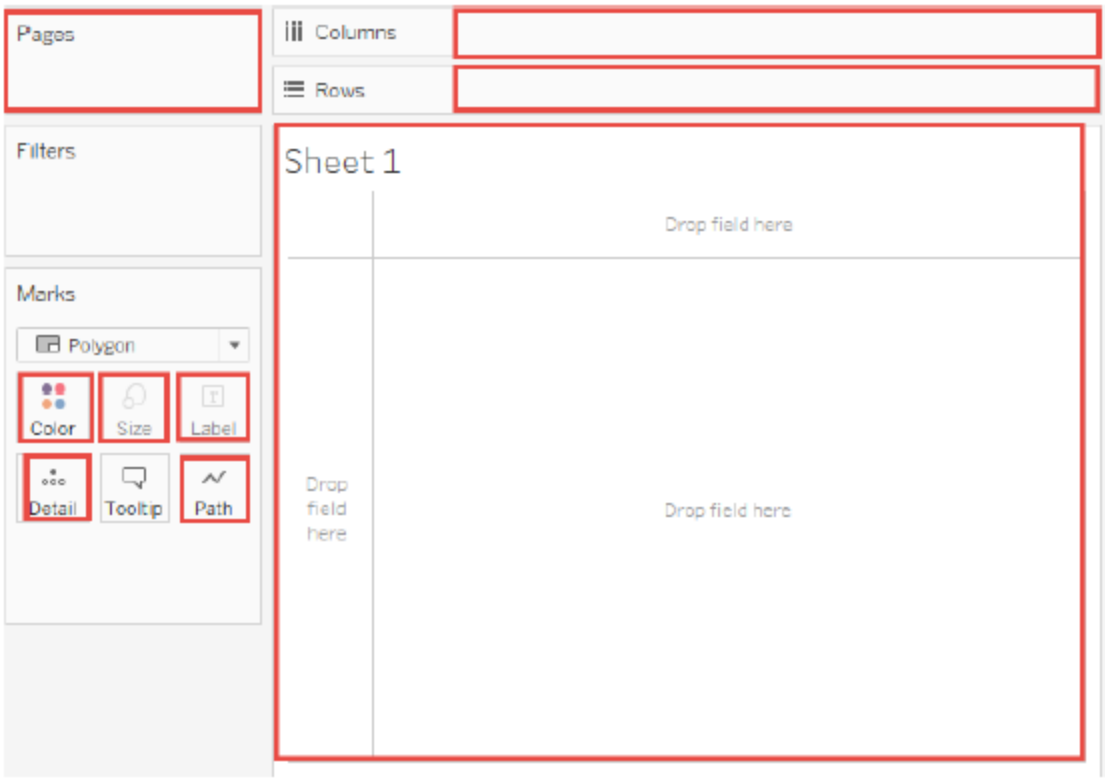
Table Calculation

A table calculation is a transformation you apply to the values for a measure in the view. Table calculations are available as you work with views in Tableau Desktop and also as you edit views in Tableau Server or Tableau Online. Table calculations are a special type of calculated field that computes on the local data in Tableau. They are calculated based on what is currently in the view and do not consider any measures or dimensions that are filtered out of the view.

For any Tableau view, there is a virtual table that is determined by the dimensions in the view. This table is not to be confused with the tables in your data source. Specifically, the virtual table is determined by the dimensions within the "level of detail," which means the dimensions on any of the following shelves or cards in a Tableau worksheet:



When you right-click that measure on the Marks card, you will see two options that mention table calculations:

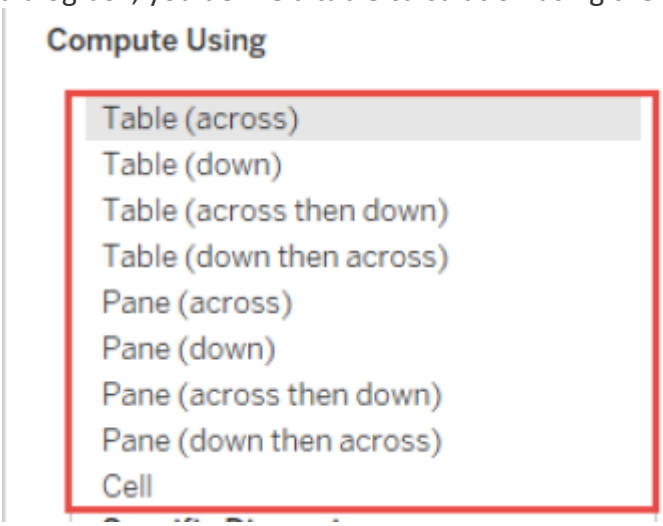
- **Add Table Calculation**
- **Quick Table Calculation**

