Data Visualization Lab

The Tableau Workspace

Dec. 19, 2022

Is there anything you want to ask about Lecture 5?

Before we start ...

- ➔ During tomorrow's lesson (Dec 20, 2022 - 16:30/18:30) we will have a Q&A session
  - ◆ I will be available to answer any questions about your projects and help you out if you need;
  - ◆ You won't have any additional explanation about new topics;
  - ◆ I won't be recording, as nothing new will be explained.

- ➔ For the people who follow remotely, email me if you have any questions (do not use Moodle);

- ➔ The last three lectures of the course will be on **Jan. 9, 10, 11**
  Since they are pretty close to the deadline for your projects, I will send you a form to answer in order to understand what you want to do during those lessons.

Before we start …

Download the Workbook for today's lecture 🔗 here

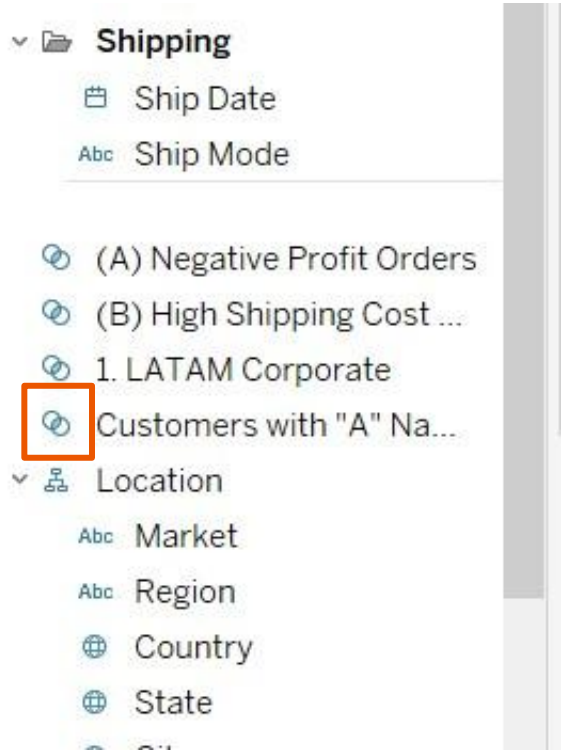
💡 Experience from previous lectures says that, if the workbook is not working or you're having troubles with the download, switch to your mobile hotspot Internet connection

The Tableau Workspace
Working with Sets

Sets in Tableau

- Sets can be thought of as combinations of data, like filter results;
- They can be useful for highlighting a specific segment of data in the chart or for creating a visualization based on a combination of filters.

Sets are shown in the **Data Pane** along with the other dimensions and measurements, and are identified by the icon with the two overlapping circles. **But …**



Sets icons

… not all the sets share the same icon!

Sets created by the user in Tableau have the basic icon;

Sets brought into Tableau from a multidimensional data source have a database icon together with the circles;

Sets automatically created by Tableau from an action, such as filter actions on a dashboard, have the action set icon;

User filters display in the Sets area of the data window with the user filter set icon.

Creating sets

Sets can be created in multiple ways, but the method you chose impacts on the kind of set you will create.

Sets can be:

- ➔ Static;
- ➔ Dynamic;
- ➔ Combined.

