

UNDERSTANDING DIMENSIONS AND MEASURES

When we connect to a new data source, Tableau performs two actions.

Action#1: Assigns a **role** (Dimension or Measure)

Action#2: Assigns a **type** (data type i.e., Number (decimal), Number (whole), Date, Date & Time, String, Boolean, Geospatial)

The role assigned can be either be a **dimension** or a **measure** in the Data pane, depending on the **type of data** the field contains.

UNDERSTANDING DIMENSIONS AND MEASURES

The below mentioned topics will be covered:

Data field roles and types

Using Dimension fields in the view

How dimensions affect the level of detail/granularity of the view

Using Measure fields in the view

DATA FIELD ROLES AND TYPES

Data fields are made from the columns in the data source.

As discussed, each field is automatically assigned a data type (such as integer, string, date), and a role: **Discrete Dimension** or **Continuous Measure** (more common), or **Continuous Dimension** or **Discrete Measure** (less common).

Dimensions contain qualitative or categorical values (such as names, dates, or geographical data).

Dimensions can be used to categorize, segment, and reveal the details in the data.

Dimensions affect **the level of detail** or **granularity** of the view.

DATA FIELD ROLES AND TYPES

Measures contain numeric, quantitative values that we can measure.

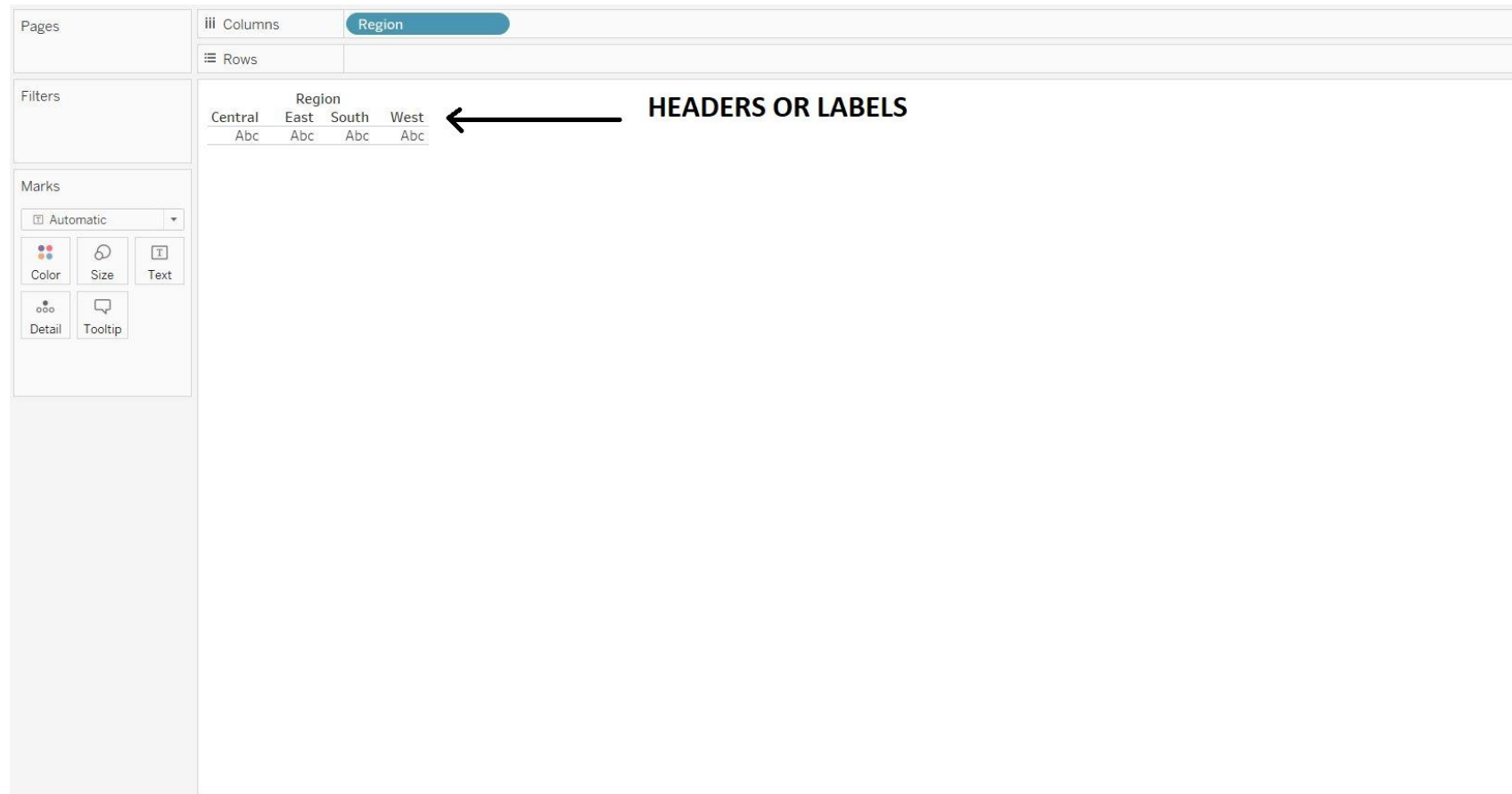
Measures are always **aggregated**.

