Data visualization with Tableau

by Ivett Kovács

Numbers have an important story to tell. They rely on you to give them a clear and convincing voice.

—Stephen Few

What is Tableau?

Tableau is a Data Visualisation tool that is widely used for Business Intelligence but is not limited to it. It helps create interactive graphs and charts in the form of beautiful dashboards and worksheets to gain business insights. And all of this is made possible with gestures as simple as drag and drop!

Why I recommend Tableau:

- It's easy to set up.
- it allows us to create beautiful visualizations.
- It's user interface is similar to Excel.
- There is no need for scripting data: just simple drag and drop functionality.
- It has a constructive and pleasant user community all around the world.

What Products does Tableau offer?

To work with Tableau, you **need** Tableau, right?

Tableau Desktop
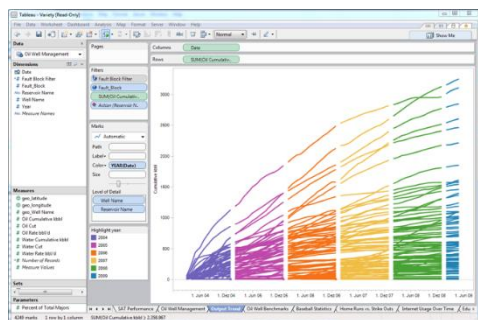
- Data analysis and visualization
- Report creation
- Creation of interactive dashboards and data stories
- Publication of dynamic and static content
- Direct access to databases, data warehouses and other sources

It is available in the following three formats:

1. Free trial for 14 days
2. If you are a student or a teacher, you can get free access to the Desktop for a full year.
3. Purchase Tableau

Tableau Public

Tableau Public is purely free of all costs and does not require any license. But it comes with a limitation that all of your data and workbooks are made public to all Tableau users.
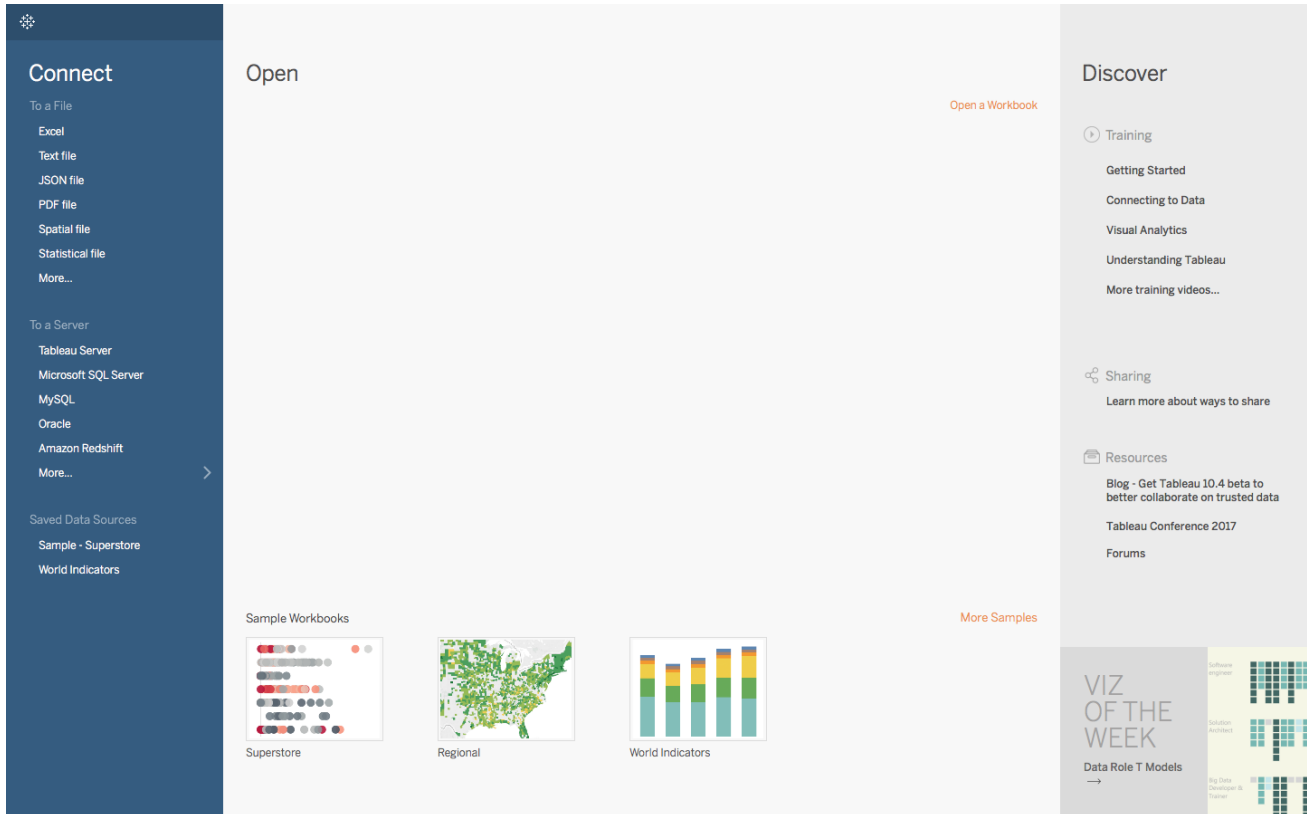
Tableau Reader
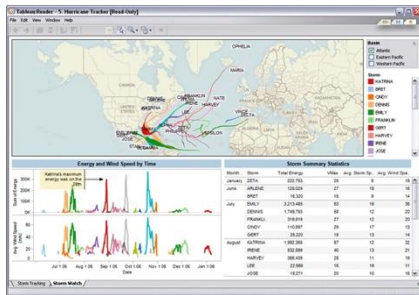
- "Acrobat Reader for Data"
- Visual analytics on the desktop
- Full interactivity: Filter sort and page through data
- Packaged data, no live connection
- Free of charge

Once downloaded, run your installer and Tableau will install.

