This is an outline of the sections that make up the Data Source page.

Sections D and E

You can think of Section D as a **visual workspace** for combining your data. Go ahead and drag the *raw_data* sheet into Section D.

You will quickly see that one of the main ways to make things happen in the Tableau workbook is to ***drag and drop*** items to different areas of the workspaces.
Since we only have one table in this area, there is not very much to visualize at the moment.

Before we bring in other tables into Section D, let's check out the area below it (Section E). You can think of Section E as a **data preview** area. Here you get a preview of the table that you are loading as your workbook's data source. You can see the fields (or columns) and the first 1000 rows in the data table. You can click on the number in Section E to change the number of rows that you are viewing in the preview area, as shown below. Take some time to get familiar with the data you have loaded into Tableau. Each row in the table contains data for a wine bottle review.
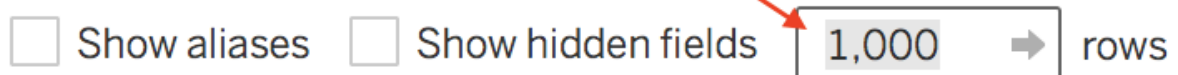

The field where you can change the number of rows shown in the data preview area.

In the next chapter, we will focus on Section E and learn about data preparation tasks that you can complete in this area. For now, let's go back up to Section D and return to our discussion about combining data.

Combine Data in Tableau with UNIONS

Here is a visual image of what a UNION looks like:
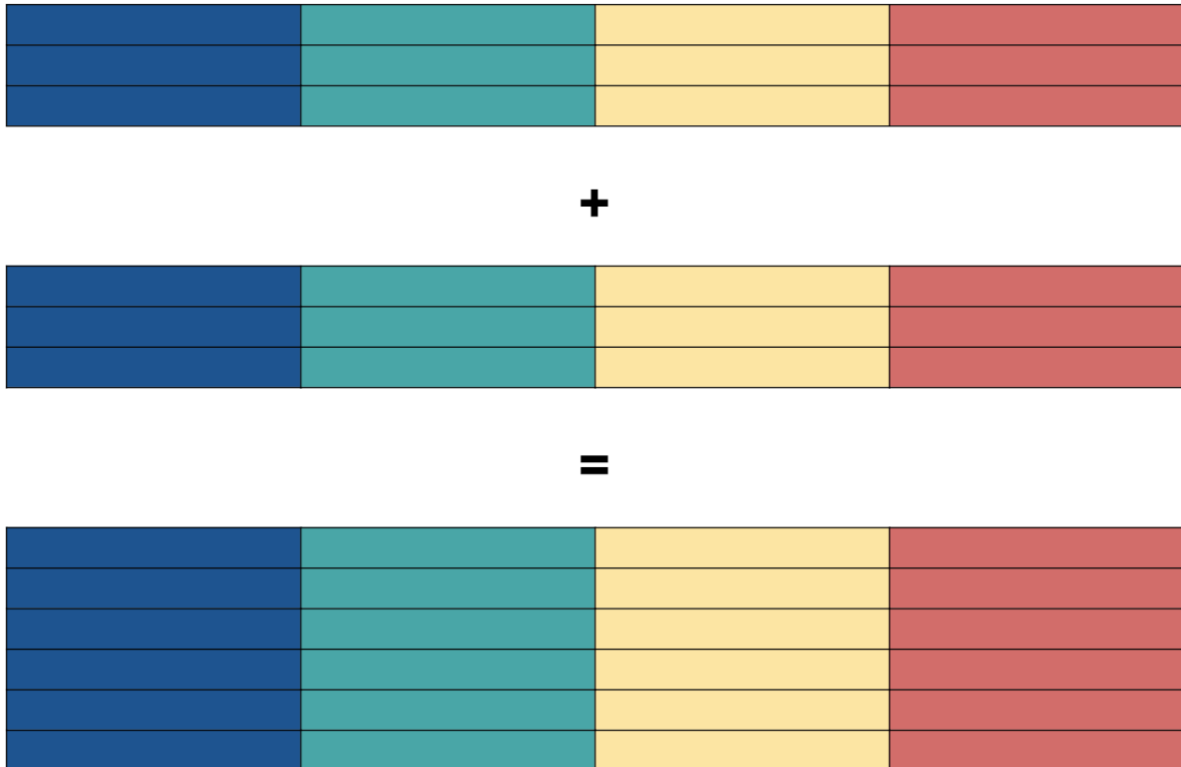
Color diagram of a union.

