

AVG(Life Expectancy)

SUM(GDP per Capita)

Life Expectancy

Country

Drag Sheets on a Dashboard to create a multiple chart.

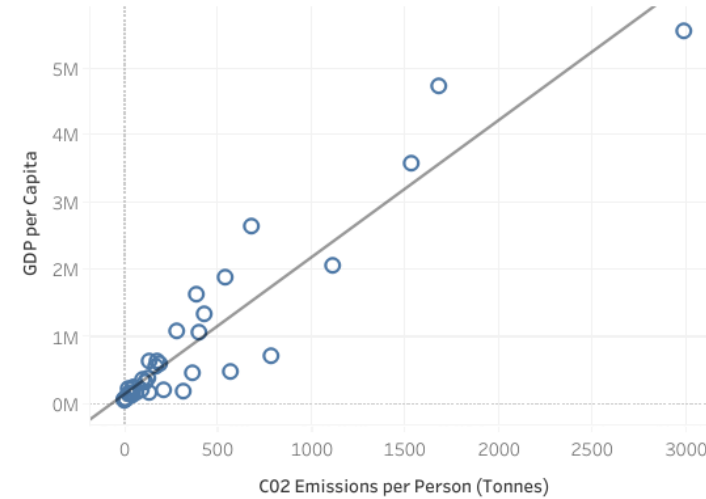


Let's create table with data on GDP, Emission and Life Expectancy in Asia, and make a Dashboard which include this table.

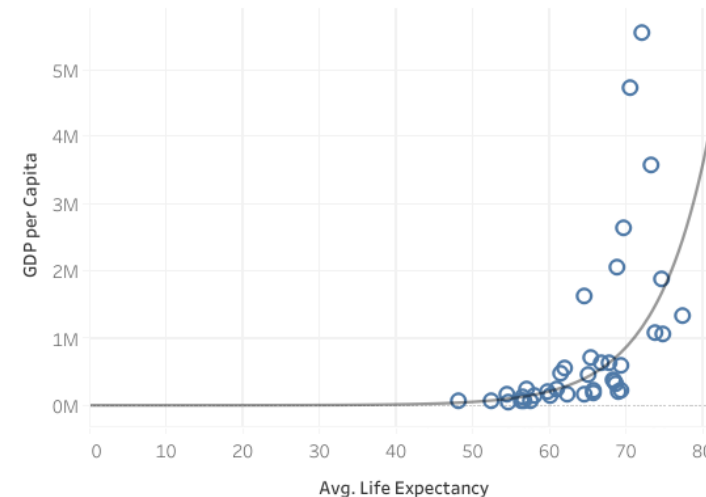
Basic Table

| Country | CO2 Emissi.. | GDP per Ca.. | Life Expect.. |
|--------------|--------------|--------------|---------------|
| Afghanistan | 8 | 66,086 | 2,649 |
| Armenia | 87 | 218,840 | 3,797 |
| Azerbaijan | 363 | 443,040 | 3,571 |
| Bahrain | 1,116 | 2,050,000 | 3,788 |
| Bangladesh | 9 | 80,943 | 3,164 |
| Bhutan | 18 | 144,267 | 3,200 |
| Cambodia | 7 | 81,071 | 2,884 |
| China | 139 | 168,519 | 3,560 |
| Cyprus | 275 | 1,091,120 | 4,063 |
| Georgia | 117 | 323,820 | 3,776 |
| India | 40 | 113,090 | 3,109 |
| Indonesia | 51 | 250,600 | 3,351 |
| Iraq | 169 | 565,400 | 3,411 |
| Israel | 395 | 1,059,360 | 4,113 |
| Japan | 431 | 1,337,430 | 4,252 |
| Jordan | 128 | 373,390 | 3,758 |
| Kazakhstan | 779 | 722,190 | 3,593 |
| Kuwait | 1,527 | 3,592,000 | 4,033 |
| Lebanon | 175 | 628,750 | 3,738 |
| Malaysia | 192 | 608,270 | 3,824 |
| Maldives | 49 | 247,370 | 3,144 |
| Mongolia | 210 | 216,580 | 3,289 |
| Myanmar | 10 | 78,147 | 3,099 |
| Nepal | 4 | 71,130 | 3,120 |
| Oman | 387 | 1,626,220 | 3,560 |
| Pakistan | 32 | 153,270 | 3,314 |
| Philippines | 40 | 222,110 | 3,617 |
| Qatar | 2,985 | 5,527,400 | 3,968 |
| Saudi Arabia | 680 | 2,635,200 | 3,828 |
| Singapore | 535 | 1,867,470 | 4,101 |
| Sri Lanka | 21 | 232,490 | 3,816 |
| Tajikistan | 67 | 174,930 | 3,429 |
| Thailand | 100 | 359,530 | 3,762 |
| Timor-Leste | 3 | 63,434 | 3,006 |
| Turkey | 133 | 620,100 | 3,674 |
| Turkmenistan | 567 | 463,620 | 3,381 |

