Lab 8: Data Analysis: Creating and Using Table Calculations

Overview

In this lab, you will learn about the different types of table calculations in Tableau, their benefits, and how to use them effectively. The goal of this lab is to improve your analytical skills using table calculations by looking at data through different views to understand the underlying patterns. By the end of this lab, you will be well positioned to perform complex analysis on the data in your visualizations using table calculations.

Introduction

In any visualization, a virtual table is created based on the dimensions used in the view. This is added to the `Columns`, `Rows`, and `Marks` shelves.

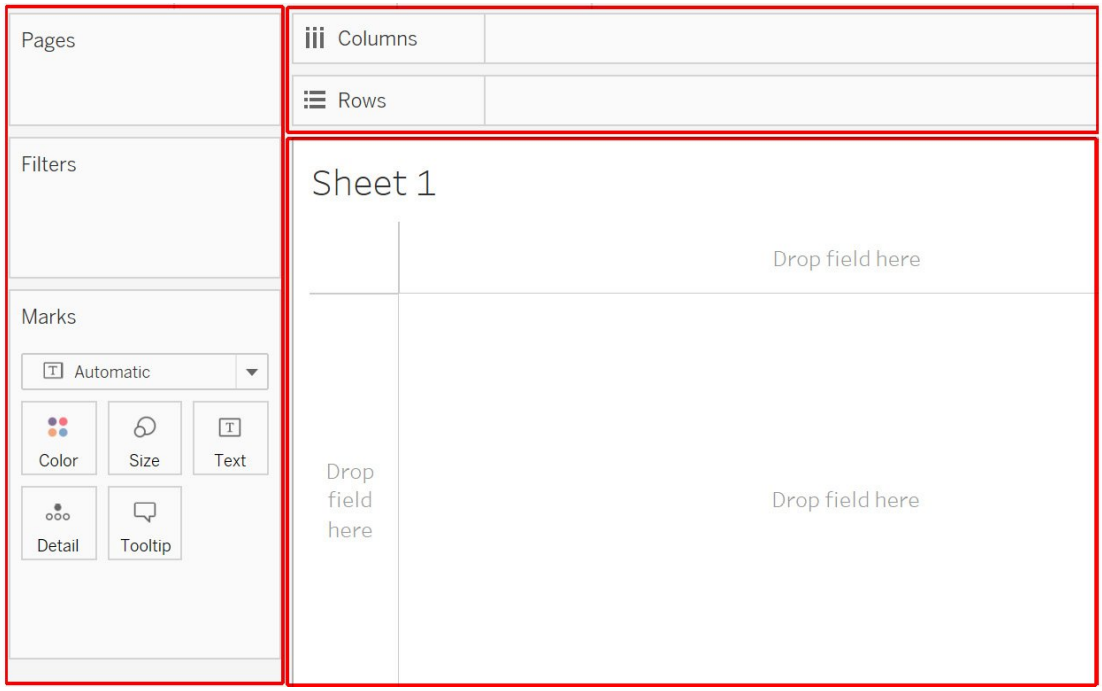


Figure 8.1: Virtual table in the view

The highlighted area in the preceding figure consisting of the `Rows`, `Columns`, and `Marks` shelves will make up your level of detail. The empty canvas outline for dropping fields contains the virtual table that will be affected by table calculations.

A table calculation is simply a calculation that computes results based on the table segment in scope. You will learn about segments and scope in detail in the following sections. For now, assume it is the entire empty canvas area. All table calculations will only be computed within the empty canvas outline or the virtual table.

In previous labs, you learned about visualization methods that present data in a meaningful way. There may be times where you need to analyze a table, such as when you want to find the most profitable sub-category within a category. This is where table calculations come in handy.

In this lab, you will learn about table calculations and their applications through various exercises. You will also learn about the functions that are a part of table calculations, and how to apply them. You will use the `Sample - Superstore` dataset throughout the exercises.

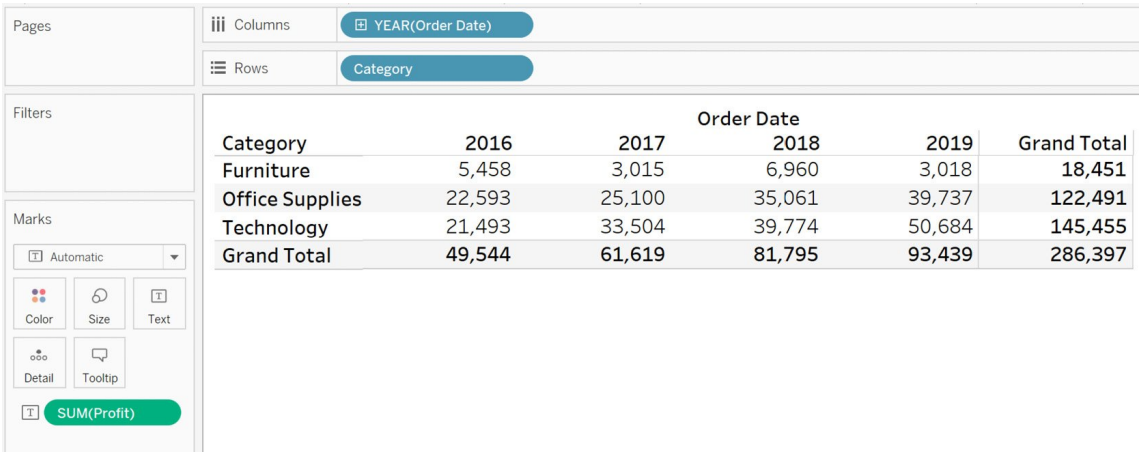
Quick Table Calculations

Quick table calculations, as the name suggests, allow you to quickly apply frequently used table calculations to the view using the most typical settings for that calculation type. They save you the effort of using the column fields from data to create calculations. They have inbuilt logic , so you can use them directly in the view. Some of the most commonly used table calculations are as follows:

- `Running Total`
- `Difference`
- `Percent of Total`
- `Percent Difference`
- `Percentile`
- `Rank`
- `Moving Average`

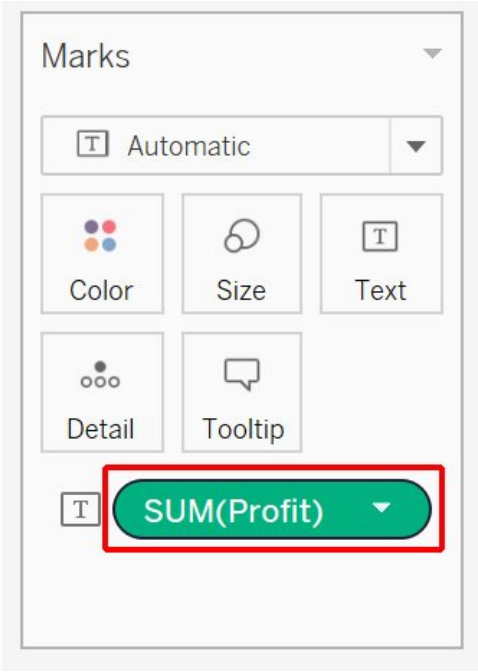
You will start by learning how to apply quick table calculations, using the `Sample - Superstore` dataset. This file can be found by following the `Documents` | `My Tableau Repository` | `Data Sources` system path, and then opening the *Sample - Superstore.xls* file.

To begin, create a view that shows `Category` against `YEAR(Order Date)` and `SUM(Profit)`, as follows:

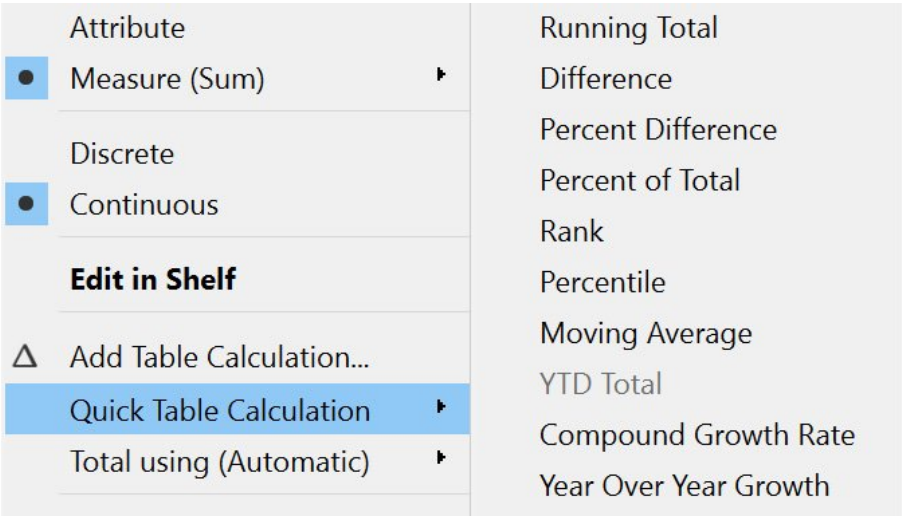


	Order Date				
Category	2016	2017	2018	2019	Grand Total
Furniture	5,458	3,015	6,960	3,018	18,451
Office Supplies	22,593	25,100	35,061	39,737	122,491
Technology	21,493	33,504	39,774	50,684	145,455
Grand Total	49,544	61,619	81,795	93,439	286,397

Table calculations only work with measures, so you need a measure to add a calculation. To add a quick table calculation, first click on the measure dropdown, which is `SUM(Profit)` in this case.



Navigate to the `Quick Table Calculation` menu.



You can see that there are numerous quick calculations available, such as `Running Total`, `Percentile`, and `Rank`. You will now go through each of these in detail.

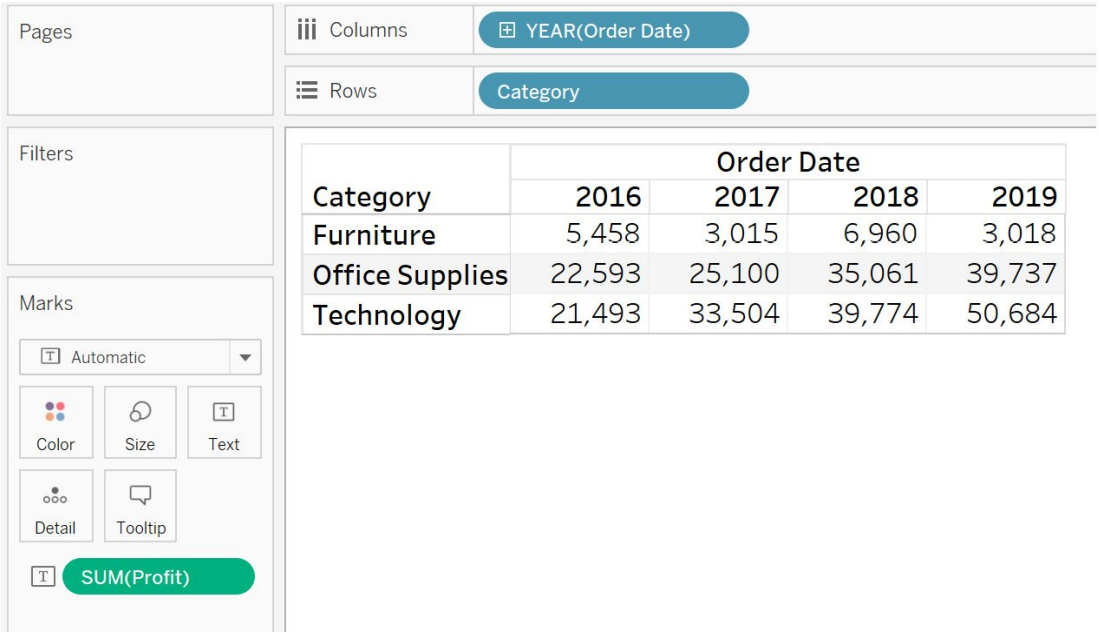
Running Total

`Running Total`, as the name suggests, is used to calculate the cumulative total of a measure across a specific dimension or table structure. It adds up the previous value with the current value to display that result in the current value's place in the running total. For example, consider that you are working on a project related to a car manufacturer. A common use case for this calculation, would be to calculate the month-by-month cumulative car sales for a year, to find out the total sales for that year. You can also further calculate it on a year-by-year basis to find out the overall car sales to date. The next exercise looks at this in detail.

Exercise 8.01: Creating a Running Total Calculation

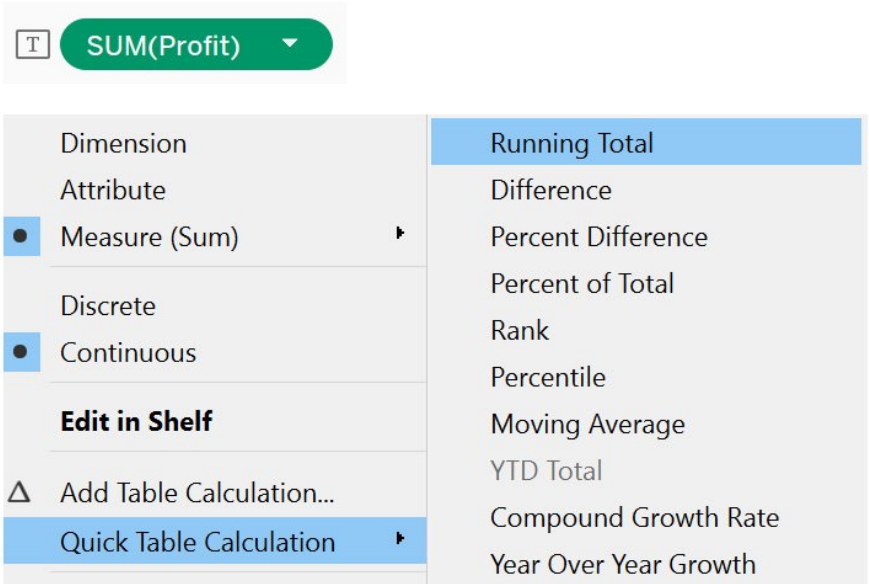
In this exercise, you will calculate the cumulative profit earned across different years for a particular category using the `Running Total` calculation. This allows you to view all years together for the profits earned, rather than individual years. The following steps will help you complete this exercise:

1. Load the `Sample - Superstore` dataset in your Tableau instance. In the `Connect` pane, click on `Microsoft Excel` and navigate to `Documents` | `My Tableau Repository` | `Data Sources`, and then open the `Sample - Superstore.xls` file.
2. Create a view that shows `Category` against `YEAR(Order Date)` and `SUM(Profit)`, as follows:

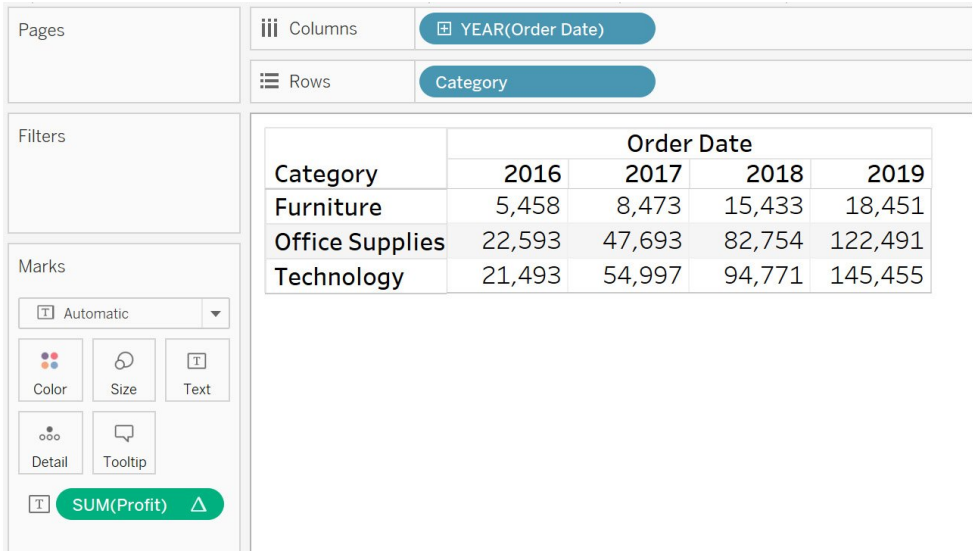


	Order Date			
Category	2016	2017	2018	2019
Furniture	5,458	3,015	6,960	3,018
Office Supplies	22,593	25,100	35,061	39,737
Technology	21,493	33,504	39,774	50,684

1. Add a `Running Total` quick calculation to the view by selecting the following highlighted options:

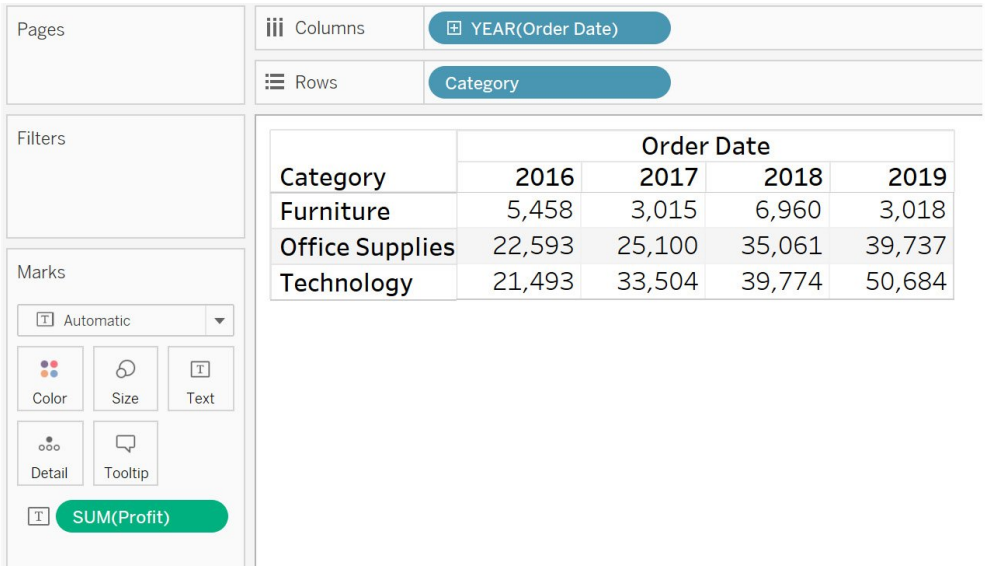


1. The following view shows the final output:



Category	Order Date			
	2016	2017	2018	2019
Furniture	5,458	8,473	15,433	18,451
Office Supplies	22,593	47,693	82,754	122,491
Technology	21,493	54,997	94,771	145,455

As you can see, by comparing the previous figure (final view) with the next one (initial view), the profit has been summed cumulatively by taking the previous year's profit, as well as the current year's profit. With `Furniture`, for example, the second value under the running total is computed using the previous value and the current value, that is, 5,458 + 3,015 = 8,473, and this is done similarly for other values.



Category	Order Date			
	2016	2017	2018	2019
Furniture	5,458	3,015	6,960	3,018
Office Supplies	22,593	25,100	35,061	39,737
Technology	21,493	33,504	39,774	50,684

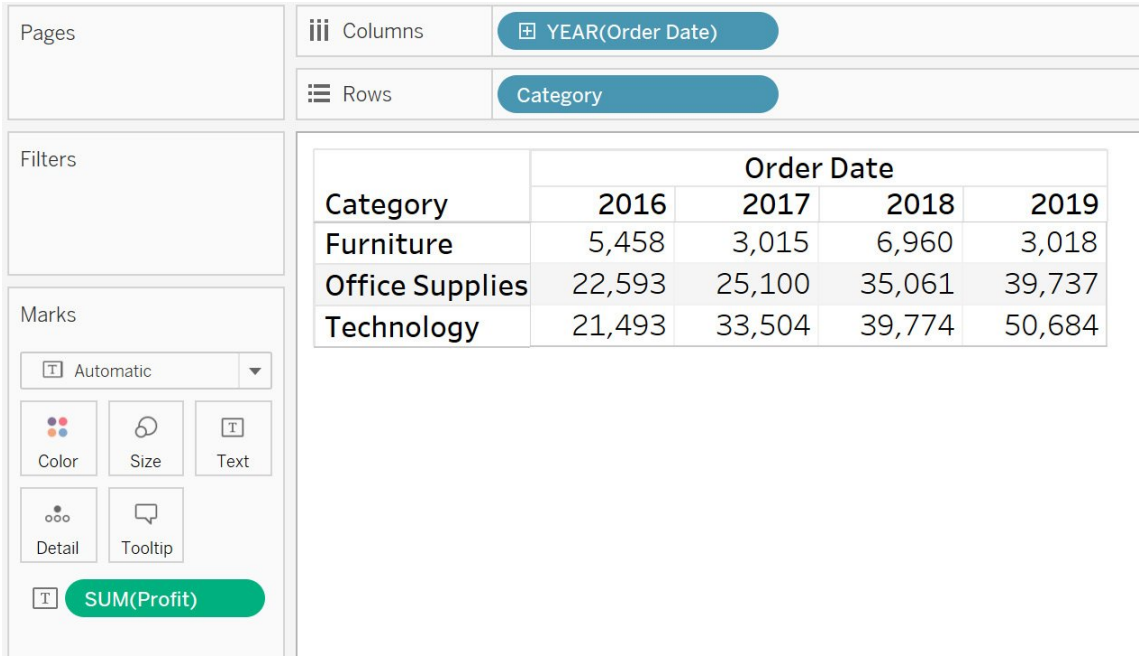
This view is helpful for calculating the cumulative profit earned, year after year, for the different categories, as well as for identifying which category has been performing well and which hasn't. These insights can help you make important business decisions to understand which products can be used to generate higher profits.