When you use a UNION to combine data, you are *stacking tables.* When you are stacking data tables, you will have **one base table onto which you stack one or more tables**.

For example, if you have sales data in quarterly data files, you will probably want to stack the data for quarters 2 - 4 **onto** the data for quarter 1, in order to have one complete dataset for sales.

Our base table is the dataset found in the sheet named *raw_data*. We are going to stack the data found in the sheet named *high_costs* onto *raw_data*. This way we have one data table for all wine bottle reviews in the dataset, including high-priced wines (found in the *high_costs* table).

The main way to complete a union of data in Tableau is to use the **New Union** button that is found in Section C.

Let's try that option out!

First, you need to clear out the visual workspace by removing any tables that are found in section D. Go ahead and **drag out** the *raw_data* table from Section D and drop it anywhere outside the section.

Once your visual workspace is cleared, drag and drop the *New Union* button into Section D, as shown below.
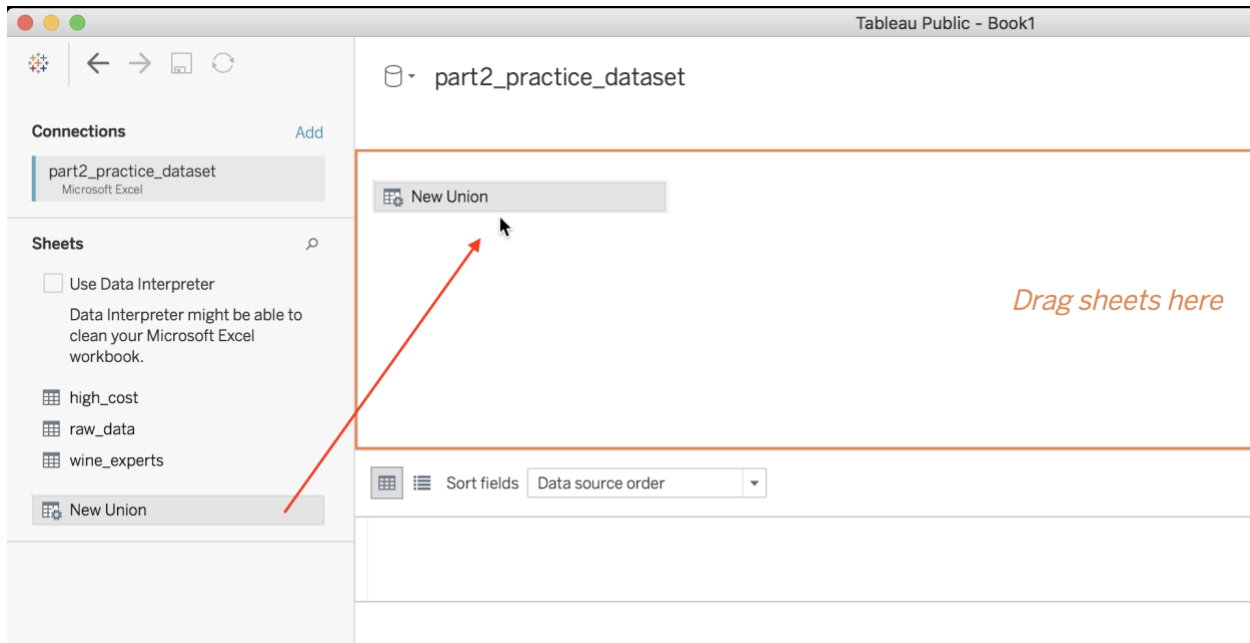
Drag and drop the New Union button into Section D.
You should see a dialogue window pop up, as shown below. If you don't see this screen after dropping *New Union* to Section D, you probably just need to minimize your Tableau window to see it. Drag and drop the raw_data and high_cost tables into this dialogue window.
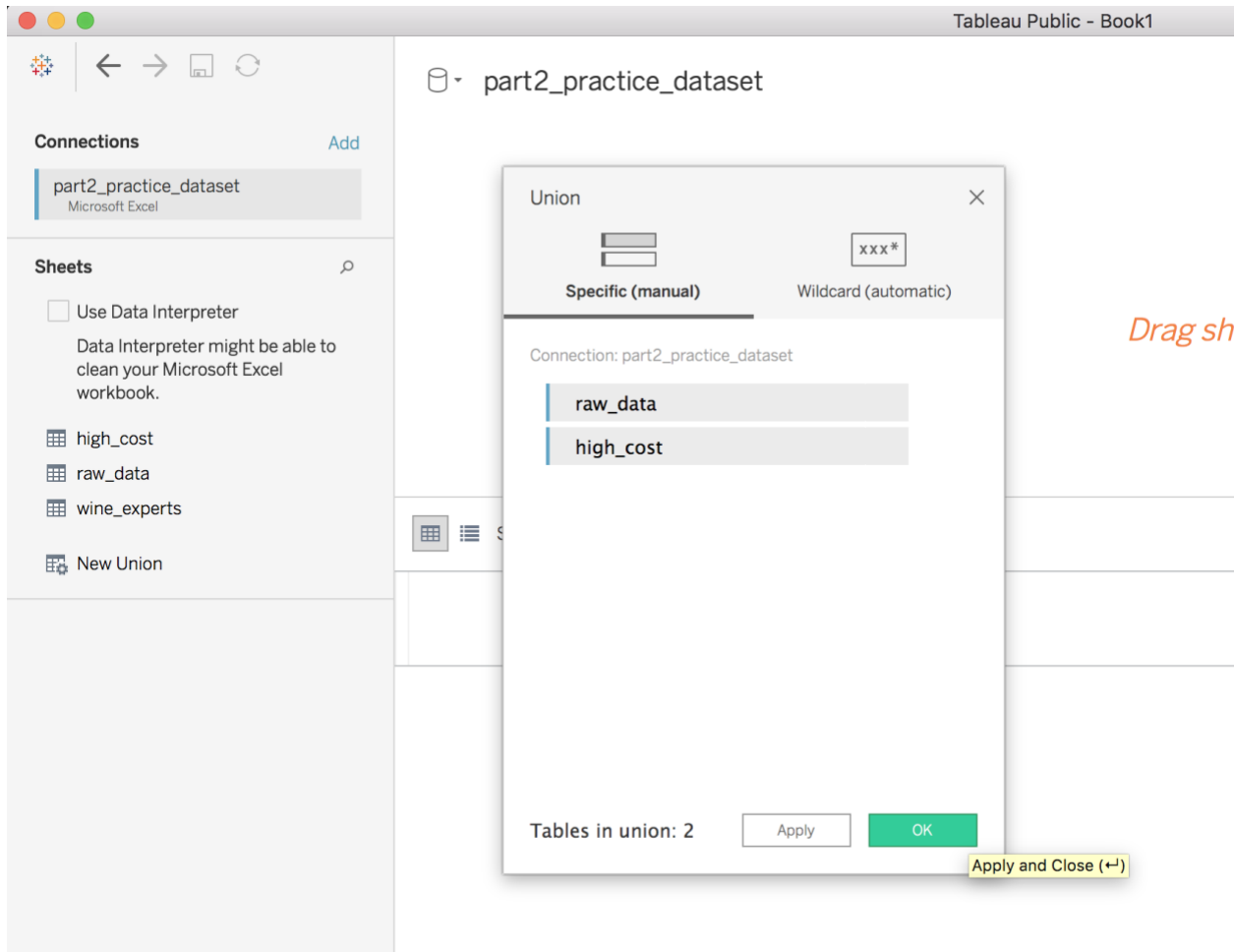
New Union window prompt.

