

## **Tutorial B for the Case “Modern Retail Analytics: Data Visualization Using Tableau”**

### **2. Answer Business Questions with Tableau**

#### **2.1. Data-Driven Investigation #1**

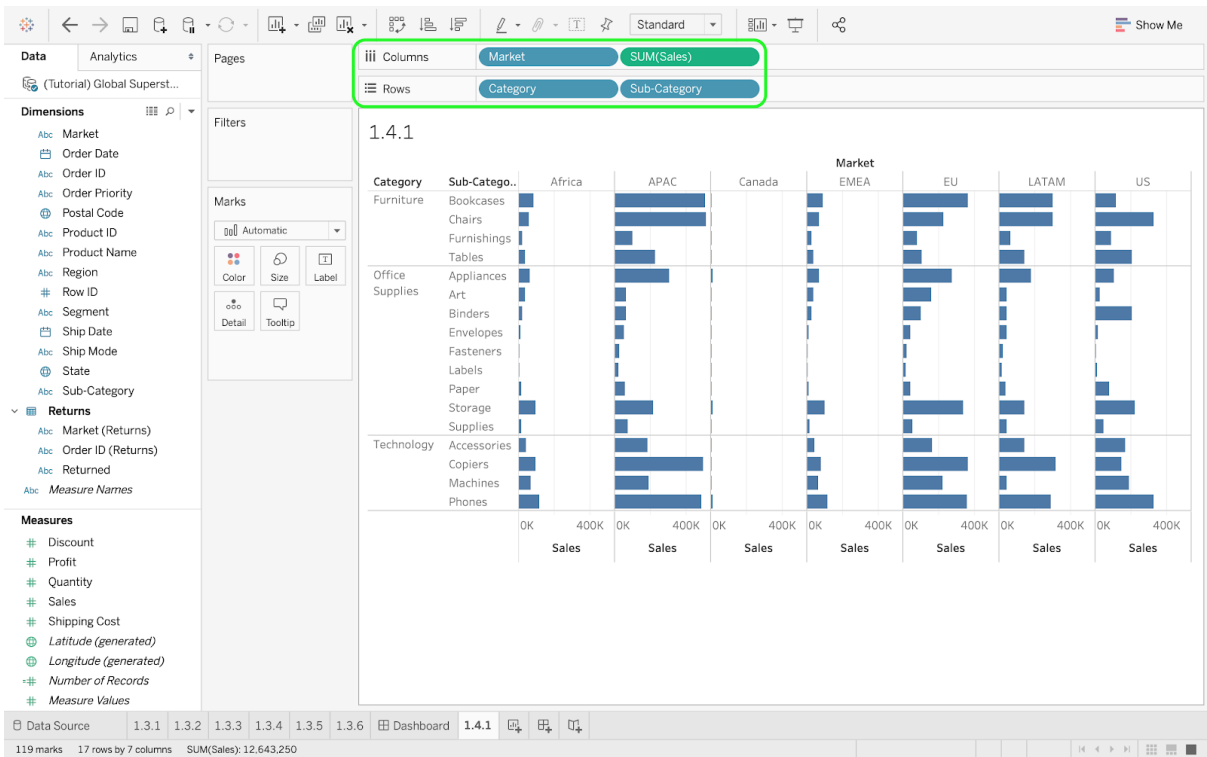
***Investigate the average sales and profit per order by market, order category, and order subcategory. Do any patterns stand out?***

To answer this question, you can start by dragging the relevant dimensions and measures to the Columns and Rows panes. For example, a possible configuration can be Market and Sales in Columns, and Category and Sub-Category in Rows. Instead of adding profit to the Rows or to the Columns, you can drag the measure to the Color mark. This improves the visual aspect of the graph but does not help answer the above question. Next, click on the drop-down menu for both measures and switch from Sum to Average. In addition, some subcategories of the Office Supplies category do not seem to be insightful (due to their low sales level). To enhance the chart readability, you can group the subcategories that you do deem invaluable by right-clicking on your selection and clicking on Group.