Quick Table Calculations

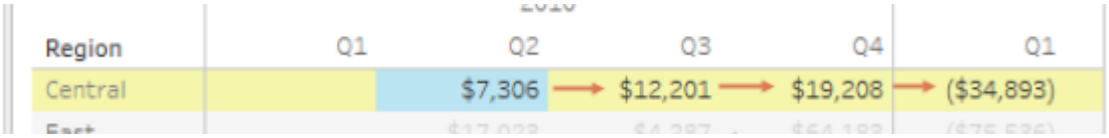
A quick table calculation is a one-step process where you choose a common table calculation type from a list. Tableau automatically applies the most typical settings for that calculation type. If the results are satisfactory, you're done. If not, you can continue working with the calculation by clicking the measure again and choosing Edit table calculation. The list of available quick calculation types does not exactly match the list of default calculation types you see in the Table Calculation dialog box.

Choose Your Approach to Table Calculations

The easiest way to add a table calculation is to use a quick table calculation. But if you need more flexibility than a quick table calculation affords, you can base your calculation on the visual structure of your view, or you can reference the specific dimensions in the view. When you configure a table calculation using the **Compute Using** options in the Table Calculation dialog box, you define a table calculation using the visual structure of your view.



As you add or edit a table calculation in the Table Calculation dialog box, Tableau highlights the effects of the **Compute Using** options you choose in the view. For example, a **Table (Across)** calculation moves from left to right across the entire width of the view:



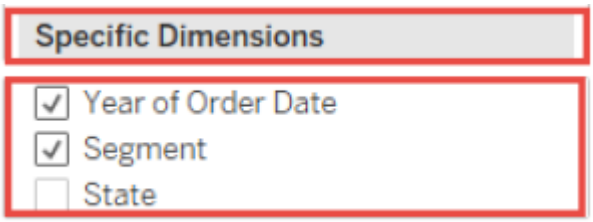
A Pane (Down then Across) calculation moves down the first column in a pane, then down the second column in a pane, and so on:

Region	Q1	Q2	Q3	Q4
Central		$6,397	($2,415)	$16,998
East	($12,593)	($2,876)	($10,790)	$34,185
International	$35,599	$78,598	$173,907	$468,815
South	($54,297)	($93,498)	($181,841)	($526,998)
West	$32,199	$32,391	$20,935	($6,010)

The **Compute Using** approach should be convenient and intuitive for most users because the calculation aligns with what you see in your view. The list of options under **Compute Using** changes according to the content of your view.

Table Calculations: Reference Specific Dimensions in Your View

With this approach, you define a table calculation by referencing the dimensions in the view. Choose **Specific Dimensions** in the Table Calculation dialog box and then select or clear fields in the box below:



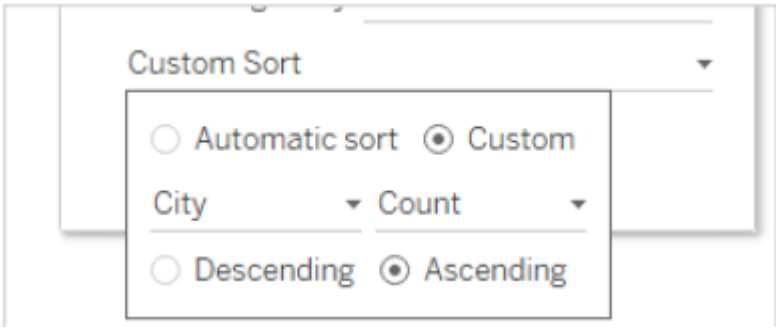
To configure a table calculation using specific dimensions, click Specific Dimensions and then select dimensions in the box below. You can also drag dimensions up or down in the list to set the sequence for the calculation.