Setup: done.

Getting Started

Connect to the Data

You should see a screen similar to the one above. This is where you import your data. As you can see, there are multiple formats that your data can be in. It can be in a flat file such as Excel, CSV or you can directly load it from data servers too.

Tableau itself offers some Sample Workbooks, with pre-drawn charts and graphs. I would suggest going through these later for further exploration.

The best way to learn is to get your hands dirty. Let us start with our Data, which can be found here. The dataset describes the orders of a fictional retailer in the US and is often used in tutorials and guides as it's got everything to showcase most of Tableau's functionalities.

STARSCHEMA   +ableau SOFTWARE   dataviz.love

The first thing that you will obviously need to do is import the data into Tableau. So quickly follow the below steps:

1. Since the data is in an Excel File, click on **Excel** and choose the Sample – Superstore.xls file
2. You can see three sheets on the screen, but we are only going to be dealing with Orders sheet, so go ahead and drag it on *here*

Wait, the imported data looks a bit different for the first few rows. Don't worry, the solution lies right ahead.

Data Interpreter

3. Click on the **Use Data Interpreter** in order to clean your data table.

All that messy data magically disappeared!

Data Visualisations

As soon as you had imported your dataset, next to the Data Source tab near the bottom of the screen, you immediately must have seen **Go to Worksheet**. A Worksheet is where you make all of your graphs, so click on that tab to reach the following screen:
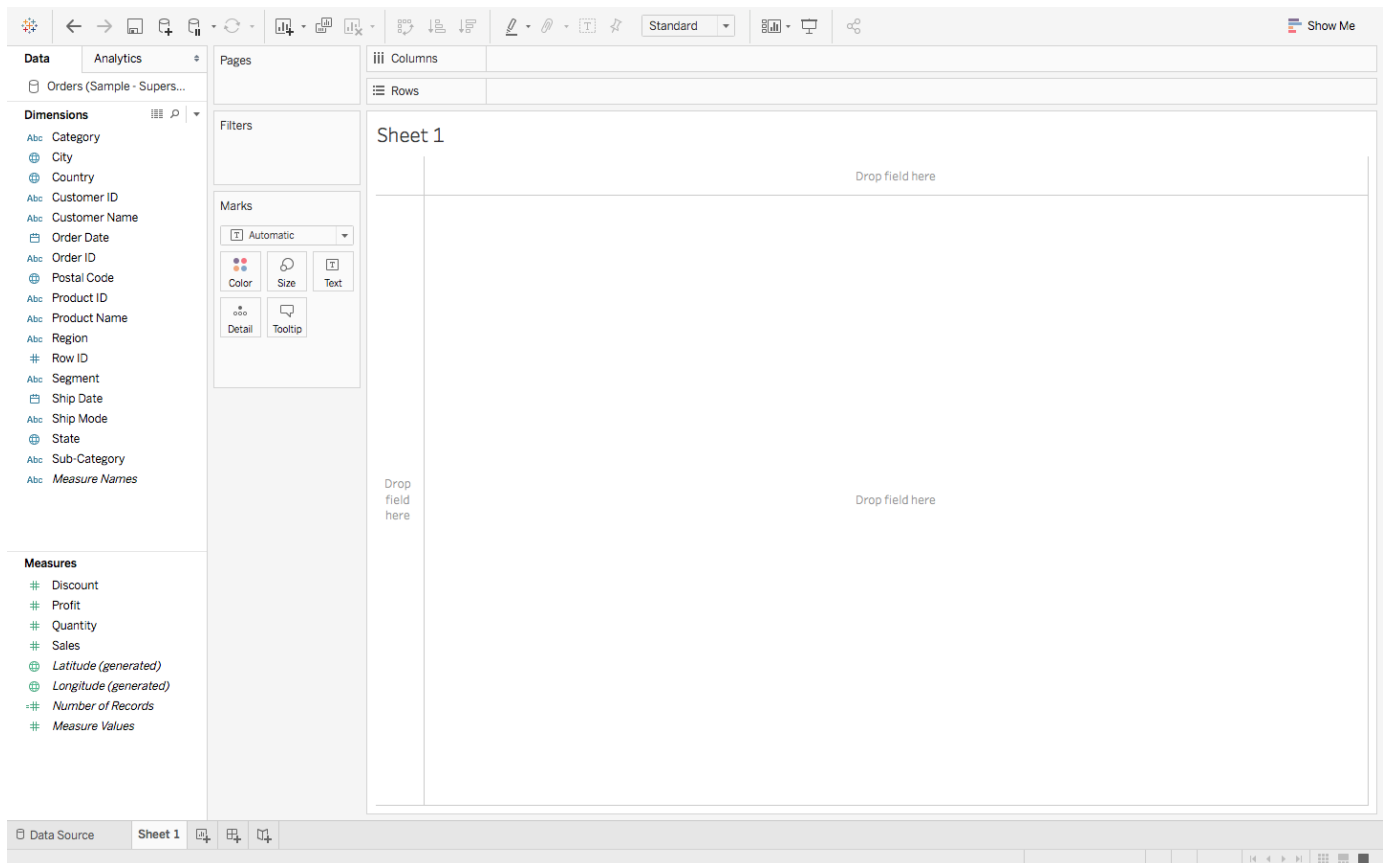
Don't get overwhelmed by the various elements that you see here, we will cover them all one by one.