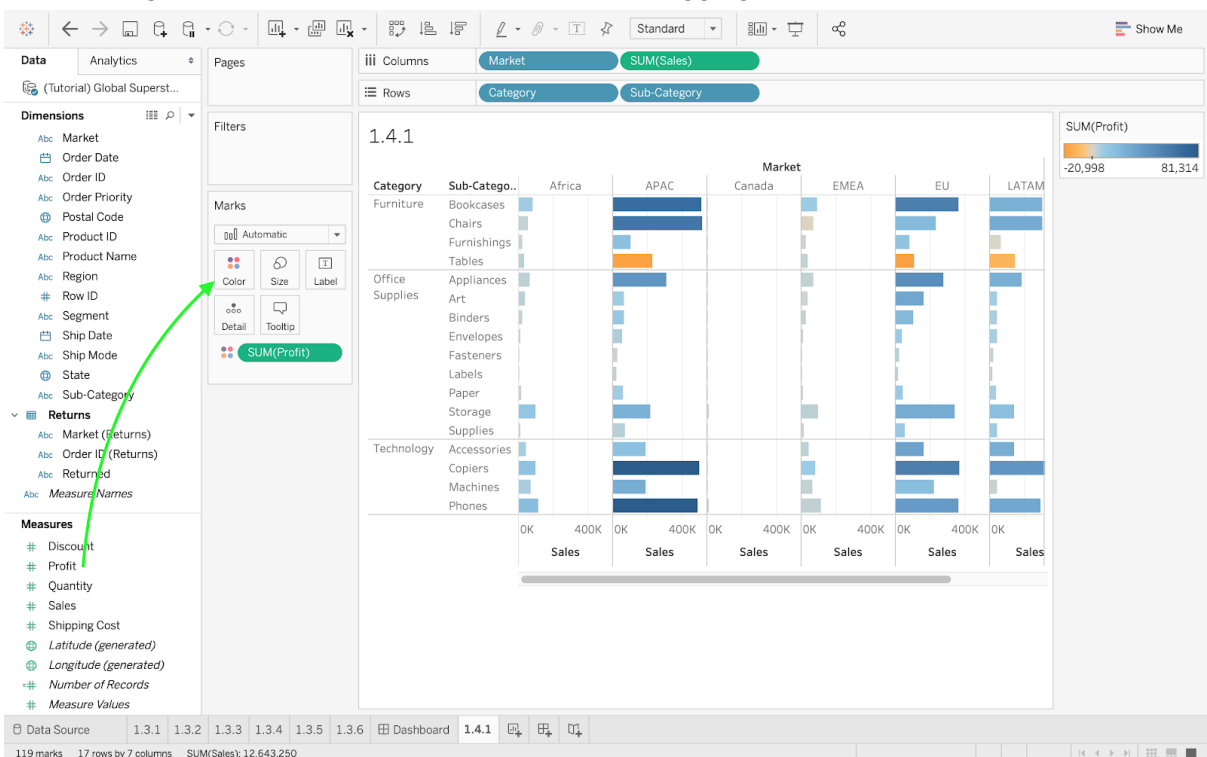
At this point, you can start looking for interesting patterns. For example, the Table subcategory (from the Furniture category) seems to have significant average sales for several markets, but is not as profitable in other markets (see the orange hues in the figure below). In addition, the Copiers subcategory is very successful in the U.S. market. To compare this subcategory relative to other subcategories, you first need to add a Country filter (e.g., focusing only on the U.S). You can then complete your visualization by dragging the (AVG) Profit measure to the Label mark. You can see that the Copiers' hue of blue is darker relative to other subcategories, thus indicating a higher average profit. The text labels allow for a better comparison and show that no other subcategory is close to the Copiers' average profit of \$817.9. Finally, by reading the bar chart, we can conclude that the Copiers subcategory has the highest average sales in the U.S. (hovering over the bar will reveal the exact amount, which is \$2,199).

**Note:** The aforementioned solution is just one of the many possible ways to draw interesting insights and to answer the above business question.