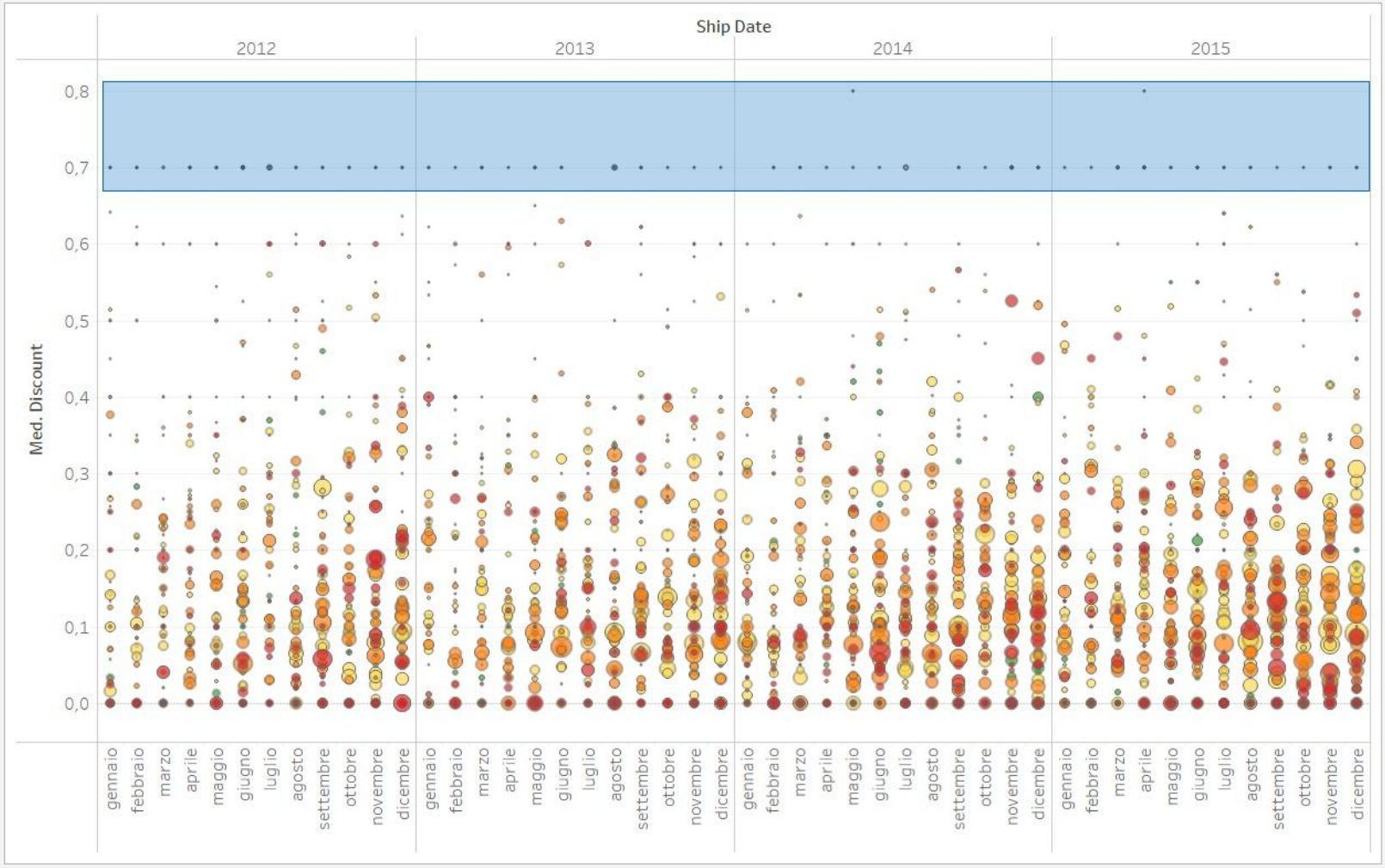
Creating sets

Create a static set

➔ Move to the **Set from Marks** sheet;

➔ Select a part of the points (let's choose the top one) on the chart by dragging your cursor over the points directly inside the chart.

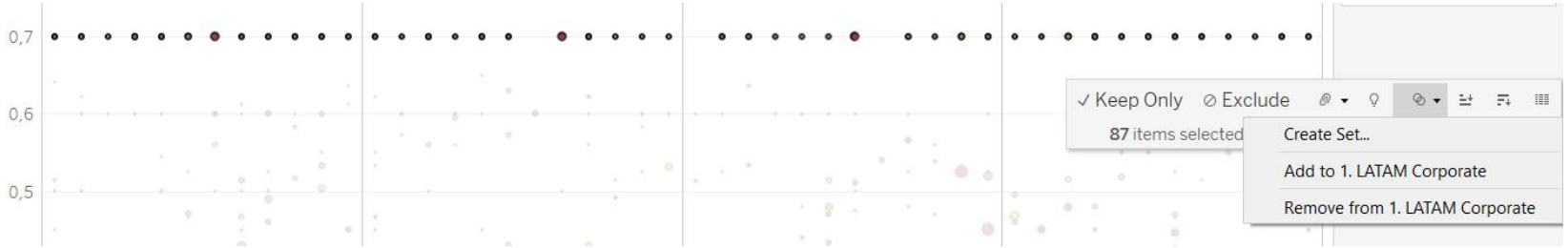
The points we selected represent the orders with the highest discount.