Like any software, Tableau has its ***own terminology.***

Workbook	Tableau file with .twb or .twbx extension, which contains all results (worksheets, data sources, optionally data)
Dashboard	A dashboard is a collection of several worksheets and supporting information shown in a single place so you can compare and monitor a variety of data simultaneously.
Worksheet	Individual view, dashboard or story contained in a workbook (like sheets in an Excel file) -Dashboard is a separate level, higher than a worksheet – it can have multiple worksheets
Data source	Definition of the connection to a data sources (e.g. path to file or database host and credentials, references to tables or views in a database schema)
Field	Fields contained in data sources can be arranged in columns and rows in views. Fields can be either continuous (e.g. time, sales, temperature) or discrete (e.g. product category, region, order ID)

Dimensions and Measures:

Measure	Quantitative field (e.g. sales, number of records, inventory)
Dimension	Categorical fields that you cannot aggregate.(e.g. product name, date, region)

Shelves: Visualisation in Tableau is possible through dragging and dropping Measures and Dimensions onto these different Shelves.

Pill: When you start dragging a data field from your dimensions or measures, it becomes a pill.

**Rows and Columns:** Represent the x and y-axis of your chart.

Pages: Pages work on the same principle as Filters, with the difference that you can actually see the changes as you shift between the Paged values. Remember that Rosling chart? You can easily make one of your own using Pages.

Filter: Filters help you view a strained version of your data. For example, instead of seeing the combined Sales of all the Categories, you can look at a specific one, such as just Furniture.

Marks: When you drag a pill onto any of the shelves, data will be displayed using Marks. You may choose to represent your data using different shapes, sizes or text.

And finally, there is **Show Me,** the brain of Tableau!

When you drag and drop fields onto the workspace, Tableau makes default graphs for you, but you can change those by referring to the **Show Me** option.
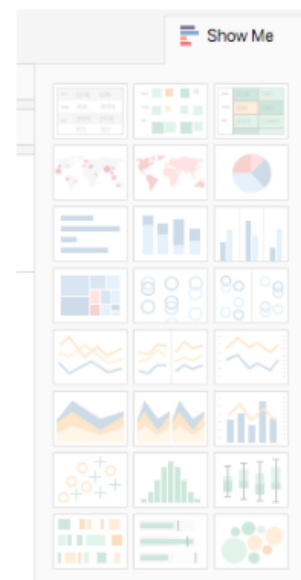
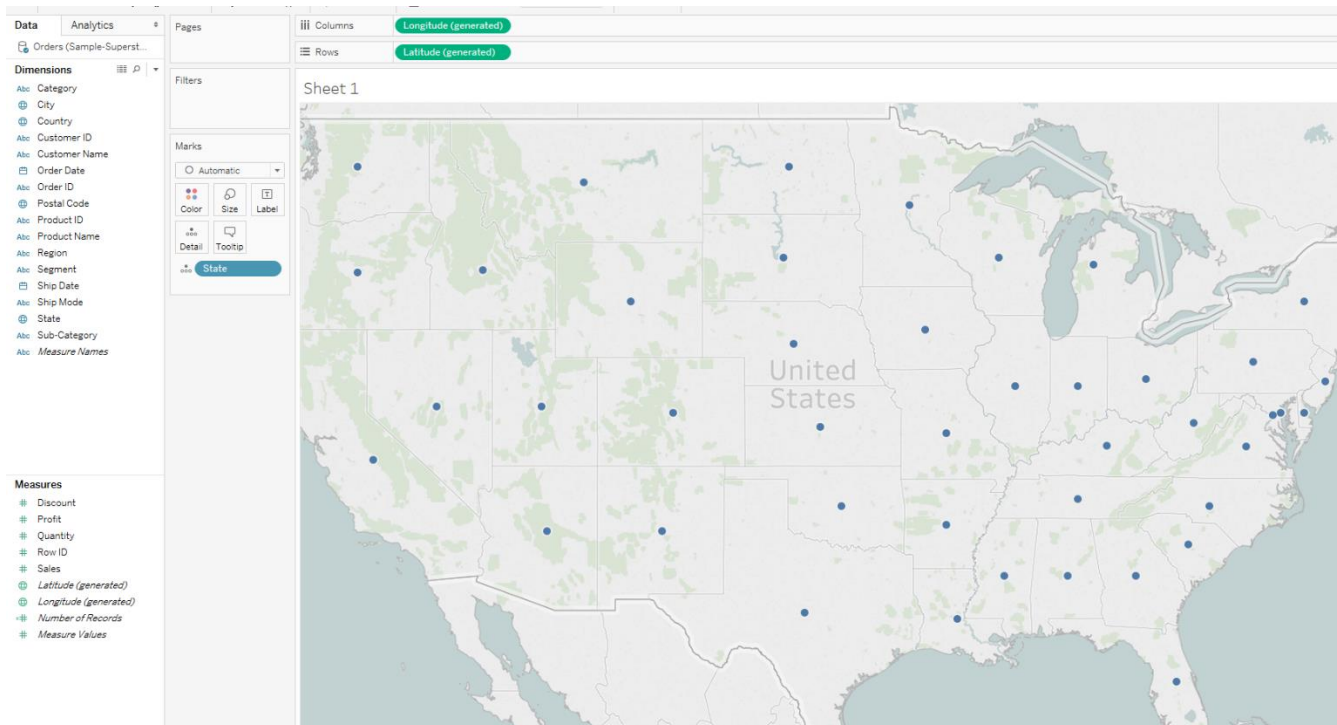# Let's do some visualization