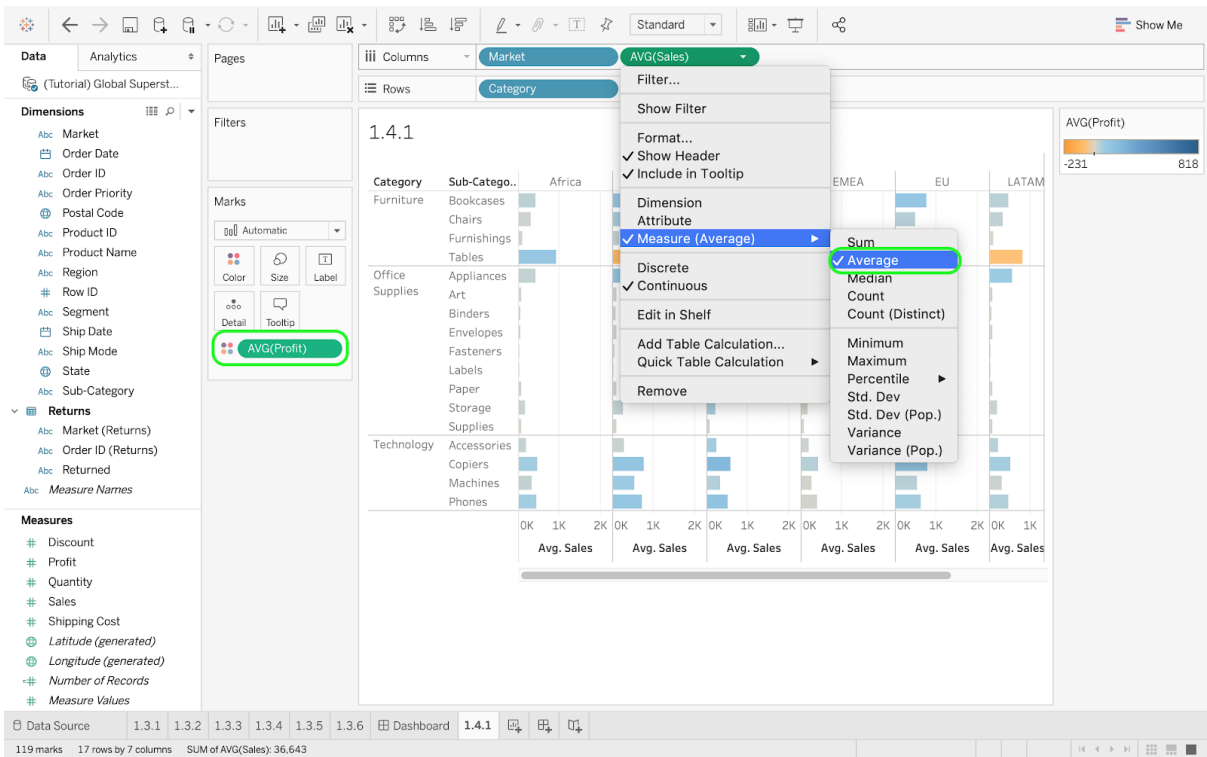
- Add the right measures and dimensions.



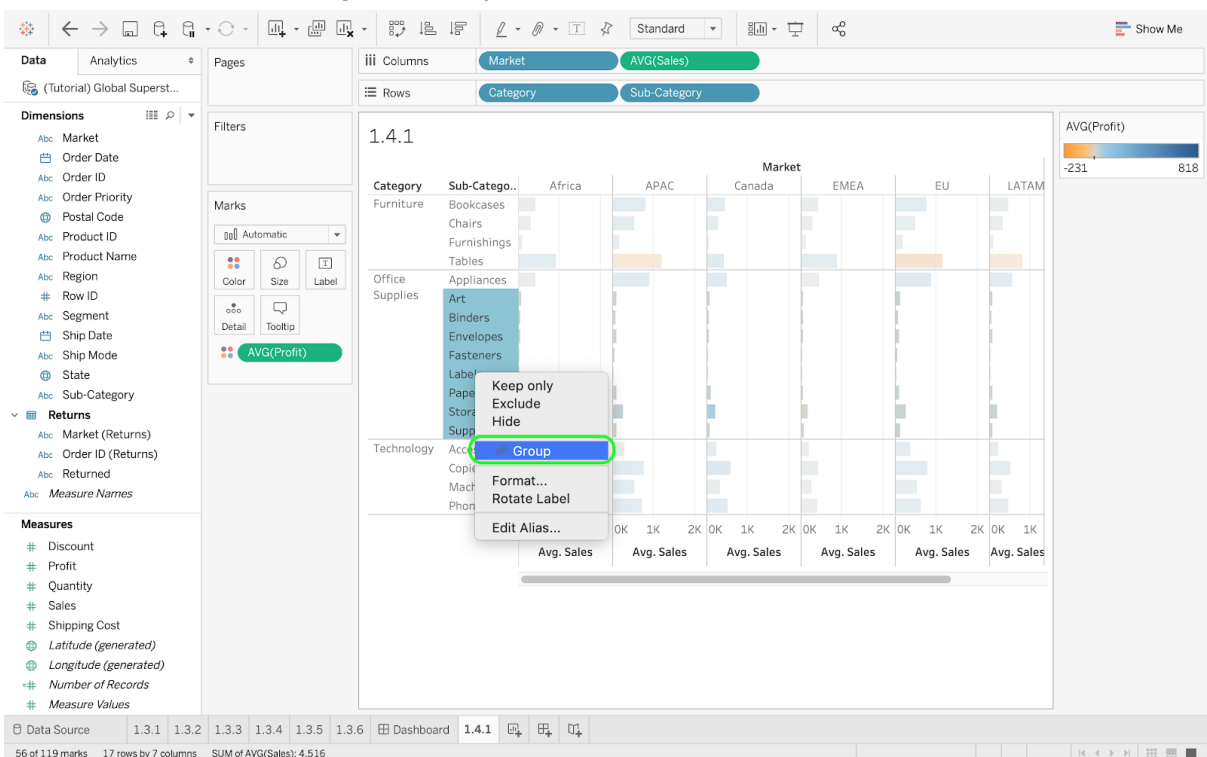
- Drag Profits to the Color mark (instead of dragging it to the Columns or Rows panes).