Next, you will learn about the `Difference` table calculation.

Exercise 8.02: Creating a Difference Calculation

In this exercise, you will calculate the profit difference across years for a category. This will help you analyze whether that category is profitable or not:

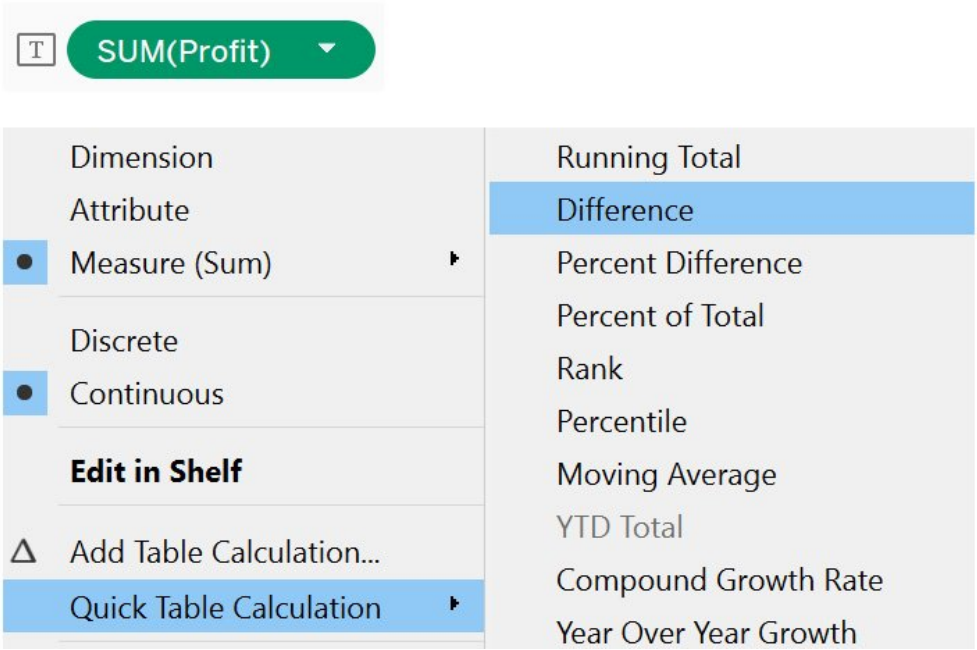
1. Load the `Sample - Superstore` dataset in your Tableau instance.
2. Create a view that shows `Category` against `YEAR(Order Date)` and `SUM(Profit)`, as follows:



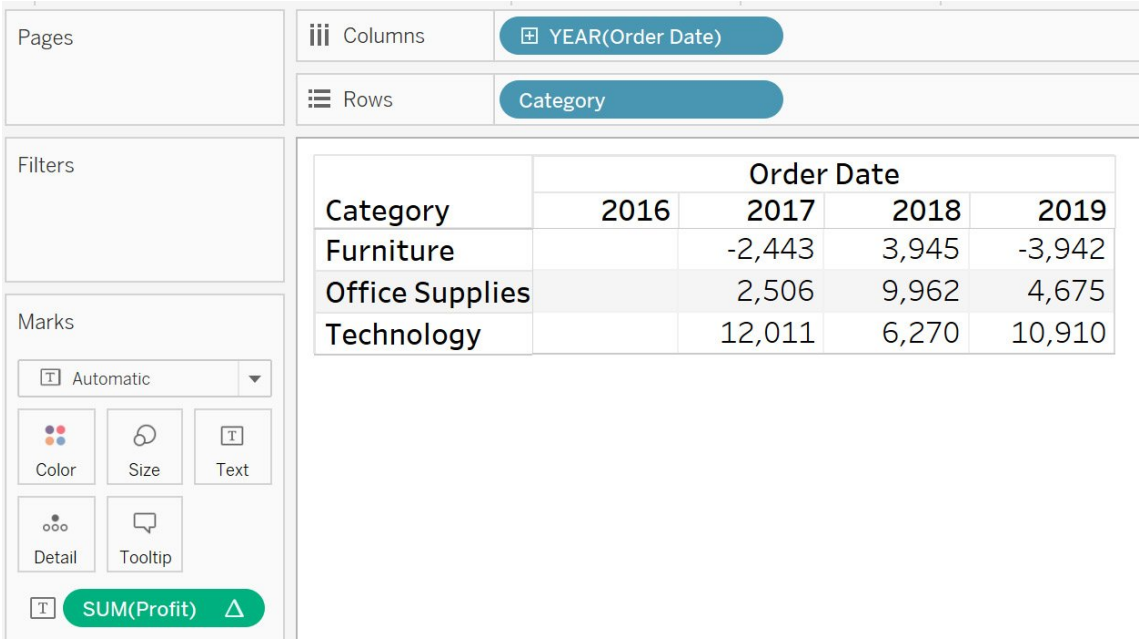
	Order Date			
Category	2016	2017	2018	2019
Furniture	5,458	3,015	6,960	3,018
Office Supplies	22,593	25,100	35,061	39,737
Technology	21,493	33,504	39,774	50,684

Figure 8.9: Initial view

1. Add the `Difference` quick calculation to the view, as shown in the following figure:



The final view will be as follows:



As you can see, the result is the difference between the current year's profit and the previous year's profit; for example, for `Furniture`, the second value under `Difference` is computed using the previous value and the current value, that is, 3,015 -- 5,458 = -2443. This is done similarly for the other categories. One thing to note here is the first year's value will always be blank, as there is nothing to compute the difference from.

In the next section, you will learn about the `Percent of Total` table calculation.

Percent of Total

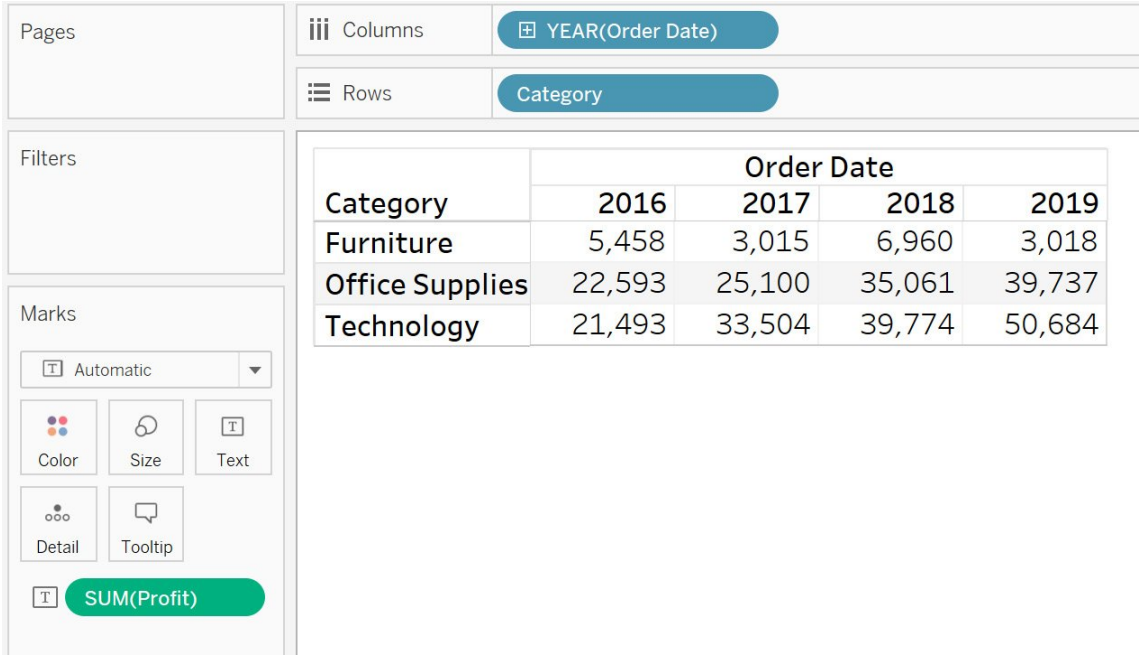
A `Percent of Total` calculation is used to calculate the percent distribution of a measure across a specific dimension or table structure. For example, if you are analyzing a project that operates in multiple countries, you can calculate what percentage of the total revenue each country generates. This in turn can highlight underperforming countries, as well as the better-performing ones.

You will use this calculation in the next exercise.

Exercise 8.03: Creating a Percent of Total Calculation

In this exercise, you will calculate the `Percent of Total` profits earned in different years for a category. By doing so, you can understand how each category has contributed to yearly profits. Perform the following steps to complete this exercise:

1. Load the `Sample - Superstore` dataset in your Tableau instance.
2. Create a view that shows `Category` against `YEAR(Order Date)` and `SUM(Profit)`, as follows:



Category	Order Date			
	2016	2017	2018	2019
Furniture	5,458	3,015	6,960	3,018
Office Supplies	22,593	25,100	35,061	39,737
Technology	21,493	33,504	39,774	50,684

Figure 8.12: Initial view

1. Add the `Percent of Total` quick calculation to the view

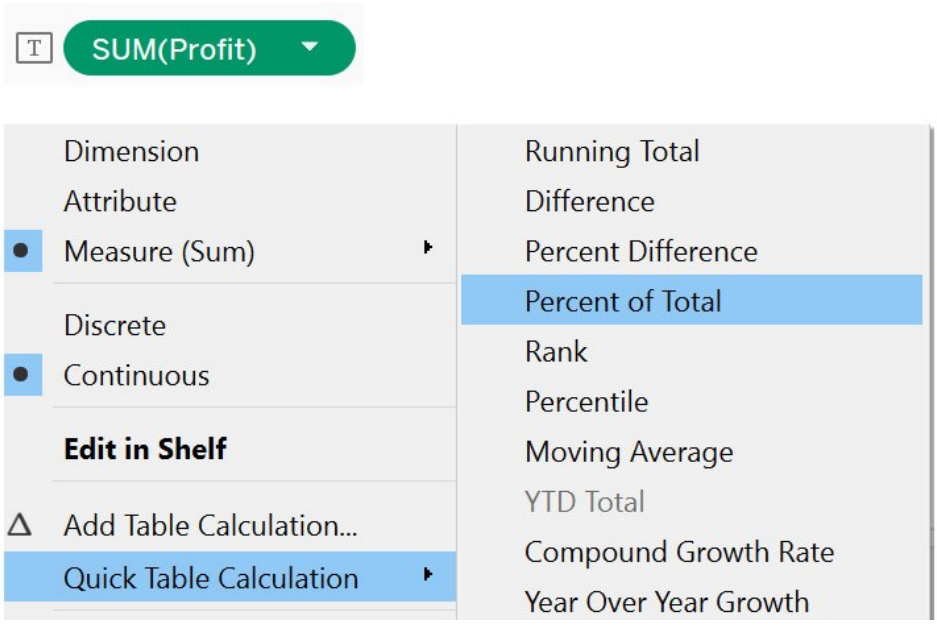


Figure 8.13: Accessing quick table calculation | percent of total

The following view is the final output:

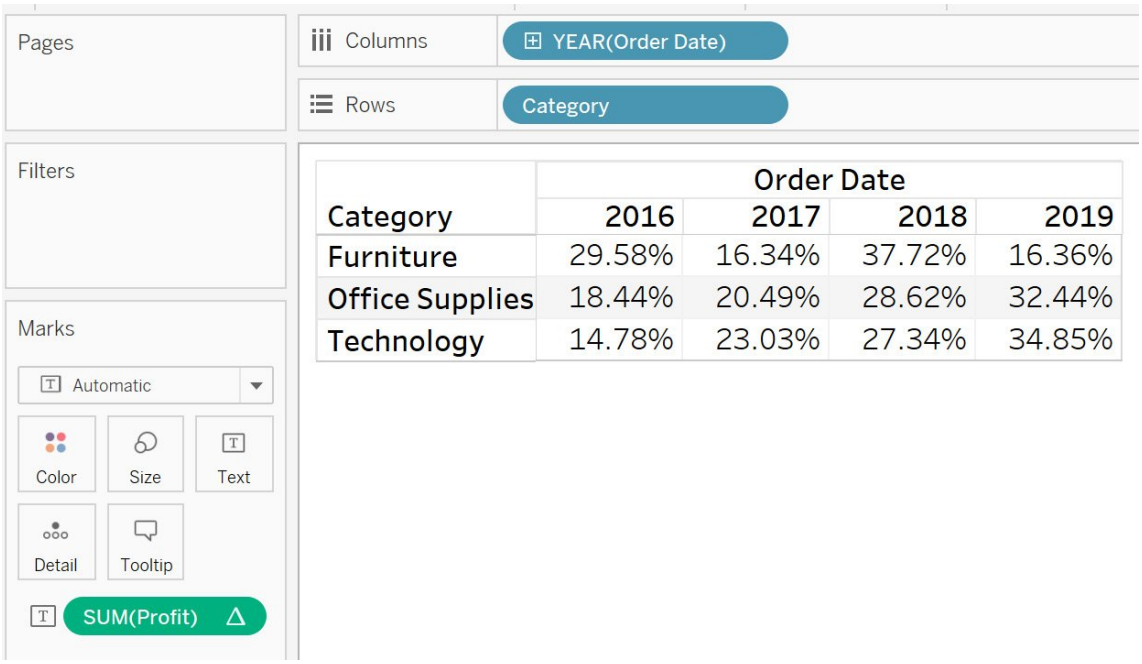


Figure 8.14: Final output

You can see that the profit has been converted to a percentage of the total, from all the years' profits. For example, for `Furniture`, you can first compute the sum of all the years' profits, which comes to 18,451. Then, divide each year's profits with this number. So, for 2016, you can compute it as 5,458 / 18,451, which is 29.58%.

This view helps find out which year has been better for generating profits for each category. The next step is to identify patterns indicative of higher profits in those years, and to try to replicate the patterns for the current year to generate similar or higher profits.

The next section looks at the `Percent Difference` table calculation.

Exercise 8.04: Creating a Percent Difference Calculation

In this exercise, you will be calculating `Percent Difference` across the different years for a particular category. This will help you analyze, in terms of percentage, the profit difference for the various categories:

1. Load the `Sample - Superstore` dataset in your Tableau instance.
2. Create a view that shows `Category` against `YEAR(Order Date)` and `SUM(Profit)`, as follows:

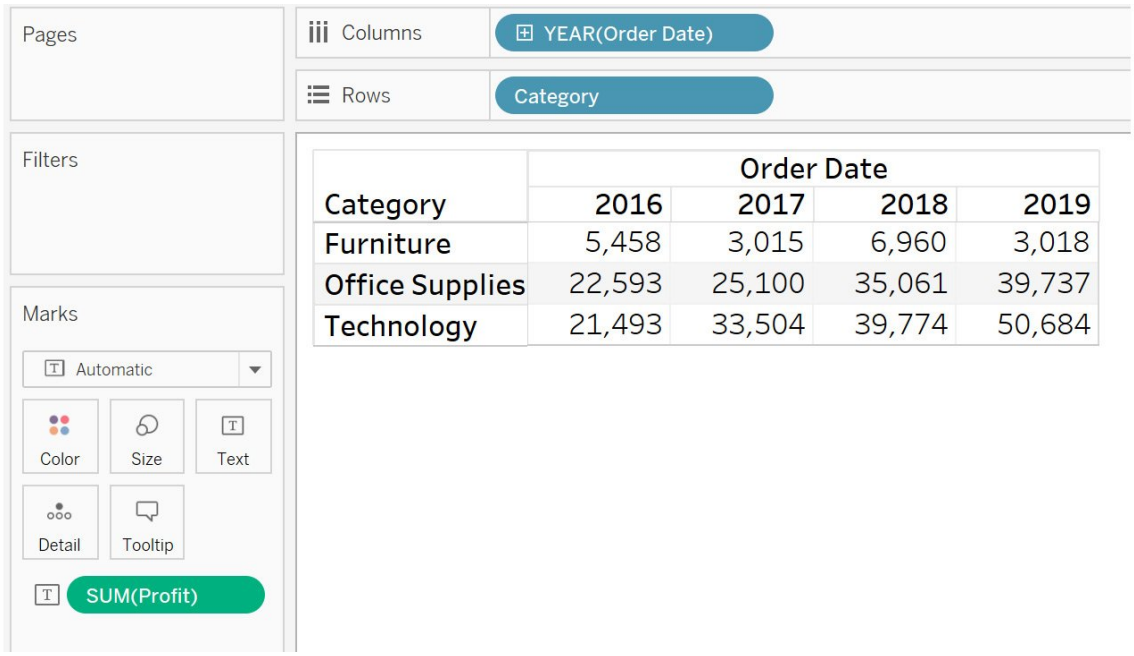


Figure 8.15: Initial view

1. Add the `Percent Difference` quick calculation to the view:

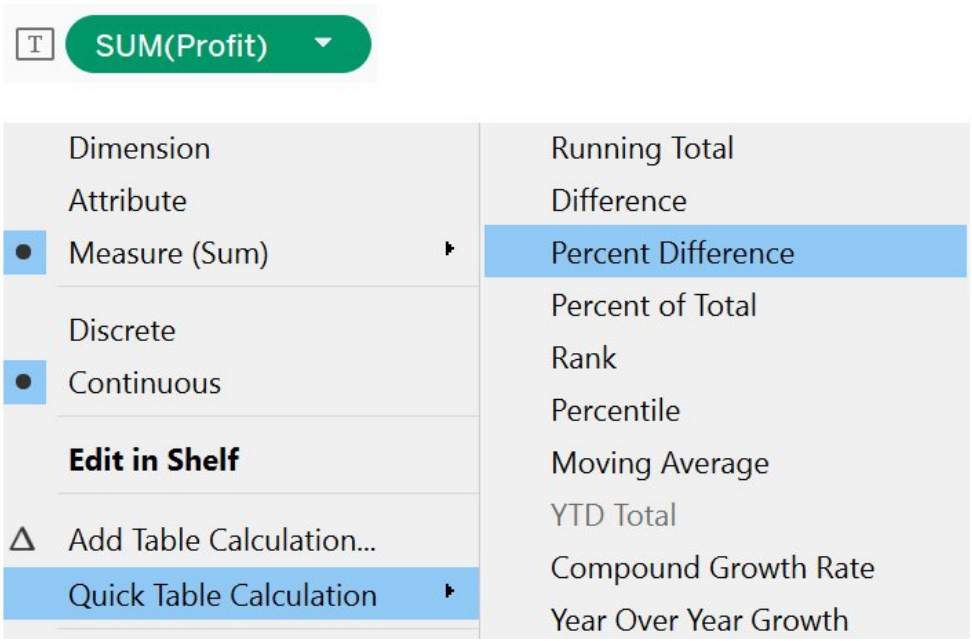


Figure 8.16: Accessing quick table calculation | percent difference

The following figure shows the final output:

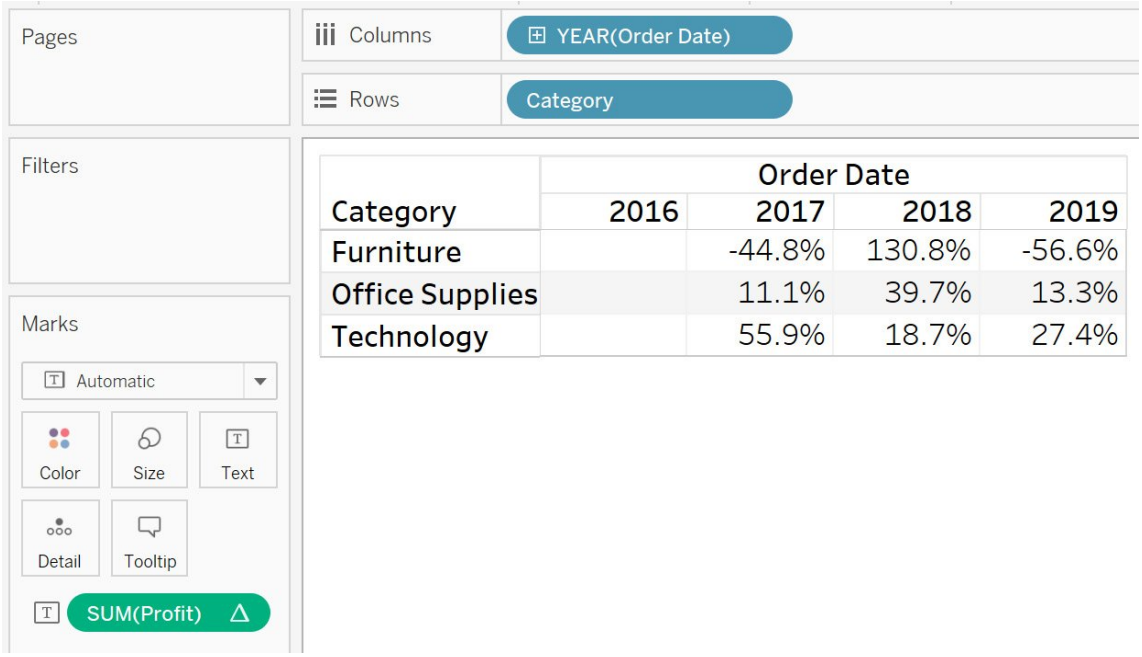


Figure 8.17: Final output

As you can see, the output shows the difference between the current value and previous values, divided by the previous value; for `Furniture`, the percent difference for 2016 is computed as 3,015 -- 5,458 / 5,458, which comes to `-44.8%`.