Merging Mismatched Fields

In the previous chapter, you learned about the *View Data* option in Section C. At this point, you saw that the column names of the first column in each table were different. Indeed, if you look at the data preview in Section E, you will see a column for *Review_No* and a column for *review_id*.

Tableau has interpreted Review_No and review_id as two different fields, even though they are the same column.

Even though these two columns are the same, Tableau interprets them as different in the resulting dataset (after the union).

To fix this, you first need to highlight both columns.

If you are on a Mac, hold `command` and **click** on both columns.
If you are on a PC, hold `Ctrl` and **click** on both columns.
Then right-click on one of the highlighted columns, and select ***Merge Mismatched Fields***.

Let's rename this newly merged field to ***review_id***. First, right-click the newly merged review id column (or click the drop-down arrow for the column). Then select the *Rename* option.

After completing these steps, you should only have one column for *review_id*, as shown below.

Field Name		Table	Remote Field Name
#	review_id	Project	Review_No & review_id
⊕	country	Union	country
Abc	description	Union	description
Abc	designation	Union	designation
#	points	Union	points
Abc	price	Union	price
⊕	province	Union	province
Abc	region_1	Union	region_1
Abc	region_2	Union	region_2
Abc	title	Union	title
Abc	variety	Union	variety
Abc	winery	Union	winery
Abc	T_code	Union	T_code
Abc	Sheet	Union	Sheet
Abc	Table Name	Union	Table Name

Merged field for review_id columns.

If all column names are **exactly** the same in each table of a union, then you will **not** need to do this step.
**Now, for a very important note!**

If there are rows that are found in **both** tables of a union, then they will be duplicated in the resulting data table after the join.

- Later on, I will show you how to create filters, which you can use to duplicate data.

However, if you need to complete a complex union or join, or your combination of data results in a significant number of duplicates, then you should consider completing those tasks before loading the data into Tableau.
Combining Data in Tableau With JOINS

Here is a visual image of what a JOIN looks like:
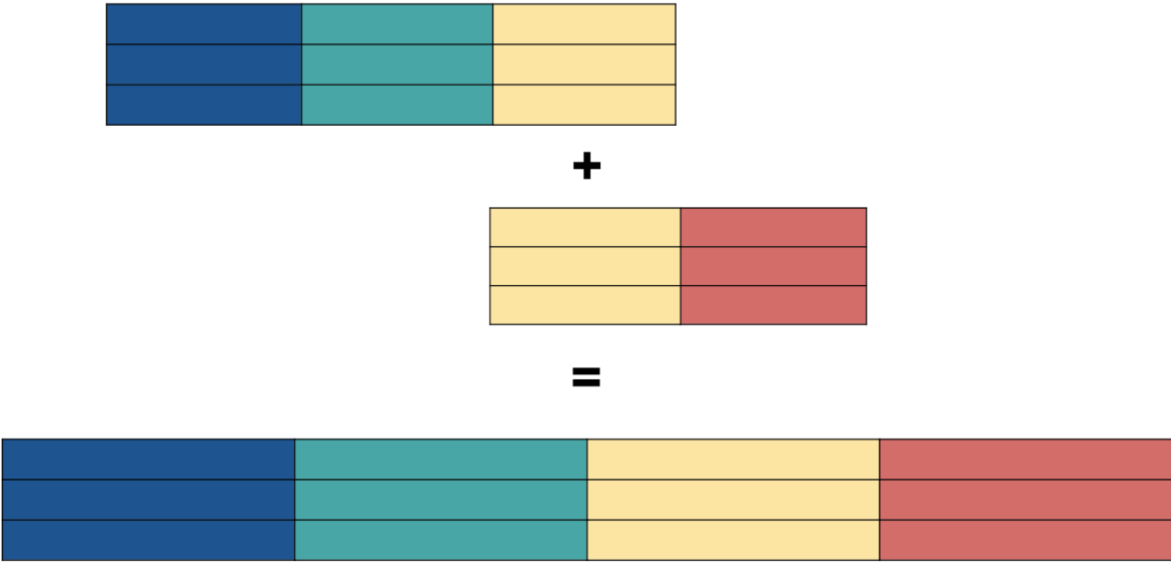
Color diagram of a join.
Remember that you need a common field between your tables (such as a column of IDs--identifiers or keys) when you are using a JOIN to combine data. In the color diagram of a join shown above,, the **yellow column would be the common field** between the first two tables.

