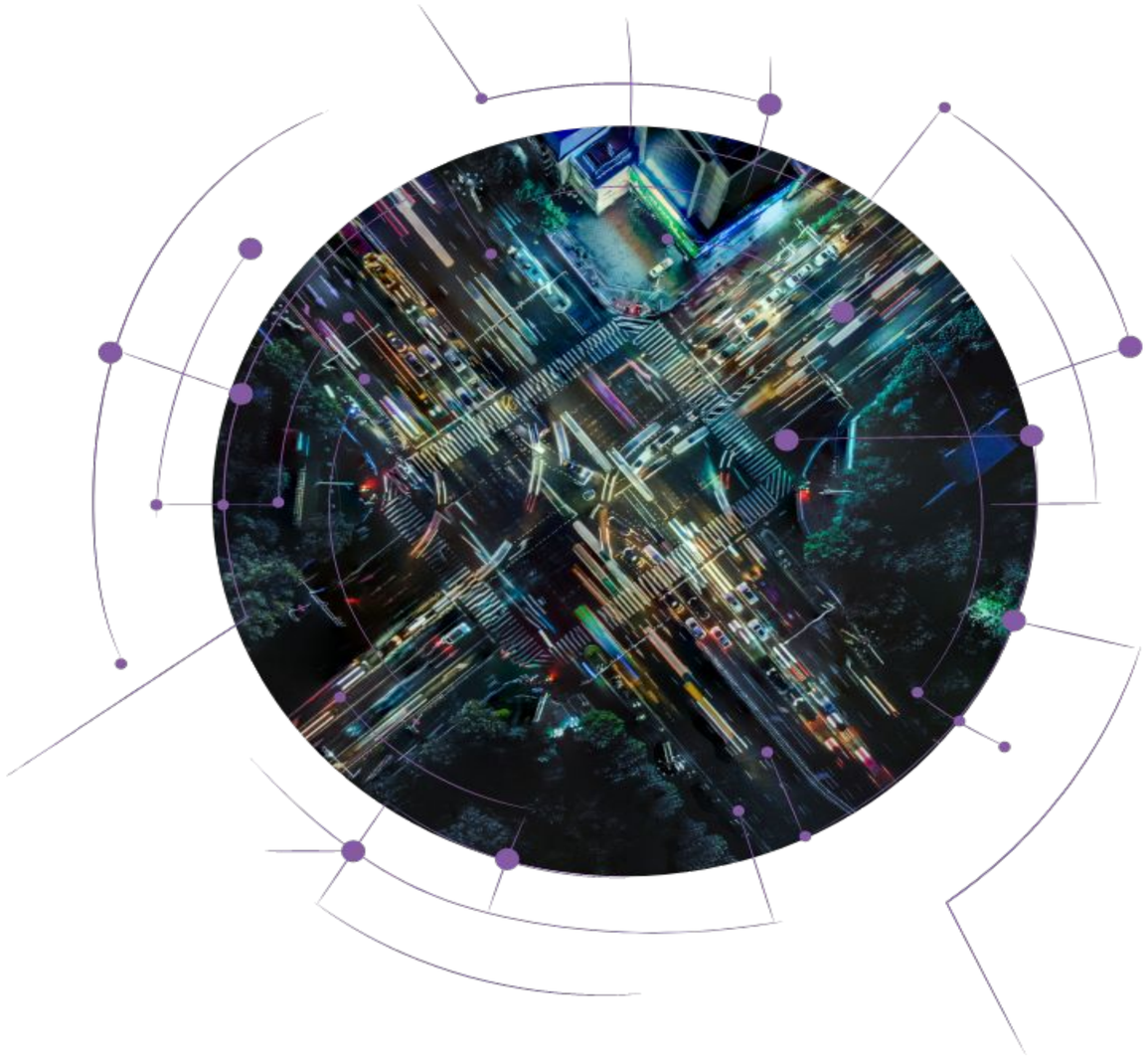
DATASOCIETY:

Introduction to Tableau

Part 3

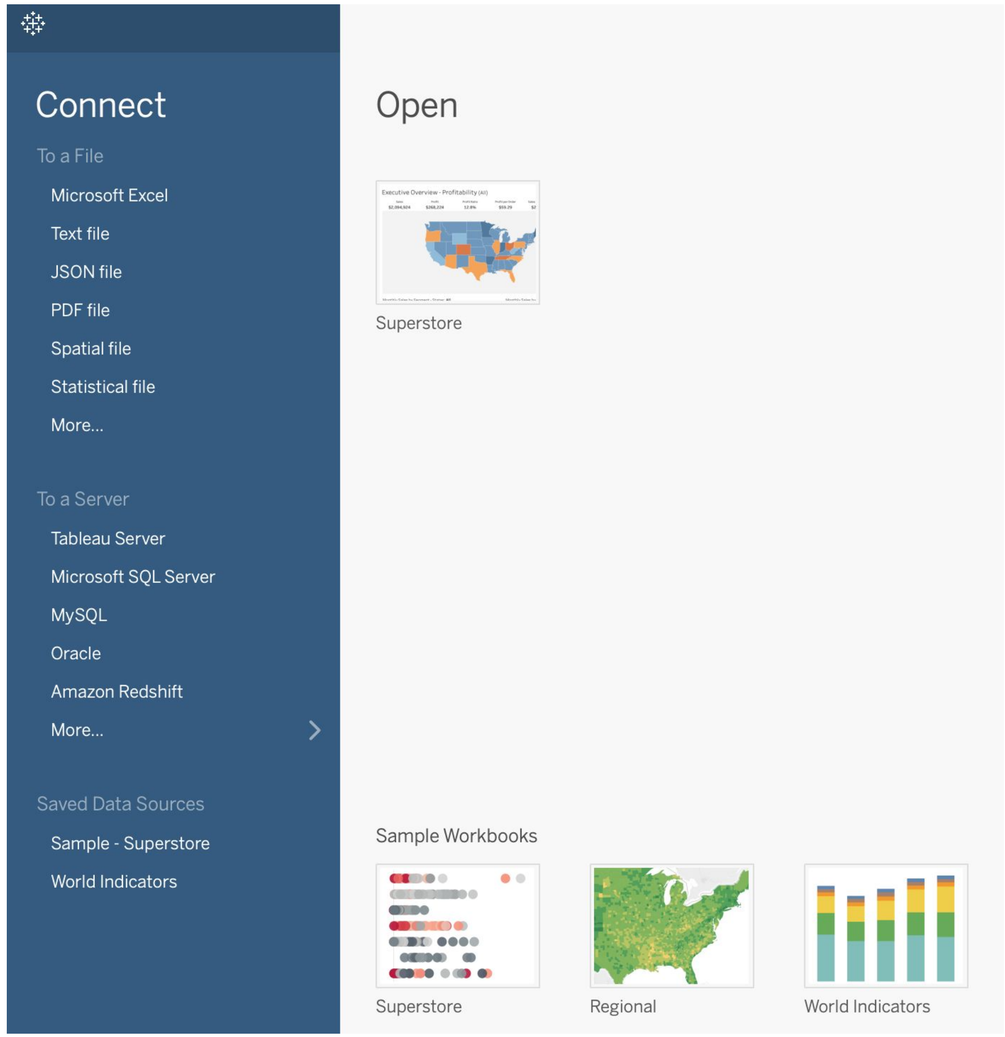


Recap: importing data

- Import data with the **Connect** panel.

- Supports multiple formats such as:
  - Microsoft Excel (.xlsx).
  - Text (.txt, .csv).
  - JSON (.json).
  - PDF (.pdf).
  - R data format (.RData).