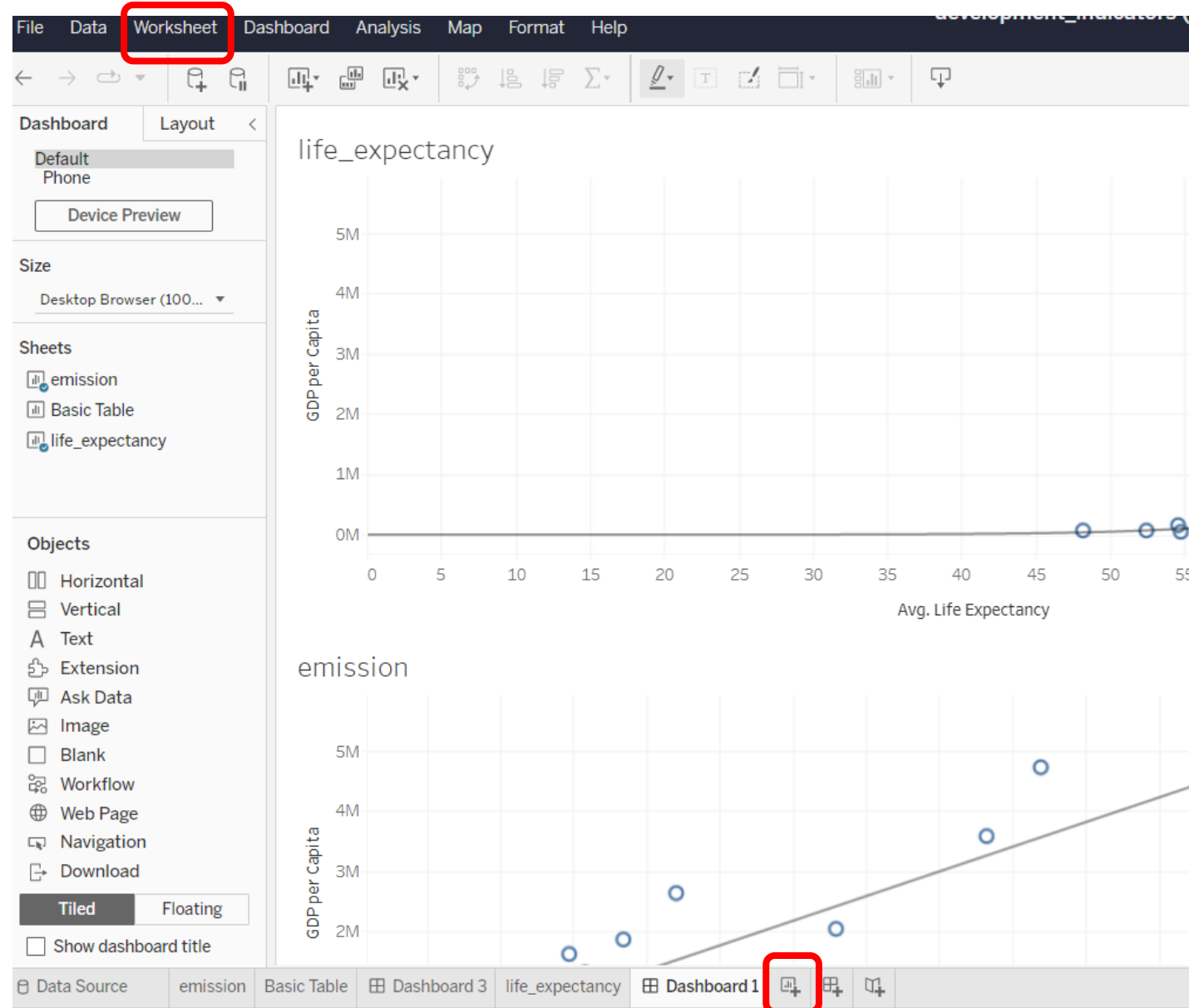
emission



life_expectancy



Create new worksheet by one of two ways.



Drag Country Dimension to Rows shelf.