This view helps to compare the individual category profits in terms of percent, and identifies how each category has performed compared to the previous year. This can help you understand whether the category did better (or not), compared to the previous year.You can further investigate the reason for performance differences, and act on the analysis accordingly.

Next, you will learn about the `Rank` and `Percentile` table calculations.

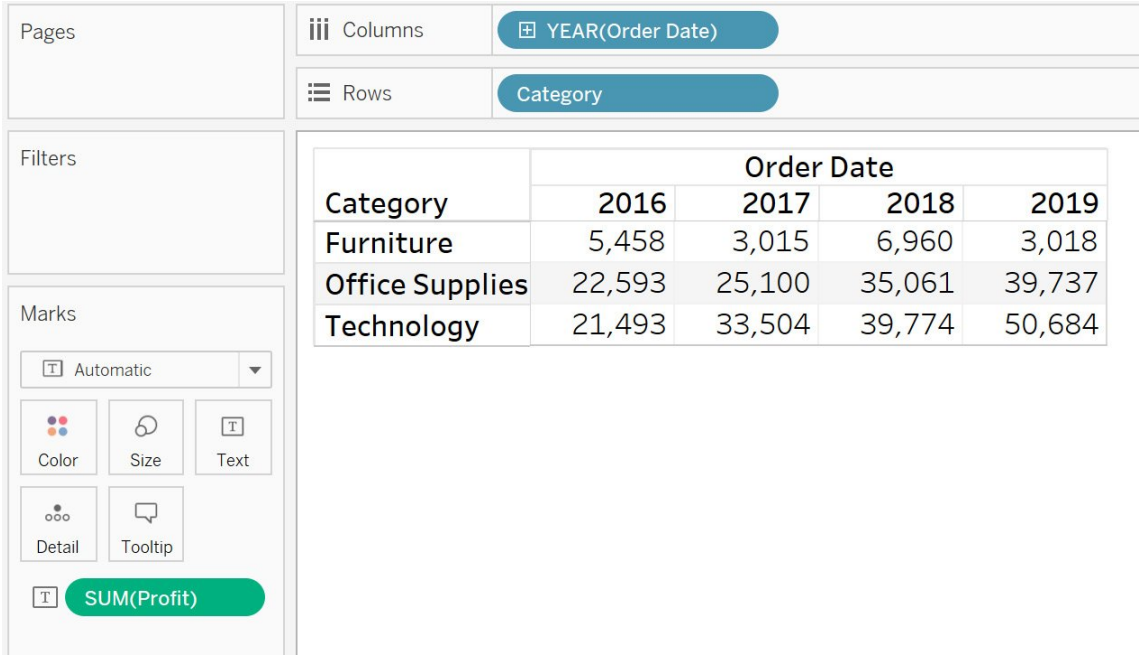
Percentile and Rank

`Percentile`, as you may have guessed, is used to calculate the percentile of a measure across a specific dimension or table structure. Similarly, `Rank` will rank the measure across a specific dimension or table structure. You will learn about these in detail in the next exercise.

Exercise 8.05: Creating Percentile and Rank Calculations

In this exercise, you will calculate `Percentile` and `Rank` across different years for a particular category. This will help you understand how much profit various categories have generated in different years. Follow these steps to complete this exercise:

1. Load the `Sample - Superstore` dataset in your Tableau instance.
2. Create a view that shows `Category` against `YEAR(Order Date)` and `SUM(Profit)`.



Category	Order Date			
	2016	2017	2018	2019
Furniture	5,458	3,015	6,960	3,018
Office Supplies	22,593	25,100	35,061	39,737
Technology	21,493	33,504	39,774	50,684

Figure 8.18: Initial view

1. Add the `Rank` quick calculation to the view, as shown in the following figure:

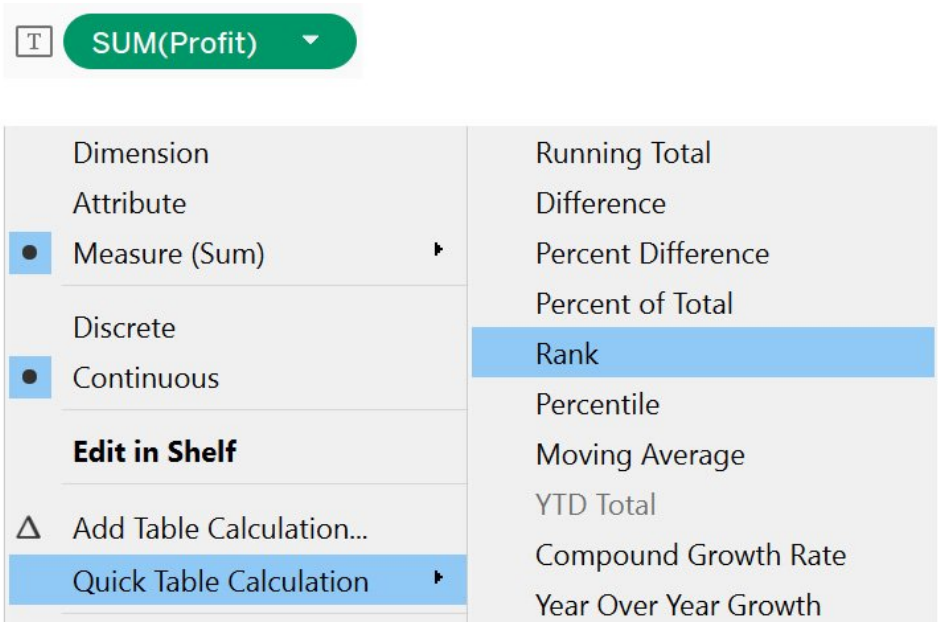
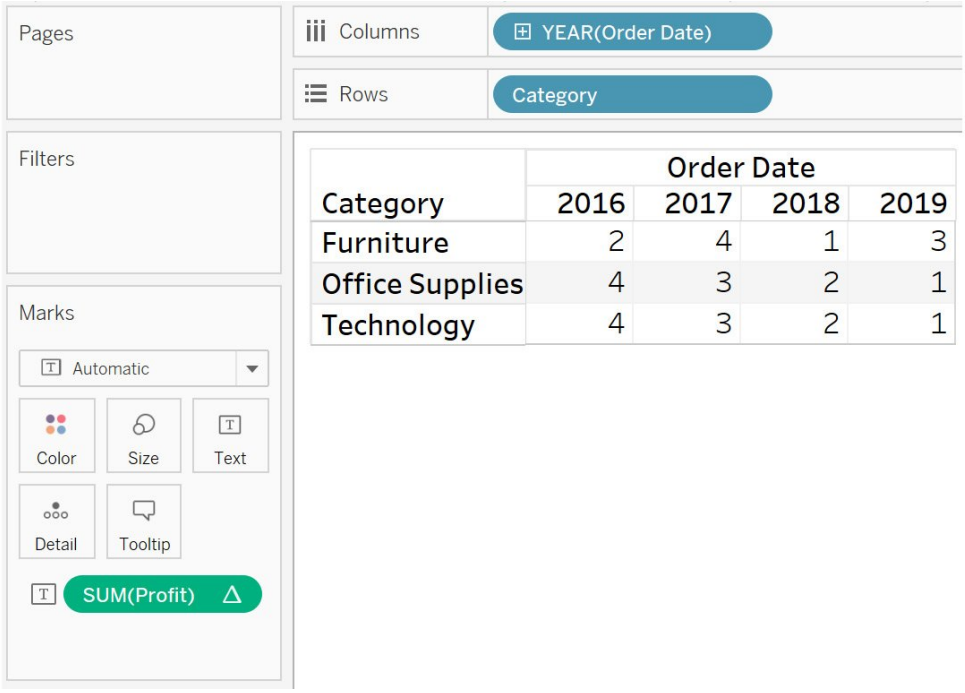


Figure 8.19: Accessing quick table calculation | rank

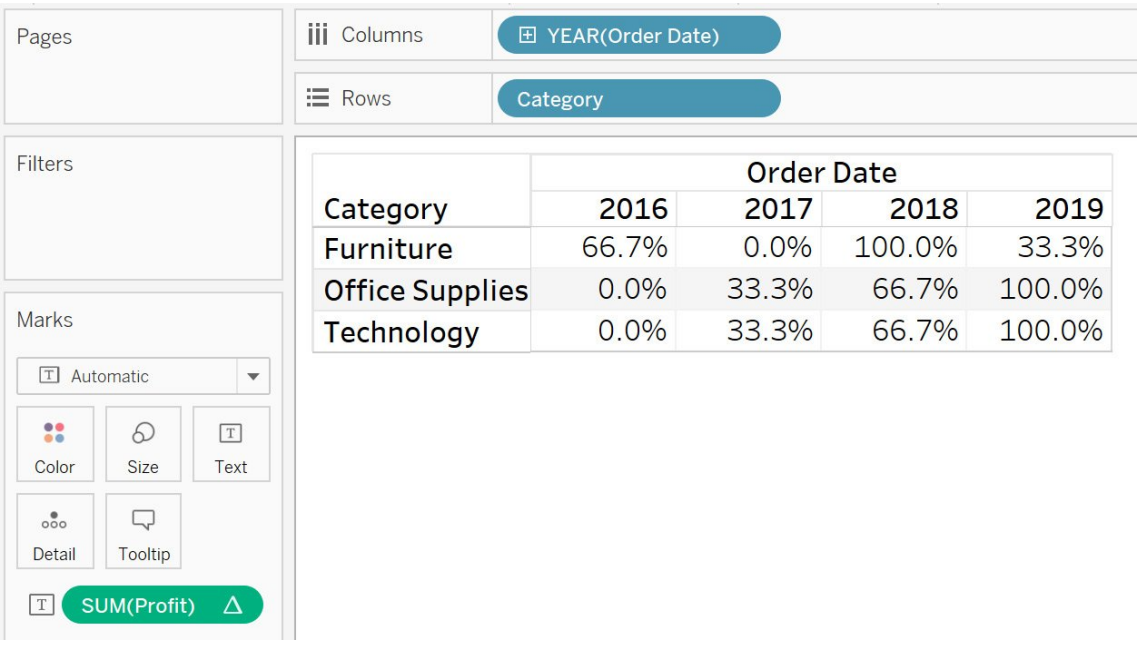
The following view will be the final output for `Rank`. The output is ranked based on the descending values of `SUM(Profit)`:



Category	Order Date			
	2016	2017	2018	2019
Furniture	2	4	1	3
Office Supplies	4	3	2	1
Technology	4	3	2	1

Figure 8.20: Rank output on selecting the Rank quick table calculation

1. Similarly, add the `Percentile` quick calculation to the view by selecting the `Percentile` quick table calculation. The following figure shows the final output for this:



Category	Order Date			
	2016	2017	2018	2019
Furniture	66.7%	0.0%	100.0%	33.3%
Office Supplies	0.0%	33.3%	66.7%	100.0%
Technology	0.0%	33.3%	66.7%	100.0%

Figure 8.21: Percentile output on selecting the Percentile quick table calculation

With the `Rank` calculation, you ranked each year in a particular category based on the sum of the profits. The preceding figure shows the `Percentile` operation. For `Furniture`, the profit for 2016 is at the 0th percentile, which means that 0% of data is under $3,015. Similarly, for 2017, the profit is $6,960 at the 100th percentile, meaning

that the profit for all other years is below this value. This view can help you do a year-by-year comparison for individual category profits in terms of percentile and rank, to identify how each category has performed compared to the previous year.

Next, you will learn about the `Moving Average` quick table calculation.

Moving Average

`Moving Average` is used to calculate the average of a measure across a specific dimension or table structure in a dynamic range, rather than being static. The advantage of using a moving average is that more importance is given to the values of recent history, rather than using all historic data. Moving averages are commonly used for identifying trends of share prices, where you can analyze a 20-day moving average (last 20 days of share price), or a 50-day moving average (last 50 days of share price), to understand how the share price is moving. The next exercise looks at this in detail.

Exercise 8.06: Creating a Moving Average Calculation

In this exercise, you will calculate the moving average of profit earned across different years for a particular category. This will help you understand whether the average value is higher or lower than the previous year's profits:

1. Load the `Sample - Superstore` dataset in your Tableau instance.
2. Create a view that shows `Category` against `YEAR(Order Date)` and `SUM(Profit)`.

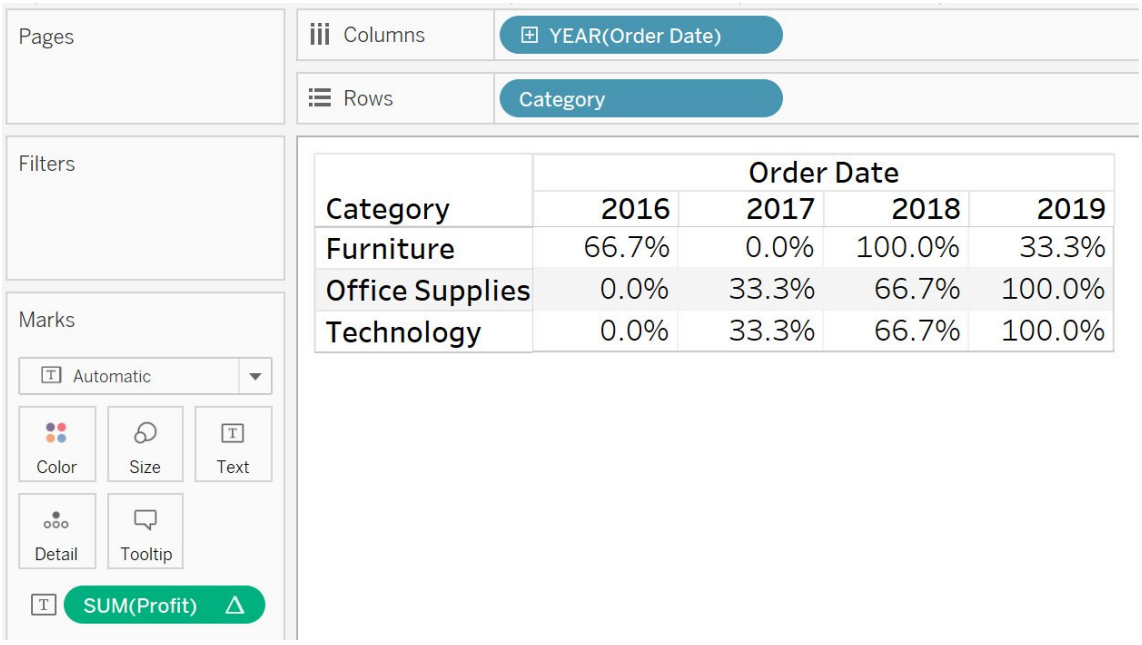


Figure 8.22: Initial view

1. Add the `Moving Average` quick calculation, as shown in the following figure:

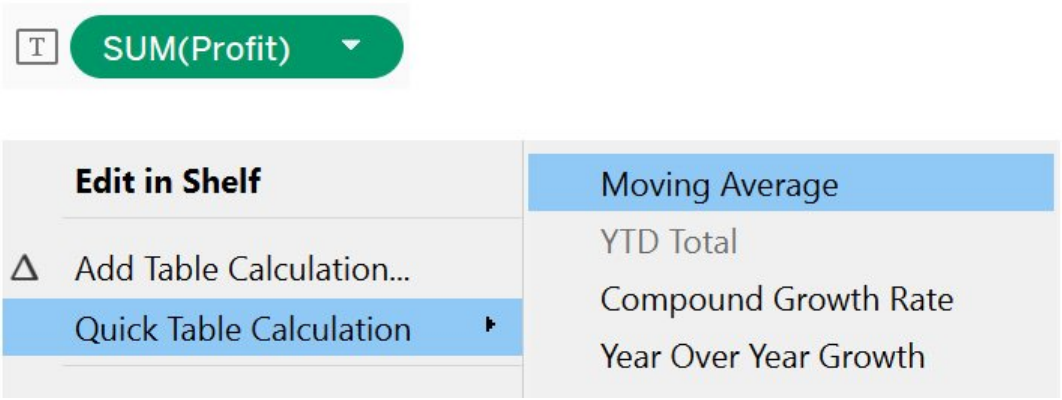
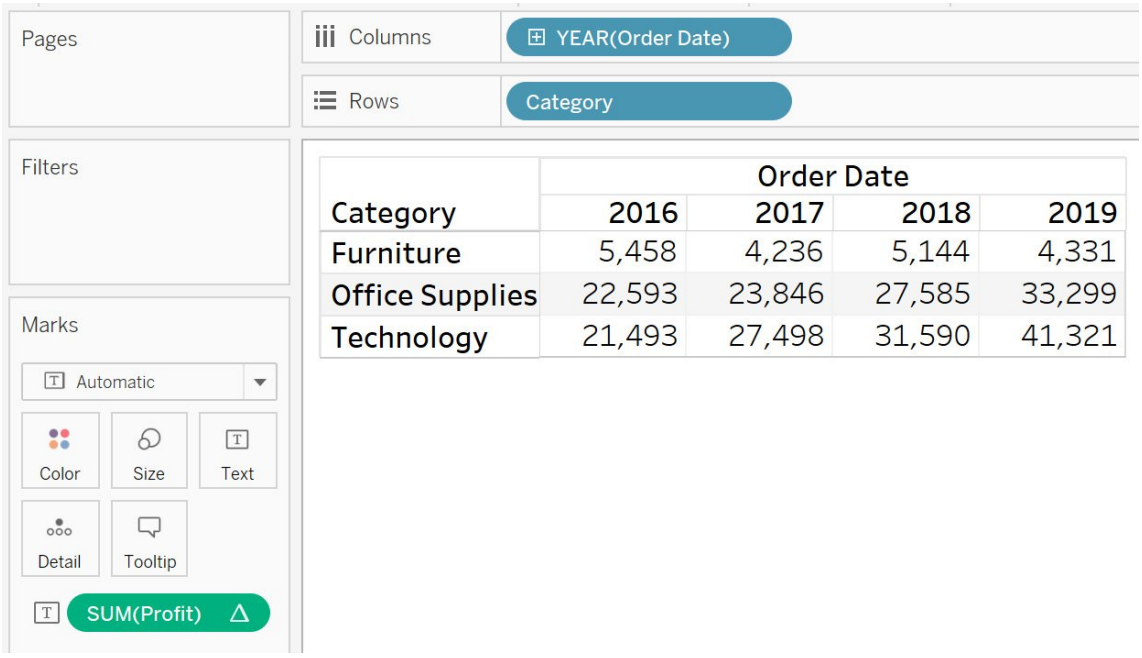


Figure 8.23: Accessing quick table calculation | moving average

This view will be the final output:



	Order Date			
Category	2016	2017	2018	2019
Furniture	5,458	4,236	5,144	4,331
Office Supplies	22,593	23,846	27,585	33,299
Technology	21,493	27,498	31,590	41,321

Figure 8.24: Final output

As you see, the profit has been averaged across the total from all the years' profits. First, the sum of all the years' profits is computed, and then, this number is divided by the number of years. For example, for 2017, the moving average comes to 8,473 / 2 = 4,236.