Always start with an information need: I want to see a regional split of sales.
So let's jump straight in and build a map, first up. The Customer State dimension has a map icon next to it.
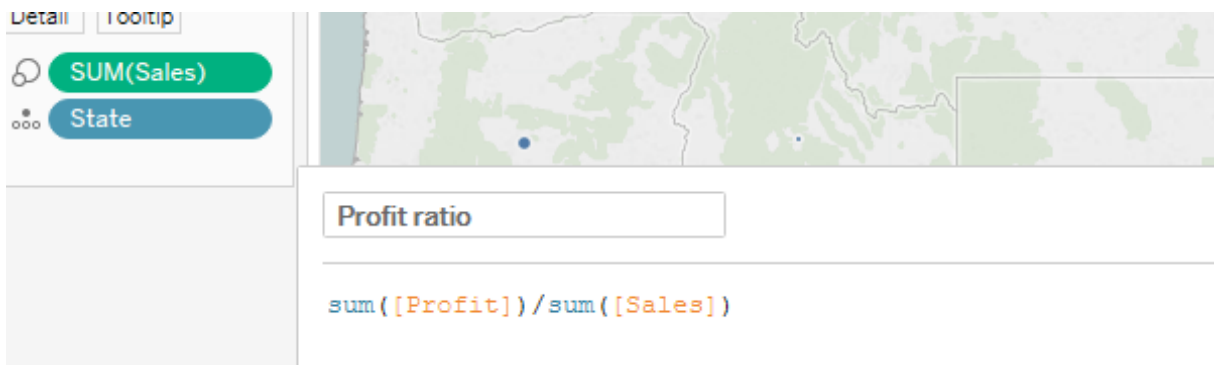
- Double click on Customer state.

There we have it – one click mapping. But we want to see Sales data.

- Double click on Sales.

- Now let's create a new field. Compute **profit ratio**.

Right-click on the data panel – **Create Calculated Field**

Profit ratio

sum([Profit])/sum([Sales])

- Change the number format to percentage and drag onto the color mark.
- Optionally, change the color pallet to Red-Blue diverging. Set the center to 0.
- Add the Order date to the Filters shelf and apply it to ALL Using this Datasource.
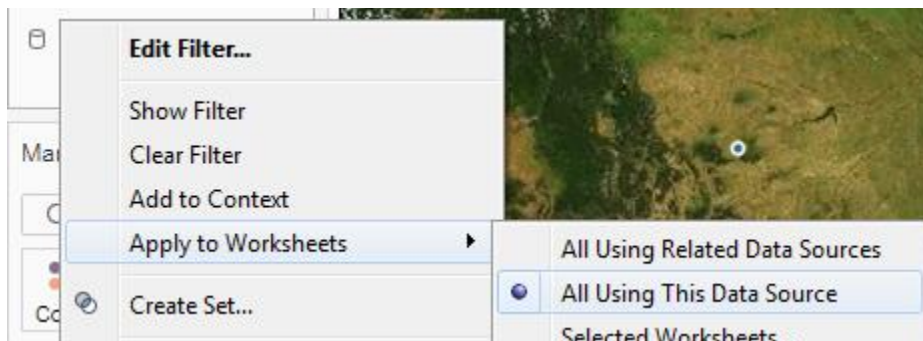
- Rename the sheet "Sales Map"
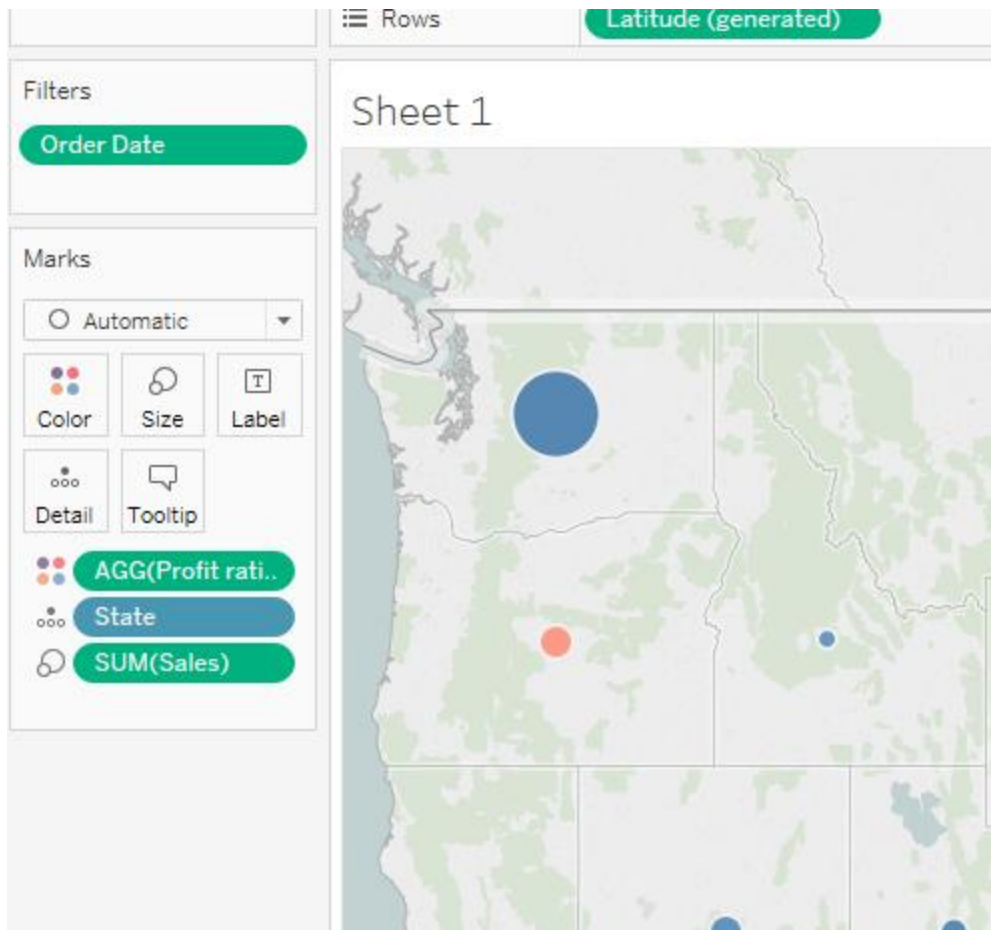
Let's see the Matrix for products by region.