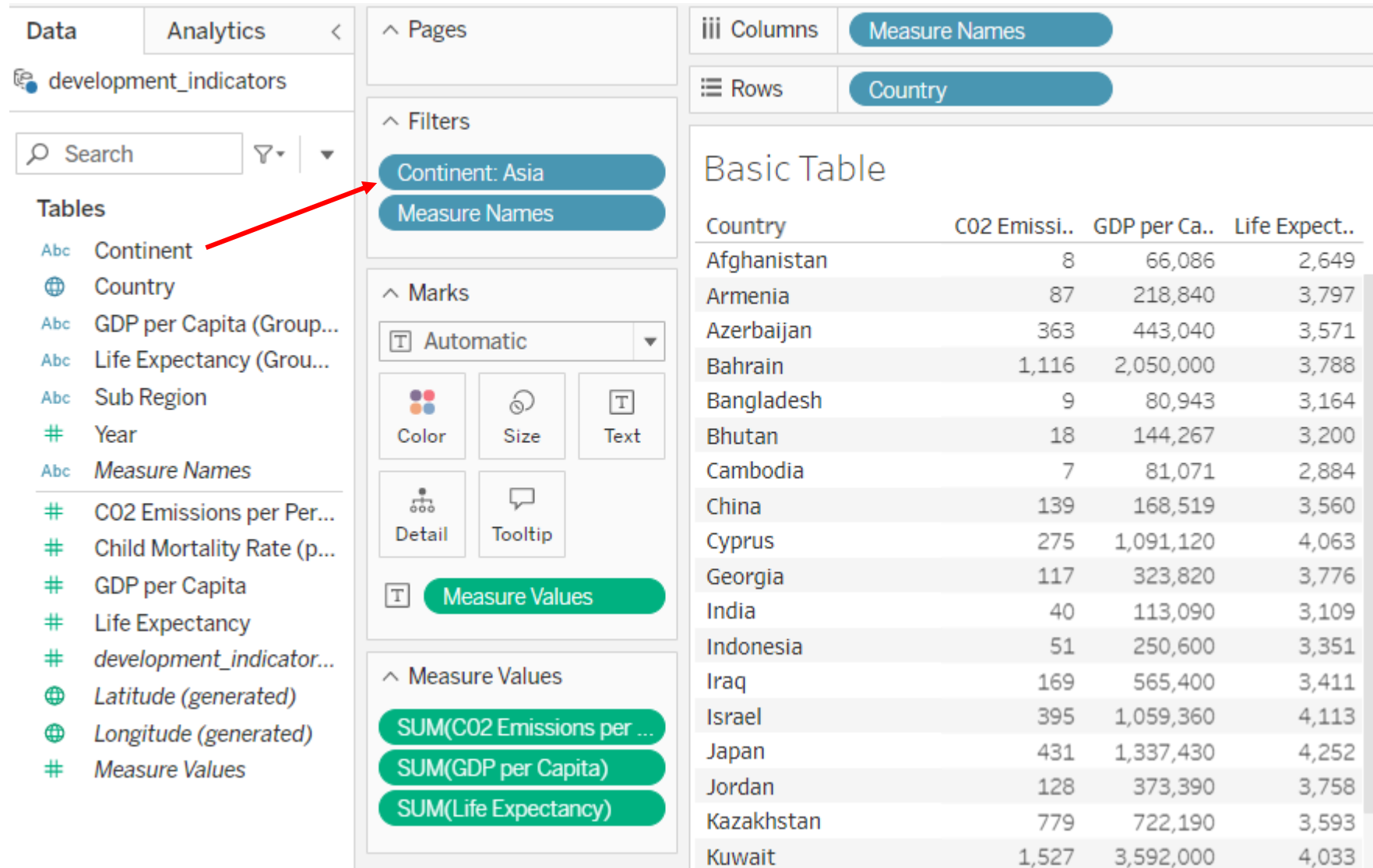
The screenshot shows a data visualization tool interface with the following components:

- Data** tab selected, showing `development_indicators`.
- Search** bar and filter icons.
- Tables** list on the left:
 - Continent
 - Country (highlighted with a red arrow pointing to the Rows shelf)
 - GDP per Capita (Grouped)
 - Life Expectancy (Grouped)
 - Sub Region
 - Year
 - Measure Names
 - C02 Emissions per Per...
 - Child Mortality Rate (p...
 - GDP per Capita
 - Life Expectancy
 - development_indicator...
 - Latitude (generated)
 - Longitude (generated)
 - Measure Values
- Filters** shelf containing:
 - Continent: Asia
 - Measure Names
- Marks** shelf containing:
 - Automatic (dropdown)
 - Color, Size, Text (formatting options)
 - Detail, Tooltip (interaction options)
 - Measure Values (dropdown)
- Measure Values** shelf containing:
 - SUM(C02 Emissions per ...)
 - SUM(GDP per Capita)
 - SUM(Life Expectancy)
- Columns** shelf containing: Measure Names
- Rows** shelf containing: Country (highlighted with a red arrow pointing from the Country table)