Ship Date
2012
2013
2014
2015
Med. Discount
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0,0
gennaio
febbraio
marzo
aprile
maggio
giugno
luglio
agosto
settembre
ottobre
novembre
dicembre

Creating sets

Create a static set

- ➔ Use the toolbar that will appear after you select the points (or hover the selection);
- ➔ Use the icon with the two overlapping circles (Sets icon) to create a new set;
- ➔ Choose **Create Set...**

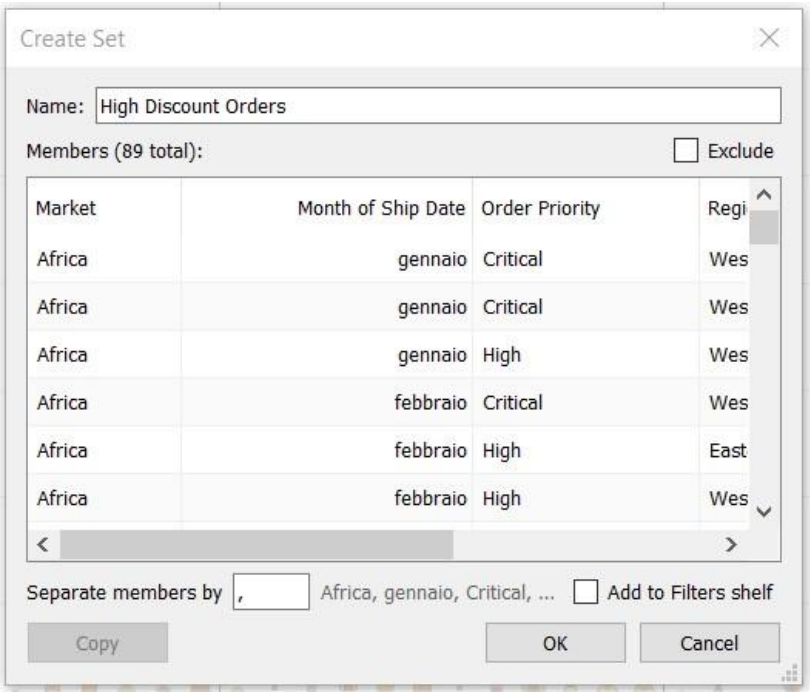


Creating sets

Create a static set

➔ Call this set **High Discount Orders**;

The process of creating this type of set is similar to that of creating groups.



💡 Selecting **Exclude** will create a new set that contains all items except those that were manually selected (can be useful for excluding outliers)

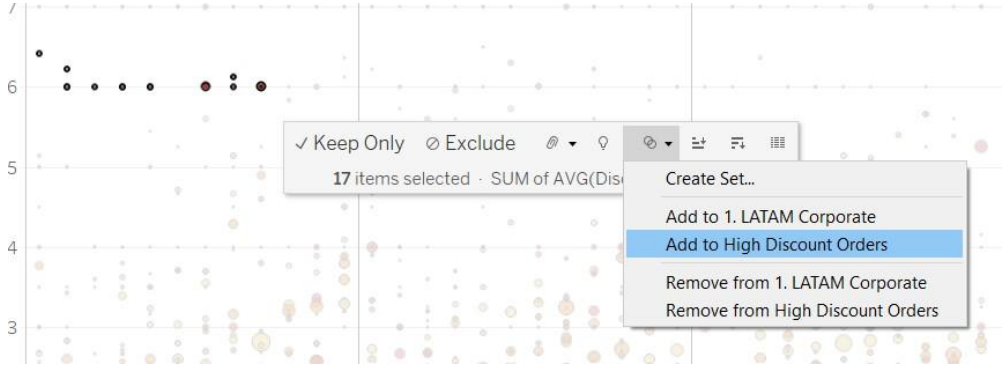
Creating sets

Create a static set

Let us now try selecting other points on the chart, in an area that is close to the previous one.

- ➔ Use the **Set icon** and open the menu;
- ➔ You will see that the new selection can be added to or removed from the set we created earlier, **High Discount Orders**. This happens because both sets were created in the same way.

For now, let's create a new set (**Create Set...**).