Table Calculation Application: Addressing and Partitioning

In the previous section, you learned about quick table calculations. But did you notice that all these calculations were working at the row level? What if you need to apply calculations at the column level? This is where the concept of addressing and partitioning comes into play.

Addressing means defining the direction of the calculation. A calculation can compute horizontally or vertically, depending on the option selected. Partitioning can be defined as the scope of the calculation; for example, you can partition a view into various years for different categories, or various categories for the same year.

In this section, you will learn about the following methods to address and partition data:

- `Table(across)`
- `Table(down)`
- `Table(across then down)`
- `Table(down then across)`
- `Pane(down)`
- `Pane(across then down)`
- `Pane(down then across)`
- `Cell`
- `Specific Dimensions`

You will continue working with the same example that you have been using in the previous exercises. First, you will explore the various ways of addressing data.

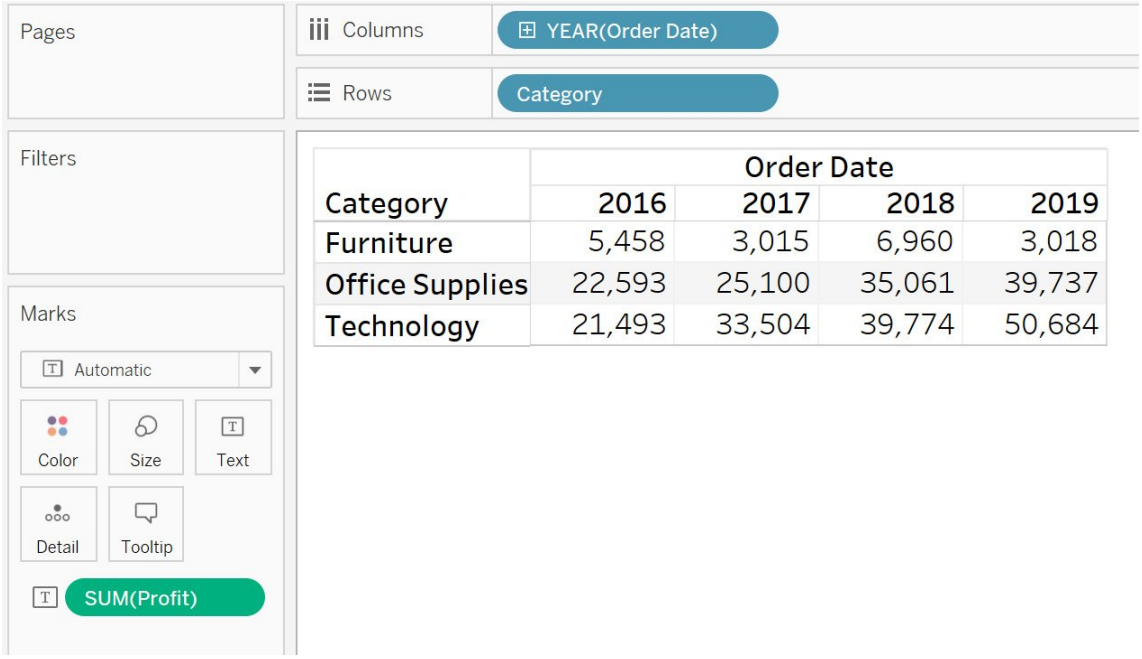
Table (across)

`Table(across)` performs a calculation horizontally across a table, and restarts after each row. For example, consider you have years on the `Columns` shelf for various product names on the rows, along with their sales. Here, `Table(across)` would perform the calculation for all the years' sales for an individual product, and then restart for the next product. The next exercise looks at this in detail.

Exercise 8.07: Creating a Table (across) Calculation

Considering the example of car manufacturer sales, suppose you want to compare the sales for the various years. In this exercise, you will use a `Table(across)` calculation to find this. The following steps will help you complete this exercise:

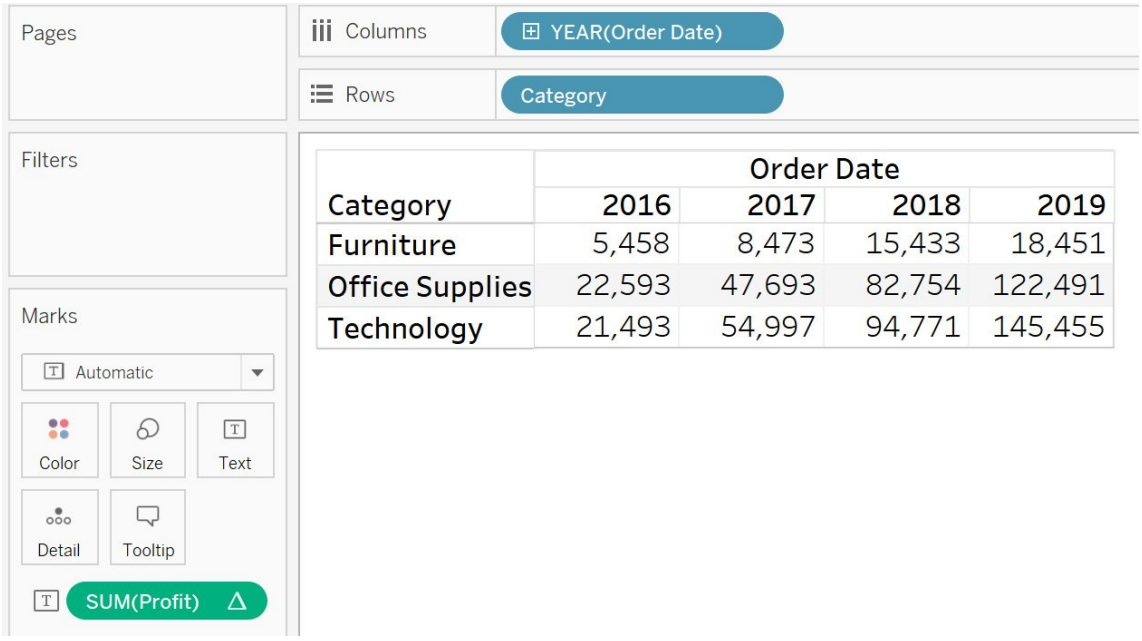
1. Load the `Sample - Superstore` dataset in your Tableau instance.
2. Create a view that shows `Category` against `YEAR(Order Date)` and `SUM(Profit)`.



Category	Order Date			
	2016	2017	2018	2019
Furniture	5,458	3,015	6,960	3,018
Office Supplies	22,593	25,100	35,061	39,737
Technology	21,493	33,504	39,774	50,684

Figure 8.25: Initial view

1. Add the `Running Total` quick calculation to get the following view:



Category	Order Date			
	2016	2017	2018	2019
Furniture	5,458	8,473	15,433	18,451
Office Supplies	22,593	47,693	82,754	122,491
Technology	21,493	54,997	94,771	145,455

Figure 8.26: Running total for SUM(Profit)

1. Now, select `Compute Using` and then `Table(across)`, as shown in the following figure

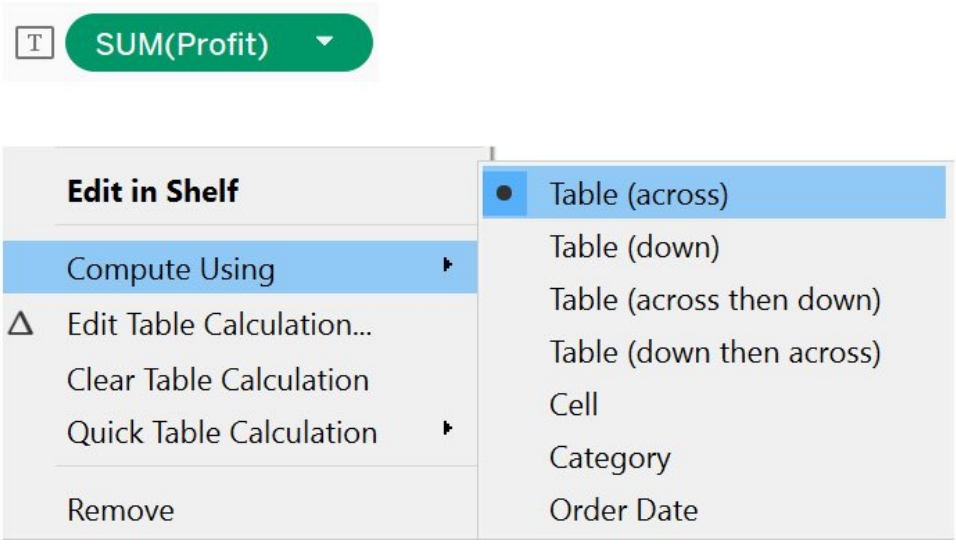


Figure 8.27: Selecting table (across)

The next figure shows the final view. You can see that the `Profit` table calculation is done for every `Category` (partitioning) across the different `Order Date` years (addressing):

		Order Date			
Category		2016	2017	2018	2019
Furniture	Table (Across)	5,458	8,473	15,433	18,451
	Profit	5,458	3,015	6,960	3,018
Office Supplies	Table (Across)	22,593	47,693	82,754	122,491
	Profit	22,593	25,100	35,061	39,737
Technology	Table (Across)	21,493	54,997	94,771	145,455
	Profit	21,493	33,504	39,774	50,684

Figure 8.28: Final output

This view helps find the cumulative profit for the various categories over the years. This can help youunderstand how each category has been performing compared with other categories, over the years.

Next, you will learn about the `Table(down)` calculation.

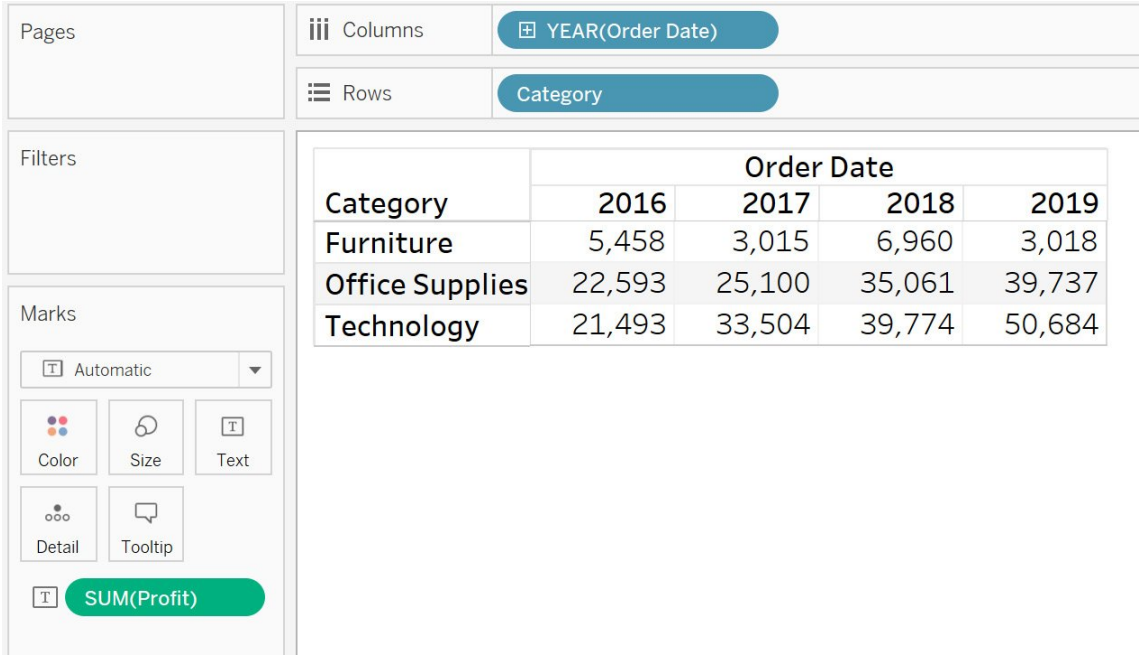
Table (down)

`Table(down)` computes the calculation vertically down the table, and restarts after each column. For example, consider that you have the various years on the `Columns` shelf for the product names (and their sales) on the rows. `Table(down)` would compute the calculation for all of a product's sales for an individual year, and then restart at the next product.

Exercise 8.08: Creating a Table (down) Calculation

For this exercise, you will compare the sales for various years, using the `Table(down)` calculation along years. This will help you compare the profits for the years, and help you understand whether the sales are improving or declining:

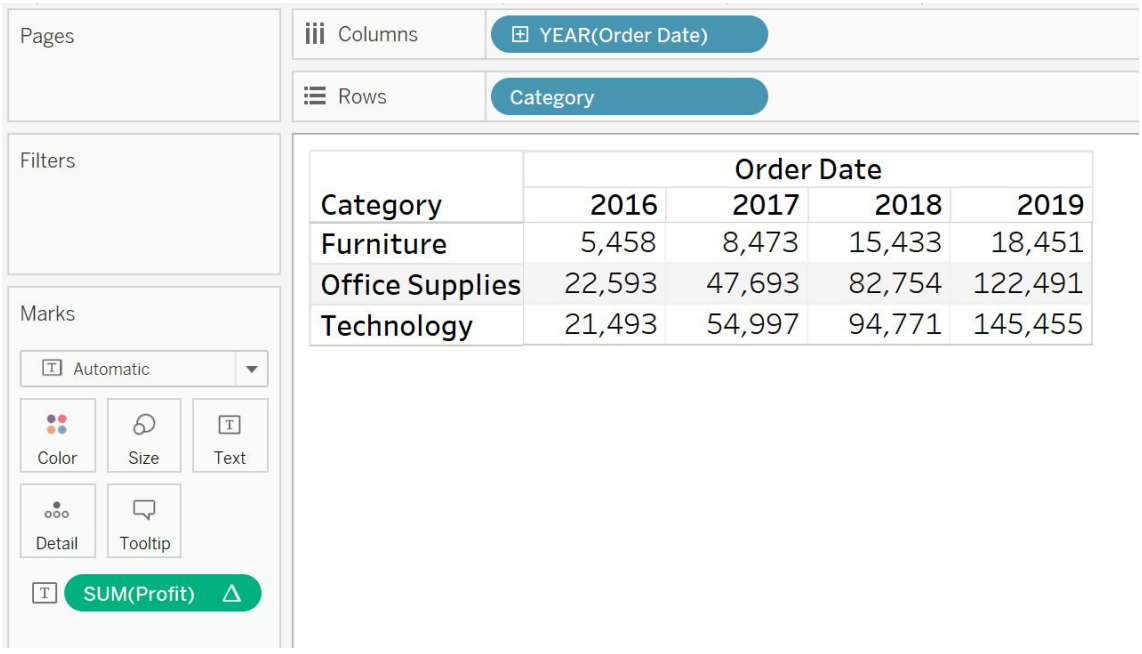
1. Load the `Sample - Superstore` dataset in your Tableau instance.
2. Create a view that shows `Category` against `YEAR(Order Date)` and `SUM(Profit)`.



	Order Date			
Category	2016	2017	2018	2019
Furniture	5,458	3,015	6,960	3,018
Office Supplies	22,593	25,100	35,061	39,737
Technology	21,493	33,504	39,774	50,684

Figure 8.29: Initial view

1. Add the `Running Total` quick calculation to get the following view. This is the default, which is the across or horizontal direction:



	Order Date			
Category	2016	2017	2018	2019
Furniture	5,458	8,473	15,433	18,451
Office Supplies	22,593	47,693	82,754	122,491
Technology	21,493	54,997	94,771	145,455

Figure 8.30: Running total for SUM(Profit)

1. Select `Compute Using` and then `Table(down)`, as follows:

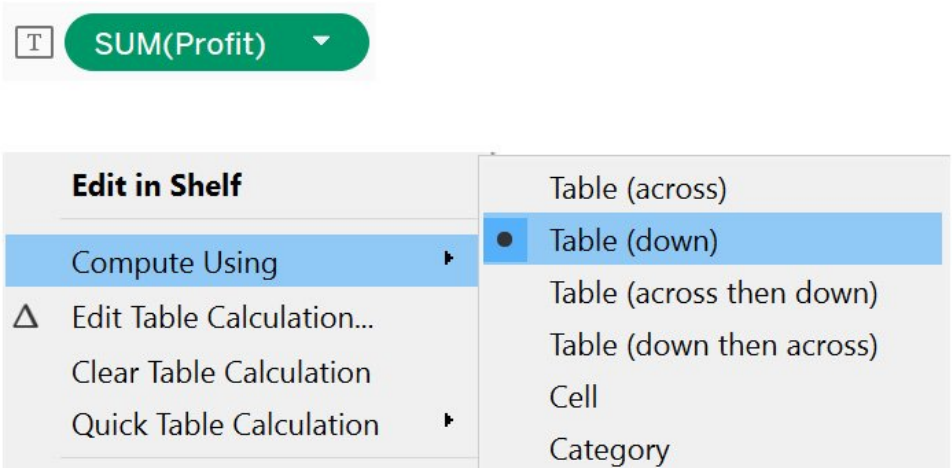


Figure 8.31: Accessing compute using | table (down)

1. The following figure shows the final view. You can see that the `Profit` table calculation is computed for every `Order Date` year (partitioning) for the three `Category` values (addressing):

		Order Date			
Category		2016	2017	2018	2019
Furniture	Table (Down)	5,458	3,015	6,960	3,018
	Profit	5,458	3,015	6,960	3,018
Office Supplies	Table (Down)	28,051	28,115	42,021	42,755
	Profit	22,593	25,100	35,061	39,737
Technology	Table (Down)	49,544	61,619	81,795	93,439
	Profit	21,493	33,504	39,774	50,684

Figure 8.32: Final output

This view can help you answer how each category has been performing based on profits across years. You could potentially make important business decisions based off these results.

Next, you will learn about `Table(across then down)` and `Table(down then across)` together. These are opposites. `Table(across then down)` computes the calculation horizontally across the table and adds the values at the end of each row to the first value of the next row. `Table(down then across)` performs the calculation vertically down the table, and adds the values at the end of each column to the first value of the next column.

In the `Table(down)` and `Table(across)` exercises, you treated the end totals for each column or row as separate values. So, you got a comparison for the different addressing results. For `Table(across then down)` and `Table(down then across)`, a value for the current row/column will be the result of the previous rows/columns along with the current row/column.

Considering the previous example of car manufacturer sales, suppose you perform `Table(down)` and then `Table(across)` for sales; Tableau would first compute the sales for the current year for all products, and then add that value to the next year's values. Hence, for the current year, you would get cumulative values for the previous years and the current year's sales.