- First, we create a new sheet.
- Start with sales – double click on it as before.
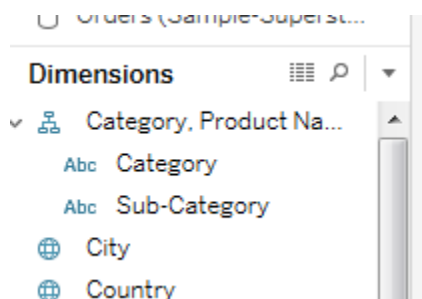- Now double click on Product Category. Very easily we have a bar chart showing sales by category.
- Let's create the Product Hierarchy in Tableau. Select the Category, Sub-Category fields on the Data Panel and right click- Create Hierarchy and it is DONE.

- There is a plus sign next to the Product category – it is also in the bar chart on the bottom axis. This is because of the hierarchy that we had created Click on the plus icon. Fast, easy, intuitive drill down.
- Now we want to bring in some Region information. Drag Region from the data pane and drop it directly in the viz – on the sales axis.
- Finally, let's add our Profit Ratio – drag it onto the color shelf. Look at how much information we now have encoded here, without obscuring the value of the information!
- Rename the sheet "Sales Matrix"
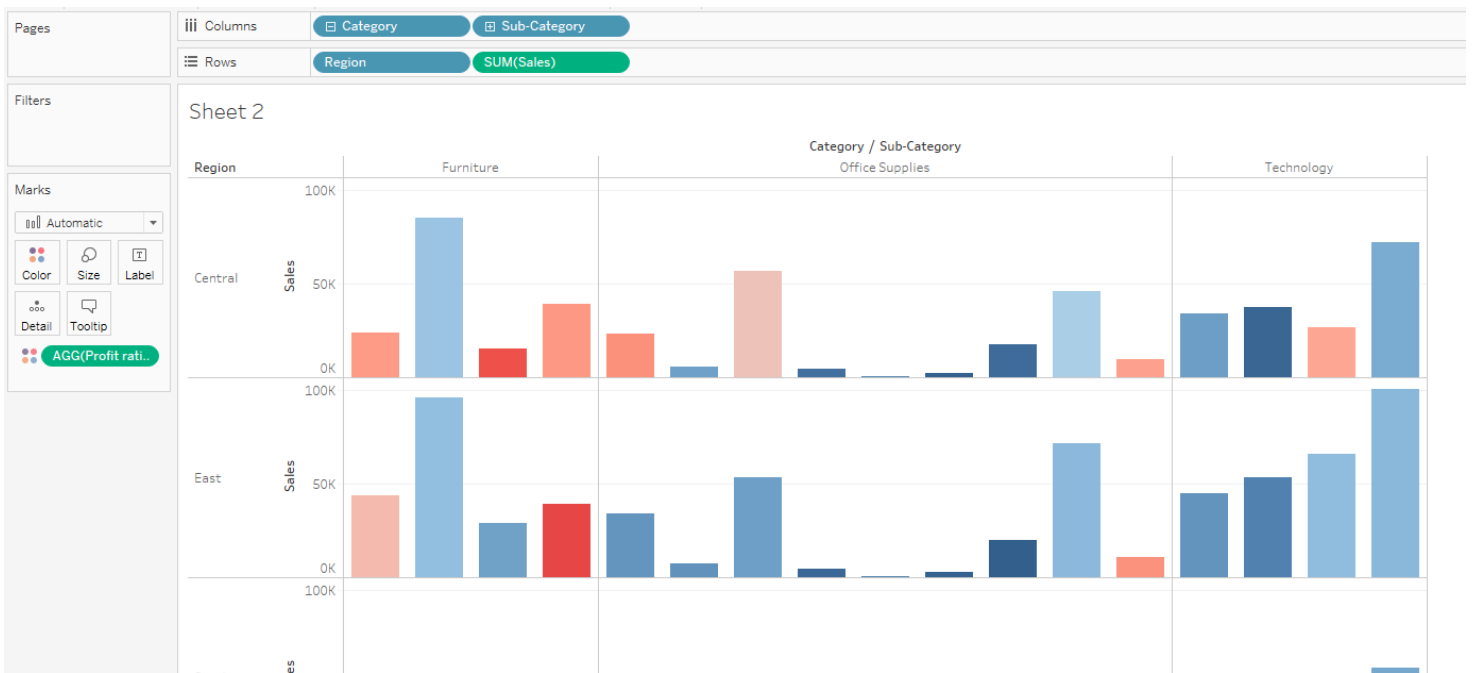
Moving on to the third visualization in our dashboard, we are going to create our Customer Segmentation list.
- Create a new sheet.
- We know that the bars are going to show sales – so go ahead – double click sales.