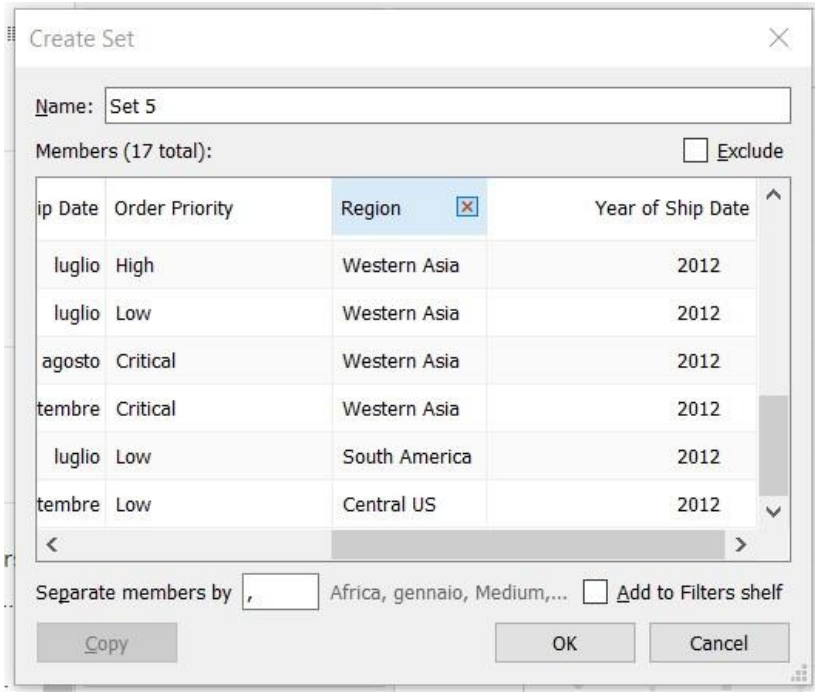


Creating sets

Create a static set

The window for creating a new set allows you to choose according to which dimensions you want to define the set. Our chart is defined by the following dimensions and measures:

- **YEAR (Ship date)** and **MONTH (Ship date)** in the columns;
- **Market** and **Region** in the Details shelf in the Marks pane;
- **Order Priority** in the Colors shelf in the Marks pane.

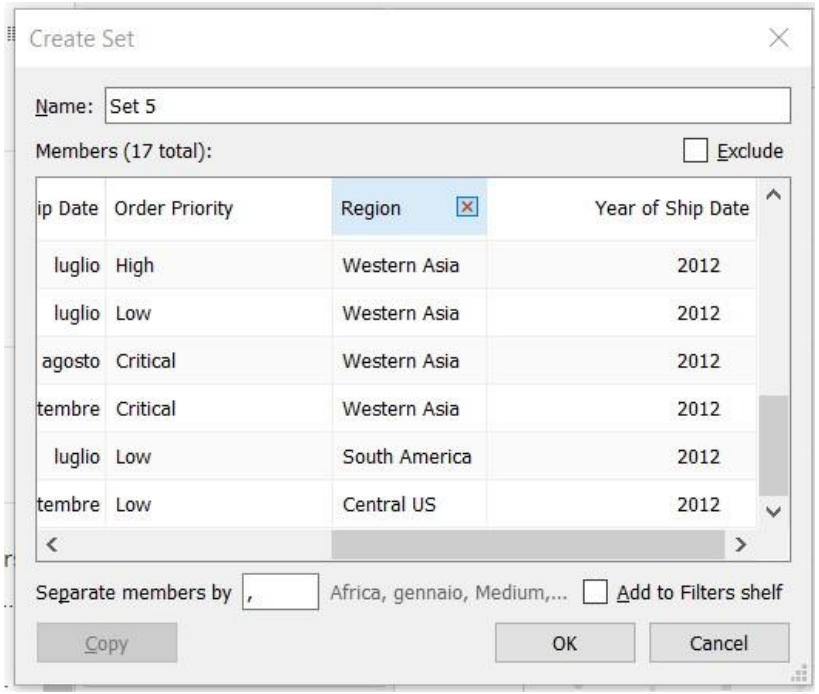


Creating sets

Create a static set

You will notice that the same dimensions will be present in the columns of the set creation window.