When we drag a measure into the view, Tableau applies an **aggregation** to that **measure (by default)**.

This default aggregation of the measure can be changed.

USING DIMENSION FIELDS IN THE VIEW

When a **discrete dimension** field e.g.: **Region** is dragged to **Rows** or **Columns**, Tableau creates **column** or **row headers**. These headers are also called **Labels**.

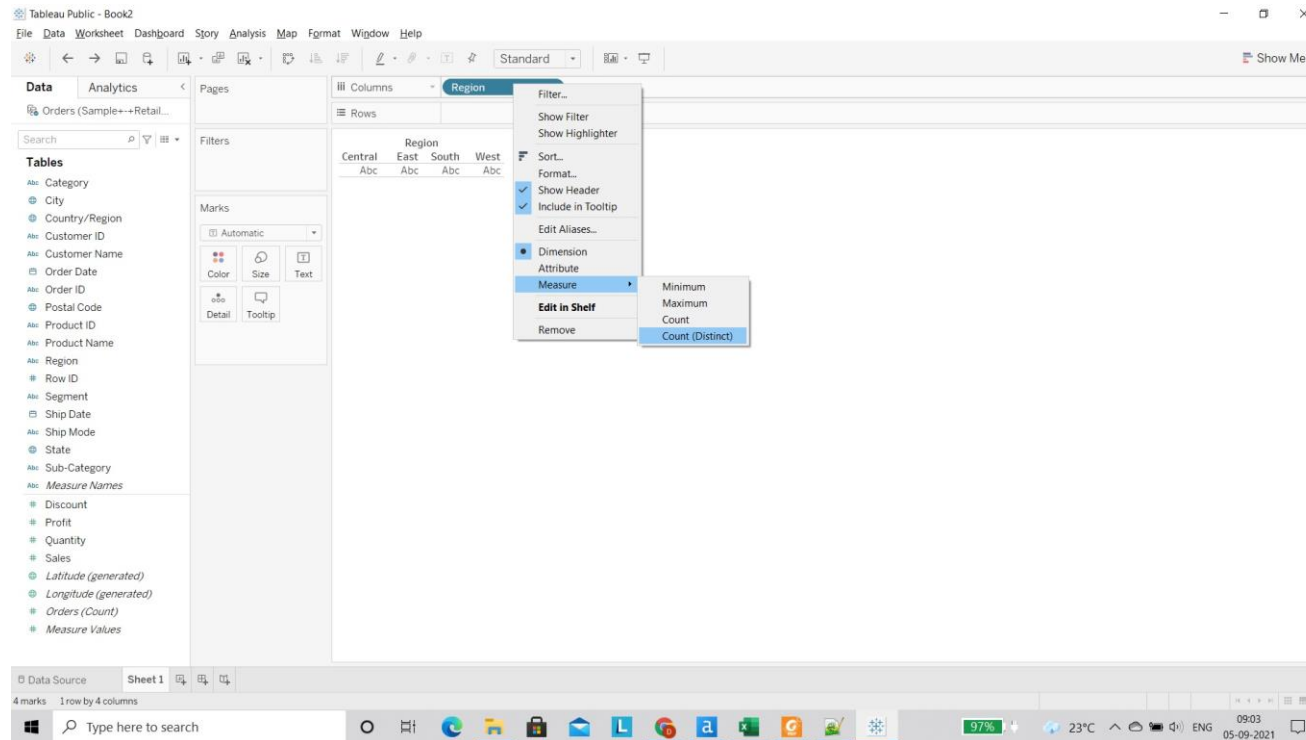


USING DIMENSION FIELDS IN THE VIEW

In many cases, fields from the **Dimension** area will initially be discrete when we add them to a view, with a **blue** background.