Exercise 8.09: Creating Table (across then down) and Table (down then across) Calculations

In this exercise, you will continue with the example used in the previous exercises, and use `Table(across then down)` and `Table(down then across)` calculations. The following steps will help you complete this exercise:

1. Load the `Sample - Superstore` dataset in your Tableau instance.
2. Create a view that shows `Category` and `Sub-Category` against `YEAR(Order Date)` and `SUM(Profit)`, as follows. Filter on `Category: Technology` by placing `Category` on the `Filters` shelf:

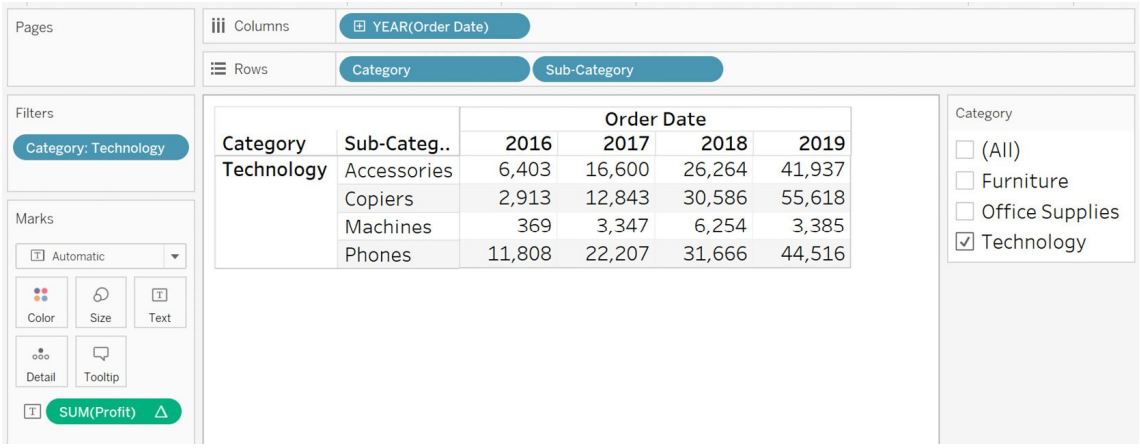


Figure 8.33: Initial view for table (across then down)

1. Add the `Running Total` quick calculation to get the following view. Here, you get the cumulative sum of profits for all the years for a sub-category. The default addressing would be `Table(across)`:

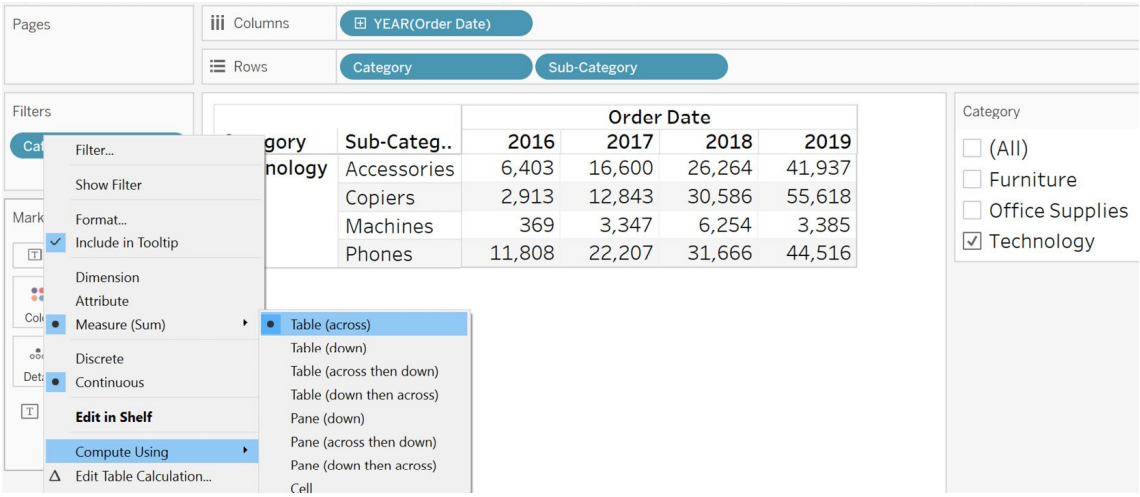


Figure 8.34: Running total for SUM(Profit)

1. Select `Compute Using` and then `Table(across then down)`.

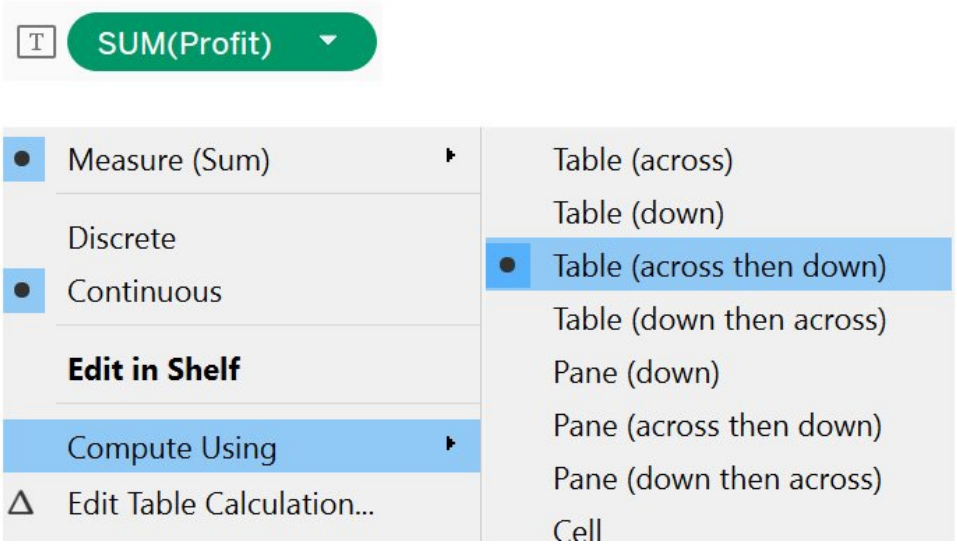


Figure 8.35: Accessing compute using | table (across then down)

The following is the generated view. You can follow the lines shown in the following figure to see how the computation is done:

			Order Date			
Category	Sub-Categ..		2016	2017	2018	2019
Technology	Accessories	Table (Across then Down)	6,403	16,600	26,264	41,937
		Profit	6,403	10,197	9,664	15,672
	Copiers	Table (Across then Down)	44,850	54,780	72,523	97,554
		Profit	2,913	9,930	17,743	25,032
	Machines	Table (Across then Down)	97,924	100,901	103,808	100,939
		Profit	369	2,977	2,907	-2,869
	Phones	Table (Across then Down)	112,747	123,146	132,606	145,455
		Profit	11,808	10,399	9,460	12,849

Figure 8.36: The working of table (across then down)

First, `Table(across)` is performed for `Accessories` (see the orange lines). Then, that total (`$41,937`) is computed by `Table(down)` (green line) with the profit of `Copiers` (`$2,913`) making it `$44,850`. This process is repeated until the table ends.

1. To change this to `Table(down then across)`, select `Compute Using` and then `Table(down then across)`, as follows:

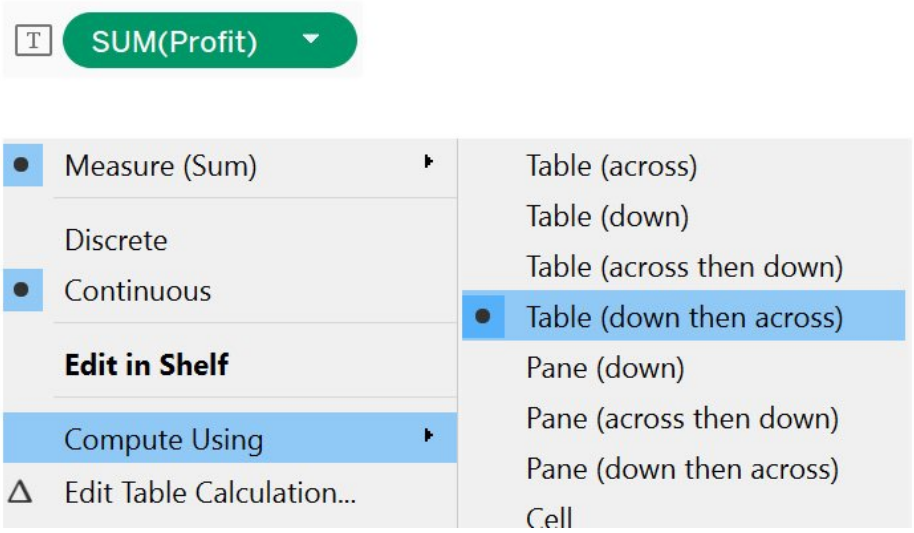


Figure 8.37: Accessing compute using | table (down then across)

This will be the generated view. Again, you can follow the lines to see how the computation is done. This is exactly the opposite of how `Table(across then down)` works:

			Order Date			
Category	Sub-Categ..		2016	2017	2018	2019
Technology	Accessories	Table (Down then Across)	6,403	31,690	64,661	110,443
		Profit	6,403	10,197	9,664	15,672
	Copiers	Table (Down then Across)	9,316	41,620	82,404	135,475
		Profit	2,913	9,930	17,743	25,032
	Machines	Table (Down then Across)	9,685	44,598	85,311	132,606
		Profit	369	2,977	2,907	-2,869
	Phones	Table (Down then Across)	21,493	54,997	94,771	145,455
		Profit	11,808	10,399	9,460	12,849

Figure 8.38: The working of table (down then across)

As you see, first the profits are added in a downward direction, then this sum is taken across to a different year. This process continues until the final year. This view can help you understand how the different sub-categories have been performing, based on profits summed together over the previous years.

Next, you will learn about panes. Table calculations can work down or across panes, depending on the calculation type. A pane can be defined as a combination of cells made up of fields on the `Rows` and `Columns` shelves, as in the following screenshot:

Category	Sub-Categ..	Order Date 2016	2017	2018	2019
Furniture	Bookcases	-346	-2,755	212	-584
	Chairs	6,955	6,228	5,763	7,644
Pane 1	Furnishings	1,973	3,052	3,935	4,099
	Tables	-3,124	-3,510	-2,951	-8,141
Technology	Accessories	6,403	10,197	9,664	15,672
	Copiers	2,913	9,930	17,743	25,032
Pane 2	Machines	369	2,977	2,907	-2,869
	Phones	11,808	10,399	9,460	12,849

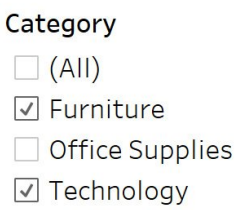


Figure 8.39: Panes

They can also be thought of as smaller tables within a bigger table. Table calculations can be performed on panes similar to how you did at the table level. The following is a list of the various pane-related computations:

- `Pane(across)`
- `Pane(down)`
- `Pane(across then down)`
- `Pane(down then across)`

You will start with `Pane(across)`.

Exercise 8.10: Creating a Pane (across) Calculation

`Pane(across)` computes the calculation horizontally across the pane, and restarts at the next pane. Considering your previous example of car manufacturer sales, suppose you want to compare the sales for the various years, while also considering the different car segments, such as hatchback, sedan, and SUV. In this exercise, you will use the `Pane(across)` calculation to do this.

The following steps will help you complete this exercise:

1. Load the `Sample - Superstore` dataset in your Tableau instance.
2. Create a view that shows `Category` against `YEAR(Order Date)`, `QUARTER(Order Date)`, and `SUM(Profit)`, as follows:

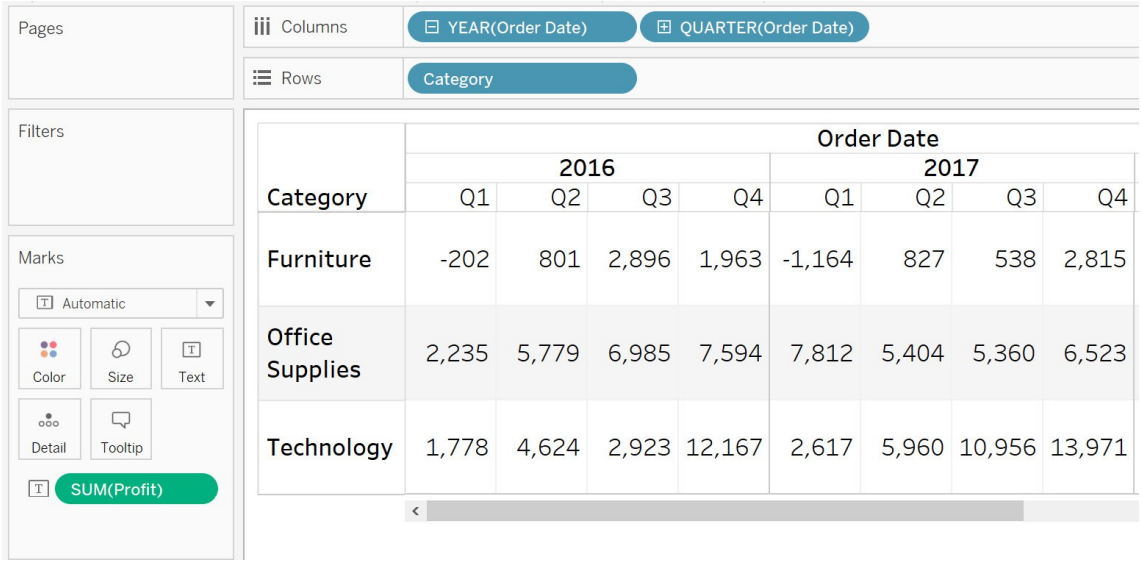


Figure 8.40: Initial view with a running total for SUM(Profit)

1. Filter on `YEAR(Order Date)` as `2016` and `2017`.

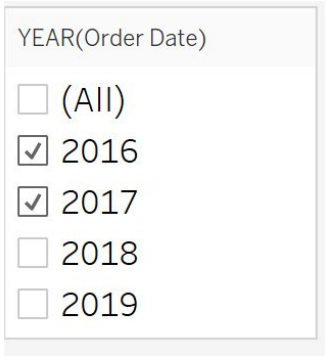


Figure 8.41: Adding a YEAR filter

1. You now have two horizontal panes. For a pane table calculation to be activated, you need more than one dimension in the rows or the columns. A pane here will be one row, per `Category`,per year; so you'll have six panes in the view. The first pane looks like this:

	Order Date							
	2016				2017			
Category	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Furniture	-202	801	2,896	1,963	-1,164	827	538	2,815
Office Supplies	2,235	5,779	6,985	7,594	7,812	5,404	5,360	6,523
Technology	1,778	4,624	2,923	12,167	2,617	5,960	10,956	13,971

Figure 8.42: Understanding pane (across)

1. Add a Running Total of Sum(Profit) and then select the `Pane(across)` option by clicking again on `SUM(Profit)`.

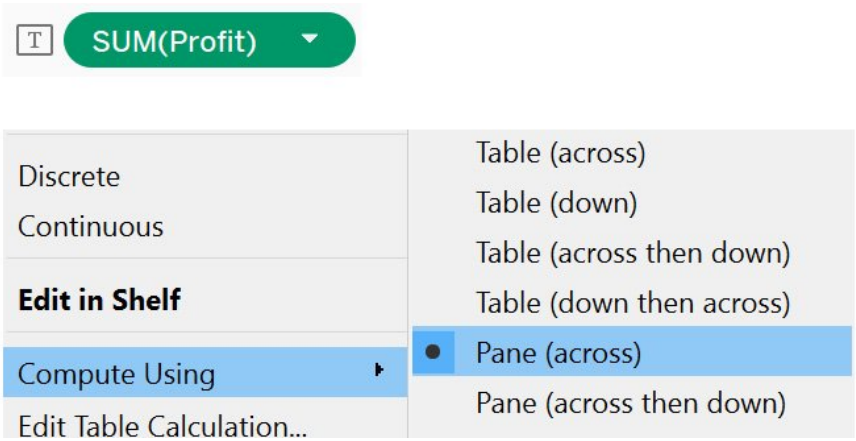
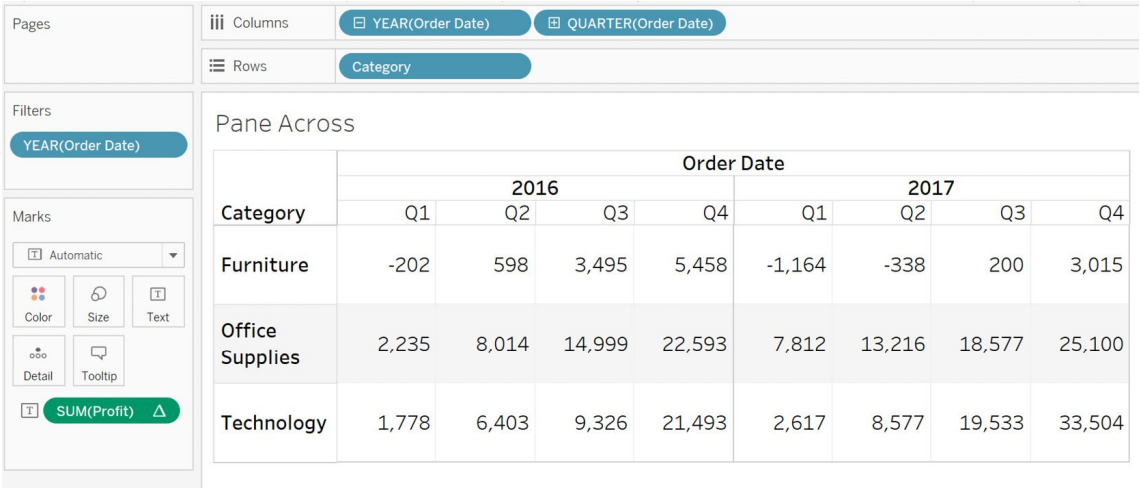


Figure 8.43: Accessing compute using | pane (across)

On selecting `Pane(across)`, you should see the following output:



	Order Date							
	2016				2017			
Category	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Furniture	-202	598	3,495	5,458	-1,164	-338	200	3,015
Office Supplies	2,235	8,014	14,999	22,593	7,812	13,216	18,577	25,100
Technology	1,778	6,403	9,326	21,493	2,617	8,577	19,533	33,504

Figure 8.44: Final output

1. To understand this better, add `Profit` to another view and compute the result.

		Order Date							
		2016				2017			
Category		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Furniture	Profit	-202	801	2,896	1,963	-1,164	827	538	2,815
	Pane (Across)	-202	598	3,495	5,458	-1,164	-338	200	3,015
Office Supplies	Profit	2,235	5,779	6,985	7,594	7,812	5,404	5,360	6,523
	Pane (Across)	2,235	8,014	14,999	22,593	7,812	13,216	18,577	25,100
Technology	Profit	1,778	4,624	2,923	12,167	2,617	5,960	10,956	13,971
	Pane (Across)	1,778	6,403	9,326	21,493	2,617	8,577	19,533	33,504

Figure 8.45: The working of pane (across)

As you see, each of the highlighted blue boxes just adds profits horizontally, and this restarts after each partition or pane horizontally. You can also validate the sum of profit by referencing the bottom table.

		Order Date							
		2016				2017			
Category		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Furniture	Profit	-202	801	2,896	1,963	-1,164	827	538	2,815
	Pane (Across)	-202	598	3,495	5,458	-1,164	-338	200	3,015
Office Supplies	Profit	2,235	5,779	6,985	7,594	7,812	5,404	5,360	6,523
	Pane (Across)	2,235	8,014	14,999	22,593	7,812	13,216	18,577	25,100
Technology	Profit	1,778	4,624	2,923	12,167	2,617	5,960	10,956	13,971
	Pane (Across)	1,778	6,403	9,326	21,493	2,617	8,577	19,533	33,504

Figure 8.46: Final output analysis

This view can help you see how different categories have performed based on profits summed together over all different quarters across the two Order Date years. This can help you hone in on profits, to understand which quarters generated the highest profits.

Next, you will learn about `Pane(down)`. `Pane(down)` performs the calculation vertically down the pane, and restarts at the next pane.

Exercise 8.11: Pane (down) Calculation

Considering the example of car manufacturer sales, suppose you want to analyze the sales of various car models sold per segment per year. Here, you can use `Pane(down)` addressing on the segment partitioning. The following steps will help you complete this exercise:

1. Load the `Sample - Superstore` dataset in your Tableau instance.
2. Create a view that shows `YEAR(Order Date)` and `Category` against `QUARTER(Order Date)` and the running total for `SUM(Profit)`, as follows:

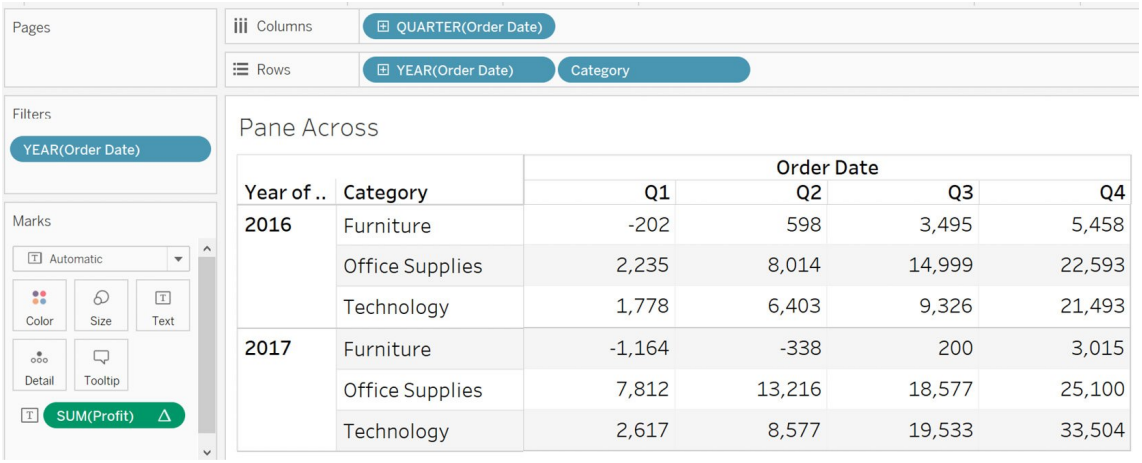


Figure 8.47: Initial view with the running total for SUM(Profit)

1. Filter on `YEAR(Order Date)` as `2016` and `2017`.

Figure 8.48: Adding a YEAR filter

1. Now, you will have eight vertical panes -- four for `2016` and four for `2017` -- based on the four quarters and two years.