Basic Table

| Country | C02 Emissi.. | GDP per Ca.. | Life Expect.. |
|-------------|--------------|--------------|---------------|
| Afghanistan | 8 | 66,086 | 2,649 |
| Armenia | 87 | 218,840 | 3,797 |
| Azerbaijan | 363 | 443,040 | 3,571 |
| Bahrain | 1,116 | 2,050,000 | 3,788 |
| Bangladesh | 9 | 80,943 | 3,164 |
| Bhutan | 18 | 144,267 | 3,200 |
| Cambodia | 7 | 81,071 | 2,884 |
| China | 139 | 168,519 | 3,560 |
| Cyprus | 275 | 1,091,120 | 4,063 |
| Georgia | 117 | 323,820 | 3,776 |
| India | 40 | 113,090 | 3,109 |
| Indonesia | 51 | 250,600 | 3,351 |
| Iraq | 169 | 565,400 | 3,411 |
| Israel | 395 | 1,059,360 | 4,113 |
| Japan | 431 | 1,337,430 | 4,252 |
| Jordan | 128 | 373,390 | 3,758 |
| Kazakhstan | 779 | 722,190 | 3,593 |
| Kuwait | 1,527 | 3,592,000 | 4,033 |

Filter the data.



The interface displays a data table titled "Basic Table" with columns: Country, CO2 Emissi.., GDP per Ca.., and Life Expect.. The table lists various countries and their corresponding values for these indicators. The interface also includes a sidebar with a "Tables" list and a "Filters" section where "Continent: Asia" is selected. A red arrow points from the "Continent" field in the "Tables" list to the "Continent: Asia" filter button.

Tables

- Continent
- Country
- GDP per Capita (Group...)
- Life Expectancy (Grou...)
- Sub Region
- Year
- Measure Names
- CO2 Emissions per Per...
- Child Mortality Rate (p...)
- GDP per Capita
- Life Expectancy
- development_indicator...
- Latitude (generated)
- Longitude (generated)
- Measure Values

Filters

- Continent: Asia
- Measure Names

Marks

- Automatic
- Color
- Size
- Text
- Detail
- Tooltip
- Measure Values

Measure Values

- SUM(CO2 Emissions per ...)
- SUM(GDP per Capita)
- SUM(Life Expectancy)

Columns

- Measure Names

Rows

- Country

Basic Table

| Country | CO2 Emissi.. | GDP per Ca.. | Life Expect.. |
|-------------|--------------|--------------|---------------|
| Afghanistan | 8 | 66,086 | 2,649 |
| Armenia | 87 | 218,840 | 3,797 |
| Azerbaijan | 363 | 443,040 | 3,571 |
| Bahrain | 1,116 | 2,050,000 | 3,788 |
| Bangladesh | 9 | 80,943 | 3,164 |
| Bhutan | 18 | 144,267 | 3,200 |
| Cambodia | 7 | 81,071 | 2,884 |
| China | 139 | 168,519 | 3,560 |
| Cyprus | 275 | 1,091,120 | 4,063 |
| Georgia | 117 | 323,820 | 3,776 |
| India | 40 | 113,090 | 3,109 |
| Indonesia | 51 | 250,600 | 3,351 |
| Iraq | 169 | 565,400 | 3,411 |
| Israel | 395 | 1,059,360 | 4,113 |
| Japan | 431 | 1,337,430 | 4,252 |
| Jordan | 128 | 373,390 | 3,758 |
| Kazakhstan | 779 | 722,190 | 3,593 |
| Kuwait | 1,527 | 3,592,000 | 4,033 |

Drag required Measures to Text icon.

The screenshot displays a data visualization tool interface with the following components:

- Data Source:** development_indicators
- Columns:** Measure Names
- Rows:** Country
- Filters:** Continent: Asia, Measure Names
- Marks:** Automatic (with Color, Size, and Text icons)
- Measure Values:** SUM(CO2 Emissions per ...), SUM(GDP per Capita), SUM(Life Expectancy)

Red arrows indicate the process of dragging measures from the Measures list to the Text icon in the Marks card:

- From **CO2 Emissions per Per...** to the **Text** icon.
- From **GDP per Capita** to the **Text** icon.
- From **Life Expectancy** to the **Text** icon.