The resulting table would have the three **rows** from the first table **matched with** the three **rows** in the second table. These matches are based on the yellow column. Using the *View Data* option in Section C, you can see that the *T_code* field exists in both the *raw_data* and *wine_experts* tables.

View Data: raw!data	View Data: wine!experts
T_code	T_code
WE_5	WE_0
WE_5	WE_1
WE_5	WE_2
WE_5	WE_3
WE_5	WE_5
WE 5	WE 8

T_code is an ID column that exists in both the raw_data and wine_experts data tables. Go ahead and drag and drop the *wine_experts* table into the virtual workspace (Section D). You should see an INNER JOIN icon show up in Section D, as shown below.

🗄 ▾ Union+ (part2_practice_dataset)

Union	◐	wine_experts
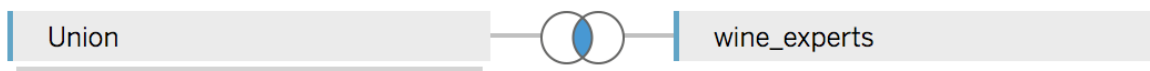
An inner join icon should appear in Section D.
We know that this icon represents an inner join because it is highlighting (in blue) the overlap between the two circles. Basically, Tableau is telling us that it has joined the data in the Union table (*raw_data* + *high_costs*) with the data in the *wine_experts* table using an inner join. This means that the resulting table that we see in the data preview area includes **only rows that matched based on the *T_code* field. Looks like the *T_code* field is equivalent to our yellow column, doesn't it?**
Remember, there are four main types of JOINS when it comes to combining data tables. They are as follows:

- Inner Join
- Full Outer Join
- Left Join
- Right Join

If you need a refresher on the different types of joins, I recommend you check out [this resource](#).

We want to change the inner join to a left join. Why? Because we want to keep all the data from our (left) Union table, and only bring in rows from the *wine_experts* table when there is a match in the *T_code* column.

To do this, click on the INNER JOIN icon, and you should see the following join properties window appear:
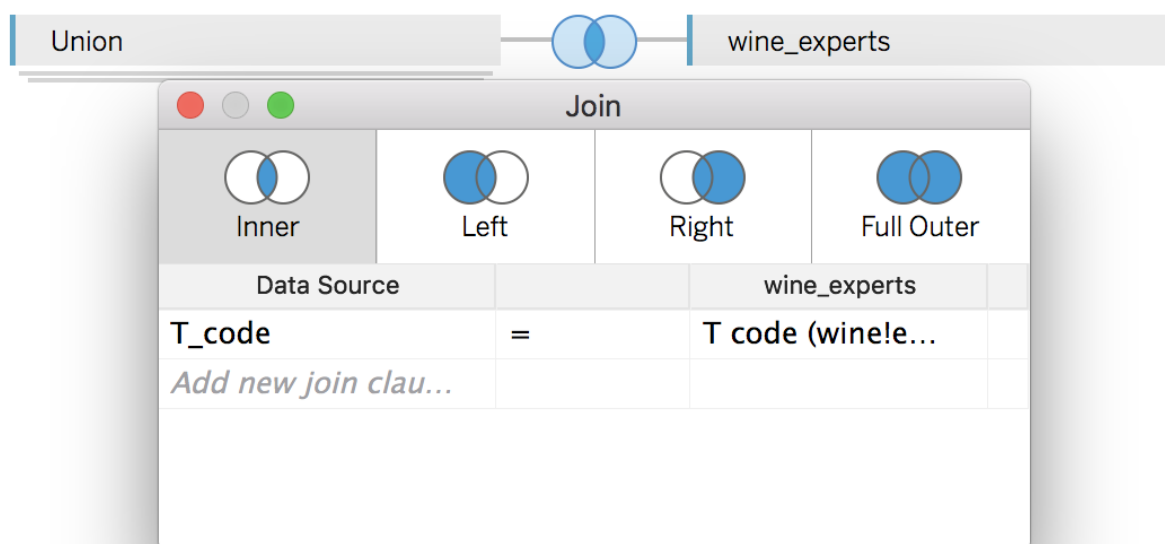
After clicking on the join icon in Section D, you should see the join properties window. In this window, you can select the type of join that is best for your data. We need a LEFT JOIN, so go ahead and select *Left Join*. You can also change which columns Tableau should use for the matching fields between the data tables. We want the *T_code* field to be used (our "yellow join column"), so no change is necessary here.