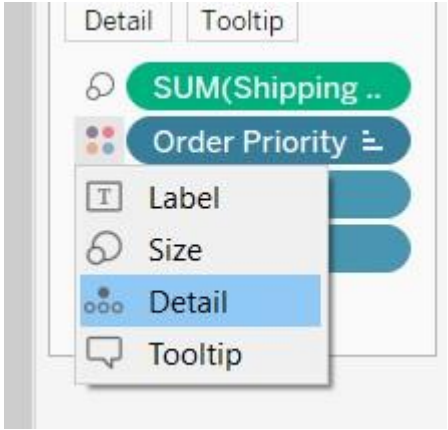
- ➔ Remove all dimensions by using the X button that pops up when you hover the column title except **MONTH**;
- ➔ Save the set.

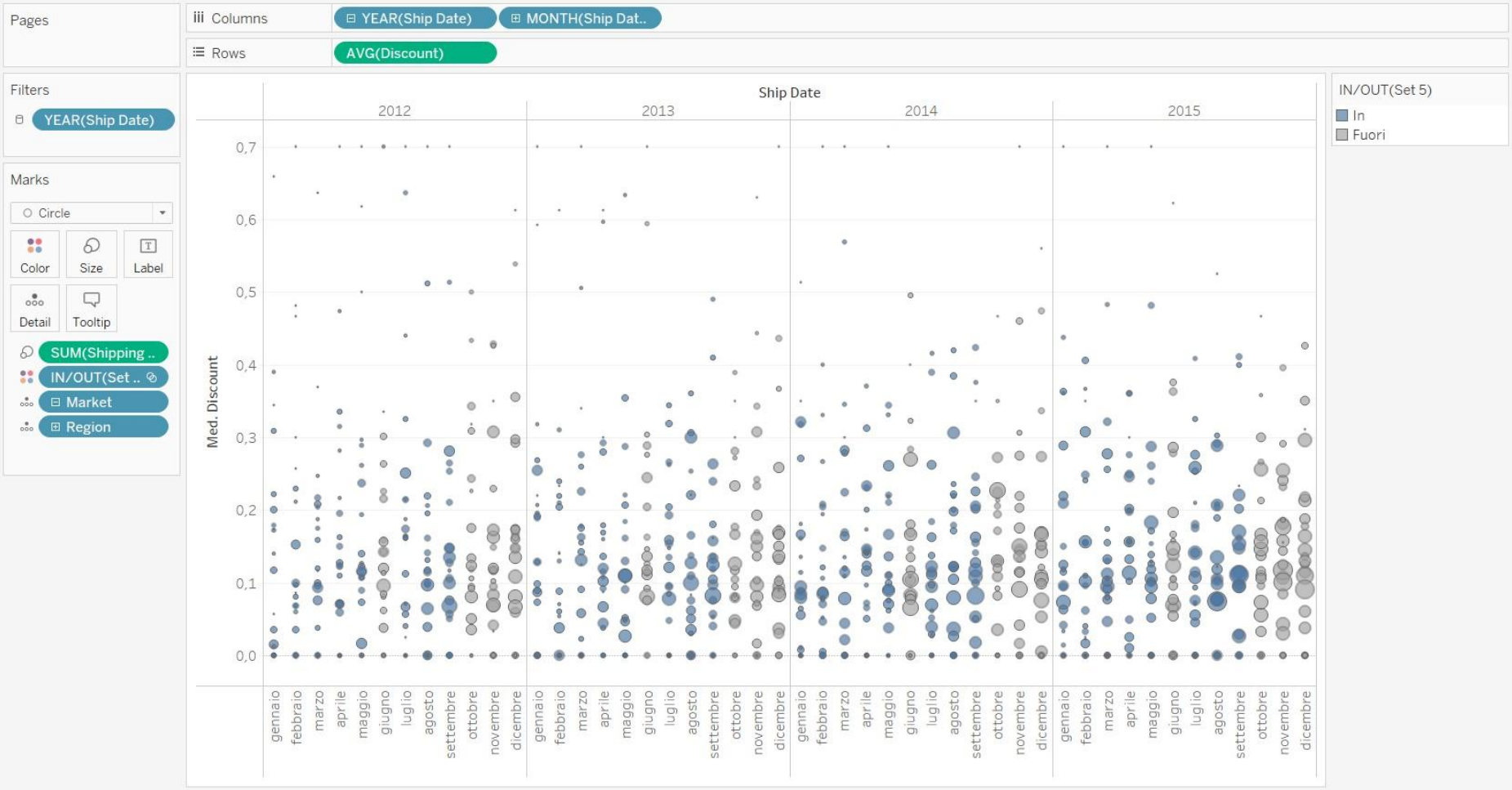


Creating sets

Create a static set

- ➔ Change **Order Priority** from Color to Details in the Marks pane;
- ➔ Drag the new set to the **Color** Shelf.