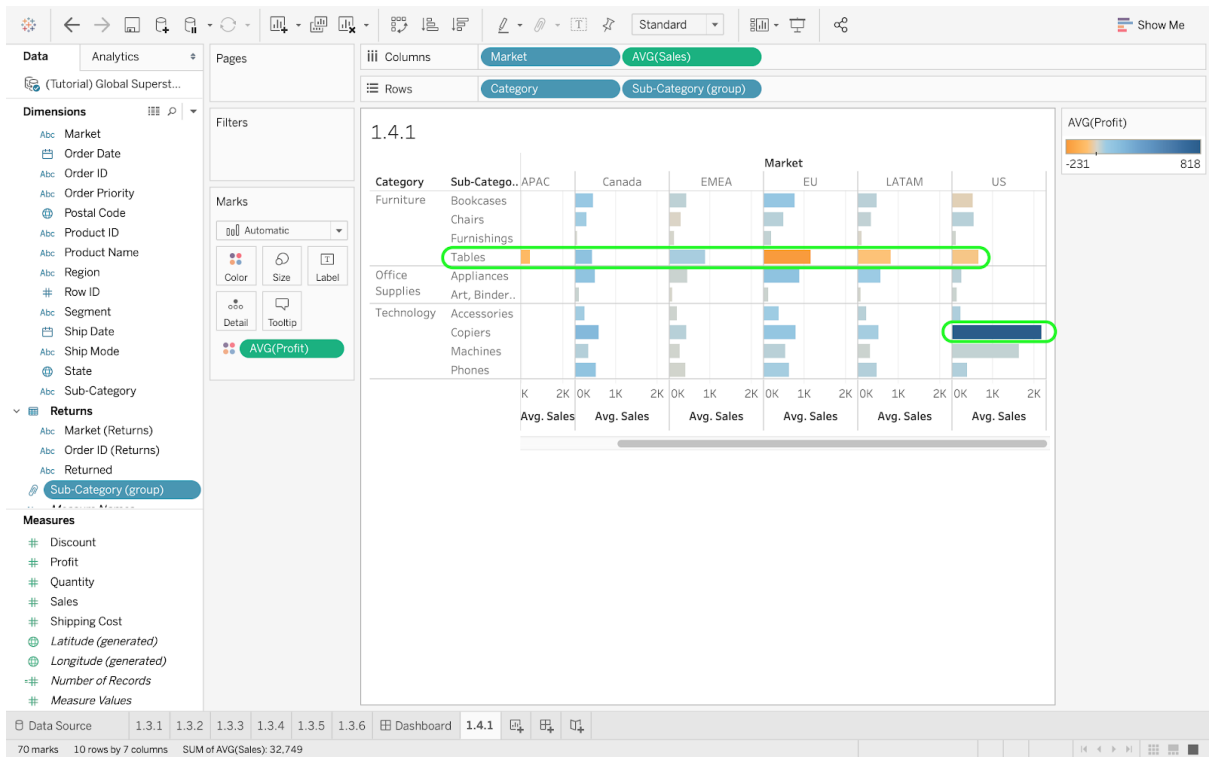
- Change the measure of Sales (and Profits) to Average.