You should see a LEFT JOIN icon after the change, as shown below.


A left join icon should appear in Section D.

Section F: Save Your Work!

Let's take some time to save the work we've done so far, so we don't lose it! If you try using the Save button found in Section A of the Data Source page, you will not be able to save. Tableau needs you to create a sheet in the Tableau workbook file before you can save.

Go to Section F of the Data Source page, and click on *Sheet 1*.
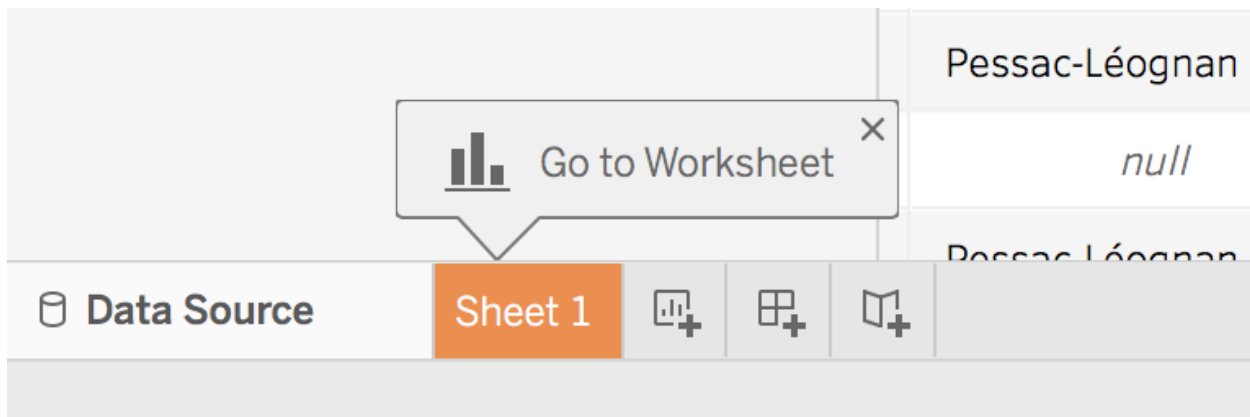
.
Section F of the Data Source page.
In the following chapters, you will have a proper introduction to Sheet workspace in Tableau. For now, focus on saving your work. Even though you have added a new sheet to your workbook, you haven't made any actual changes, so there is nothing to save. Go ahead and drag and drop the *Number of Records* field into the middle of the screen.