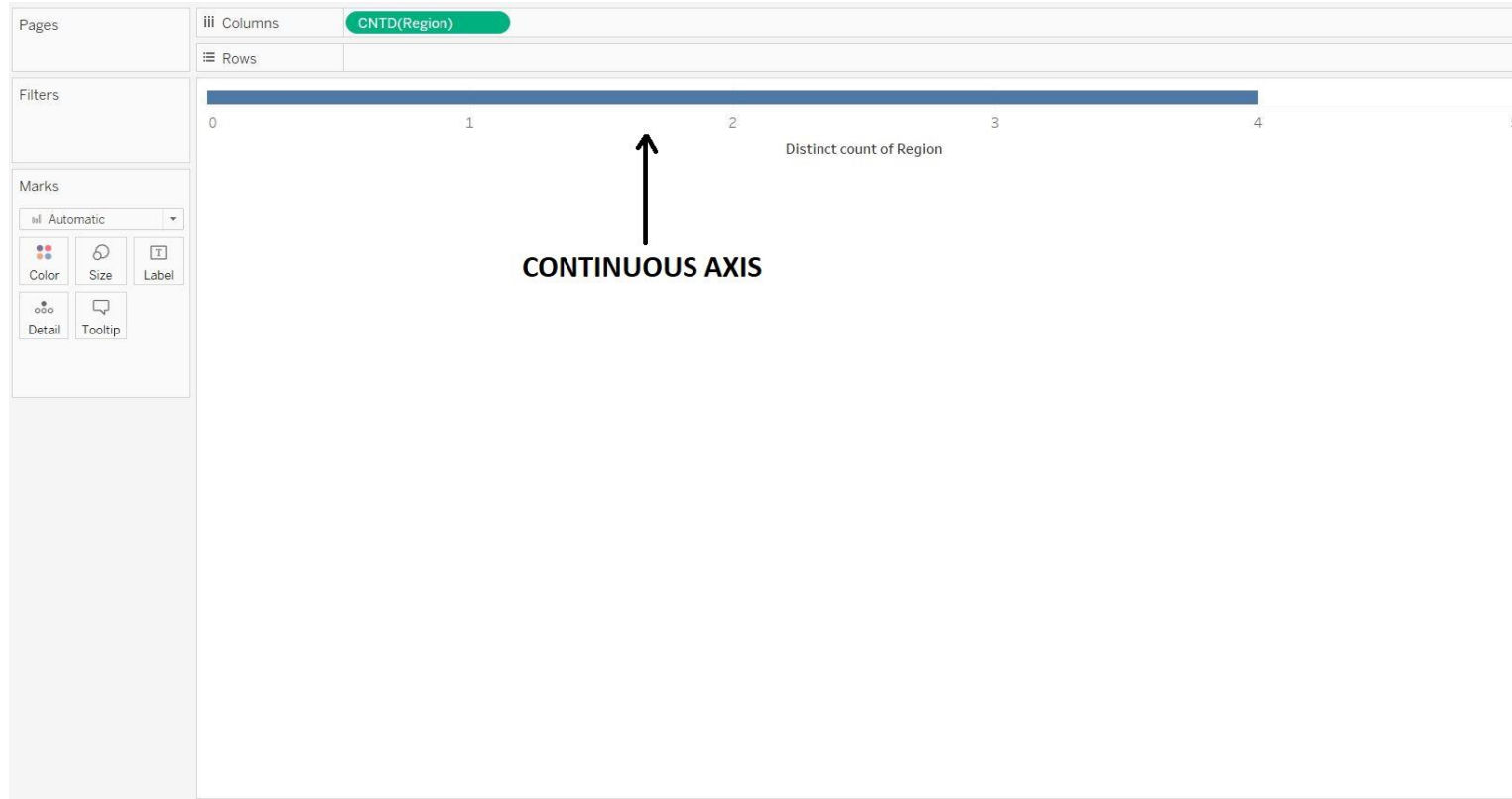
Date dimensions and numeric dimensions can be discrete or continuous, and all measures can be discrete or continuous.

After a dimension is dragged to Rows or Columns, we can change the field to a measure just by clicking the field and choosing **Measure**.



USING DIMENSION FIELDS IN THE VIEW

Now the view will contain a **continuous axis** instead of column or row headers, and the field's background will become **green**



Date dimensions can be **discrete** or **continuous**.

Dimensions containing **strings** or **Boolean values** cannot be continuous.

Tableau does not aggregate dimensions

HOW DIMENSIONS AFFECT THE LEVEL OF DETAIL OF THE VIEW

The **level of detail** in a view refers to how **granular** the data is, given the **dimension** and **measure** data in the view.

It is the **dimension** that provides **the granularity to the view**.