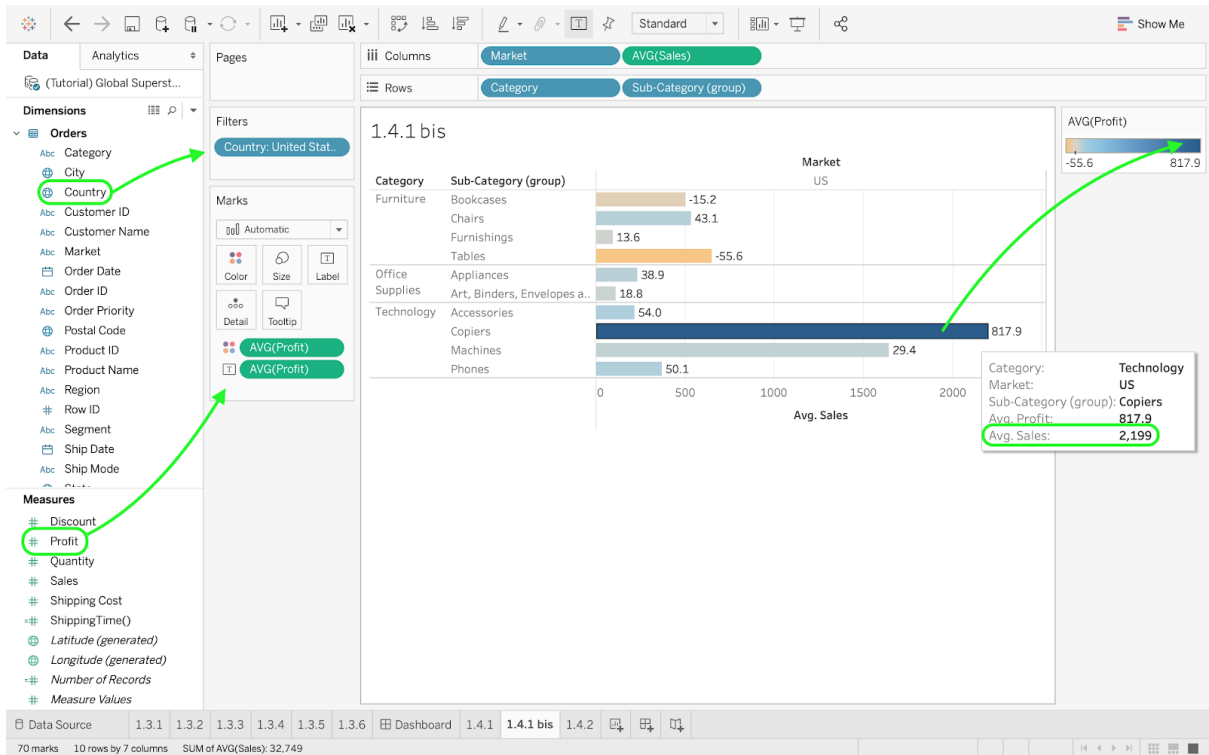
- Group the subcategories that you deem invaluable.



- Investigate.



- Add a Country filter (e.g., U.S. only) and take a closer look at the Copiers subcategory. Add a text label for (AVG) Profit to complement your Color mark.



## 2.2 Data-Driven Investigation #2

**Investigate which days of the week have faster shipping times. Which day should you place your order to get a fast shipping time?**

To answer this question, start by dragging the Order Date dimension to the Columns pane. You will notice that the default setting displays the dimension by year. Within the dimension's drop-down menu, select the option Weekday. We have now access to the different days of the week, but the shipping time is still missing. The shipping time is essentially the difference between the Order Date and the Ship Date. From Analysis, located on the menu bar at the top of the display, select the option Create Calculated Field.

Assign a relevant name to your field and input a formula in the calculation pane. Note that basic formulae have already been created by Tableau, and DATEDIFF is conveniently one of them. To use DATEDIFF, determine the first argument (called date\_part), which consists of the desired unit (in our case, we can use "day"). Next, select Order Date and Ship Date as start\_date and end\_date respectively, and press the green OK button. When you add your new measure to the Rows pane, you will notice something odd with the line that was just generated. Specifically, the sum of the Shipping Time was automatically displayed instead of the average. After fixing this problem, the graph is still not visually appealing (i.e., a single line at the top of the chart). A better option is to use a bar chart. You will then realize that the shipping time does not significantly vary across the different days of the week.