Year of ..	Category	Order Date Q1	Q2	Q3	Q4
2016	Furniture	-202	598	3,495	5,458
	Office Supplies	2,235	8,014	14,999	22,593
	Technology	1,778	6,403	9,326	21,493
2017	Furniture	-1,164	-338	200	3,015
	Office Supplies	7,812	13,216	18,577	25,100
	Technology	2,617	8,577	19,533	33,504

Figure 8.49: Understanding pane (down)

1. Select the `Pane(down)` option by clicking again on `SUM(Profit)`, as follows:

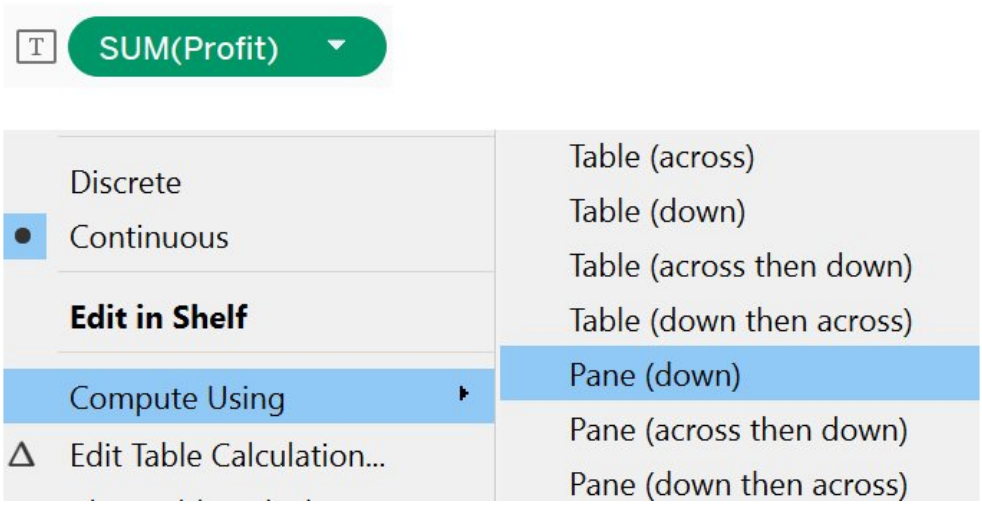


Figure 8.50: Accessing compute using | pane (down)

You will see the following output:

Pane Down

Year of ..	Category	Order Date			
		Q1	Q2	Q3	Q4
2016	Furniture	-202	801	2,896	1,963
	Office Supplies	2,033	6,580	9,881	9,557
	Technology	3,811	11,204	12,805	21,724
2017	Furniture	-1,164	827	538	2,815
	Office Supplies	6,648	6,231	5,898	9,338
	Technology	9,265	12,191	16,854	23,309

Figure 8.51: Final output

1. To understand this better, add `Profit` to the view and see the result.

Year of ..		Category	Order Date			
			Q1	Q2	Q3	Q4
2016	Profit	Furniture	-202	801	2,896	1,963
		Office Supplies	2,235	5,779	6,985	7,594
		Technology	1,778	4,624	2,923	12,167
	Pane (Down)	Furniture	-202	801	2,896	1,963
		Office Supplies	2,033	6,580	9,881	9,557
		Technology	3,811	11,204	12,805	21,724
2017	Profit	Furniture	-1,164	827	538	2,815
		Office Supplies	7,812	5,404	5,360	6,523
		Technology	2,617	5,960	10,956	13,971
	Pane (Down)	Furniture	-1,164	827	538	2,815
		Office Supplies	6,648	6,231	5,898	9,338
		Technology	9,265	12,191	16,854	23,309

Figure 8.52: The working of pane (down)

As you see, the values in each blue pane (highlighted) are summed in a downward direction, and this process restarts after every pane. Here, you can compare quarterly profits. For example, for `Q1 2016`, the total profit is `$3,811` and similarly, for `Q1 2017`, it is `$9,265`, which is approximately 2.5 times more profit. The same is cannot be said for `Q2` profits. Based on this, you can try to analyze the reasoning behind such differences, and use those insights to tweak business strategy.

Next, you will learn about `Pane(across then down)` and `Pane(down then across)`. `Pane(across then down)` is a combination of `Pane(across)` and `Pane(down)`; that is, it computes the calculation horizontally across the pane and combines the result with the values in the next pane. `Pane(down then across)` is the opposite of `Pane(across then down)`, as it performs the calculation vertically down the pane and combines the result with the values in the next pane. The next exercise looks at this in detail.

Exercise 8.12: Creating a Pane-Level Calculation

This exercise continues with the example of car manufacturer sales. Suppose you want the sales per segment per quarter for the different years together. Here, you can use the option of `Pane(across then down)` or `Pane(down then across)`. The result combines all detailed panes into a cumulative overall total. The following steps will help you complete this exercise:

1. Load the `Sample - Superstore` dataset in your Tableau instance.
2. Before creating the view, you must first create a combined field for `Category` and `Sub-Category`. This is required for the `Pane(across then down)` calculation, else Tableau will merge the sub-categories. Select `Category` and `Sub-Category` together, then, right-click and select `Create` and then `Combined Field`, as follows:

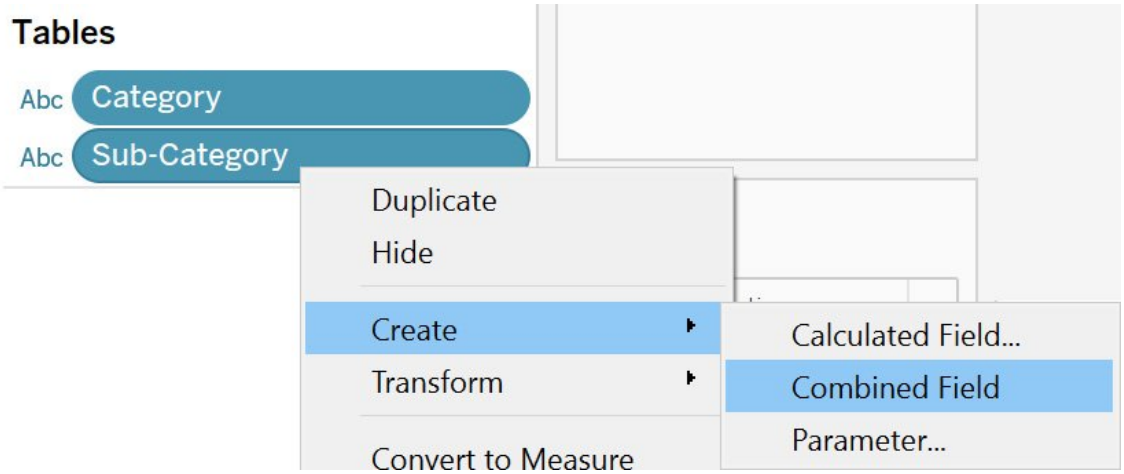
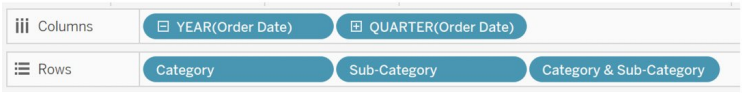


Figure 8.53: Creating a combined field

1. Create a view that shows `YEAR(Order Date)` and `QUARTER(Order Date)` against `Category`, `Sub-Category`, and the combined field. Also, add the running total for `SUM(Profit)`, as follows:



			Order Date							
			2016				2017			
Category	Sub-Categ..	Category & Sub-Category	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Furniture	Bookcases	Furniture, Bookcases	-468	-682	-372	-346	-948	-1,228	-2,933	-3,101
	Chairs	Furniture, Chairs	1,403	2,475	4,347	6,955	7,526	8,494	10,624	13,183
	Furnishings	Furniture, Furnishings	184	535	1,641	1,973	2,297	3,354	4,215	5,025
	Tables	Furniture, Tables	-1,321	-1,730	-2,122	-3,124	-4,581	-5,500	-6,248	-6,634
Office Supplies	Appliances	Office Supplies, Appliances	-252	707	1,028	2,459	2,420	1,897	2,591	4,971
	Art	Office Supplies, Art	173	580	892	1,407	1,576	1,900	2,307	2,892
	Binders	Office Supplies, Binders	634	2,795	5,115	4,740	9,975	13,349	13,621	12,336
	Envelopes	Office Supplies, Envelopes	200	516	811	1,495	1,780	2,134	2,648	3,456
	Fasteners	Office Supplies, Fasteners	10	39	114	179	207	224	270	350
	Labels	Office Supplies, Labels	104	449	725	1,286	1,654	1,826	2,139	2,609
	Paper	Office Supplies, Paper	663	1,575	3,388	6,371	7,371	8,328	10,121	12,941
	Storage	Office Supplies, Storage	693	1,236	2,417	4,166	4,912	5,602	7,036	7,672
	Supplies	Office Supplies, Supplies	10	117	509	490	509	550	436	465
Technology	Accessories	Technology, Accessories	1,125	2,163	3,849	6,403	7,073	8,311	11,411	16,600
	Copiers	Technology, Copiers		465	2,052	2,913	4,771	7,013	8,614	12,843
	Machines	Technology, Machines	-1,255	-1,397	-4,024	369	-365	562	2,607	3,347
	Phones	Technology, Phones	1,909	5,172	7,449	11,808	12,631	14,183	18,393	22,207

Figure 8.54: Initial view with the running total for SUM(Profit)

1. Filter on `YEAR(Order Date)` as `2016` and `2017`. Also, filter on `Category` by selecting `Furniture` and `Technology`, as follows:

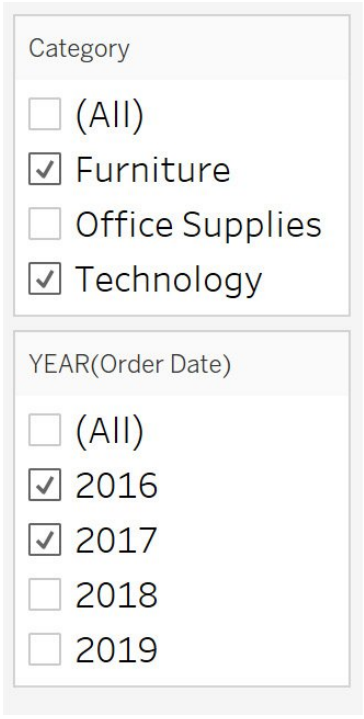


Figure 8.55: Adding category and YEAR filters

1. You now have two horizontal `Year` panes and two vertical `Category` panes. Select the `Pane(across then down)` option by clicking again on `SUM(Profit)`.

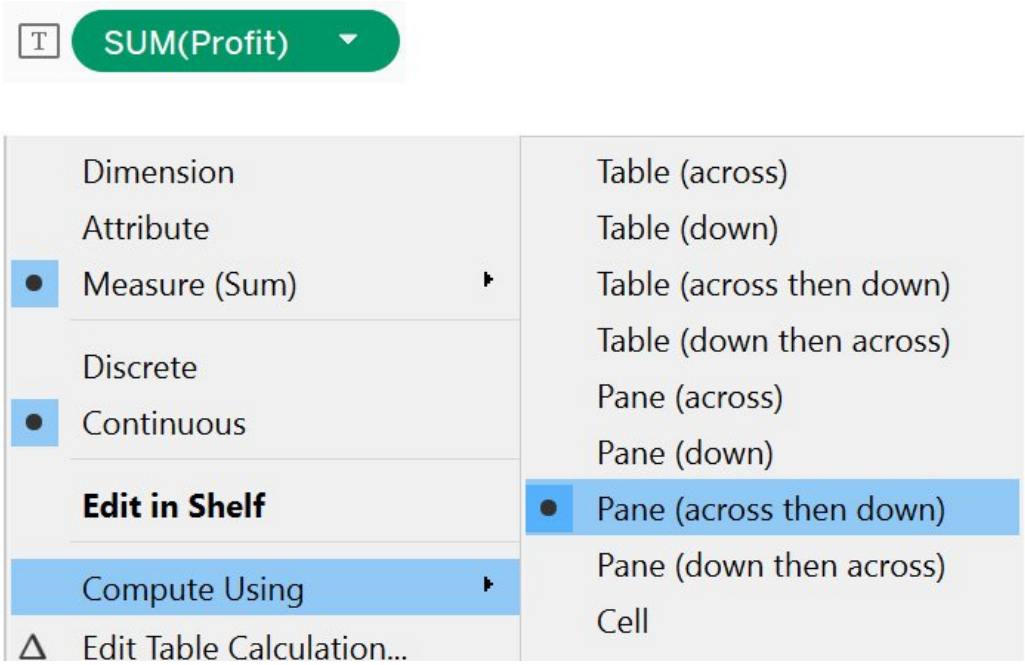


Figure 8.56: Accessing compute using | pane (across then down)

1. On selecting `Pane(across then down)`, the output generated is as follows:

			Order Date							
			2016				2017			
Category	Sub-Categ..	Category & Sub-Category	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Furniture	Bookcases	Furniture, Bookcases	-468	-682	-372	-346	-602	-882	-2,587	-2,755
	Chairs	Furniture, Chairs	1,057	2,129	4,001	6,609	-2,185	-1,217	914	3,473
	Furnishings	Furniture, Furnishings	6,792	7,144	8,250	8,582	3,797	4,855	5,715	6,525
	Tables	Furniture, Tables	7,261	6,852	6,460	5,458	5,068	4,149	3,401	3,015
Technology	Accessories	Technology, Accessories	6,582	7,621	9,306	11,860	3,686	4,924	8,023	13,212
	Copiers	Technology, Copiers	11,860	12,325	13,912	14,773	15,071	17,313	18,914	23,143
	Machines	Technology, Machines	13,518	13,376	10,750	15,143	22,408	23,336	25,381	26,120
	Phones	Technology, Phones	17,052	20,315	22,592	26,951	26,943	28,495	32,706	36,519

Figure 8.57: Final output for pane (across then down)

1. To understand this better, add `Profit` to the view and calculate the result.

Pane Across then Down

Category	Sub-Categ..	Category & Sub-Category	Order Date 2016 Q1	Q2	Q3	Q4
Furniture	Bookcases	Furniture, Bookcases	-468	-682	-372	-346
	Chairs	Furniture, Chairs	-->1,057	2,129	4,001	6,609
	Furnishings	Furniture, Furnishings	6,792	7,144	8,250	8,582
	Tables	Furniture, Tables	-->7,261	6,852	6,460	5,458
Technology	Accessories	Technology, Accessories	6,582	7,621	9,306	11,860
	Copiers	Technology, Copiers		12,325	13,912	14,773
	Machines	Technology, Machines	13,518	13,376	10,750	15,143
	Phones	Technology, Phones	17,052	20,315	22,592	26,951

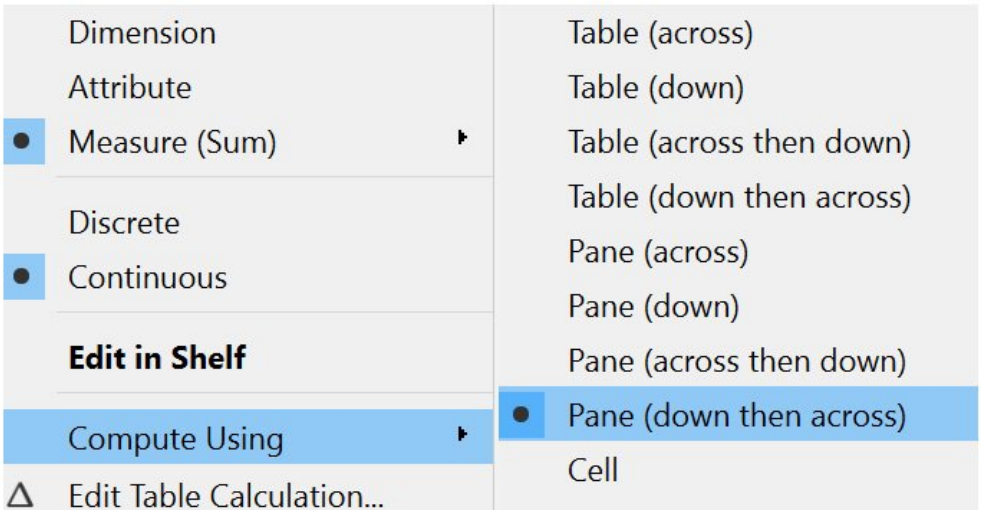
Sum(Profit)

Category	Sub-Categ..	Category & Sub-Category	Order Date 2016 Q1	Q2	Q3	Q4
Furniture	Bookcases	Furniture, Bookcases	-468	-214	311	25
	Chairs	Furniture, Chairs	1,403	1,072	1,872	2,608
	Furnishings	Furniture, Furnishings	184	352	1,105	332
	Tables	Furniture, Tables	-1,321	-409	-392	-1,002
Technology	Accessories	Technology, Accessories	1,125	1,038	1,686	2,554
	Copiers	Technology, Copiers		465	1,587	861
	Machines	Technology, Machines	-1,255	-142	-2,626	4,393
	Phones	Technology, Phones	1,909	3,263	2,277	4,359

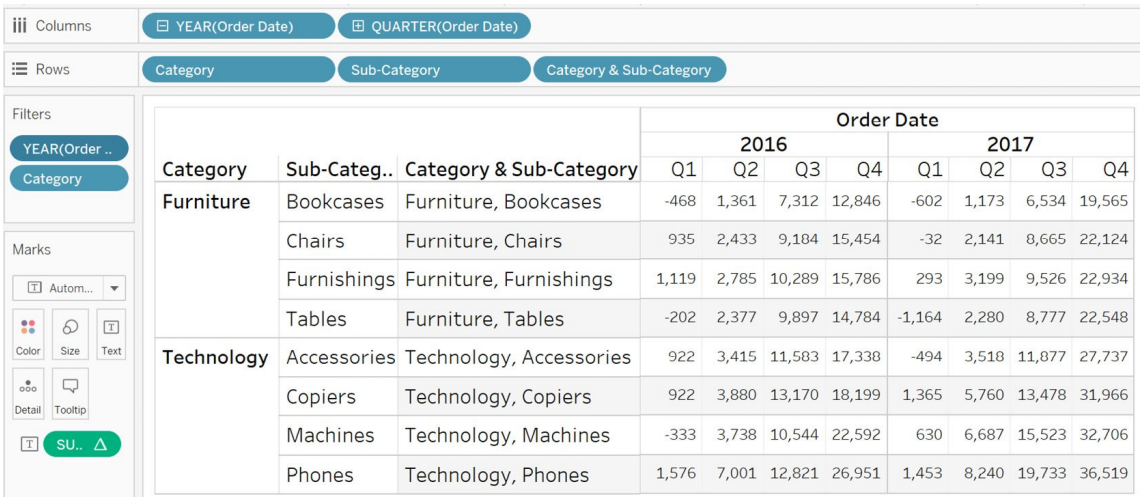
Figure 8.58: The working of pane (across then down)

Notice the blue arrows, which indicate the profits being summed from the first to the last value in that row; the orange arrow indicates that the last value of each row is added to the first value of the next row. This process is repeated until the last row for each year. Once a year is completed, the calculation restarts for the next year. You can validate the numbers by looking at the `Sum(Profit)` values, as seen on the right side.