- We know that we want a bar per customer – so take the customer name and drag it to the columns.
- We see that the bars aren't sorted, and also our chart is the wrong way around. Simple – let's pivot the table: click the swap axes button on the toolbar.
- Now for the sort – Right click our customer name field in the visualization. We want to sort our customers by their sales amount. We choose Sort.
- Everything so far has been easy and intuitive.
- Let's create a *Threshold Parameter* (Common uses for Parameters are What-If Analysis and User Input Analysis) – Right click on the Data Panel- Create Parameter
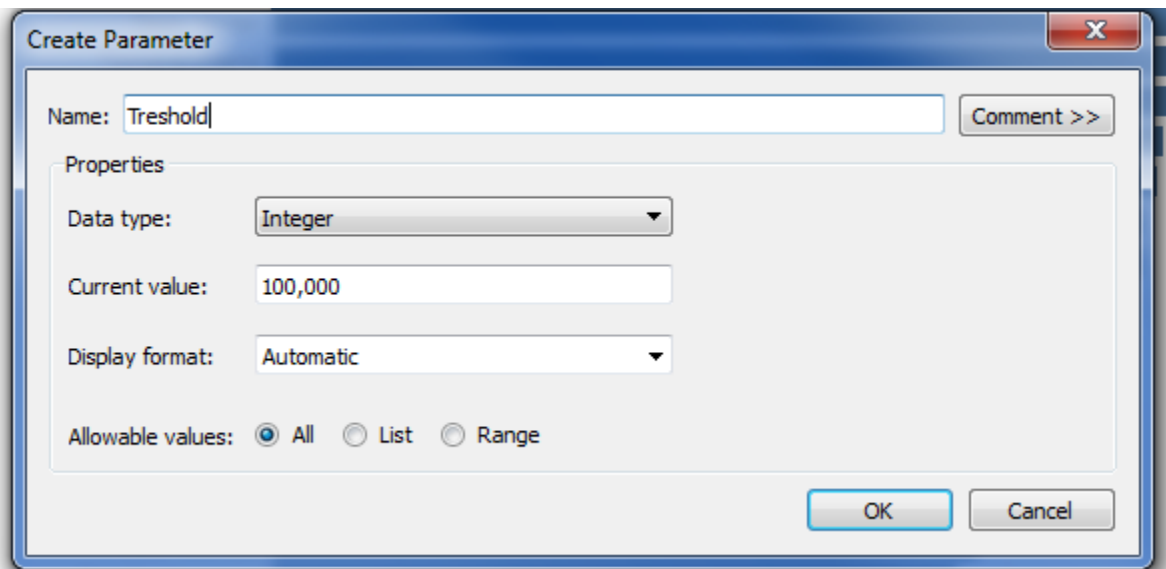
We have a parameter connection which allows us to set our platinum level threshold. Find the parameter at the bottom of the left pane, right-click it and add it to our sheet. – Right, Click- Show Parameter Control.