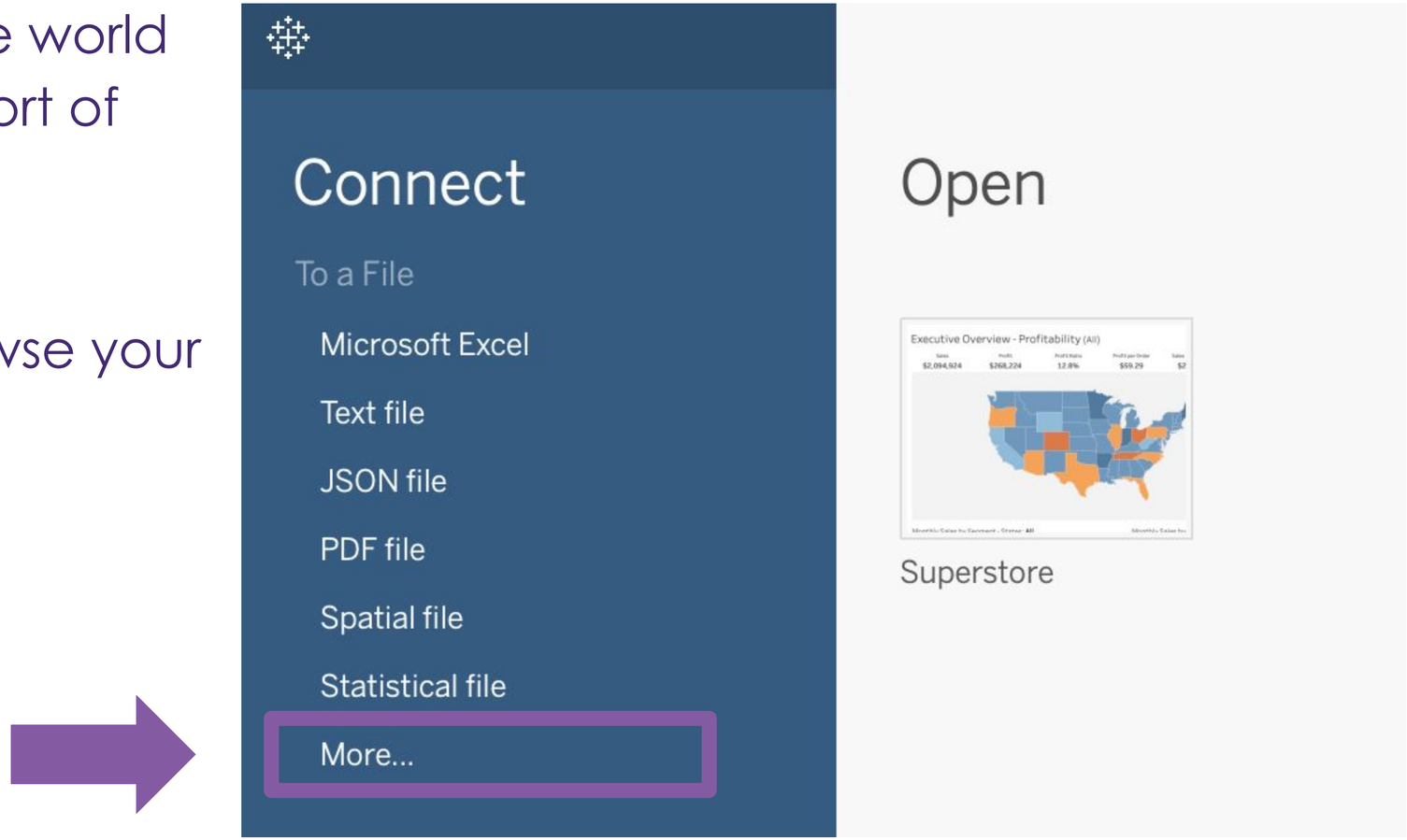
- Supports Database Connections such as:
  - MySQL.
  - Oracle.
  - Redshift.



Import World Data : CSV

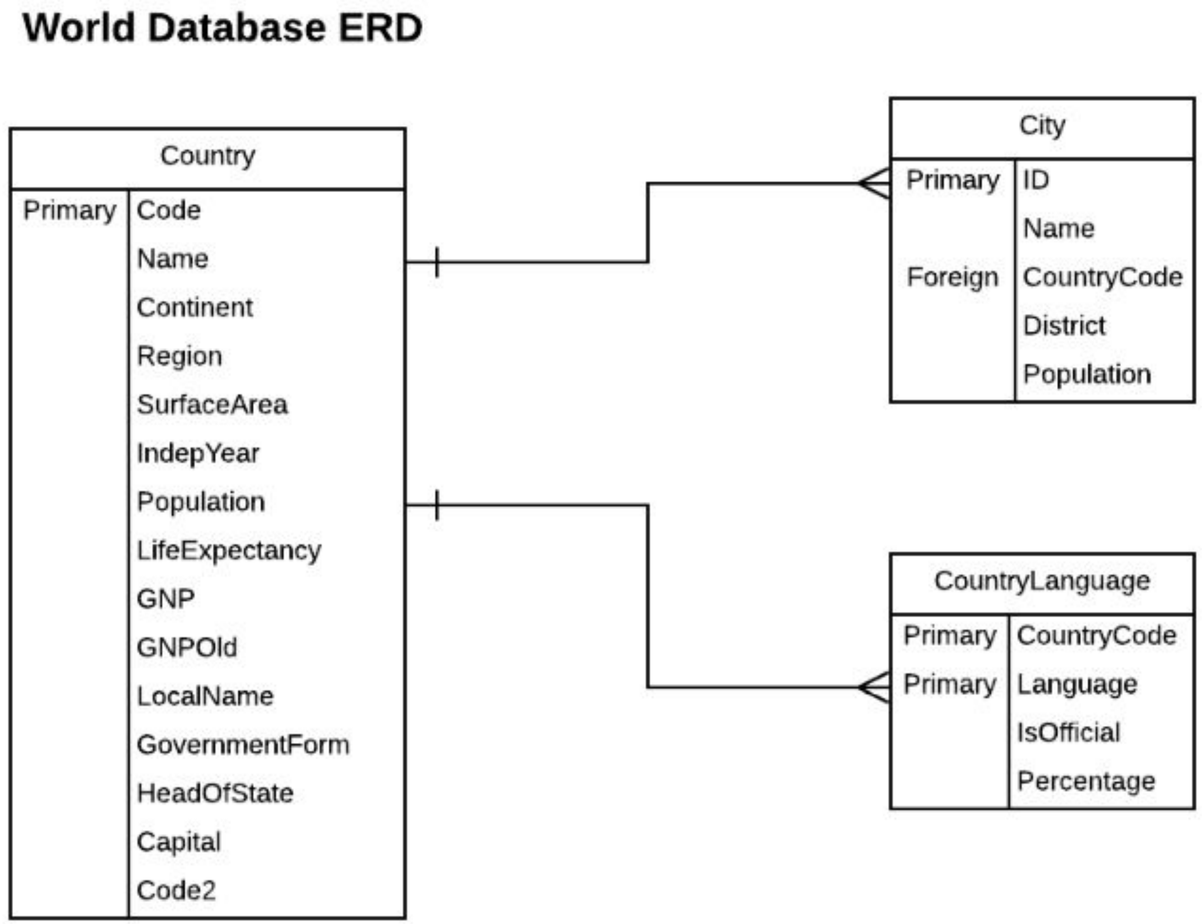
- Let's import some pieces of the world dataset today and see what sort of insights we can reveal.

- Click the **"More..."** item to browse your local CSV files.



Recap: World Database

- For now, import the following three CSV files:
  - **country.csv**
  - **city.csv**
  - **countrylanguage.csv**
- We'll use the other CSV files during our Exercises.



Recap: joining datasets using Relationships

- It is often necessary to combine data from multiple places - different tables or even data sources - to perform a desired analysis.

- Previously, Tableau utilized **joins** in order to merge and combine data in strategic ways.

- While it is still possible to perform traditional joins in Tableau, it is no longer the default option.

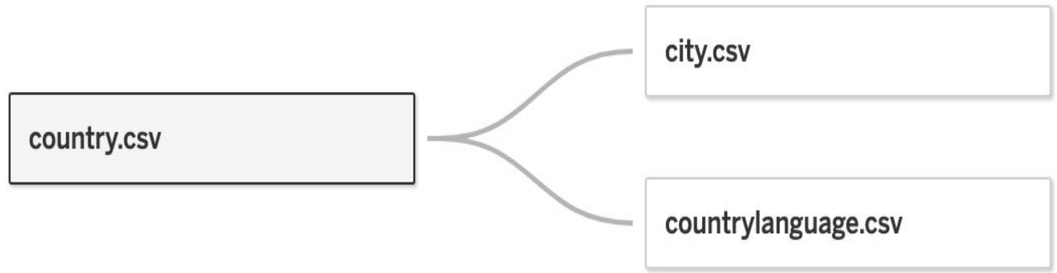
- Tableau has introduced a feature called **Relationships** to minimize the amount of data pre-processing required to visualize related datasets in multiple ways.

Recap: Relationships are contextual joins

- A single relationship will support all join types at the same time.

- For **Measures**, this means **all values are always retained**, even if they're unmatched nulls (not missing values).

- For **Dimensions**, relevant domains will be displayed **across tables**, and Tableau will display all values in the domain by default (even if there are no matching Measure values).