Pages
Columns
YEAR(Ship Date)
MONTH(Ship Dat..
Rows
AVG(Discount)
Filters
YEAR(Ship Date)
Marks
Circle
Color
Size
Label
Detail
Tooltip
SUM(Shipping ..
IN/OUT(Set ..
Market
Region
Ship Date
2012
2013
2014
2015
Med. Discount
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0,0
gennaio
febbraio
marzo
aprile
maggio
giugno
luglio
agosto
settembre
ottobre
novembre
dicembre
IN/OUT(Set 5)
In
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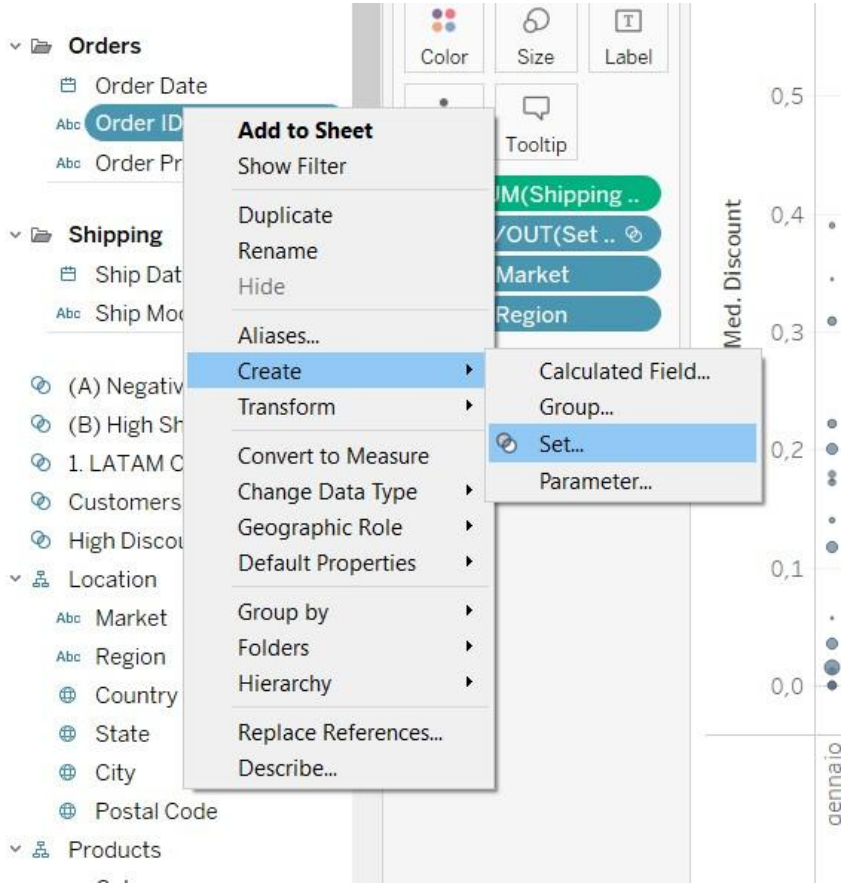
Creating sets

Create a dynamic set

Dynamic sets update as the underlying data changes (e.g. new data is added to your data source).

Imagine that we want to isolate all orders (identified with the Order ID) on which a discount greater than 8% has been applied.

➔ Right-click on the dimension that identifies the members of your set, choose **Create>Set**.