Then create a new calculated field - *Customer Level* - which depends on the Threshold Parameter. So if a customer has bigger sales than the Threshold level she/he will be our Premium Level Customer.
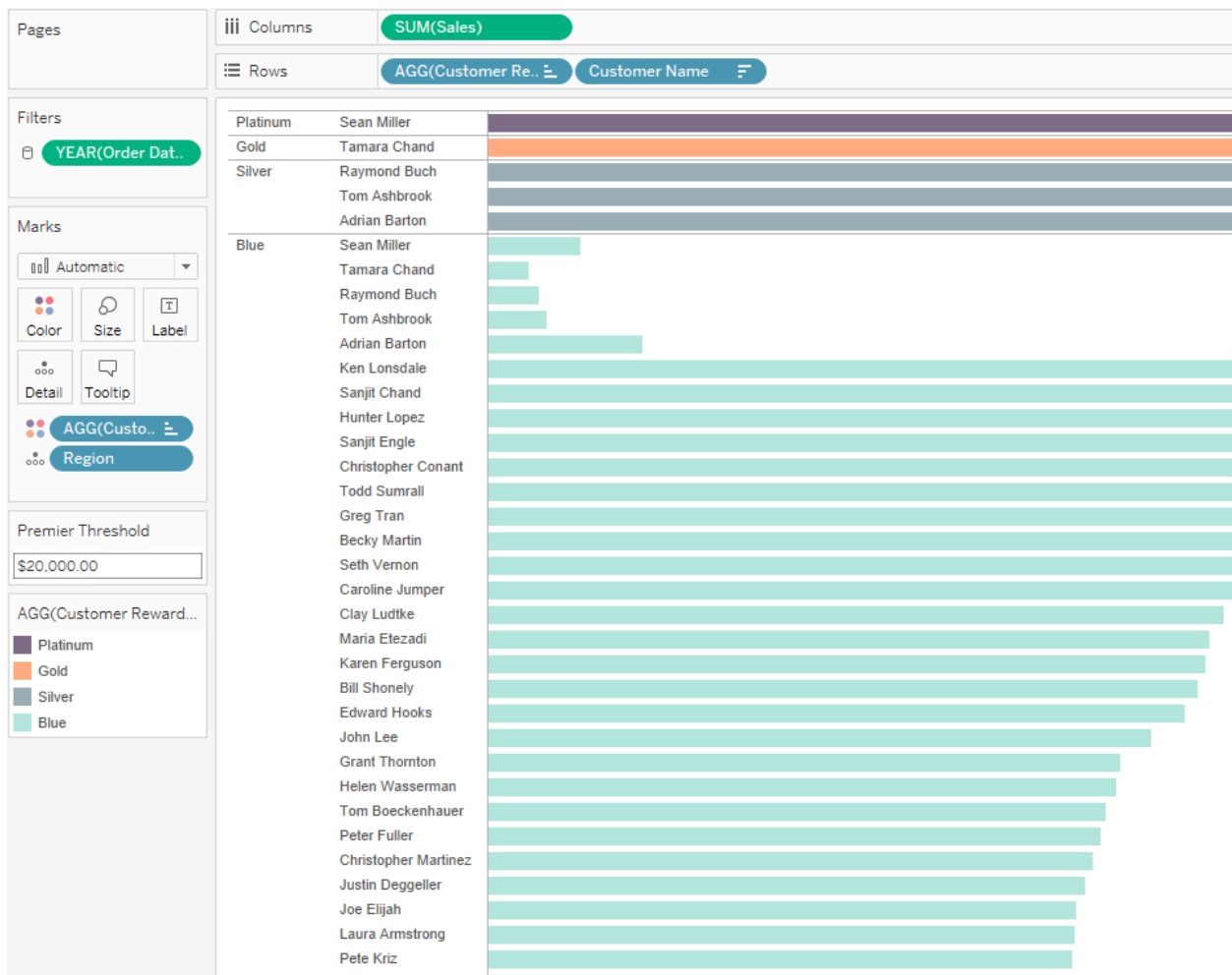
Customer Level

```
If [Sales]>[Treshold] then 'Platinum'
elseif  [Sales]>[Treshold]*0.80 then 'Silver'
else 'Blue'
end
```
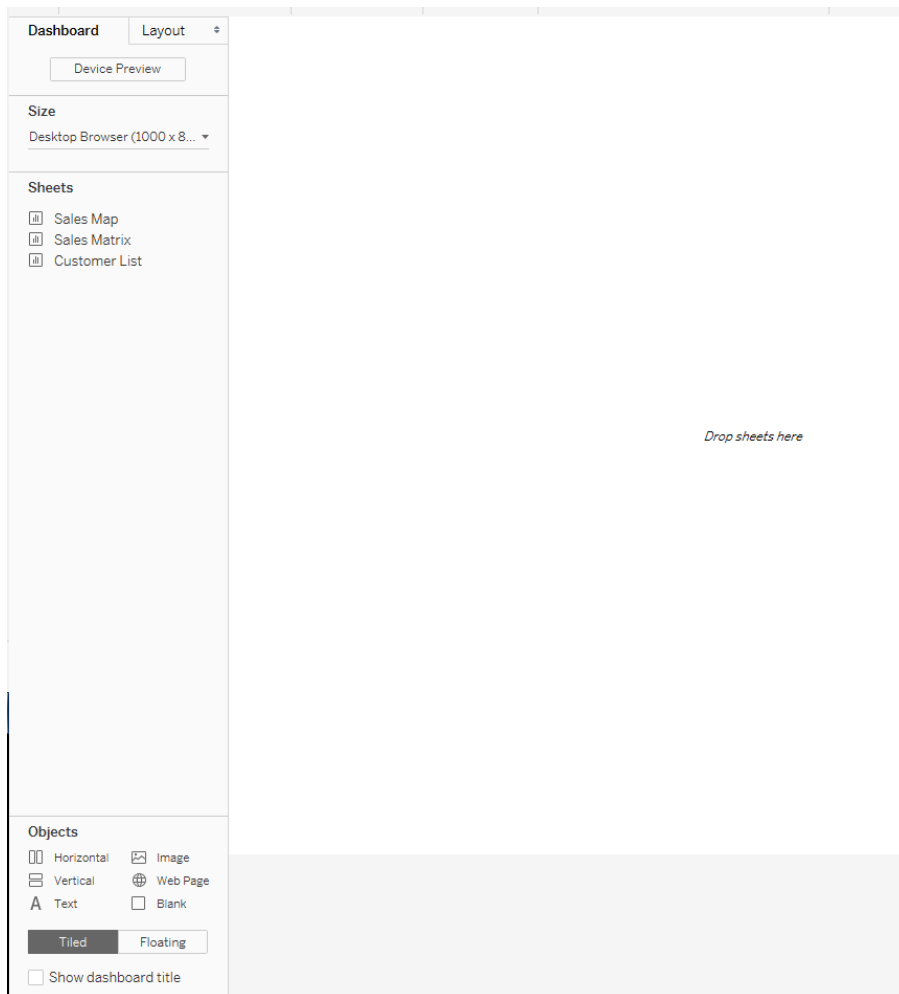
'ted)

Drag this Customer Level field to the Color Mark and test your Parameter.