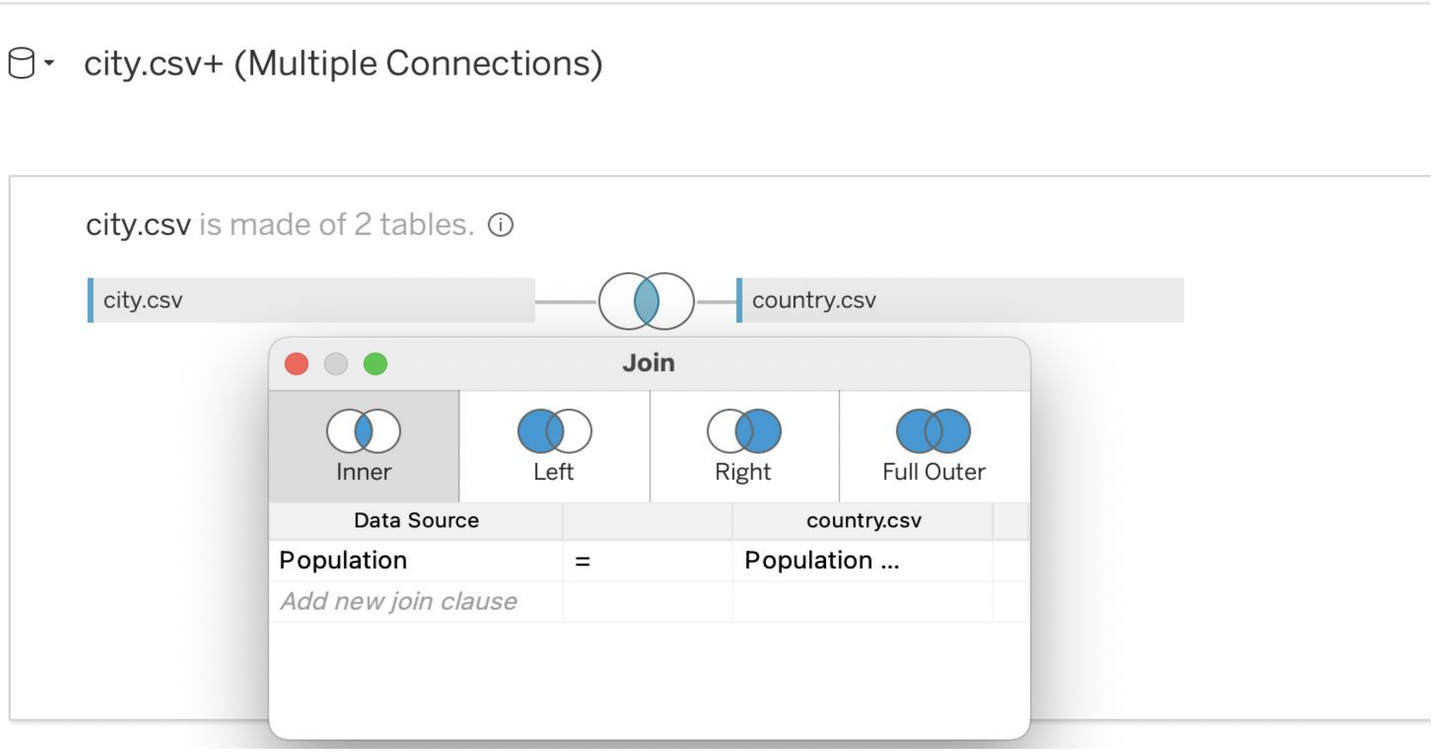


What dimension serves as the key linking city.csv and countrylanguage.csv to country.csv?

Recap: manually joining dataset using joins

- Previously, Tableau utilized **joins** in order to merge and combine data.

- It is still possible to join tables **manually** by specifying the precise variables the datasets will use as common keys, but this functionality is no longer the default.



Warm-up: finding a dataset

- Spend a few minutes looking through the **Kaggle** (link) or **Data.World** (link) repository.
    - *What kinds of data do you see that you might be interested in working with?*
    - *What kinds of data might you want to try to combine?*

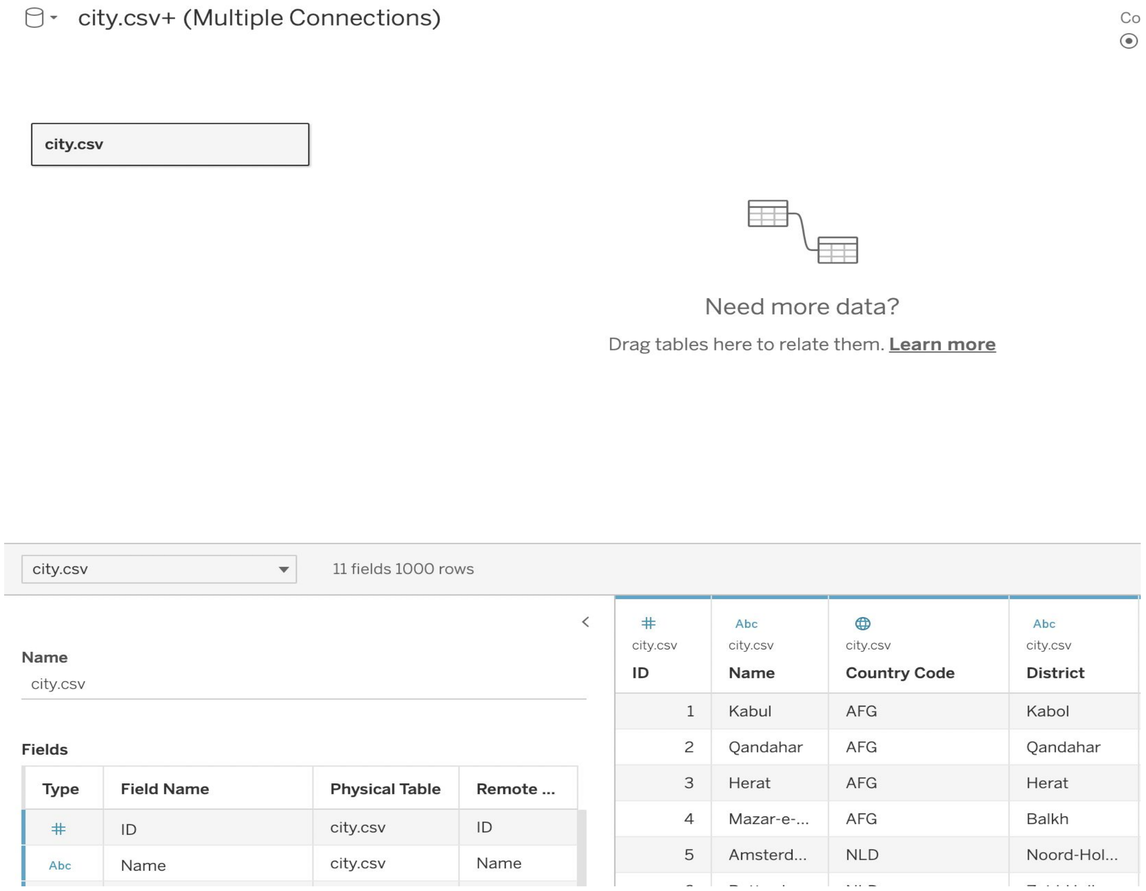
Module completion checklist

Objective	Complete
Manually join tables using joins	
Introduce the concept of aggregating, binning, and grouping	
Create and use bins and groups	
Explore filtering capabilities of Tableau	

Joining the tables using joins

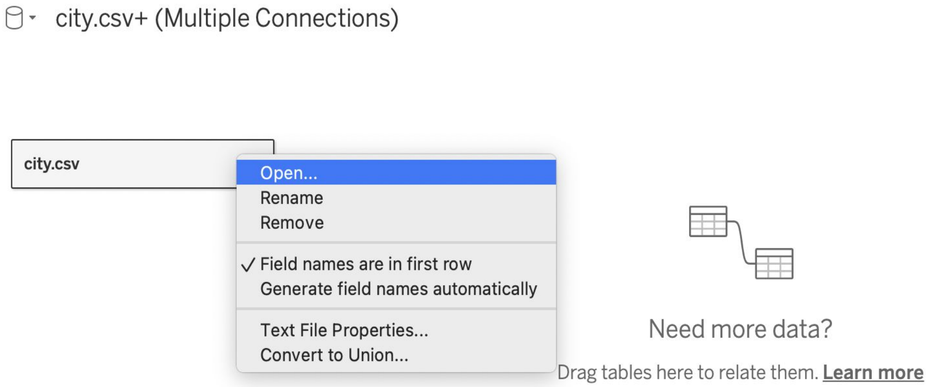
Let's join the **city**, **country**, and **countrylanguage** tables using joins.

- **Step1:** Drag the city table into the canvas.

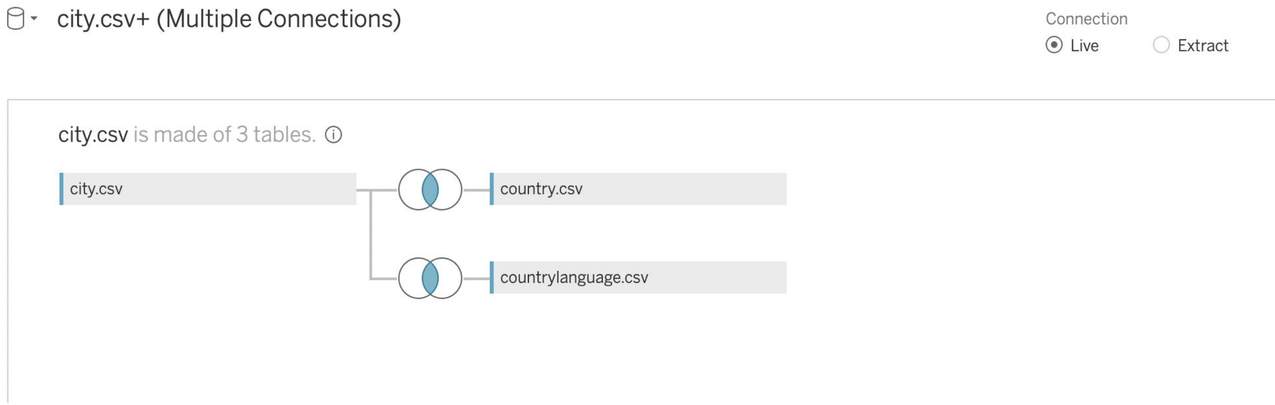


Joining the tables using joins, cont'd

- **Step 2:** Select **Open** from the menu or double-click the first table to open the join canvas (physical layer).