The resulting table is titled "Basic Table" and displays the following data:

| Country | CO2 Emissi.. | GDP per Ca.. | Life Expect.. |
|-------------|--------------|--------------|---------------|
| Afghanistan | 8 | 66,086 | 2,649 |
| Armenia | 87 | 218,840 | 3,797 |
| Azerbaijan | 363 | 443,040 | 3,571 |
| Bahrain | 1,116 | 2,050,000 | 3,788 |
| Bangladesh | 9 | 80,943 | 3,164 |
| Bhutan | 18 | 144,267 | 3,200 |
| Cambodia | 7 | 81,071 | 2,884 |
| China | 139 | 168,519 | 3,560 |
| Cyprus | 275 | 1,091,120 | 4,063 |
| Georgia | 117 | 323,820 | 3,776 |
| India | 40 | 113,090 | 3,109 |
| Indonesia | 51 | 250,600 | 3,351 |
| Iraq | 169 | 565,400 | 3,411 |
| Israel | 395 | 1,059,360 | 4,113 |
| Japan | 431 | 1,337,430 | 4,252 |
| Jordan | 128 | 373,390 | 3,758 |
| Kazakhstan | 779 | 722,190 | 3,593 |
| Kuwait | 1,527 | 3,592,000 | 4,033 |

Choose the required type for data to be shown.

The screenshot shows a data visualization tool interface. On the left, there's a sidebar with 'Data' and 'Analytics' tabs. Under 'Data', 'development_indicators' is selected. Below it is a search bar and a list of tables: 'Continent', 'Country', 'GDP per Capita (Group...)', 'Life Expectancy (Grou...', 'Sub Region', 'Year', and 'Measure Names'. The 'Measure Names' table is selected. Below this is a list of measures: 'C02 Emissions per Per...', 'Child Mortality Rate (p...', 'GDP per Capita', 'Life Expectancy', 'development_indicator...', 'Latitude (generated)', 'Longitude (generated)', and 'Measure Values'.

In the center, there's a 'Columns' section with 'Measure Names' and a 'Rows' section with 'Country'. Below these is a 'Filters' section with 'Continent: Asia' and 'Measure Names'. The 'Marks' section has 'Automatic' selected. Below the 'Marks' section are 'Color', 'Size', and 'Text' options. The 'Measure Values' section has 'SUM(C02 Emissions per ...)', 'SUM(GDP per Capita)', and 'SUM(Life Expectancy)'.

The main area displays 'Sheet 4' with a table of data. The table has columns: 'Country', 'C02 Emissi..', 'GDP per Ca..', and 'Life Expect..'. The data rows are: Afghanistan, Armenia, Azerbaijan, Bahrain, Bangladesh, Bhutan, Cambodia, China, Cyprus, Georgia, India, Indonesia, Iraq, Israel, Japan, Jordan, Kazakhstan, and Kuwait.

On the right, there's a 'Show Me' button and a panel with various visualization options. A red box highlights a small table icon in the top row of the visualization options panel. Below the table icon are various chart types: bar charts, line charts, area charts, pie charts, and scatter plots. At the bottom of the right panel, there's a section titled 'For text tables try' with buttons for '1 or more Dimensions' and '1 or more Measures'.

| Country | C02 Emissi.. | GDP per Ca.. | Life Expect.. |
|-------------|--------------|--------------|---------------|
| Afghanistan | 8 | 66,086 | 2,649 |
| Armenia | 87 | 218,840 | 3,797 |
| Azerbaijan | 363 | 443,040 | 3,571 |
| Bahrain | 1,116 | 2,050,000 | 3,788 |
| Bangladesh | 9 | 80,943 | 3,164 |
| Bhutan | 18 | 144,267 | 3,200 |
| Cambodia | 7 | 81,071 | 2,884 |
| China | 139 | 168,519 | 3,560 |
| Cyprus | 275 | 1,091,120 | 4,063 |
| Georgia | 117 | 323,820 | 3,776 |
| India | 40 | 113,090 | 3,109 |
| Indonesia | 51 | 250,600 | 3,351 |
| Iraq | 169 | 565,400 | 3,411 |
| Israel | 395 | 1,059,360 | 4,113 |
| Japan | 431 | 1,337,430 | 4,252 |
| Jordan | 128 | 373,390 | 3,758 |
| Kazakhstan | 779 | 722,190 | 3,593 |
| Kuwait | 1,527 | 3,592,000 | 4,033 |

Don't forget to rename the sheet with the table.

Search

Tables

- Continent
- Country
- GDP per Capita (Group...)
- Life Expectancy (Grou...)
- Sub Region
- Year
- Measure Names
- C02 Emissions per Per...
- Child Mortality Rate (p...
- GDP per Capita
- Life Expectancy
- development_indicator...
- Latitude (generated)
- Longitude (generated)
- Measure Values

Continent: Asia

Measure Names

^ Marks

Automatic

Color Size Text

Detail Tooltip

Measure Values

SUM(C02 Emissions per ...)