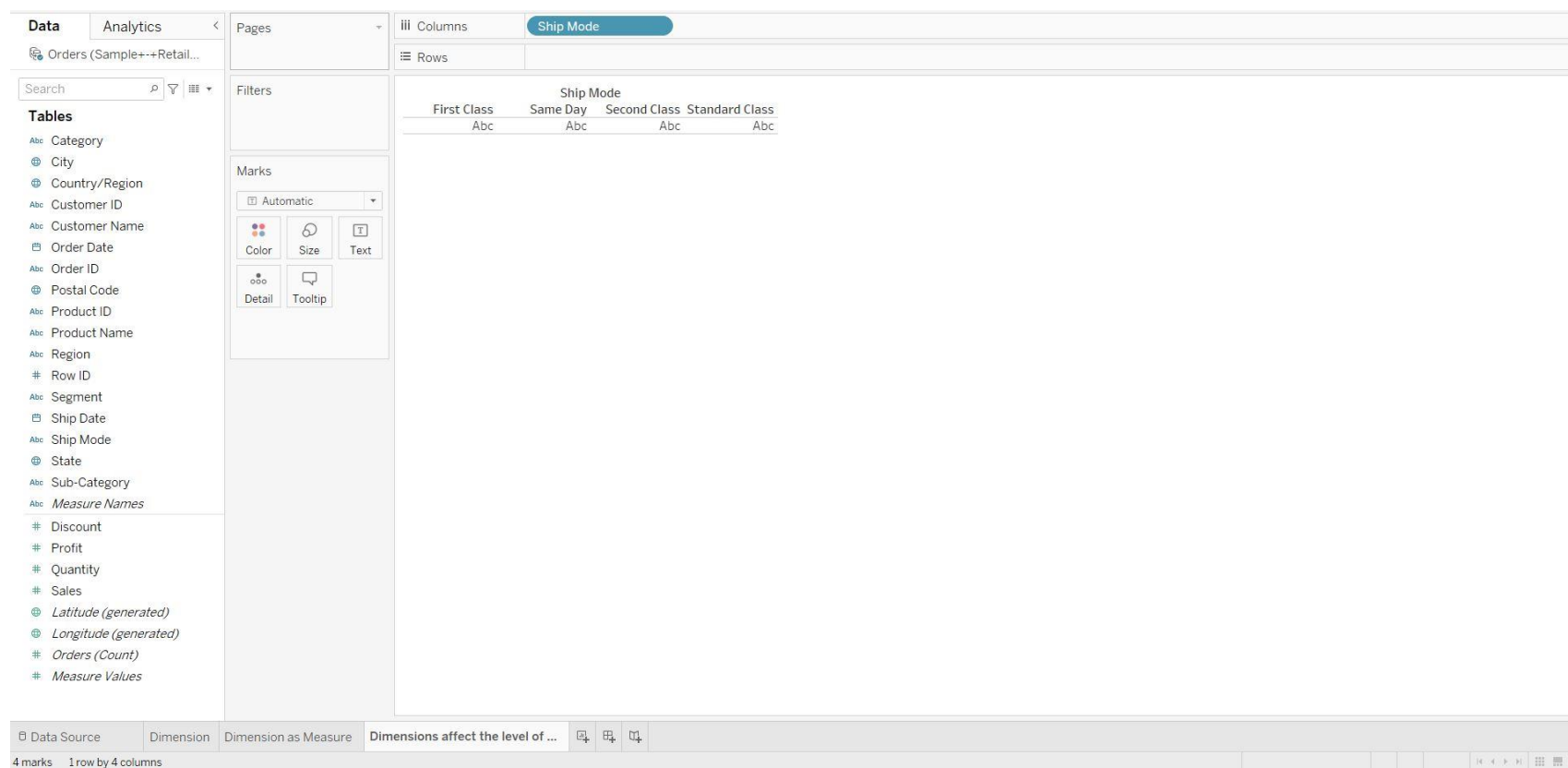
As we add **dimensions** to **Rows** or **Columns**, the **number of marks** in the view increases making the view **more granular** and **less aggregated**.

HOW DIMENSIONS AFFECT THE LEVEL OF DETAIL OF THE VIEW

To understand why adding dimensions increases the number of marks in the view, do the following:

Step 1: Drag the **Ship Mode** to **Columns** shelf

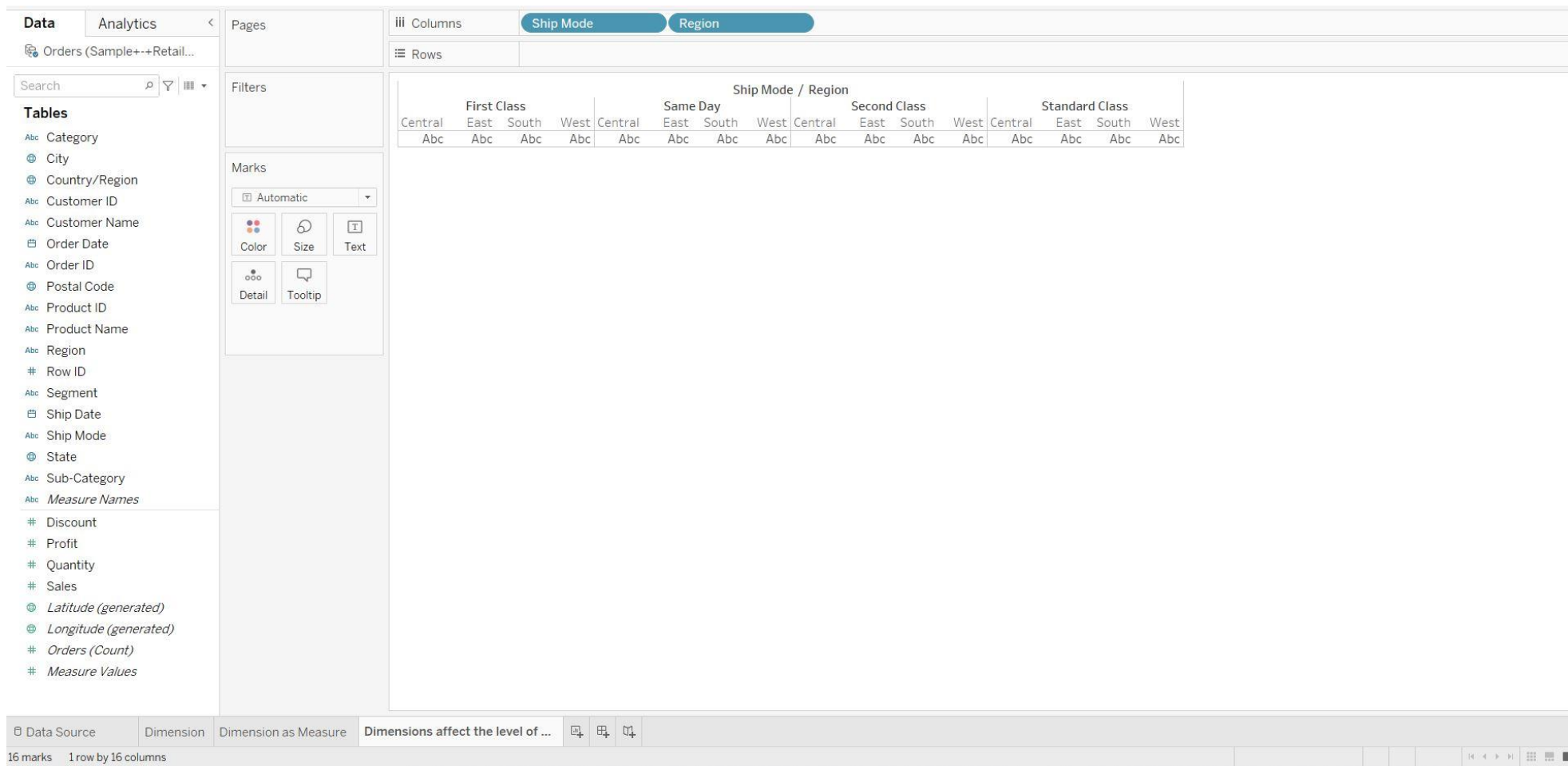
The status bar at the bottom of the Tableau window shows that there are now **four marks** in the view