Customize How Tableau Sorts the Results of Table Calculations

When you add a table calculation using specific dimensions from your view, you can also customize the way Tableau sorts the values. This option is available for all table calculation types except Rank and Percentile.

With custom sorting, you can sort the results of a table calculation using values from a field in the data source. With **Specific Dimensions** selected in the Table Calculations dialog box, do the following:

1. Click **Custom Sort** to display drop-down options.



2. Select **Custom Sort**.

3. From the drop-down list on the left, choose the field with the values you want to sort on.

4. From the drop-down list on the right, choose the aggregation you want to use with the field.

5. Specify whether to sort by **Descending** or **Ascending** values.

Table Calculation Type: Difference From

For each mark in the view, a **Difference From** table calculation computes the difference between the current value and another value in the table.

Difference from what?

With a **Difference From**, **Percent Difference From**, or **Percent From** calculation, there are always two values to consider: the current value, and the value from which the difference should be calculated. In most cases, you want to calculate the difference between the current value and the previous value. But in some cases you may want something different:

Previous	Calculates the difference between the current value and the previous value in the partition. This is the default value.
Next	Calculates the difference between the current value and the next value in the partition.
First	Calculates the difference between the current value and the first value in the partition.
Last	Calculates the difference between the current value and the last value in the partition.

At the level

The **At the level** option is only available when you select **Specific Dimensions** in the Table Calculations dialog box, and when more than one dimension is selected in the field immediately below the **Compute Using** options. This option is not available when you're defining a table calculation with **Compute Using**. But with **Specific Dimensions**, because the visual structure and the table calculation are not necessarily aligned, the **At the level** option is available to let you fine-tune your calculation.

Table Calculation Type: Percent Difference From

For each mark in the view, a **Percent Difference From** table calculation computes the difference between the current value and another value in the table, as a percentage.

Table Calculation Type: Percent From

For each mark in the view, a **Percent From** table calculation computes a value as a percentage of some other value—typically, as a percentage of the previous value in the table.

Table Calculation Type: Percent of Total

For each mark in the view, a **Percent of Total** table calculation computes a value as a percentage of all values in the current partition.

Table Calculation Type: Rank

For each mark in the view, a **Rank** table calculation computes a ranking for each value in a partition.

Descending vs. Ascending

Ascending order ranks values from least to most. **Descending** order ranks values from most to least. For Rank table calculation, the default value is **Descending**.

Rank Type

One issue with **Rank** calculations is that there may be more than one mark with the same value. What would happen, for example, if Tables in the Central region and Appliances in the South region both had sales of exactly $36,729? Tableau lets you specify how to handle such cases by including an additional field in the Table Calculation dialog box when you set **Calculation Type** to **Rank**. The choices are listed below. The number sequence at the beginning of each option show how each option would rank a hypothetical set of four values where two of the values are identical:

Option	Result
Competition (1, 2, 2, 4)	Identical values are assigned an identical rank. The highest value is ranked 1 and then the next two, identical values, are both are ranked 2. The next value is then ranked 4.
Modified Competition (1, 3, 3, 4)	Identical values are assigned an identical rank. The highest value is ranked 1 and then the next two, identical values, are both are ranked 3. The next value is then ranked 4.
Dense (1, 2, 2, 3)	Duplicate values are all given the same rank, which is the next number in the ranking sequence. The next value after the duplicate values is computed as though the duplicate values were a single value.
Unique (1, 2, 3, 4)	Duplicate values are given unique rankings, according to the direction in which the ranking is being computed.

Table Calculation Type: Percentile

For each mark in the view, a **Percentile** table calculation computes a percentile rank for each value in a partition.

With this kind of table calculation, the lowest ranked value is assigned the 0 percentile and the highest ranked value is assigned the 100 percentile (assuming the calculation is working in ascending order, which is the default). All other values are assigned a percentile based on their ranking. So for a set of four values, 1, 3, 22, 67, the percentiles would be 0%, 33%, 67%, and 100%, respectively.

Table Calculation Type: Running Total

For each mark in the view, a **Running Total** table calculation aggregates values cumulatively in a partition. It can do this by summing values, averaging values, or replacing all values with either the lowest or highest actual value.