SUM(GDP per Capita)

SUM(Life Expectancy)

Basic Table

| Country | C02 Emissi.. | GDP per Ca.. | Life Expect.. |
|-------------|--------------|--------------|---------------|
| Afghanistan | 8 | 66,086 | 2,649 |
| Armenia | 87 | 218,840 | 3,797 |
| Azerbaijan | 363 | 443,040 | 3,571 |
| Bahrain | 1,116 | 2,050,000 | 3,788 |
| Bangladesh | 9 | 80,943 | 3,164 |
| Bhutan | 18 | 144,267 | 3,200 |
| Cambodia | 7 | 81,071 | 2,884 |
| China | 139 | 168,519 | 3,560 |
| Cyprus | 275 | 1,091,120 | 4,063 |
| Georgia | 117 | 323,820 | 3,776 |
| India | 40 | 113,090 | 3,109 |
| Indonesia | 51 | 250,600 | 3,351 |
| Iraq | 169 | 565,400 | 3,411 |
| Israel | 395 | 1,059,360 | 4,113 |
| Japan | 431 | 1,337,430 | 4,252 |
| Jordan | 128 | 373,390 | 3,758 |
| Kazakhstan | 779 | 722,190 | 3,593 |
| Kuwait | 1,527 | 3,592,000 | 4,033 |
| Lebanon | 175 | 628,750 | 3,738 |
| Malaysia | 192 | 608,270 | 3,824 |
| Maldives | 49 | 247,370 | 3,144 |
| Mongolia | 210 | 216,580 | 3,289 |
| Myanmar | 10 | 78,147 | 3,099 |
| Nepal | 4 | 71,130 | 3,120 |
| Oman | 387 | 1,626,220 | 3,560 |

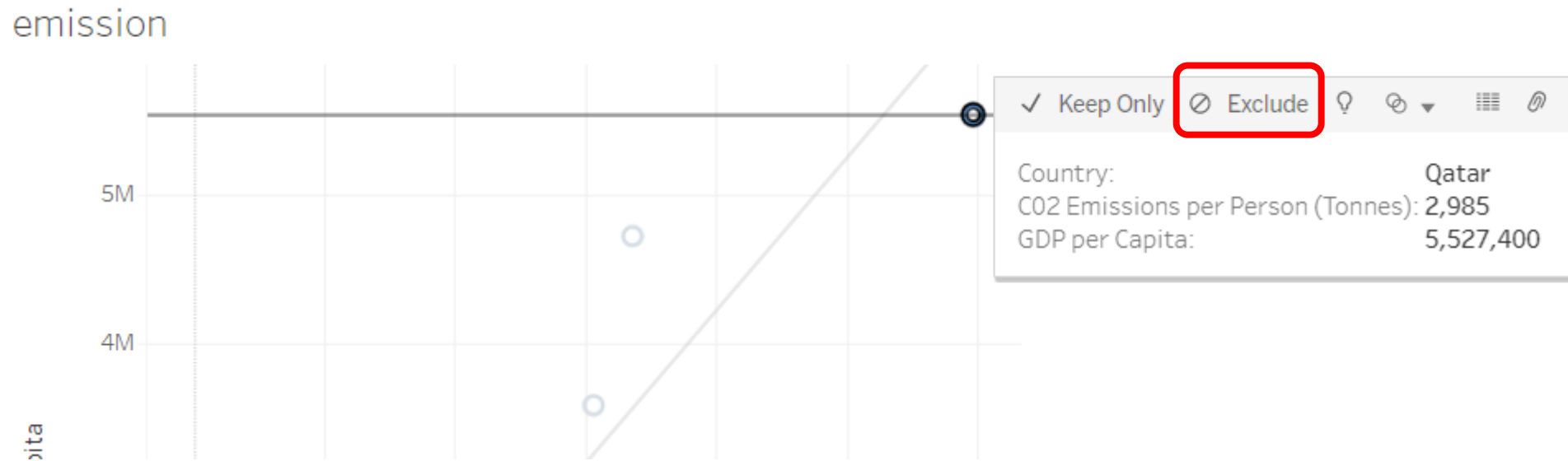
Data Source emission Basic Table Dashboard 3 life_expectancy Dashboard 1

Click Dashbord -> New Dashboard.