HOW DIMENSIONS AFFECT THE LEVEL OF DETAIL OF THE VIEW

Step 2: Drag the Region to Columns shelf

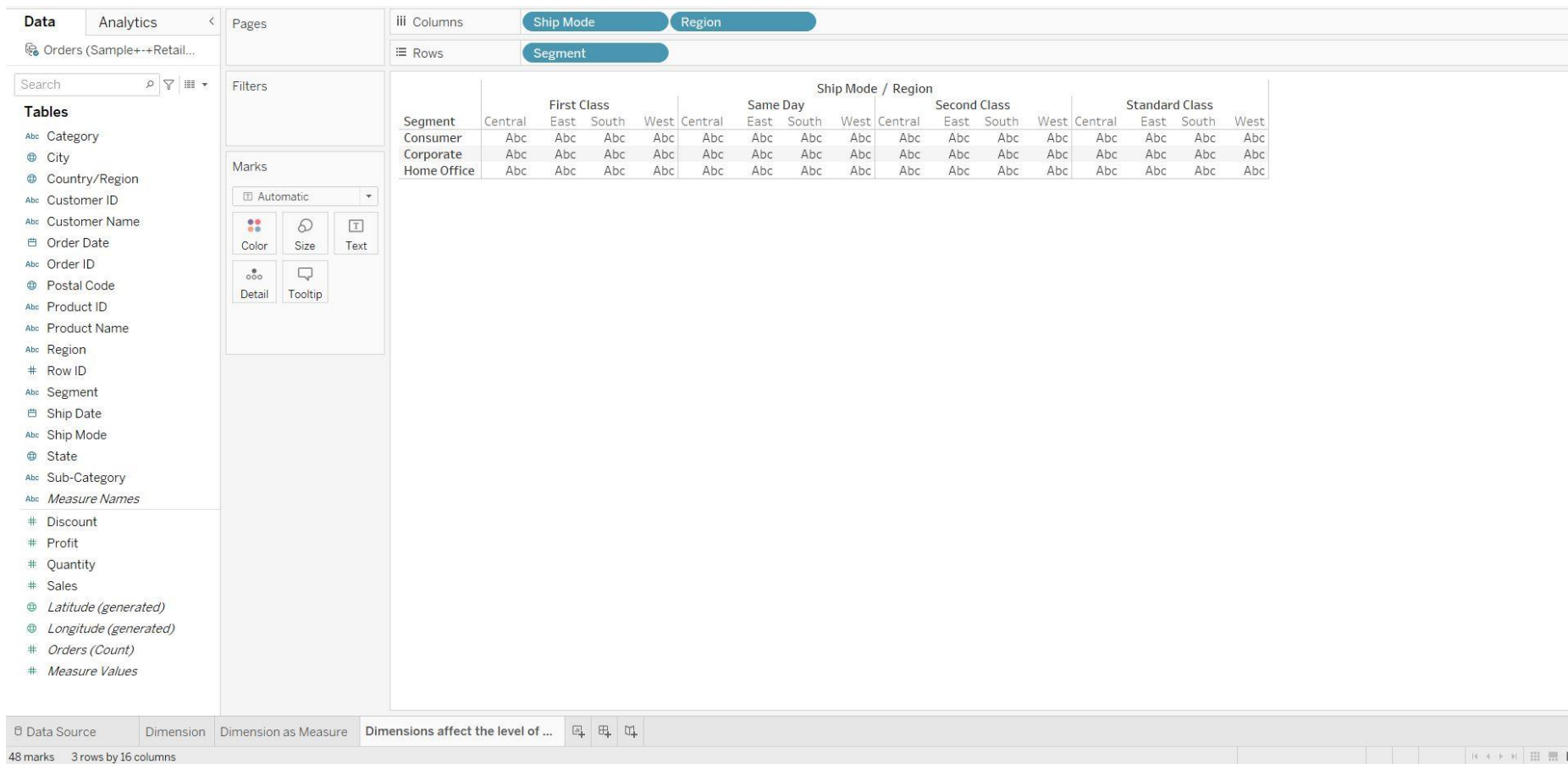
Now there are 16 marks. Four values in Ship Mode multiplied by four values in Region is 16.