1. Change the calculation to `Pane(down then across)`, as shown in the following figure:



The output generated will be as follows:



			Order Date							
			2016				2017			
Category	Sub-Categ..	Category & Sub-Category	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Furniture	Bookcases	Furniture, Bookcases	-468	1,361	7,312	12,846	-602	1,173	6,534	19,565
	Chairs	Furniture, Chairs	935	2,433	9,184	15,454	-32	2,141	8,665	22,124
	Furnishings	Furniture, Furnishings	1,119	2,785	10,289	15,786	293	3,199	9,526	22,934
	Tables	Furniture, Tables	-202	2,377	9,897	14,784	-1,164	2,280	8,777	22,548
Technology	Accessories	Technology, Accessories	922	3,415	11,583	17,338	-494	3,518	11,877	27,737
	Copiers	Technology, Copiers	922	3,880	13,170	18,199	1,365	5,760	13,478	31,966
	Machines	Technology, Machines	-333	3,738	10,544	22,592	630	6,687	15,523	32,706
	Phones	Technology, Phones	1,576	7,001	12,821	26,951	1,453	8,240	19,733	36,519

1. To understand this better, add `Profit` to the view and calculate the result for `2016`.

Pane Down then Across

Category	Sub-Categ..	Category & Sub-Category	Order Date 2016 Q1	Q2	Q3	Q4
Furniture	Bookcases	Furniture, Bookcases	-468	-> 1,361	7,312	12,846
	Chairs	Furniture, Chairs	935	2,433	9,184	15,454
	Furnishings	Furniture, Furnishings	1,119	2,785	10,289	15,786
	Tables	Furniture, Tables	-202	2,377	9,897	14,784
Technology	Accessories	Technology, Accessories	922	3,415	11,583	17,338
	Copiers	Technology, Copiers		3,880	13,170	18,199
	Machines	Technology, Machines	-333	3,738	10,544	22,592
	Phones	Technology, Phones	-> 1,576	7,001	12,821	26,951

Sum(Profit)

Category	Sub-Categ..	Category & Sub-Category	Order Date 2016 Q1	Q2	Q3	Q4
Furniture	Bookcases	Furniture, Bookcases	-468	-214	311	25
	Chairs	Furniture, Chairs	1,403	1,072	1,872	2,608
	Furnishings	Furniture, Furnishings	184	352	1,105	332
	Tables	Furniture, Tables	-1,321	-409	-392	-1,002
Technology	Accessories	Technology, Accessories	1,125	1,038	1,686	2,554
	Copiers	Technology, Copiers		465	1,587	861
	Machines	Technology, Machines	-1,255	-142	-2,626	4,393
	Phones	Technology, Phones	1,909	3,263	2,277	4,359

Observe the blue arrows, which indicate the profits being summed from the first to the last value in the column. The orange arrow indicates that the last value of each column is added to the first value of the next column. This process is repeated until the last row for each year. Once a year is completed, the calculation restarts for the next year. Once again, you can validate the numbers by looking at the `Sum(Profit)` values, as seen on the right side.

Cell

`Cell` computes across the individual cells. The result is the same as adding the measure to the shelf directly, as shown in the following figure (the cell is highlighted using a box):

Cell

			Order Date			
			2016			
Category	Sub-Categ..	Category & Sub-Category	Q1	Q2	Q3	Q4
Furniture	Bookcases	Furniture, Bookcases	-468	-214	311	25
	Chairs	Furniture, Chairs	1,403	1,072	1,872	2,608
	Furnishings	Furniture, Furnishings	184	352	1,105	332
	Tables	Furniture, Tables	-1,321	-409	-392	-1,002
Technology	Accessories	Technology, Accessories	1,125	1,038	1,686	2,554
	Copiers	Technology, Copiers		465	1,587	861
	Machines	Technology, Machines	-1,255	-142	-2,626	4,393
	Phones	Technology, Phones	1,909	3,263	2,277	4,359

The values are the same in both tables. `Specific Dimensions` computes using the dimensions you specify. You will learn about this in more detail in the following section.

Creating, Editing, and Removing Table Calculations

Hopefully you now have a good understanding of quick table calculations, but what if you need to use some other calculation, such as ranking the rows in a table? Here, you can use the `Create` calculation window. Tableau supports many table functions besides quick table calculations. In this section, you will learn how to create, access, edit, and remove a table calculation.

Creating a New Table Calculation

To create a table calculation, right-click on any measure value, and then click on `Create` , then `Calculated Field...` , as follows:

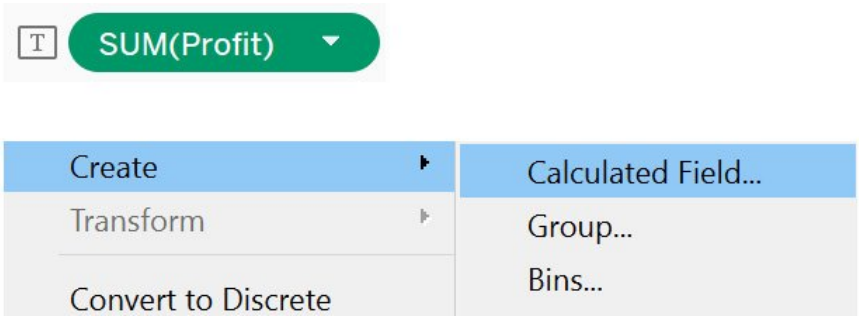


Figure 8.63: Creating a calculated field from Profit

Once you click on `Calculated Field...` , a calculation editor window will open up, as follows:

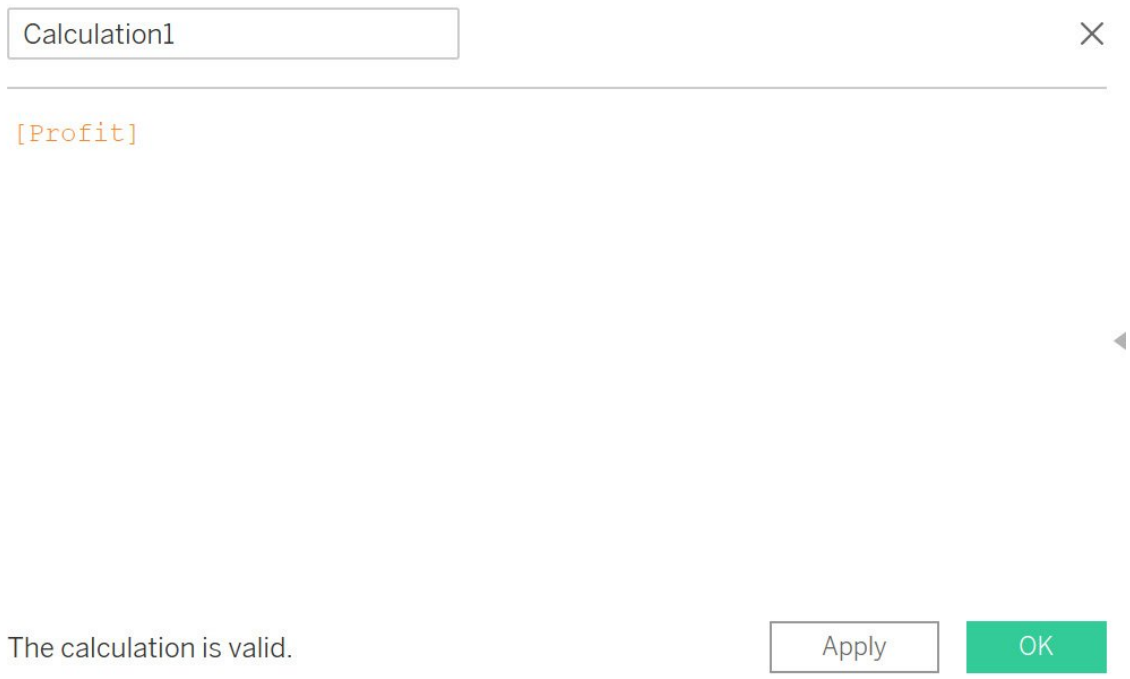


Figure 8.64: Calculation editor

Now, you can click on the dropdown and select the `Table Calculation` menu, as follows:

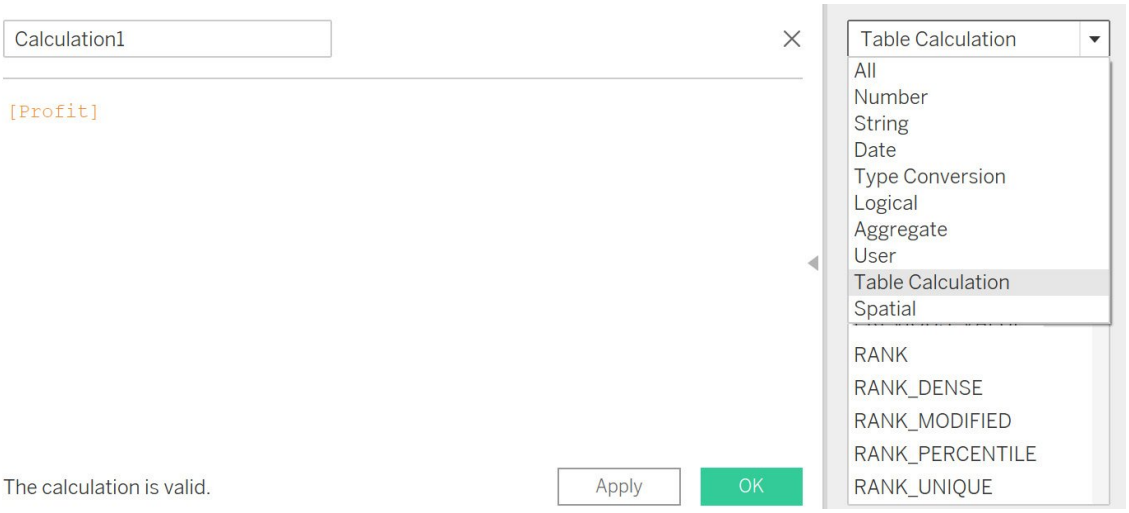


Figure 8.65: Accessing table calculation functions in the calculation editor

Next, the list of all the table calculations supported by Tableau appears, as follows:

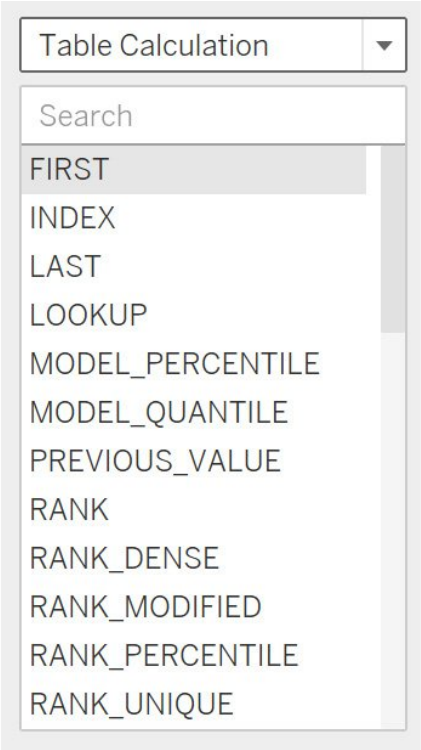


Figure 8.66: Various table calculation functions

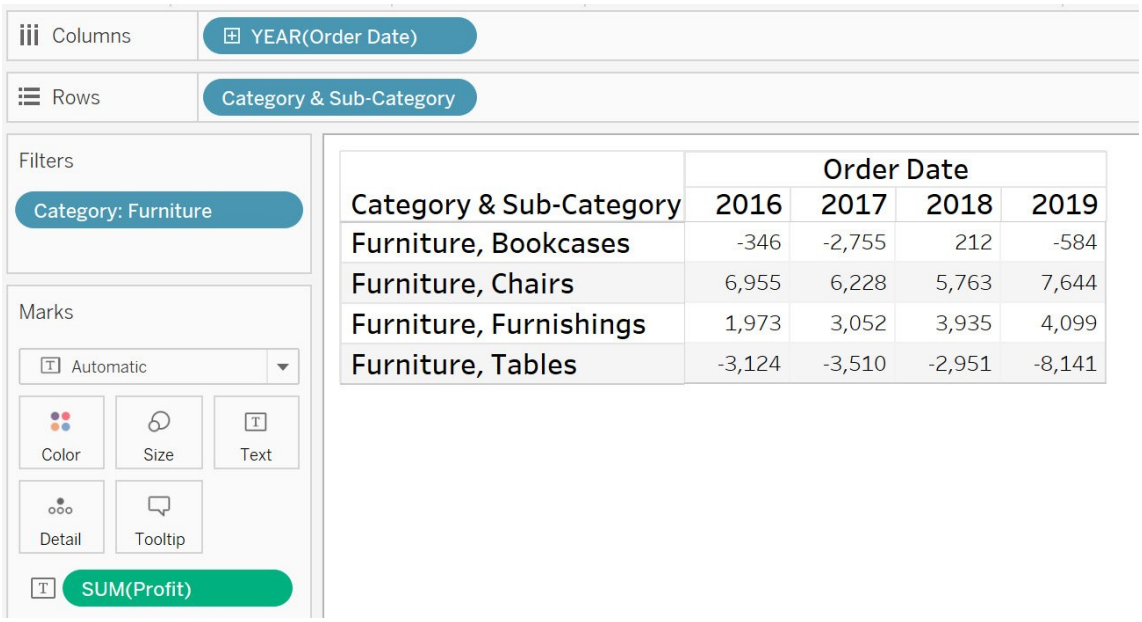
In Tableau, it's very easy to understand these table calculations. Each calculation is defined by specifying the syntax for use, the expected result from using the calculation, followed by an example.

You are already familiar with `RUNNING_TOTAL`, which is similar to `RUNNING_SUM`. The same calculation type can be used to do a variety of operations, such as sum, average, and finding the minimum and maximum values, which can be referenced under the table calculation menu.

Exercise 8.13: Creating a Table Calculation Using the Calculation Editor

In your projects, you might need to use one of the table calculation functions in the view. An example of this is the index function, which adds serial numbers to the rows in the view. You can do this by creating a table calculation. In this exercise, you will calculate the rank of `Sub-Category` based on `SUM(Profit)` across years. The following steps will help you complete this exercise:

1. Load the `Sample - Superstore` dataset in your Tableau instance. Use the combined field that you created earlier along with `YEAR(Order Date)`. Create a view as follows and also filter `Category` for `Furniture`:



Category & Sub-Category	Order Date			
	2016	2017	2018	2019
Furniture, Bookcases	-346	-2,755	212	-584
Furniture, Chairs	6,955	6,228	5,763	7,644
Furniture, Furnishings	1,973	3,052	3,935	4,099
Furniture, Tables	-3,124	-3,510	-2,951	-8,141

Figure 8.67: Initial view with SUM(Profit)

1. Now, create a `RANK` table calculation. Right-click on `Profit` in the data pane and select `Create` | `Calculated Field...`. This will open up the calculation editor.

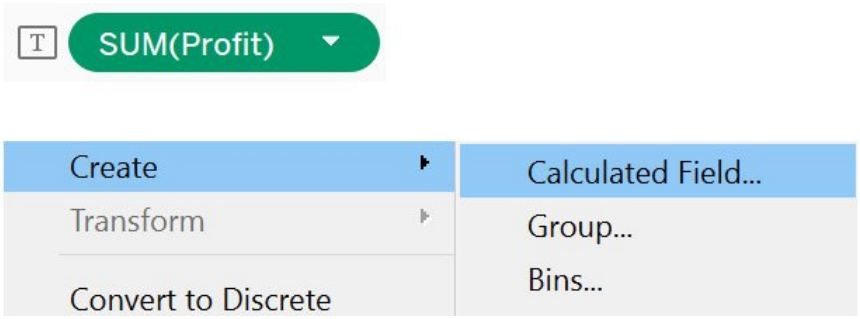


Figure 8.68: Creating a calculation using Profit

1. Add the following expression to the calculation editor:

```
RANK(SUM(Profit))Copy
```

This is shown in the following figure:

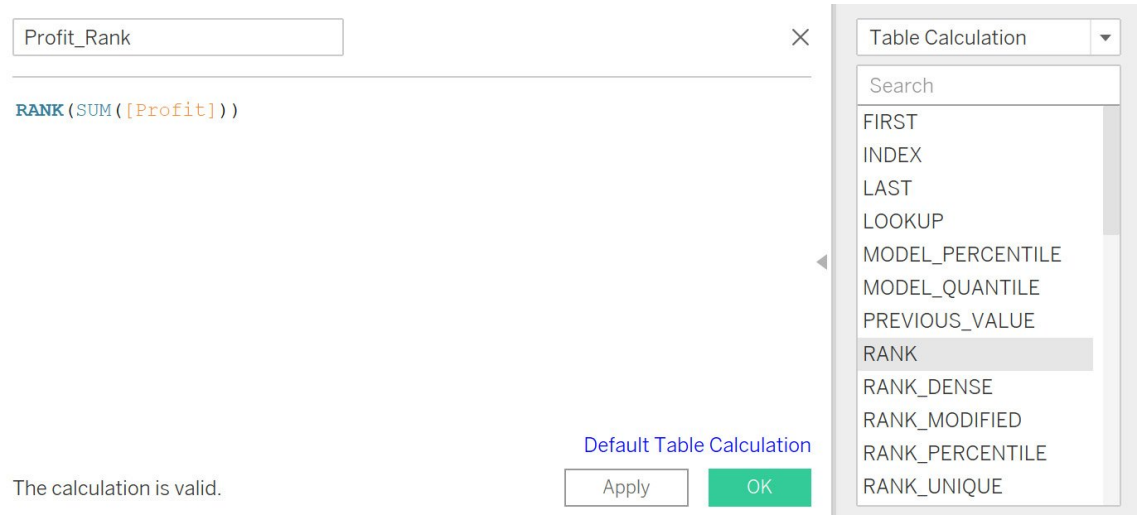


Figure 8.69: Profit_Rank calculation

1. Name it `Profit_Rank`.
2. Drag this onto the view on `Text`, as follows:

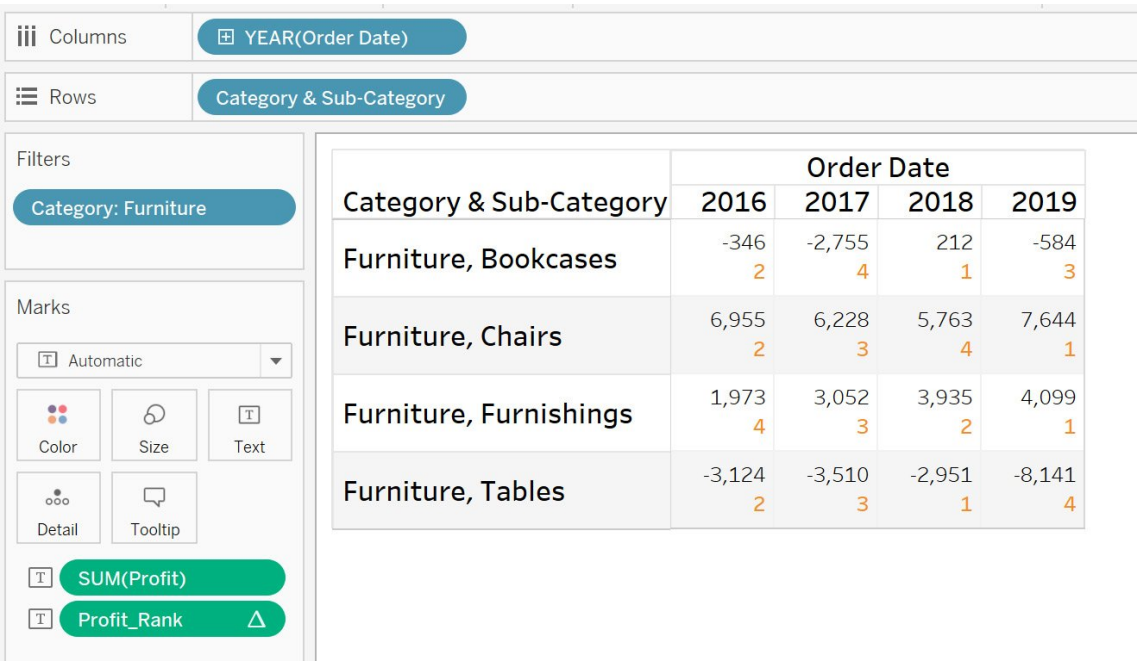


Figure 8.70: Adding the Profit_Rank calculation to the view

1. Observe that the default is the `Table (across)` direction. Edit this and try to change the computation on specific dimensions in the view. Click on the `Profit_Rank` dropdown and select `Edit Table Calculation...` and then `Specific Dimensions`, as shown in the following figure:

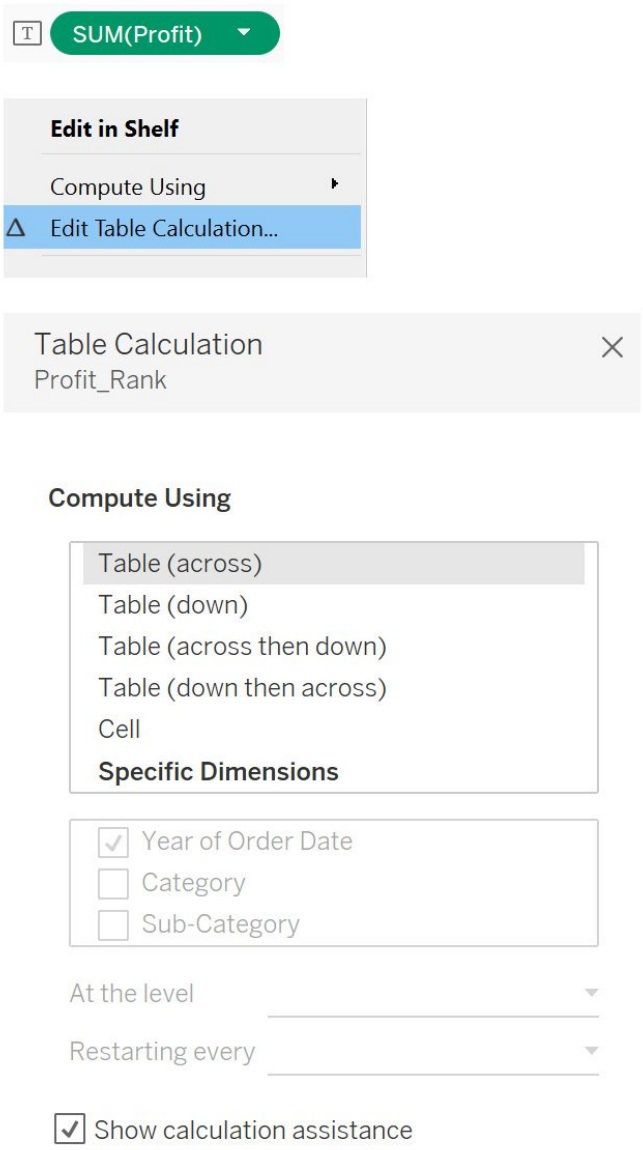


Figure 8.71: Accessing edit table calculation

Using these options, you can control how the table calculation is computed. It is important to understand the different options here:

- `At the level`: This determines the level at which the calculation is computed. The level here implies the different dimensions in the view, such as `Category` and `Sub-Category`. `Deepest` is the default if multiple dimensions are selected, which means the computation will happen at the lowest level of granularity, which is `Sub-Category` in your view.