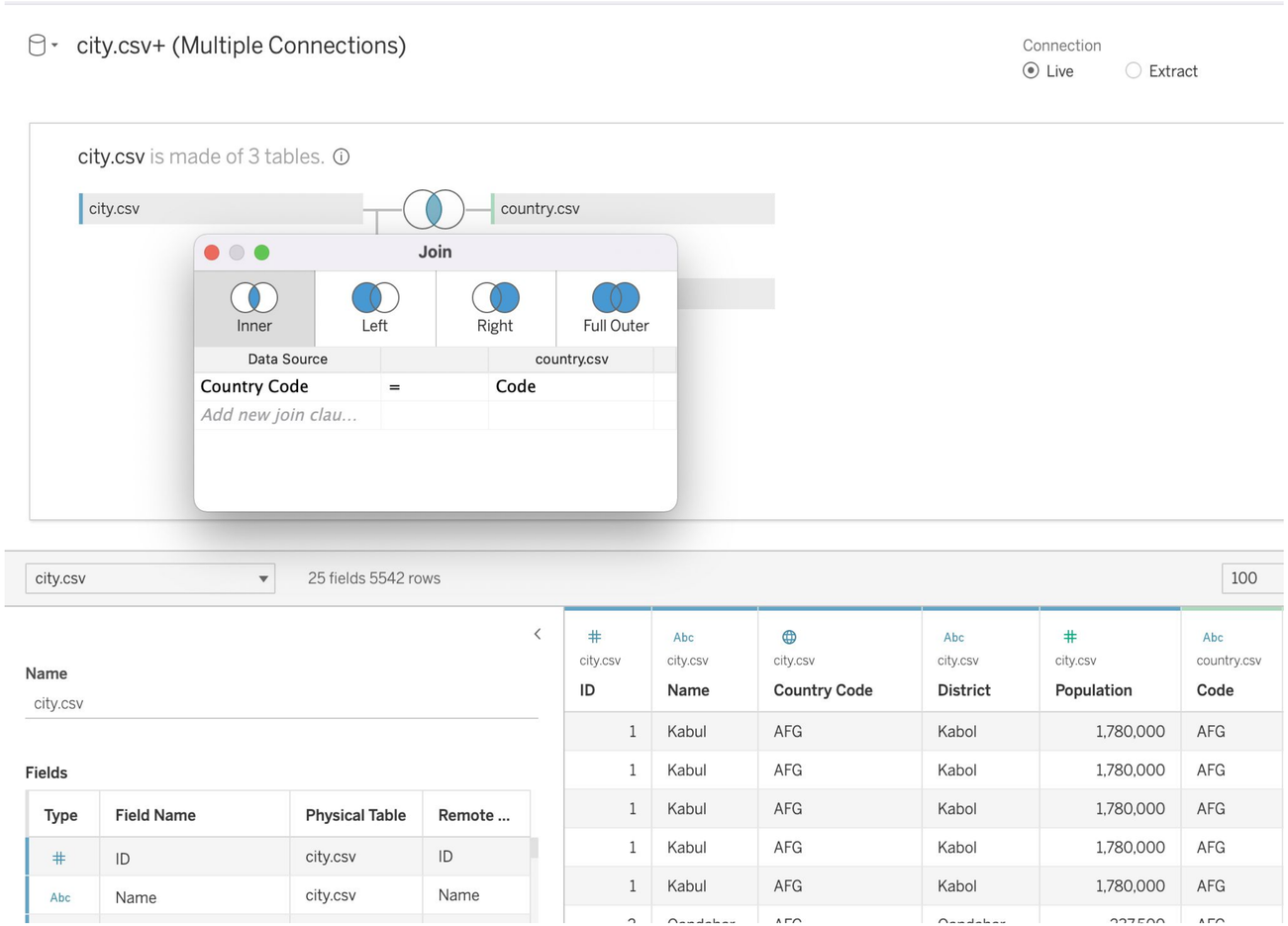


- **Step 3:** Double-click or drag **country** and **countrylanguage** table into the join canvas.



Joining the tables using joins, cont'd

- **Step 4:** Click the **join icon** to configure the join.
  - In this use case, we'll use **inner join** to join the tables.
  - The join clause is **country code**.



Module completion checklist

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Manually join tables using joins	✓
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Data integrity

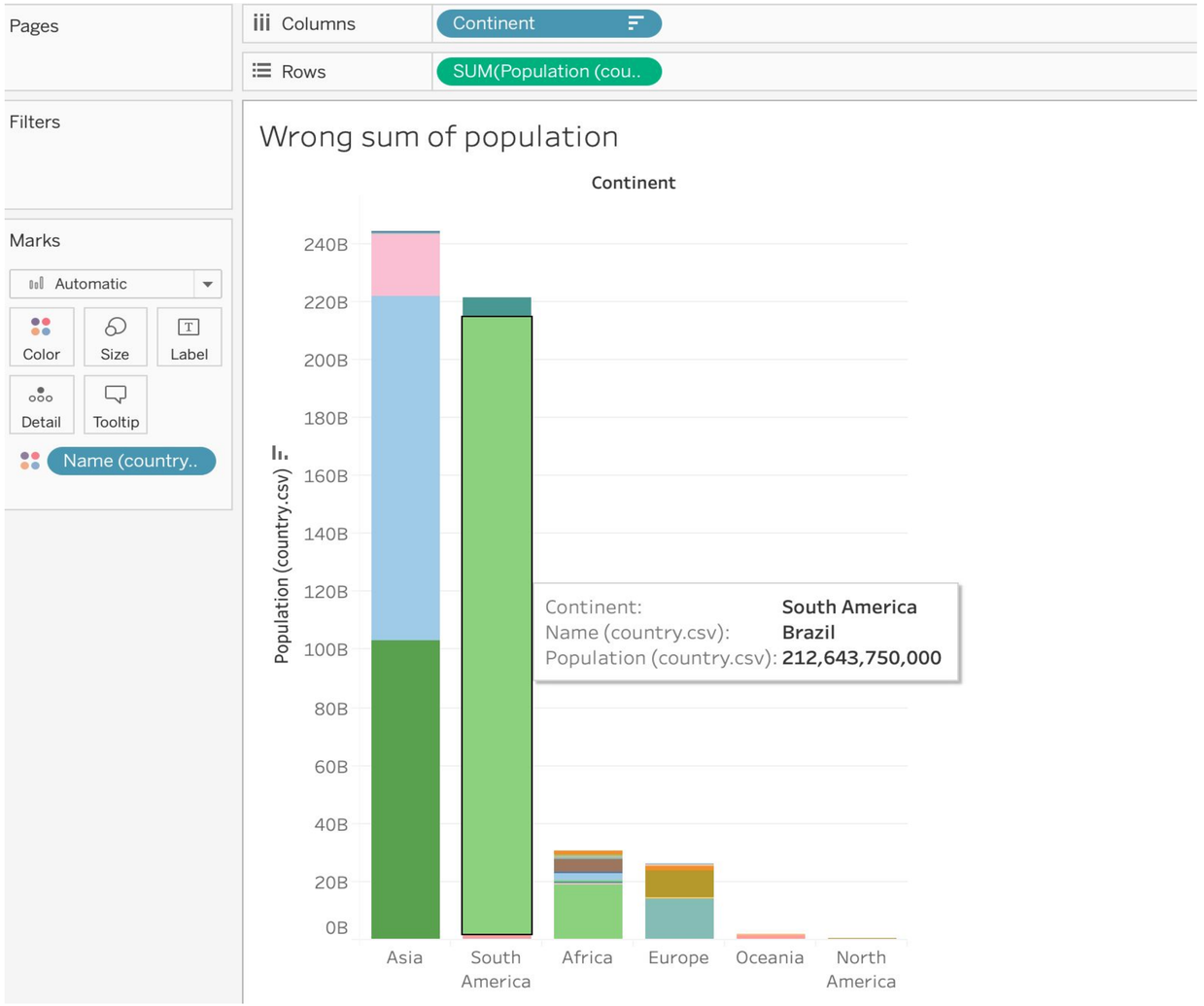
- Let's look at the summary **population data by country.**

- Does this data make sense?

  - Is the population supposed to be in billions?

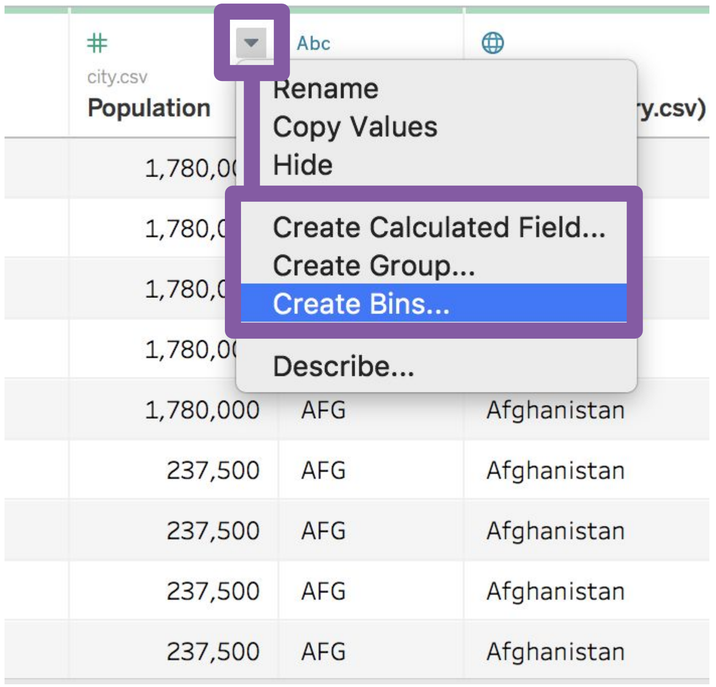
  - Are there 212 billion people in Brazil?

- What could be wrong?