HOW DIMENSIONS AFFECT THE LEVEL OF DETAIL OF THE VIEW

Step 3: Drag Segment to Rows shelf

The total is now 48 marks (four ship modes by four regions by three segments is 48)



HOW DIMENSIONS AFFECT THE LEVEL OF DETAIL OF THE VIEW

We could continue adding dimensions to Rows and Columns and observe as the number of total marks continues to increase.

Dragging a dimension to a location on the Marks card such as Color or Size will also increase the number of marks, though it will not increase the number of headings in the view.

The process of adding dimensions to the view to increase the number of marks is known as setting the **level of detail**.

HOW DIMENSIONS AFFECT THE LEVEL OF DETAIL OF THE VIEW

Step 4: The view now contains 48 separate instances of Abc—the view is all structure and no content.

Drag **Sales** to **Text**. The view can now be considered as complete

The screenshot shows a Tableau interface with the following components:

- Data Source:** Orders (Sample++Retail...)
- Columns:** Ship Mode, Region
- Rows:** Segment
- Filters:** (Empty)
- Marks:** Automatic (Text)
- Measure:** SUM(Sales)

The resulting table view displays sales data grouped by Segment, Ship Mode, and Region. The data is as follows:

Segment	First Class				Same Day				Second Class				Standard Class			
	Central	East	South	West	Central	East	South	West	Central	East	South	West	Central	East	South	West
Consumer	27,212	57,262	20,802	53,893	14,122	20,891	8,132	17,450	38,826	63,172	49,724	79,777	171,871	209,583	116,922	211,761
Corporate	18,335	18,881	20,793	47,850	1,736	19,485	9,907	13,993	35,722	37,388	35,243	37,773	102,203	124,655	55,943	126,239
Home Office	13,200	37,444	7,738	28,019	4,558	2,950	2,977	12,160	29,002	15,986	8,791	27,789	44,453	71,083	54,749	68,753