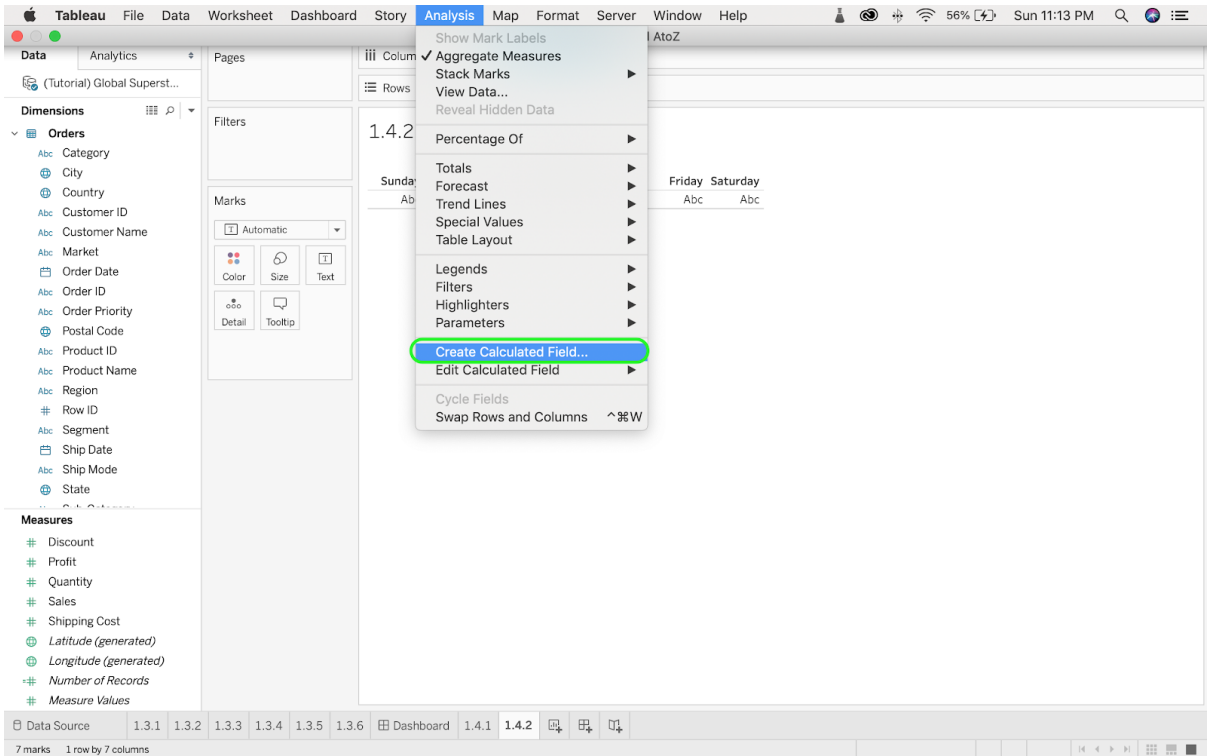
**Note:** As before, the aforementioned solution is just one of the many possible ways to find interesting insights and to answer the above business question.

- Drag the Order Date dimension to the Columns pane and select Weekday.