Aggregating, binning, and grouping

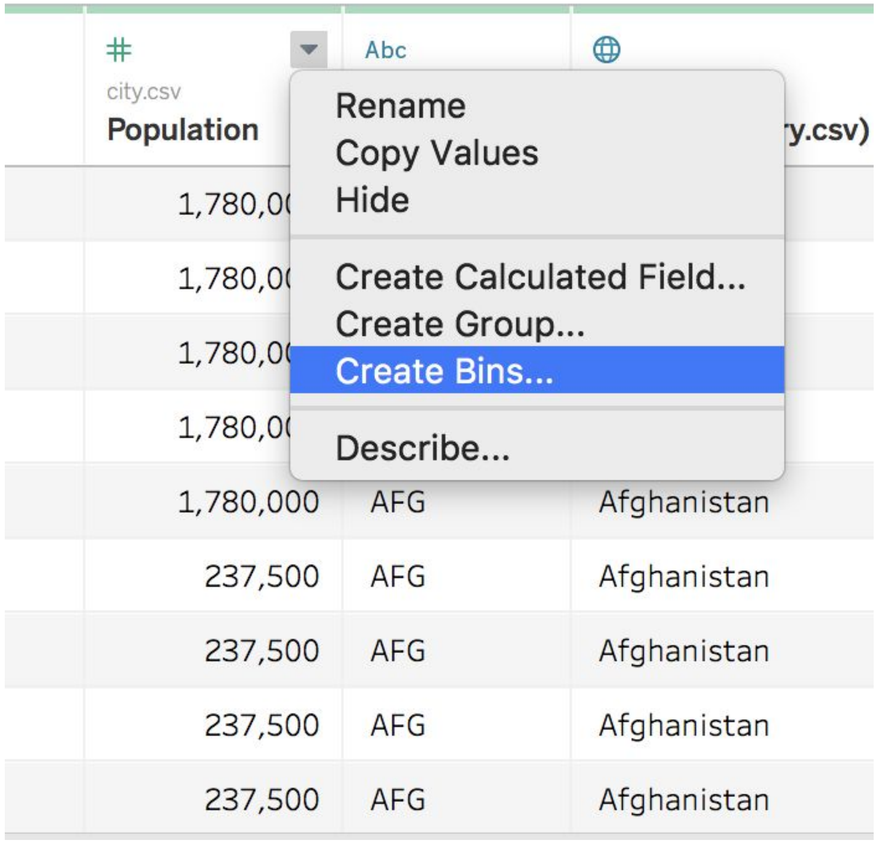
- Sometimes it makes sense to format a column into chunks.
  - Aggregating: Using a formula to calculate on some grouping of the data.
  - Binning: Sorting continuous data into bins by value.
  - Grouping: Using manual assignment to categorize data.
- Apply these with the dropdown menu to the right of each column.



Where do these groups appear?

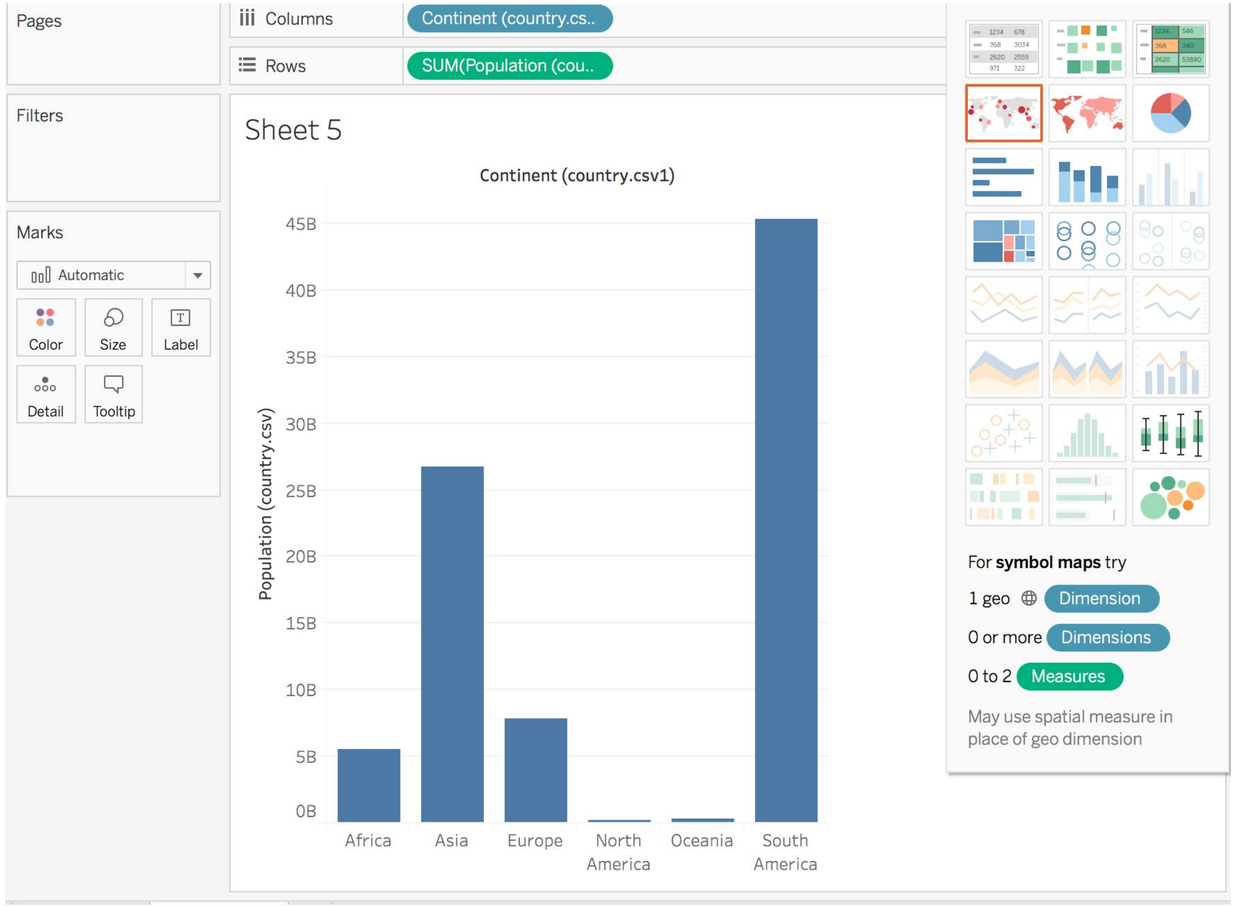
- Selecting any of these options will make new columns from the original column with some sort of summary of the column.

- Let's try this out on some of the world data.



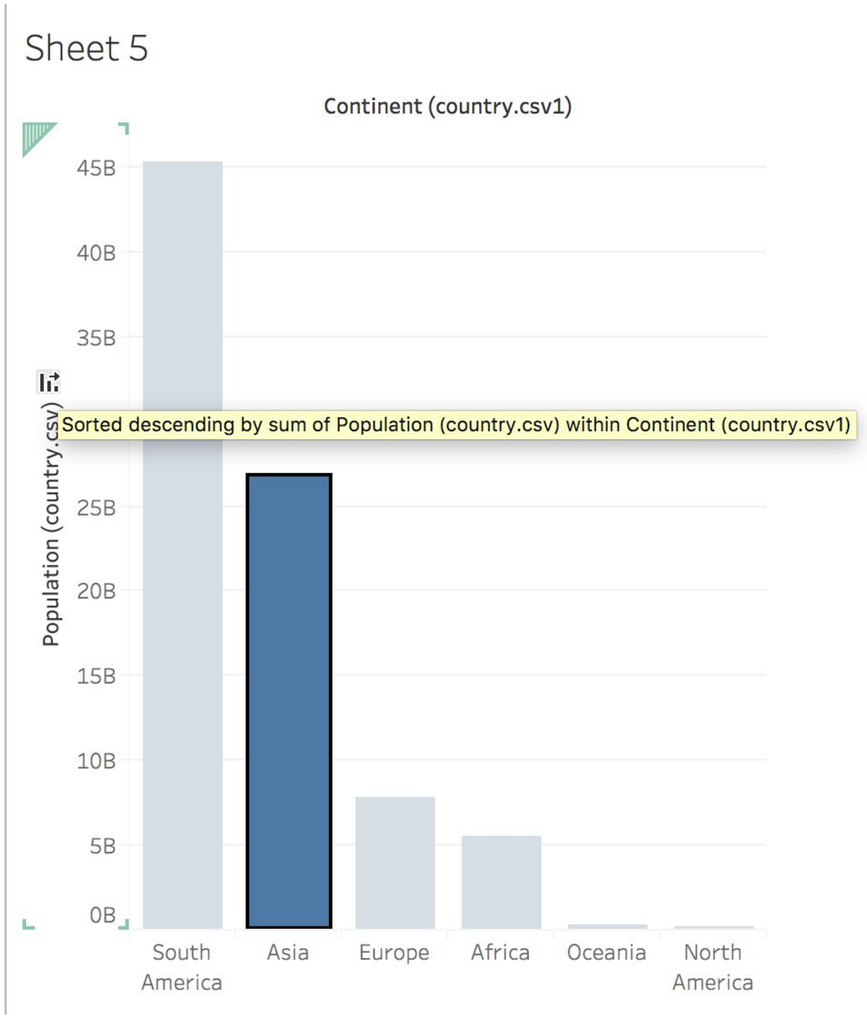
Data visualization: bar chart

- We will look at the **total population by continent.**



Sorting

- We can **sort by total population** by using this icon, located on the appropriate axis.