48 marks 3 rows by 16 columns SUM(Sales): 2,297,201

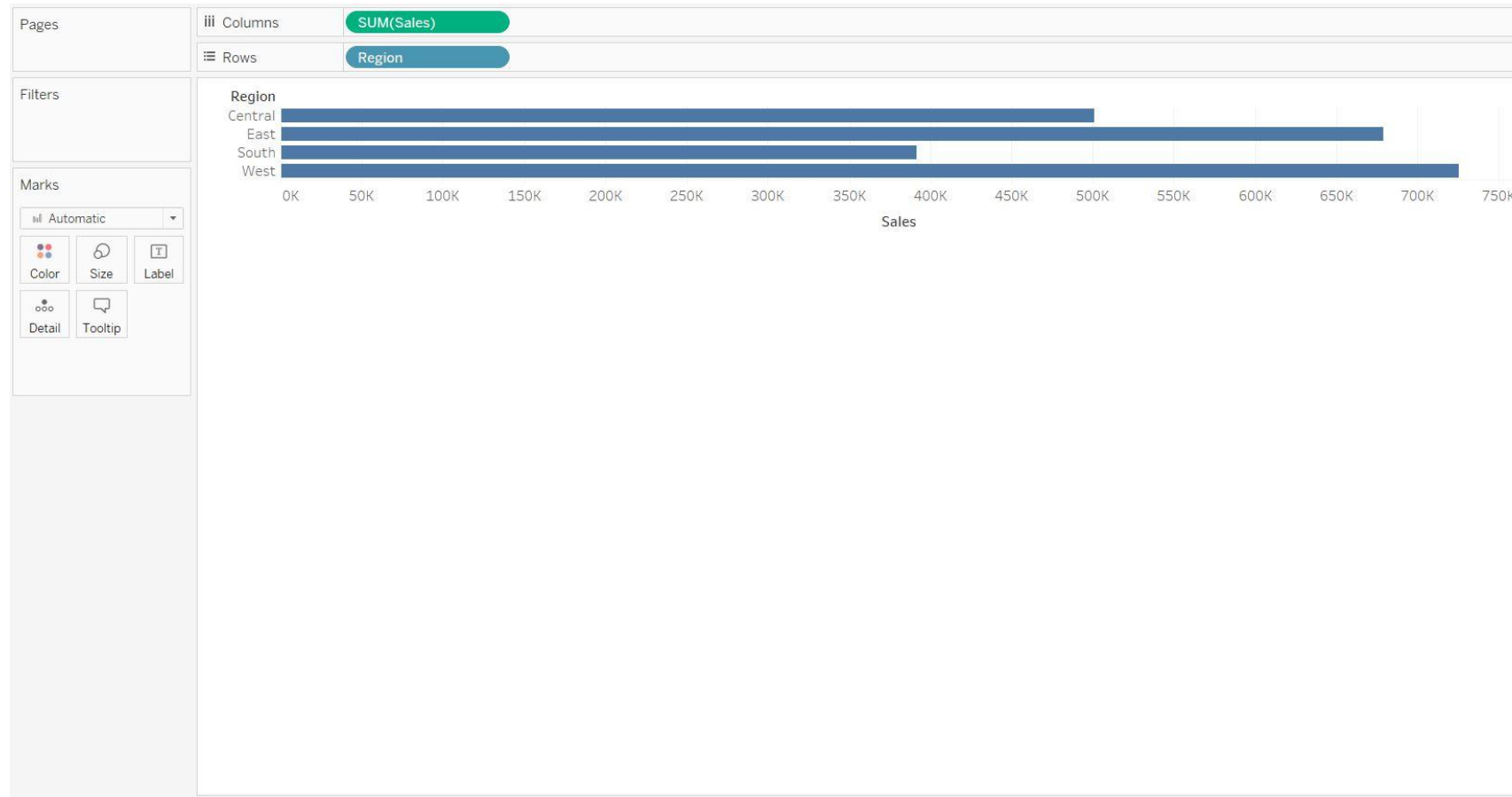
USING MEASURE FIELDS IN THE VIEW

When we drag a **measure** to the view, it is **aggregated** by default.
The type of **aggregation** will vary depending on the type of view.

We should always check the aggregation and change it if necessary.

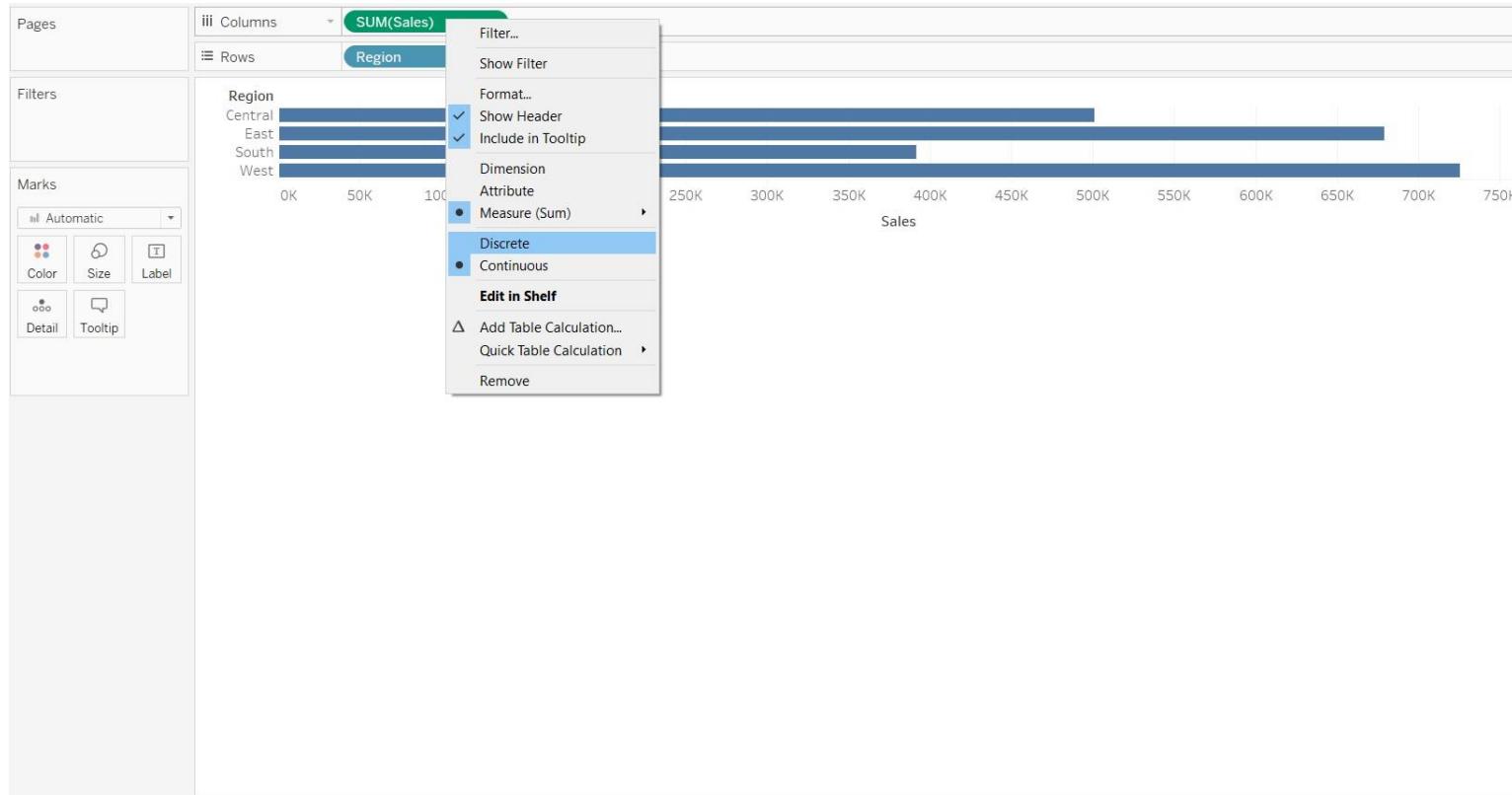
USING MEASURE FIELDS IN THE VIEW

When we drag a **continuous field** from the Data pane to **Rows** or **Columns**, Tableau creates a **continuous axis** for that field.