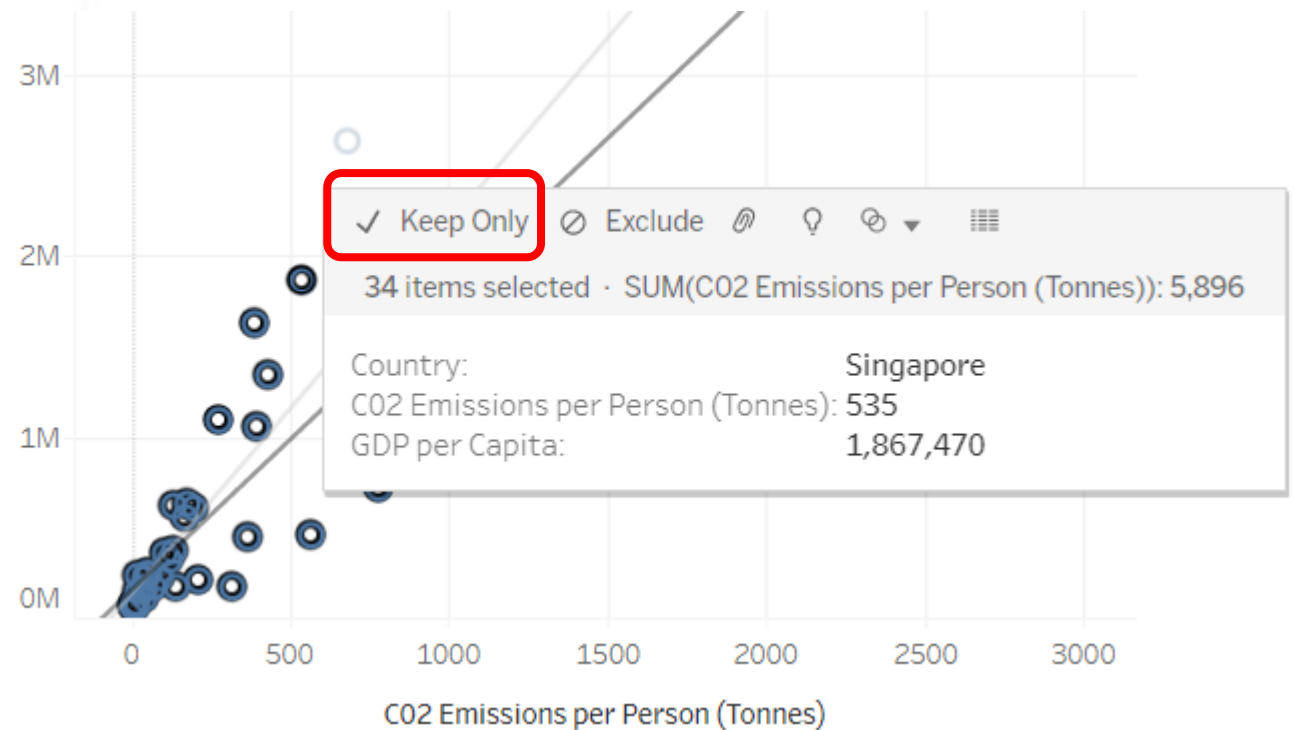
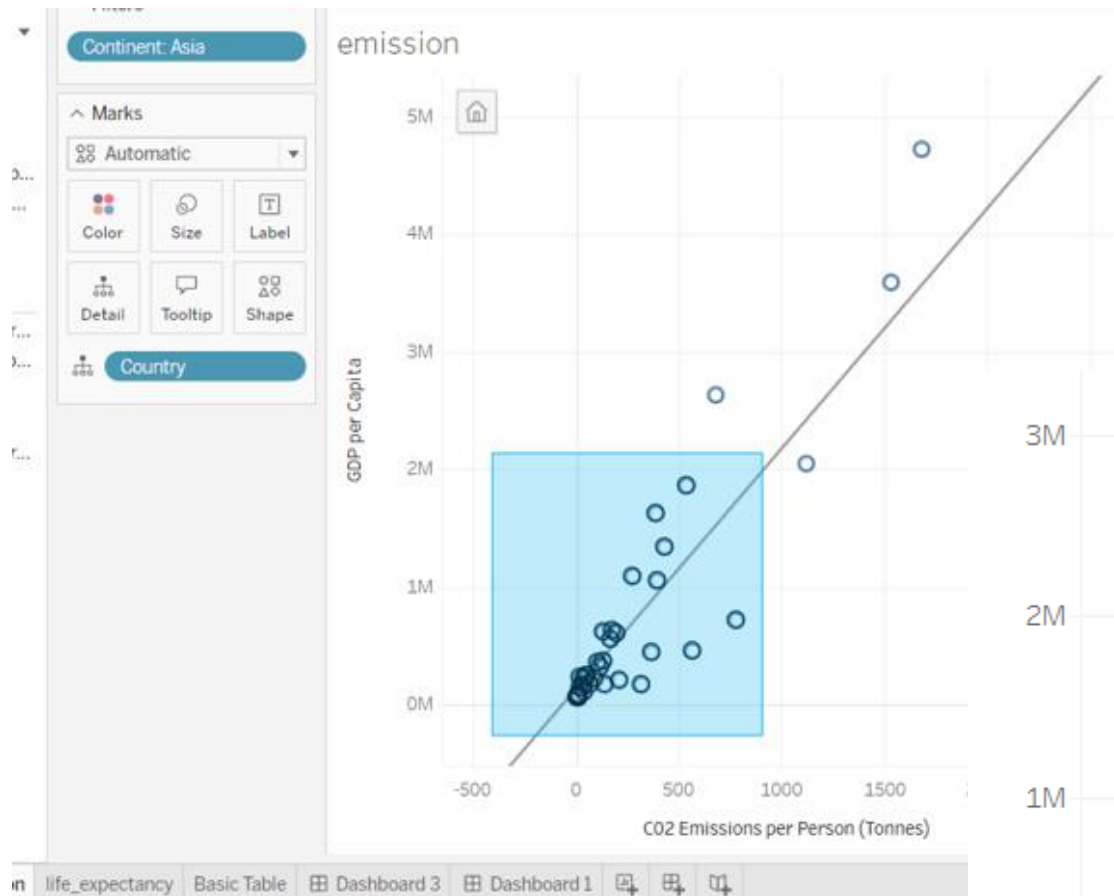
Drag the Sheets to Dashboard as required by the goals.