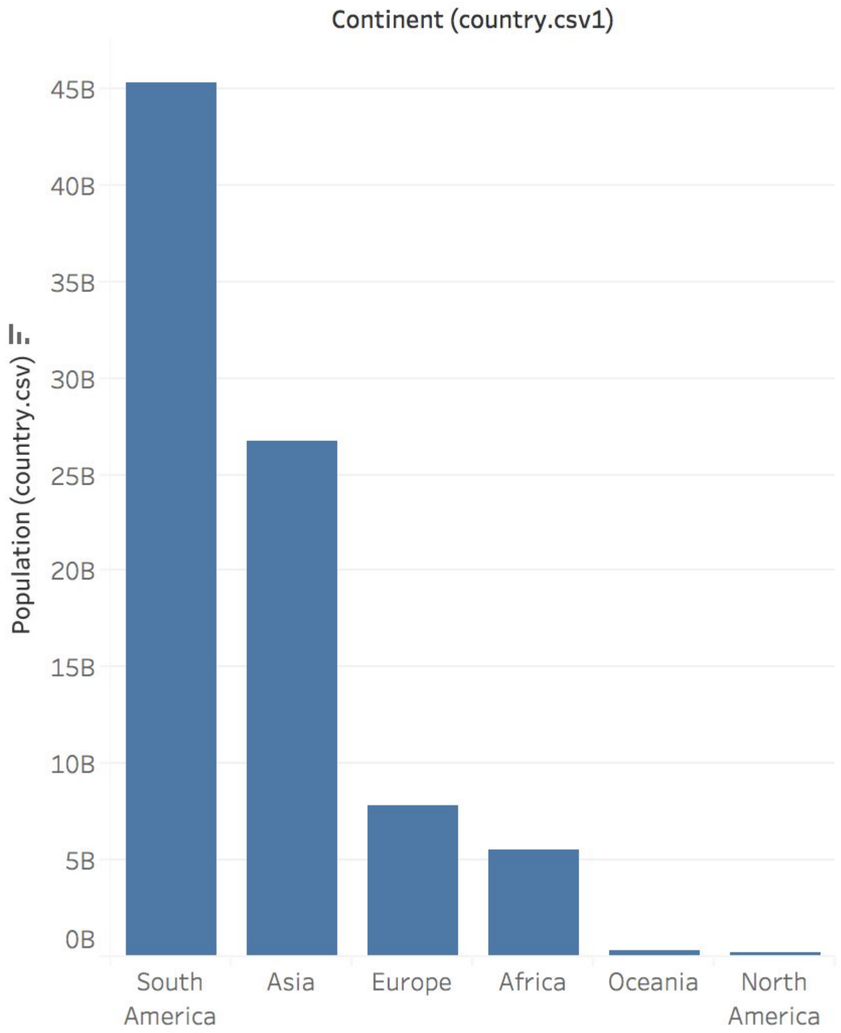
Data integrity

- Does this data make sense?
  - Are there more people in South America than Asia?

- What could be wrong?

- In today's Exercises, we will ask you to:
  - Rebuild these figures in your book.
  - Look for data integrity issues.

- We will come back to fix them.

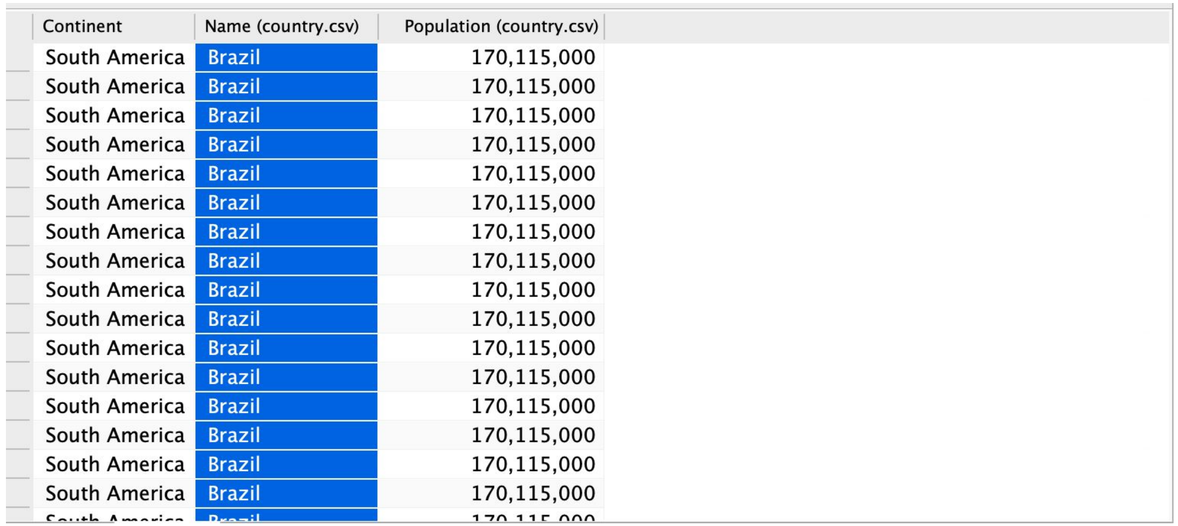


Aggregation in the data

- Check the data – the only way such high numbers are arising is that the **aggregation** of population is wrong.

- We want to calculate the population per continent with each country only represented **once**.

- We can apply the **ATTR (Attribute)** argument to tell Tableau that the populations are an attribute of each country.



Continent	Name (country.csv)	Population (country.csv)
South America	Brazil	170,115,000
South America	Brazil	170,115,000
South America	Brazil	170,115,000
South America	Brazil	170,115,000
South America	Brazil	170,115,000
South America	Brazil	170,115,000
South America	Brazil	170,115,000
South America	Brazil	170,115,000
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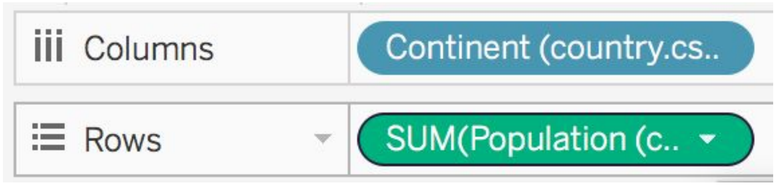
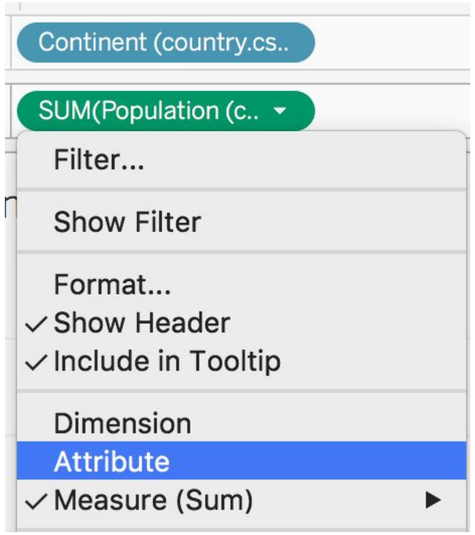
Note: Brazil has 170 million people.

Aggregation and attribute

- Look closely at the row and column shelves in the pills above the graph.
- Population is being aggregated as a **sum** across all rows of each country.
- Use the drop down in the pill and switch the aggregation to **"Attribute."**
- This means that the country level values are taken as an **attribute** of the data rather than being further aggregated.