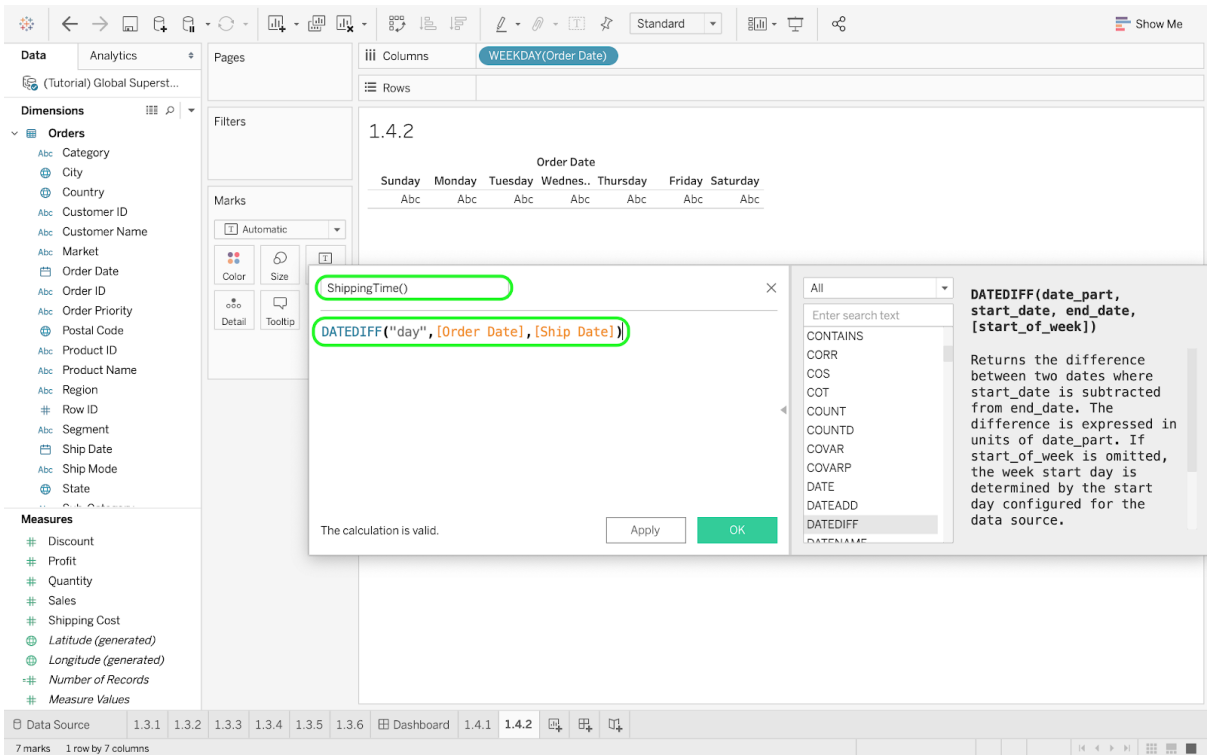
The screenshot shows the Tableau interface with the 'Order Date' dimension dragged to the Columns shelf. A context menu is open over the 'YEAR(Order Date)' field, and the 'More' option is selected, leading to a sub-menu where 'Weekday' is highlighted. A green arrow points from the 'Order Date' field in the Dimensions pane to the context menu. A green box highlights the 'Weekday' option in the sub-menu.

Order Date	Order ID	Ship Date	Shipping Time
2011	Abc	Abc	1.4.2
2012	Abc	Abc	1.4.2

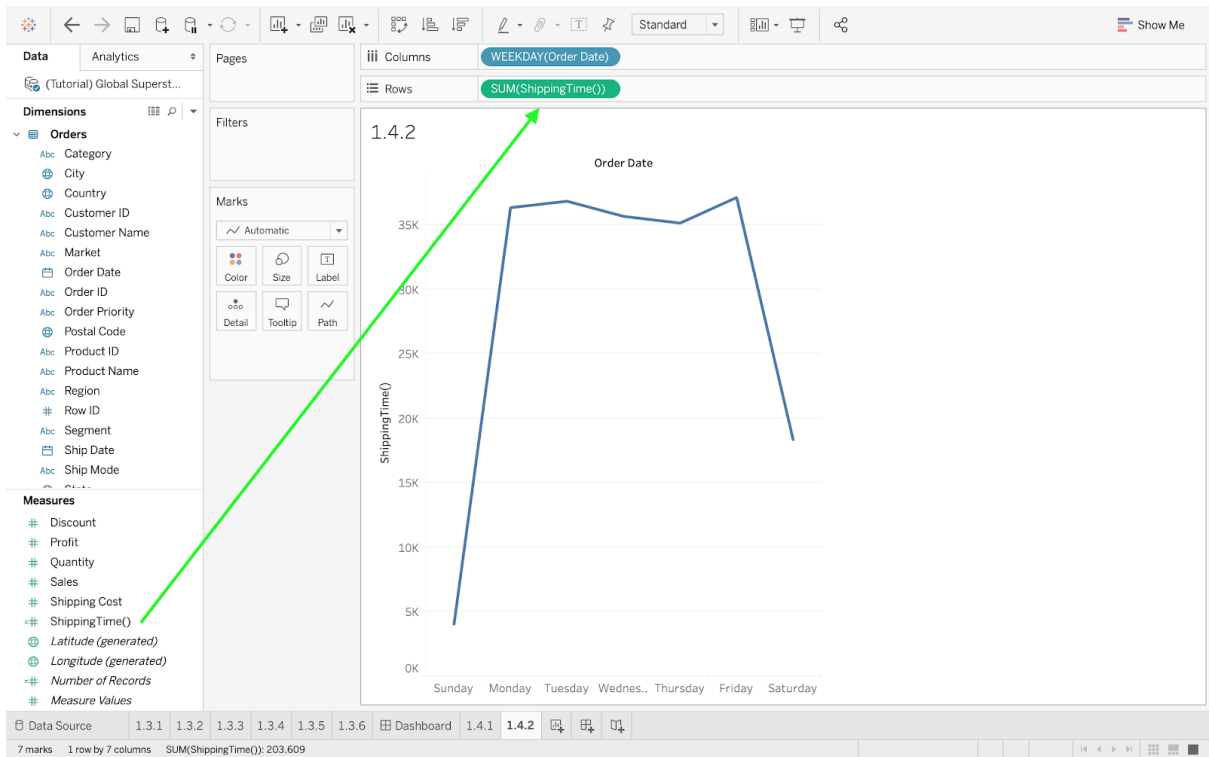
- Create a Calculated Field.