10. More filter examples

To delete the outlier double-click on the respective data point and choose *Exclude*.



Select only specific data.



Select only specific countries.

Continent: Asia
Measure Names

^ Marks
Automatic

Color Size Text

Detail Tooltip

Measure Values

SUM(CO2 Emissions per ...)
SUM(GDP per Capita)
SUM(Life Expectancy)

Basic Table

| Country | CO2 Emissi.. | GDP per Ca.. | Life Expect.. |
|-------------|--------------|--------------|---------------|
| Afghanistan | 8 | 66,086 | 2,649 |
| Armenia | 87 | 218,840 | 3,797 |
| Azerbaijan | 363 | 443,040 | 3,571 |
| Bahrain | 1,116 | 2,050,000 | 3,788 |
| Bangladesh | 9 | 80,943 | 3,164 |
| Bhutan | 18 | 144,267 | 3,200 |
| Cambodia | 7 | 81,071 | 2,884 |
| China | 129 | 168,519 | 3,560 |
| Cyprus | | 1,091,120 | 4,063 |
| Georgia | | 323,820 | 3,776 |
| India | | 113,090 | 3,109 |
| Indonesia | | 250,600 | 3,351 |
| Iraq | | 565,400 | 3,411 |
| Israel | | 1,059,360 | 4,113 |
| Japan | | 1,337,430 | 4,252 |
| Jordan | | 373,390 | 3,758 |
| Kazakhstan | 779 | 722,190 | 3,593 |
| Kuwait | 1,527 | 3,592,000 | 4,033 |
| Lebanon | 175 | 628,750 | 3,738 |

Keep only
Exclude
Hide
Group
Rotate Label

Select only specific countries.

Continent: Asia

Measure Names

^ Marks

Automatic

Color Size Text

Detail Tooltip

Measure Values

SUM(CO2 Emissions per ...)

SUM(GDP per Capita)

SUM(Life Expectancy)

Basic Table

| Country | CO2 Emissi.. | GDP per Ca.. | Life Expect.. |
|-------------|--------------|--------------|---------------|
| Afghanistan | 8 | 66,086 | 2,649 |
| Armenia | 87 | 218,840 | 3,797 |
| Azerbaijan | 363 | 443,040 | 3,571 |
| Bahrain | 1,116 | 2,050,000 | 3,788 |
| Bangladesh | 9 | 80,943 | 3,164 |
| Bhutan | 18 | 144,267 | 3,200 |
| Cambodia | 7 | 81,071 | 2,884 |
| China | 129 | 168,519 | 3,560 |
| Cyprus | | 1,091,120 | 4,063 |
| Georgia | | 323,820 | 3,776 |
| India | | 113,090 | 3,109 |
| Indonesia | | 250,600 | 3,351 |
| Iraq | | 565,400 | 3,411 |
| Israel | | 1,059,360 | 4,113 |
| Japan | | 1,337,430 | 4,252 |
| Jordan | | 373,390 | 3,758 |
| Kazakhstan | 779 | 722,190 | 3,593 |
| Kuwait | 1,527 | 3,592,000 | 4,033 |
| Lebanon | 175 | 628,750 | 3,738 |

Keep only

Exclude

Hide

Group

Rotate Label

11. In-class assignment

- You will be working with the table ***UNHealth***.
- Open the file and quickly look at the table to get a sense of what they contain.