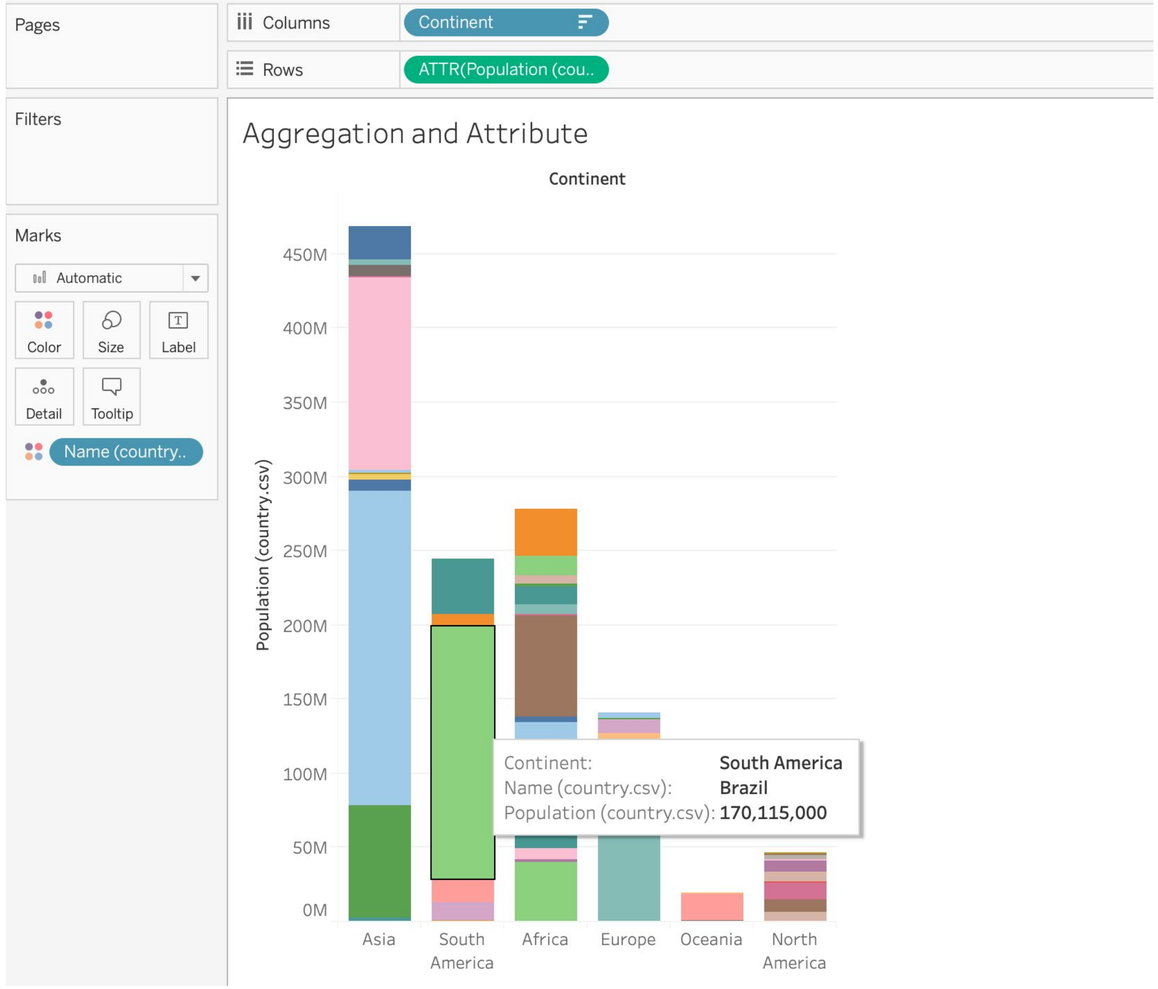


How has our visualization changed?

- Now we are treating the country populations on each row as the whole population of each country, in other words as an **attribute** of the country.

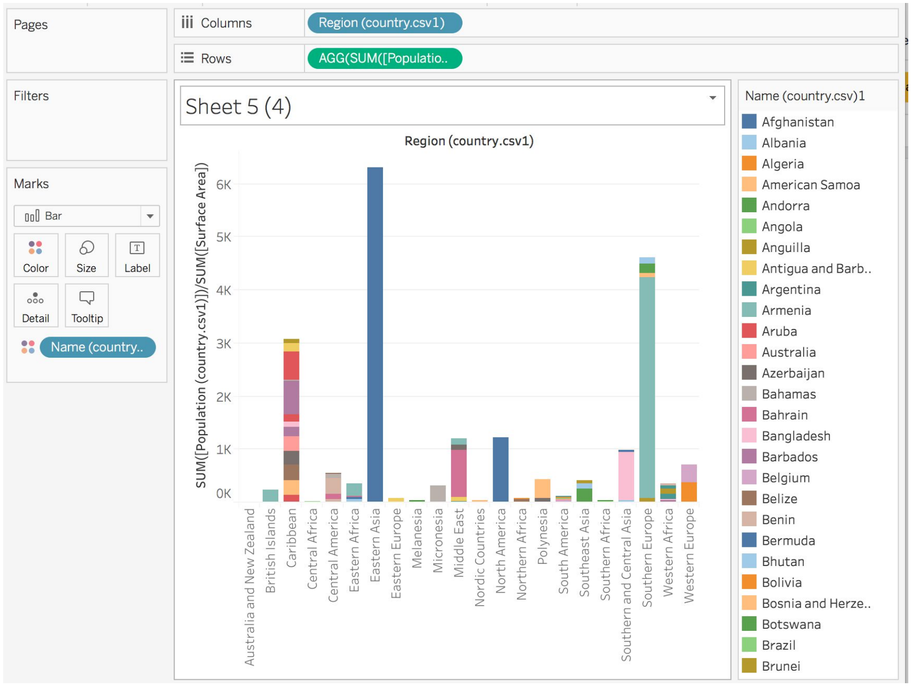
- Before, Tableau was treating each row as a part of each country's population and summing it together.

- We verify this by noting that the country populations are now as expected.



Aggregation: get population density

- Let's try plotting **population density**:
  - First, we add an aggregating dimension in the **Columns** field.
  - Then we write the aggregating formula in the **Rows** field.
  - When we press enter, Tableau makes an **aggregation formula** that calculates the new value per region.
    - Note that this is *not* a new column – rather, it is cast as **"AGG()."**



Module completion checklist

Objective	Complete
Manually join tables using joins	✓
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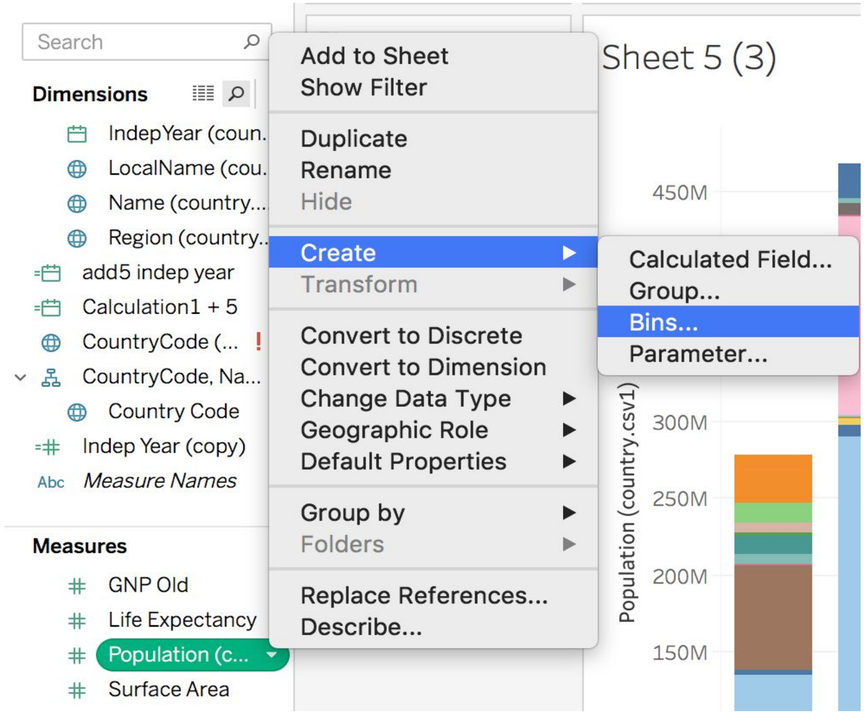
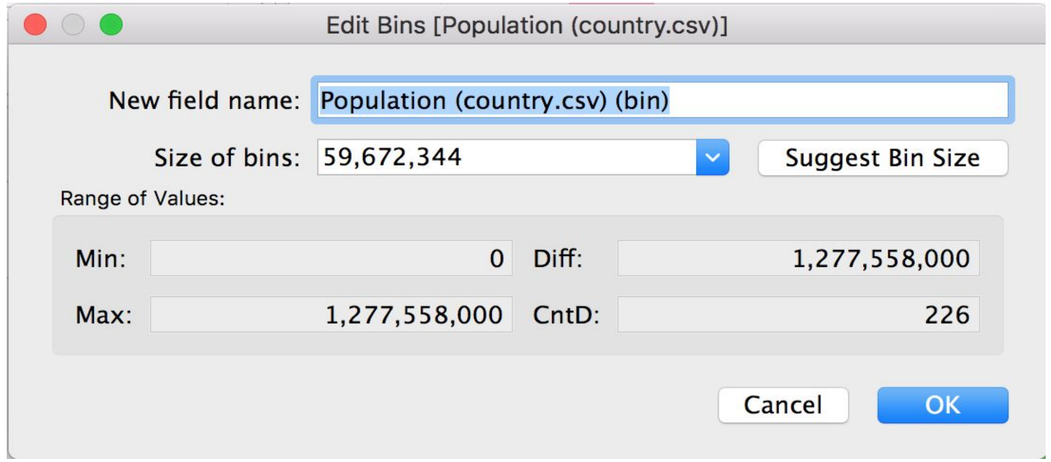
Create and use bins and groups	
Explore filtering capabilities of Tableau	

Binning

- Now we will create **bins** based on the country's population.
- Binning can help us group many **continuous values** into smaller bins, or numerical ranges, for easier analysis.