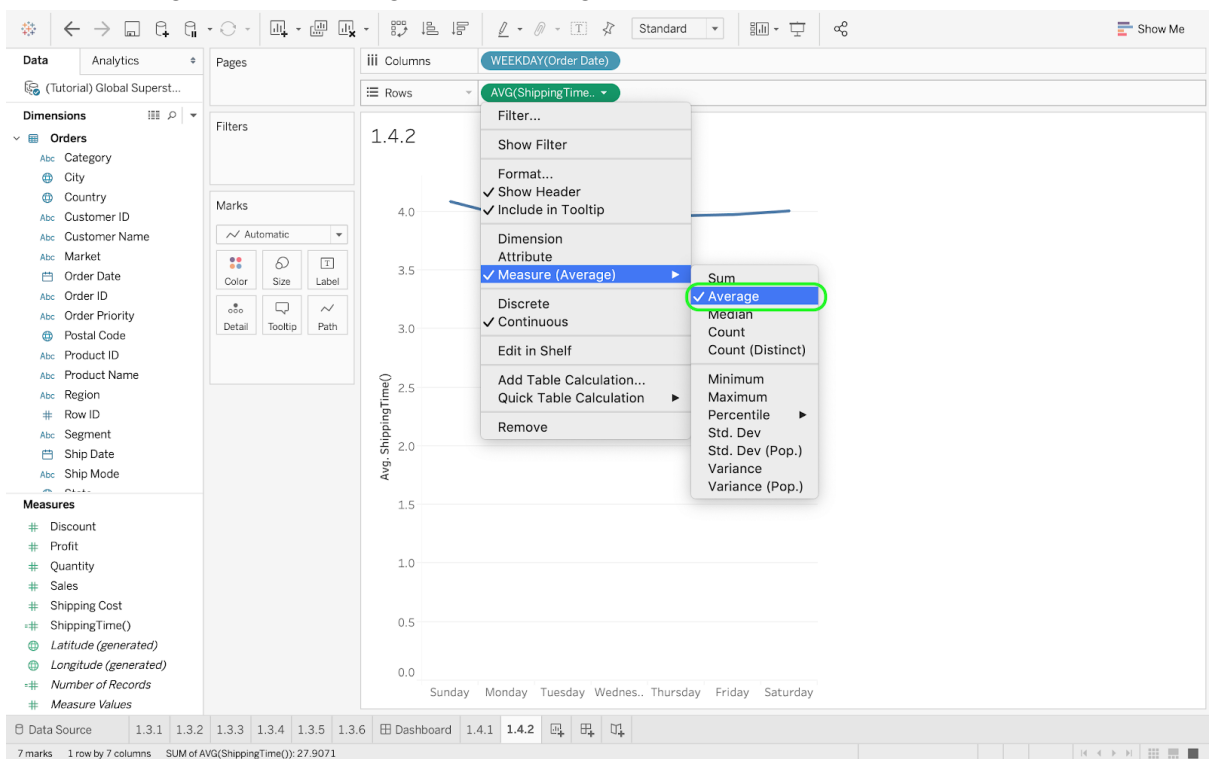
- Compute the Shipping Time with Tableau's DATEDIFF formula.



- Drag your calculated field to the Rows pane.



- Change Sum to Average (for Shipping Time).



- Select the Bar Chart view and investigate.