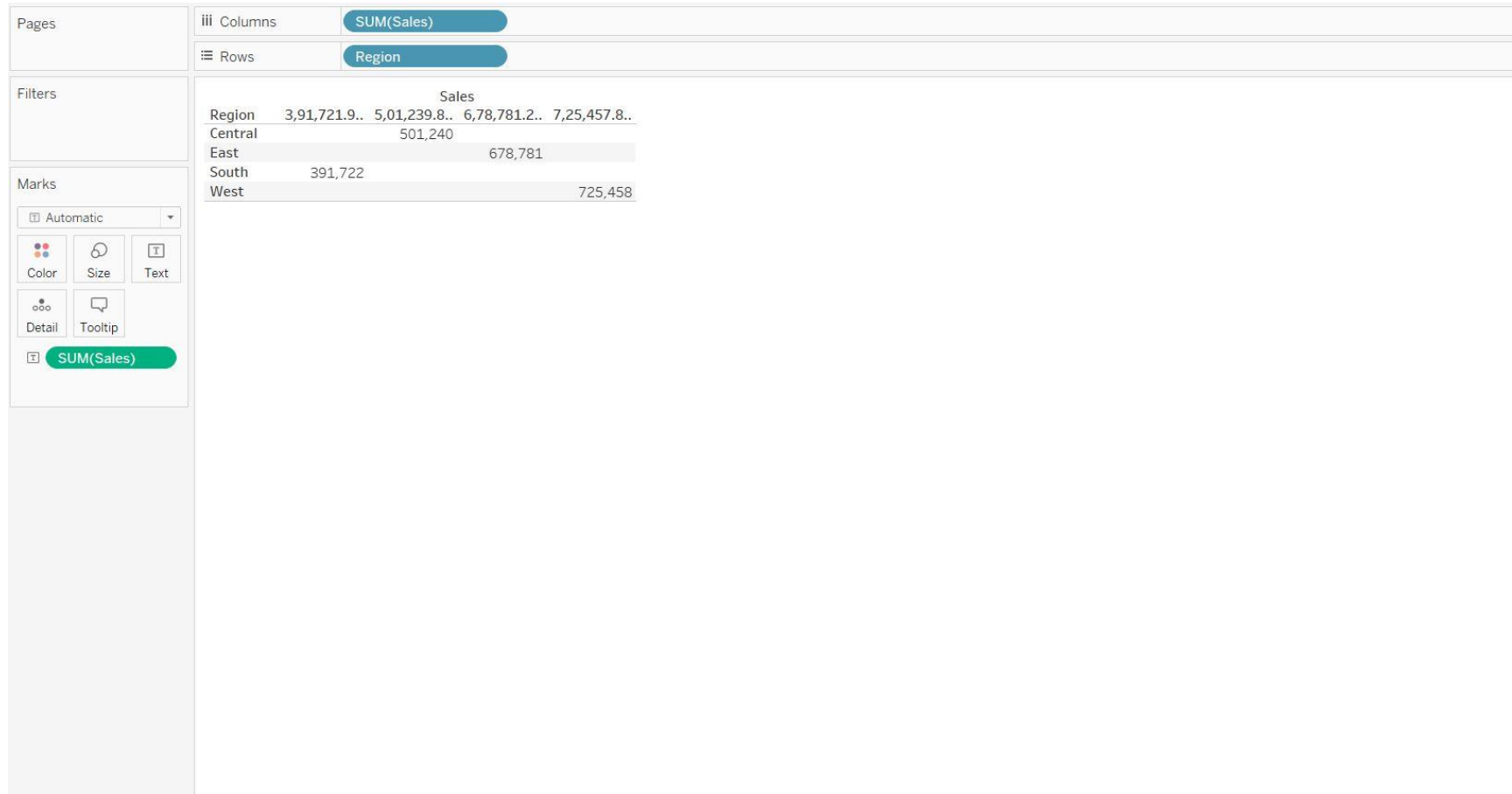
USING MEASURE FIELDS IN THE VIEW

If we click the field and change it to **Discrete**, the values become column headers.



USING MEASURE FIELDS IN THE VIEW

Tableau continues to aggregate values for the field, because even though the field is now discrete, it is still a measure, and Tableau aggregates measures by default.



USING MEASURE FIELDS IN THE VIEW

In cases where Tableau has misclassified a field as a dimension or a measure, possibly because of the data type, we can convert it and change its role.

If a measure contains numbers that don't need to be aggregated (such as a field that contains date values), we may want to convert it to be a dimension.