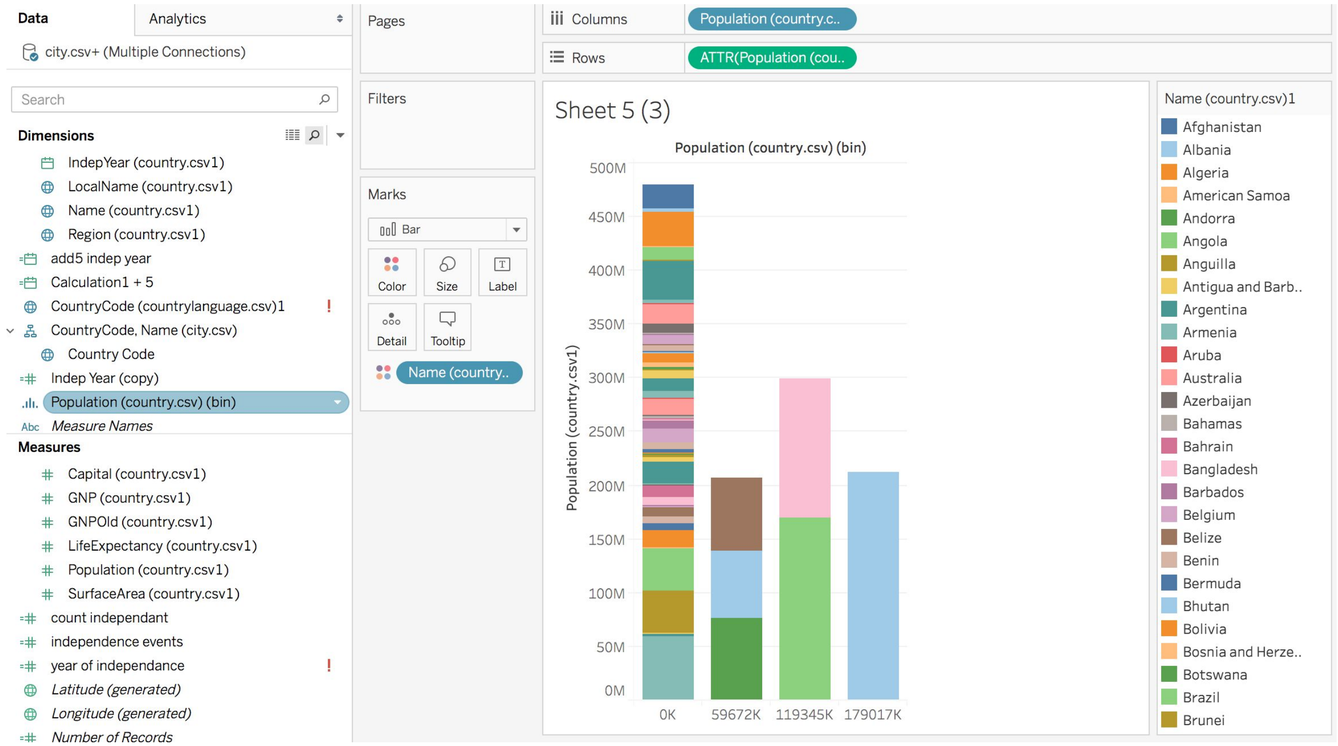




Binning, cont'd.

- We can now can see that most countries fall into the bin with the smallest values.

- Note that we are using the population attribute to keep Tableau from counting countries multiple times.

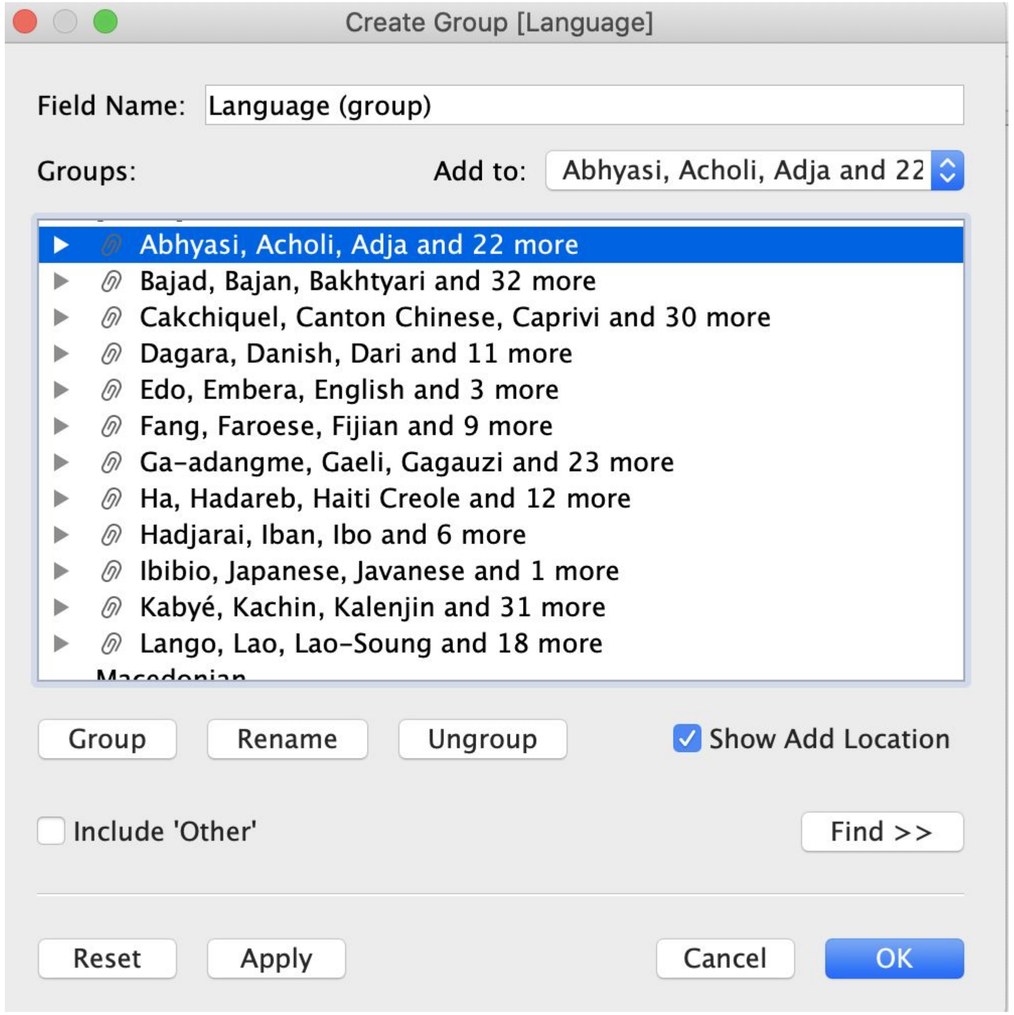


Grouping

- If your data can be classed into obvious or natural categories, you might want to organize them using **grouping.**

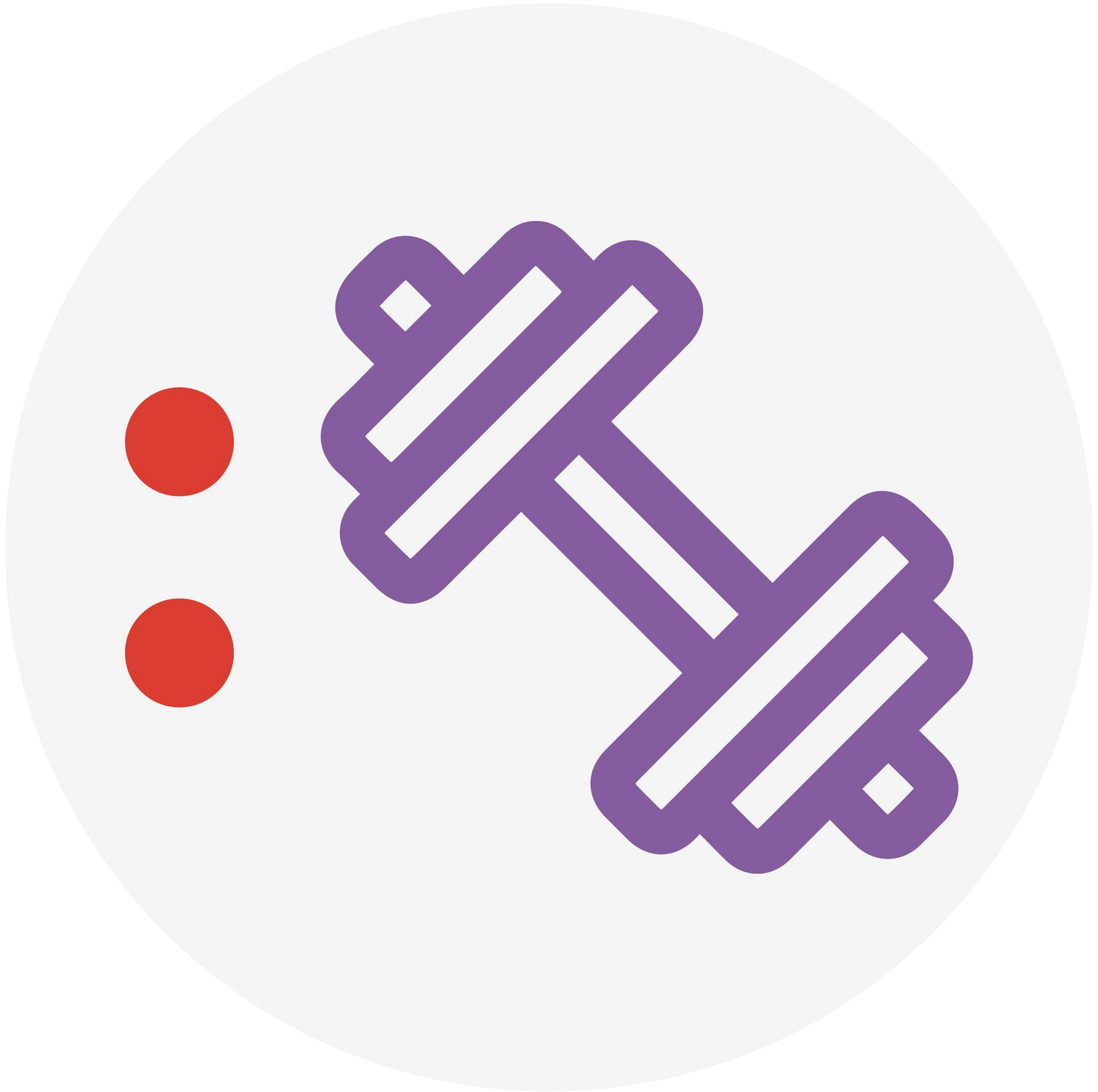
- You can specify groups manually.

- For instance, languages might be grouped into different classes alphabetically.



Knowledge check 3

Exercise 3



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End of Part 3