Your screen should look similar to the one below. Make sure you see the total number of records, **4,479**.
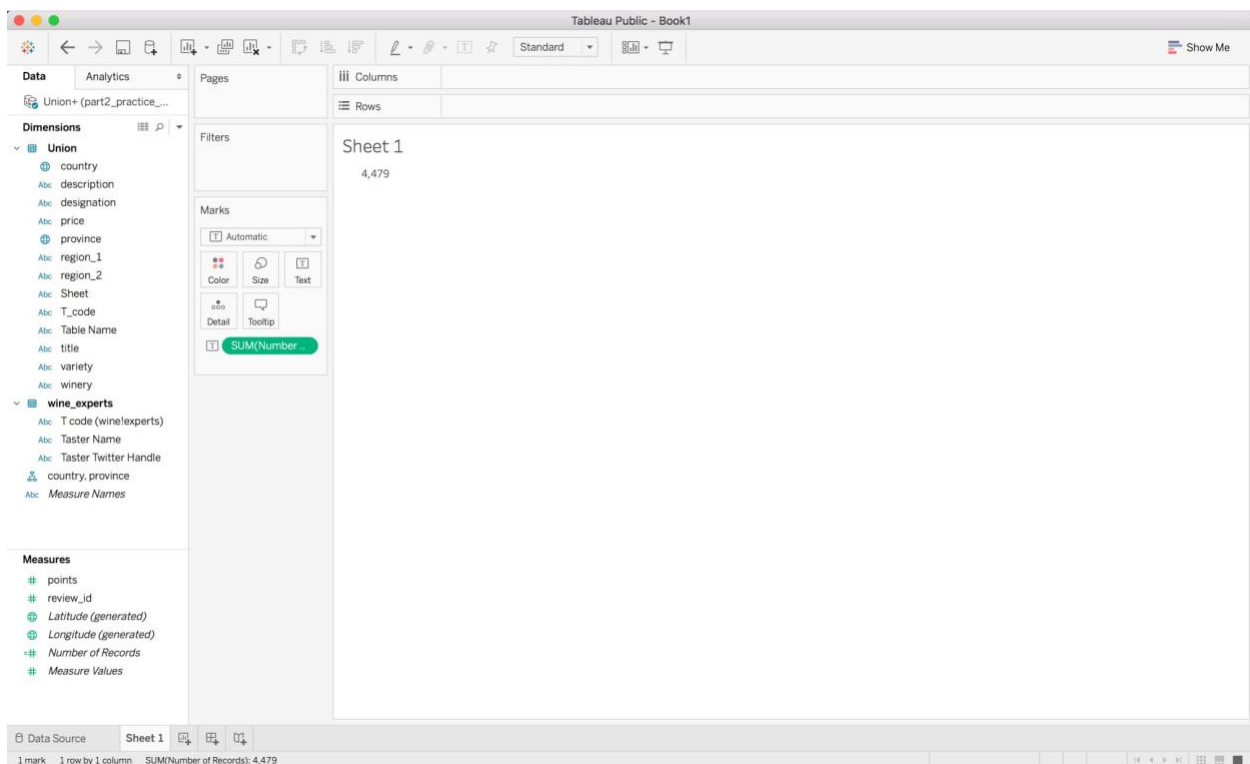
Sheet 1 showing the total number of records.
Now you should be able to click the *Save* button in the top left area of the screen. I am going to name this workbook *practice_workbook_1.* Feel free to do the same or use a

different file name. You may be prompted to sign-in to your Tableau Public account. You need to be signed-in in order to save your workbook.

Remember, when you are saving your Tableau workbook file, you are actually saving it on the Cloud (and *not* on your local computer). In Tableau lingo, you are **Publishing** your work to the server.
Depending on the size of the Tableau workbook file, your internet connection, and your computer specs, the save time may vary. Please be sure to let Tableau do its thing and finish saving your work. You will get confirmation that your save was successful when Tableau launches a browser window or tab with the link to your work online.

Now that you know how to save, be sure to do so consistently! 🙂

Summary

- Section D of the Data Source page is a **visual workspace** for combining your data with:
    - UNIONS: This is where you stack one dataset onto another dataset using the New Union button.
        - Warning: If two column names are different (even though their content is the same), then you need to **merge** them by using the **Merge Mismatched Fields** button.
    - JOINS: This is where you match one dataset to another by identifying a common field.
        - Tableau allows you to change the type of join to inner, left, right, or full outer depending on your needs.
- Section E is a **data preview** area. In this section, you get a preview of the table that you are loading as your workbook's data source. You can see the fields (or columns) and the first 1000 rows in the data table. You can also change the number of rows that you are viewing.
- Section F is the place to save your work!
    - You need to create a sheet in the Tableau workbook file before you can save.
    - Remember to do so consistently!