The Running Total Doesn't Have to Be a Sum

For a **Running Total** table calculation, Tableau can update values cumulatively in other ways than summing. Choose one of the options from the drop-down list just below the **Calculation Type** field:

Option	Meaning
Sum	Each value is added to the previous value.
Average	The running total averages the current and all previous values.
Minimum	All values are replaced with the lowest value in the original partition.
Maximum	All values are replaced with the highest value in the original partition.

Restarting Every

Use this setting to set a break (that is, restart of the calculation) in the view, based on a particular dimension.

Restarting every can be useful in the following situations:

- With dates or other hierarchies, if you restart every month, as you bring in Year or Quarter, Tableau knows to partition automatically.
- With non-hierarchies, **Restarting every** affects the sorting. If you want to address on **Products** and partition by **State**, but you want the products sorted by **SUM(Sales)** within each state, you need to include **States** as an addressing field under Specific Dimensions, but then restart every state. Otherwise, the sort by **SUM(Sales)** would be based on each product's sum of sales across all states.

The **Restarting every** option is only available when you select **Specific Dimensions** in the Table Calculations dialog box and when more than one dimension is selected in the field immediately below the **Compute Using** options—that is, when more than one dimension is defined as an addressing field. This option is not available when you're defining a table calculation with **Compute Using**.

Add Secondary Calculation

With **Running Total** and **Moving Calculation** table calculations, you have the option to transform values twice to obtain the result you want—that is, to add a secondary table calculation on top of the primary table calculation.

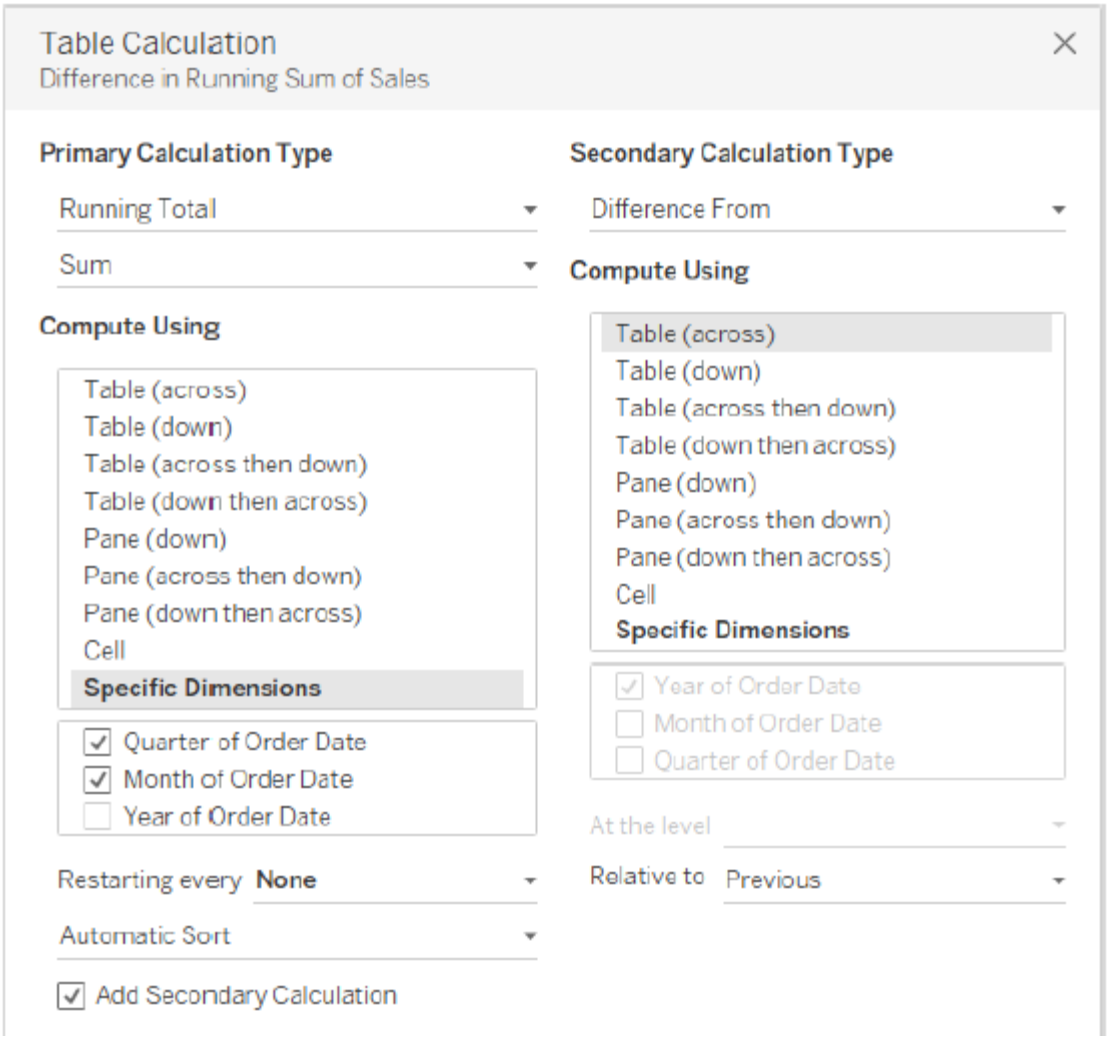
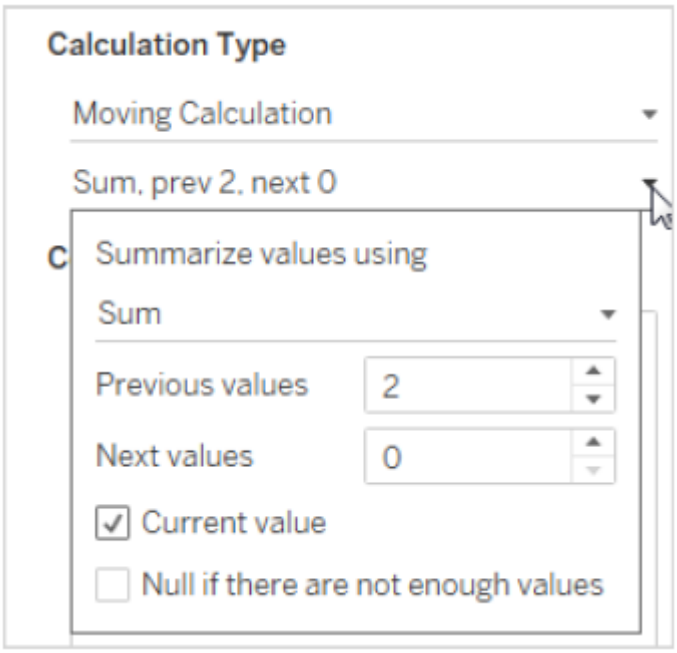