- Rename the sheet "Customer List"

Dashboards

Once we've created our visualizations, we might want to see them all in one place, next to each other, instead of switching between tabs. To do this, we can make use of dashboards. Let's create a new dashboard and add our three brand new vizes.

We can make adjustments to the layout by moving sheets around or by dragging the edges of layout containers.
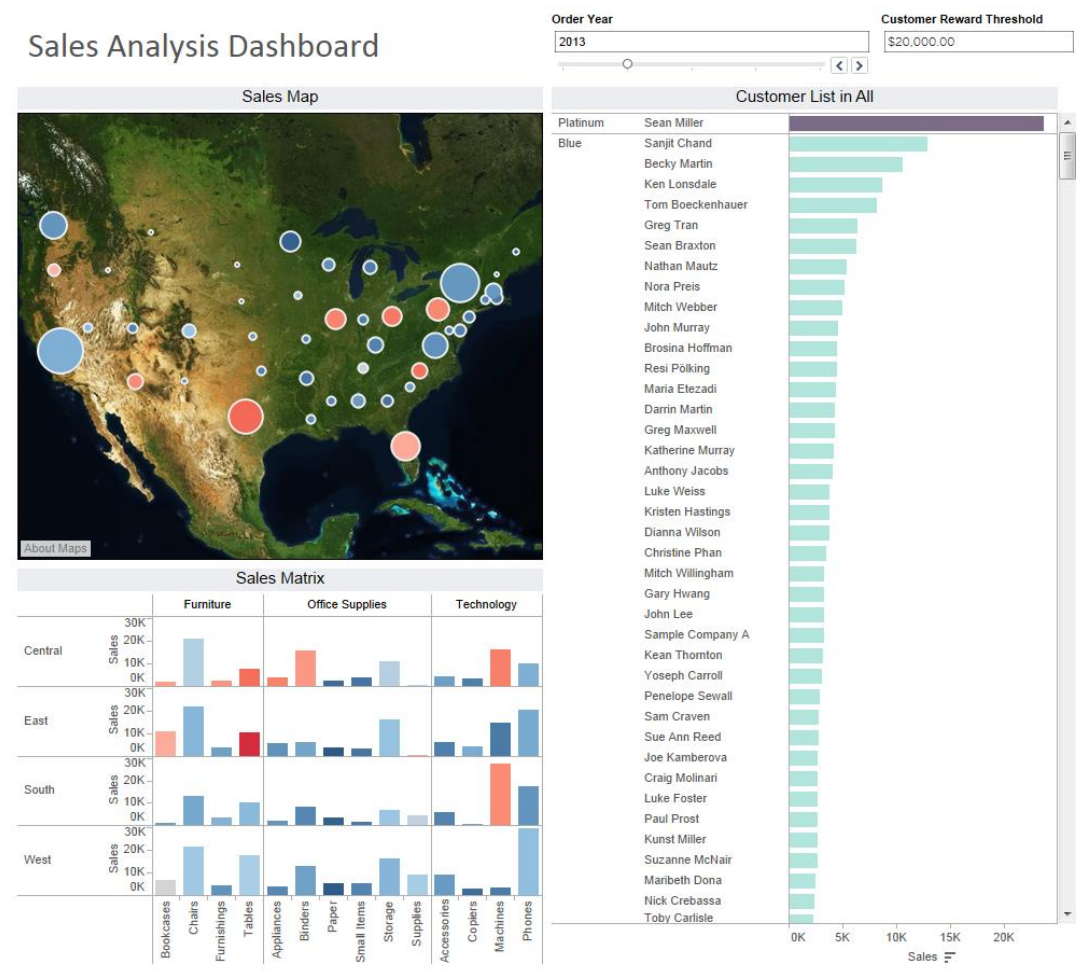

What is a Dashboard Action?

A dashboard action is an interactive element on a Tableau dashboard that is driven from the worksheets within that dashboard.

There are three types of dashboard action:

- Filter
- Highlight
- URL

You can export dashboards as images or publish them to the web, either to Tableau's Public repository or if you have access to a Tableau server than to that.
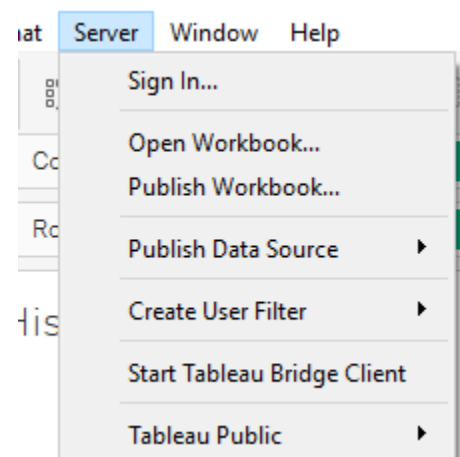
If there are ever any doubts CONTACT ME and follow my articles here: dataviz.love

dataviz.love

If you prefer more technical things I recommend my boss's – Tableau Zen Master – blog:

http://databoss.starschema.net/

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All the best on your journey as a Tableau Data Explorer!