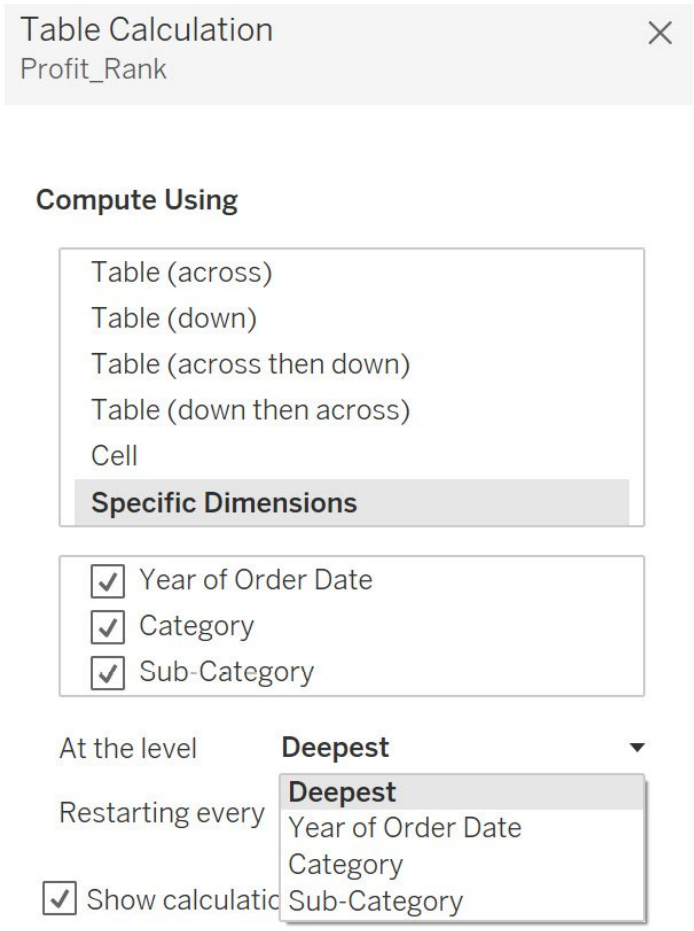


Figure 8.72: Various options under the At the level dropdown

- `Restarting every` : This option can be used to restart the computation based on the field selected.

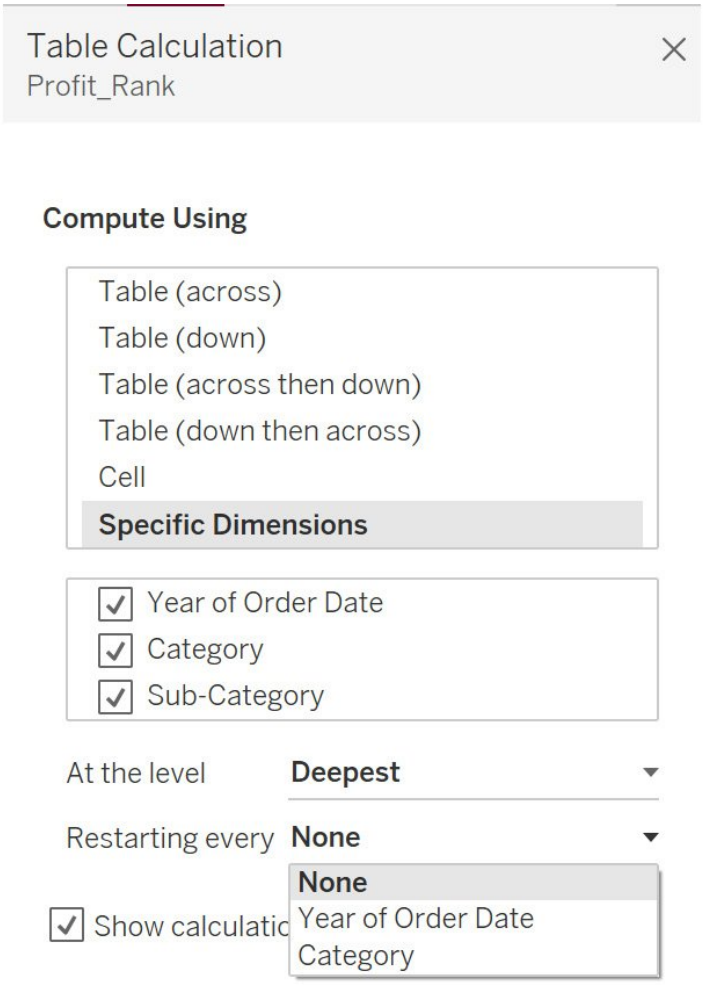


Figure 8.73: Various options under the Restarting every dropdown

- `Show calculation assistance` : This option highlights how the computation will work based on your selections. As the following figure shows, based on the selections, `Profit_Rank` will work in the downward direction (highlighted):

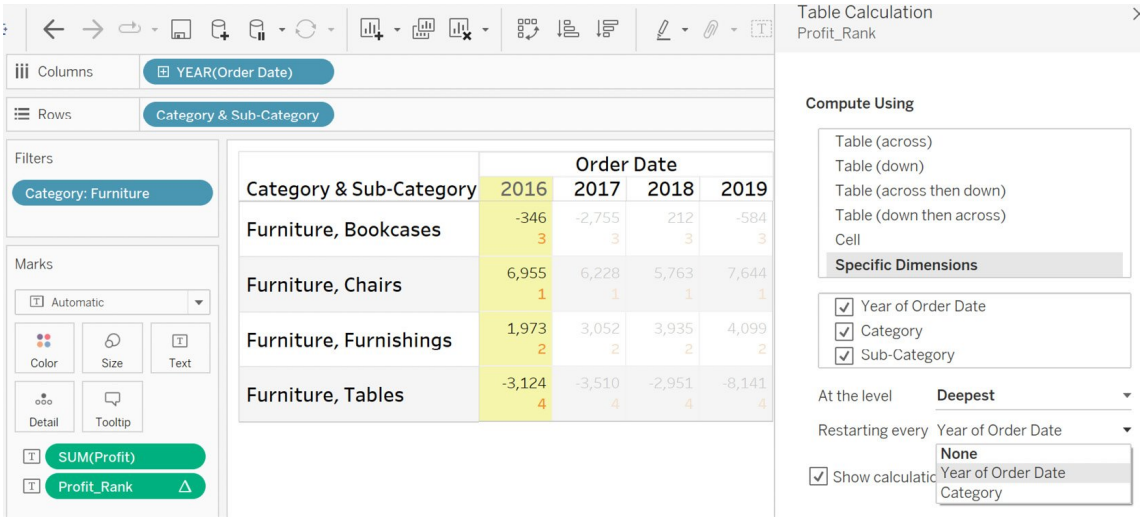


Figure 8.74: Using Show calculation assistance

This view showed how you can perform table calculations at different levels using the dimensions in the view.

Removing a Table Calculation

Once you have added a table calculation, you should also be able to remove it. This can be done by clicking on an existing quick table calculation and selecting the `Clear Table Calculation` option, as follows:

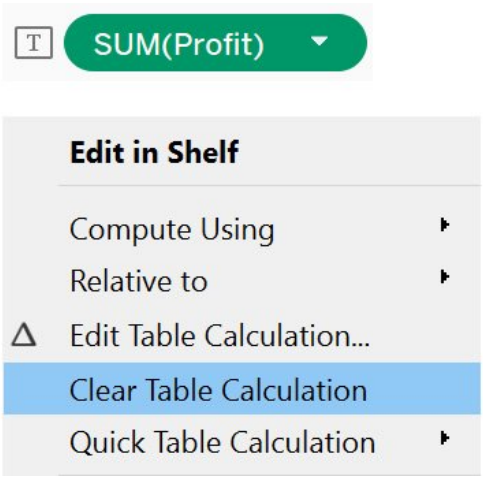


Figure 8.75: Selecting the Clear Table Calculation option

Activity 8.01: Managing Hospital Bed Allocations

There may be scenarios where you need to use the historic value of a measure to compute its current value, for example, when finding the cumulative sum of sales for all quarters in a year.This can, in turn, help you visualize the entire year's sales, or the sales difference, compared to previous quarters. In such cases, a table calculation can be useful, as all logic is inbuilt, and you need only apply the calculation to the measure value.

In this activity, you will apply table calculations to a hospital-based project, to identify how many patients are currently admitted.You willconsider factors such as new admissions, discharges, and routine follow-ups, to check

whether the threshold for beds is sufficient. By doing this, you can ensure the hospital will not run out of beds in the case of an emergency.

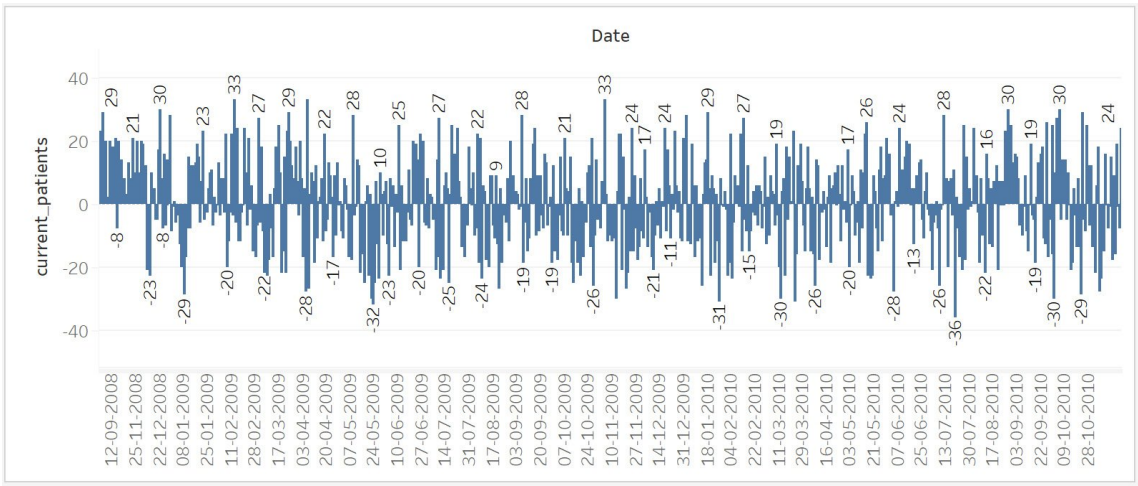
In the dataset, there is a date column indicating the current day, an Open column indicating the number of patients admitted, Discharges indicating the number of discharges, and Re-open indicating the number of patients getting re-admitted or following up for a previous admission. In addition, you also need to keep 100 of the total 900 beds free in case of an emergency. If the number of patients exceeds 600, it should be highlighted visually.

Note

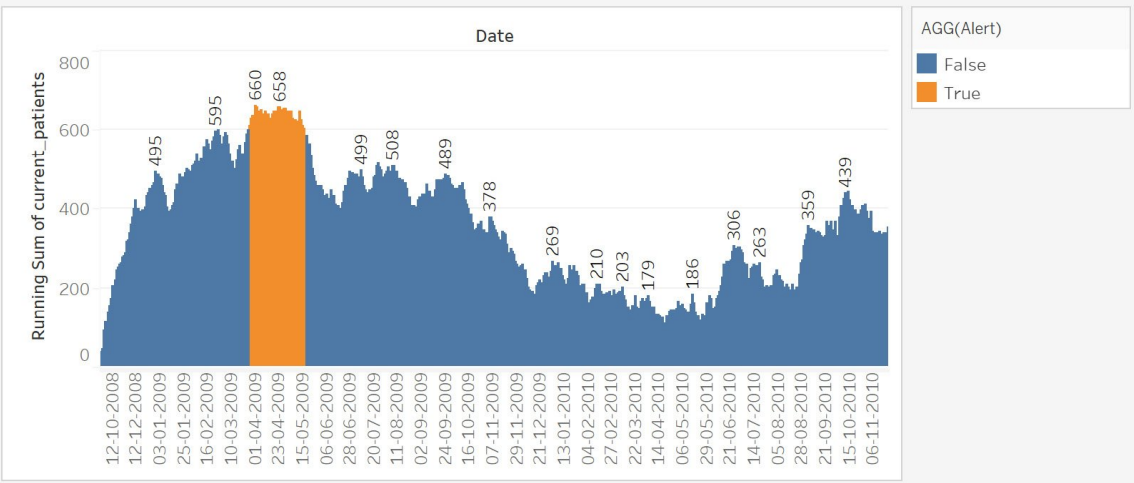
The dataset used for this activity can be found and downloaded from https://github.com/fenago/tableau-advanced.

The following steps will help you complete this activity:

1. Open and connect the dataset for `Activity 1` in your Tableau instance.
2. Create a calculation named `current_patients` to find the number of patients currently admitted. This can be calculated after considering the `Open`, `Discharges`, and `Re-open` columns.
3. Once you have a bar chart view, display the date at the exact date level, along with the number of patients currently in the hospital, using the `current_patients` field created in the previous step. This view helps you view how many patients are admitted on a given day.
4. Add a `running_sum` table calculation to the `current_patients` table calculation in the existing view. This view helps you visualize the number of patients admitted on a given day considering all the previous days as well.
5. Create another calculation named Alert to indicate that the patient count is above 600. You need to use running_sum to identify the number of patients on a given day.
6. Now, you should be able to analyze the total number of patients admitted to the hospital, and see whether there are enough beds available.
7. The initial view is as follows:



The final output is as follows:



Here, you can see that in 2009, there was a period when the number of patients was more than the number of beds. Although such incidents are rare, it is imperative that they are managed properly.

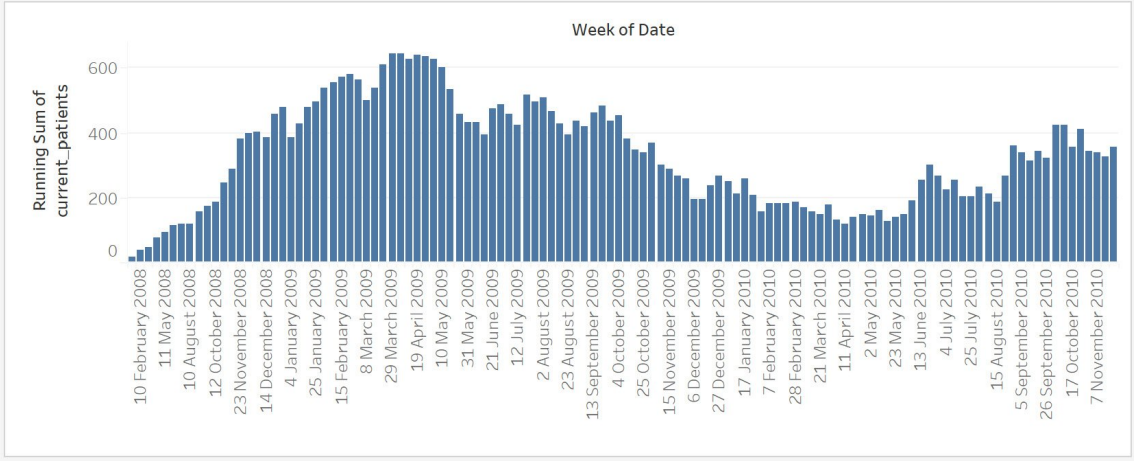
With this activity, you strengthened your knowledge of creating and using table calculations. This activity helped you see how you can use cumulative values to better analyze data, by highlighting anomalies or events that may have a significant business impact.

Activity 8.02: Planning for a Healthy Population

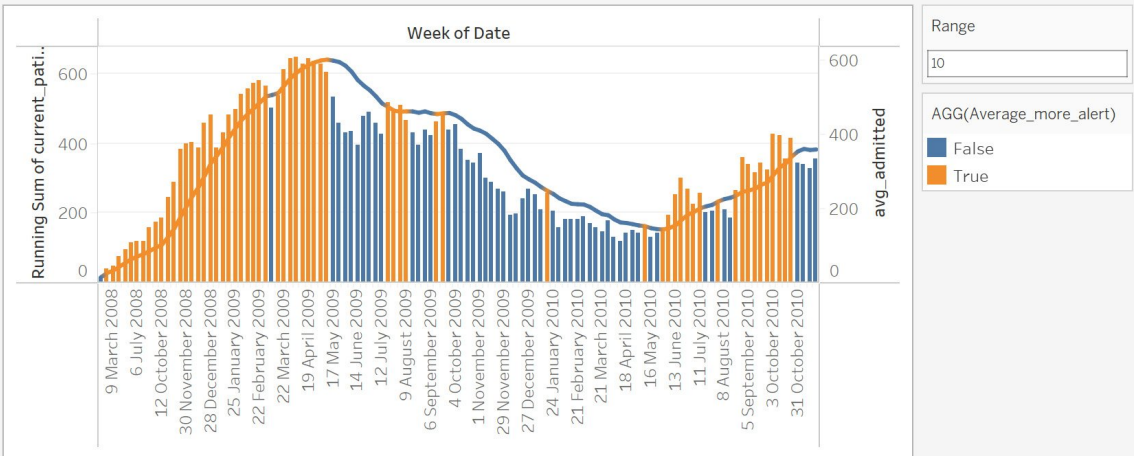
In the previous activity, you created a visualization to indicate a drastic increase in the number of patients. As an analyst, you should also be able to use historic data, and identify patterns when the number of patients go up.

In this activity, you will use a range window to identify when the current admissions increase, and whether there is a specific observable trend. In this way, the hospital can be better prepared for the future. You will use the same hospital data used in the previous activity. The following steps will help you complete this activity:

1. Plot the window average of the `RUNNING_SUM` of `current_patients`, weekly. A window average takes the average of all values in the window, which in this case is the view.
2. Remove the average for the last 10-week range to check whether the count of currently admitted patients goes up or down. Create a parameter that can be used as input for the range; you can name it `Range_input`.
3. Use this `Range_input` parameter as the input for the `WINDOW_AVG` calculation named avg_admitted. You need to calculate the average from the last 10 weeks to the current week.
4. Use a dual-axis to show the `RUNNING_SUM` of current_patients and `WINDOW_AVERAGE`. Recall that a dual-axis is used to show two measures side by side in the same view. Right-click on the axis to enable this option after adding both measures.
5. Create an alert to compare the `RUNNING_SUM` of `current_patients` and `avg_admitted`. Highlight the weeks when the sum is more than the average.
6. The initial view would look like this:



The final view should look like this:



You can now see when the current admitted patient count has gone higher than the 10-week average. The range can be changed based on the requirement by changing the input. An interesting observation is the month of July, which had a higher-than-average number of patients for the all of the previous 3 years, indicating thepossibility for a similar occurance for next July.

Summary

In this lab, you learned about table calculations. You started by performing some quick table calculations, used to quickly apply commonly used table calculations in the view. Then, you explored ways to apply a table calculation using addressing and partitioning -- how addressing defines the direction of the calculation, while partitioning defines its scope. Finally, you learned about creating a table calculation using the calculation editor, and about ways to address the view using specific dimensions.

In the next lab, you will learn about `Level of Detail`, which is another powerful concept, used to control how views are displayed.