Table Calculation Type: Moving Calculation

For each mark in the view, a **Moving Calculation** table calculation determines the value for a mark in the view by performing an aggregation (sum, average, minimum, or maximum) across a specified number of values before and/or after the current value. A moving calculation is typically used to smooth short-term fluctuations in your data so that you can see long-term trends. For example, with securities data there are so many fluctuations every day that it is hard to see the big picture through all the ups and downs. You can use a moving calculation to define a range of values to summarize using an aggregation of your choice.

Follow these steps to add a **Moving Calculation** table calculation to the basic view:

1. Click the **SUM(Sales)** field on the Marks card and then click **Add table calculation**.
2. In the Table Calculation dialog box, choose **Moving Calculation** as the **Calculation Type.**
3. Click in the drop-down list below the **Calculation Type** option to display the options that you use to configure the calculation:



4. Choose from the drop-down list of available aggregations: **Sum**, **Average**, **Minimum**, or **Maximum**. In this case, you want **Average**.
5. Using the **Previous values** option, specify how many marks preceding the current mark should be included in calculating the average. In this case, you want 2.
6. Using the **Next values** option, specify how many marks following the current mark should be included in calculating the average. In this case, you want 0.
7. Click **Current value** to indicate that you want the current value to be included in the calculation.
8. Do not click **Null if there are not enough values**. You can select this option if you want the current value to be null if there are not enough previous or next values to perform the calculation as specified. When you do not click this option, Tableau will use as many of the values within the specified range as are available.

So, finally the summary:

- **Difference From** - show absolute change.
- **Percent Difference From** - show rate of change.
- **Percent From** - show as % of other specified value.
- **Percent of Total** - show values as % of the total.
- **Rank** - rank values numerically
- **Percentile** - compute percentile values
- **Running Total** - show a cumulative total.
- **Moving Calculation** - smooth short fluctuations to identify long term trends.