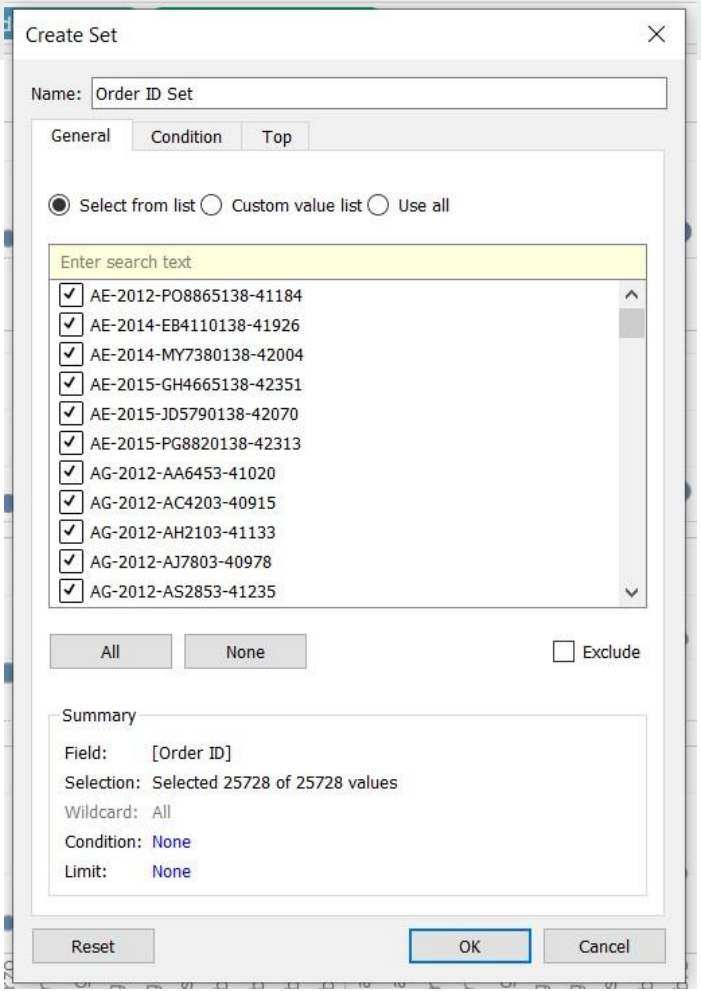


Creating sets

Create a dynamic set

From the new set creation window, in the **General panel**, you can choose which elements to include in your set.

You can use all of them or select only a few from the menu.



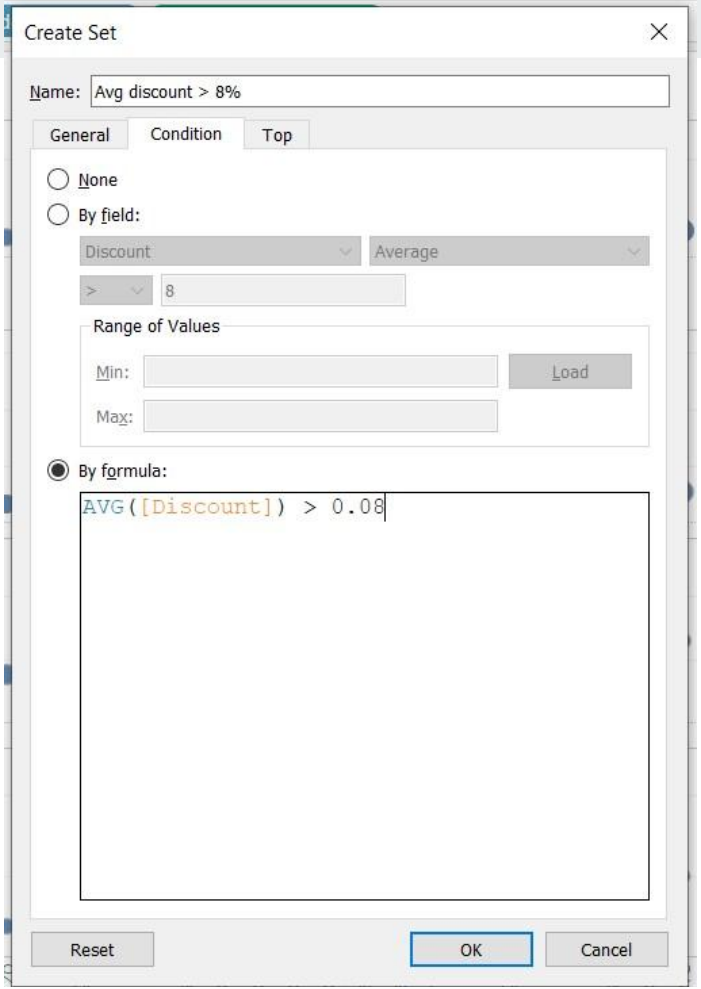
Creating sets

Create a dynamic set

From the **Condition tab** you can instead choose, from all the members selected in the General panel, which ones to include in the set, according to a specific condition.

For our example, we want to display only orders with a discount greater than 8%. You can do this:

- By formula;
- By field.

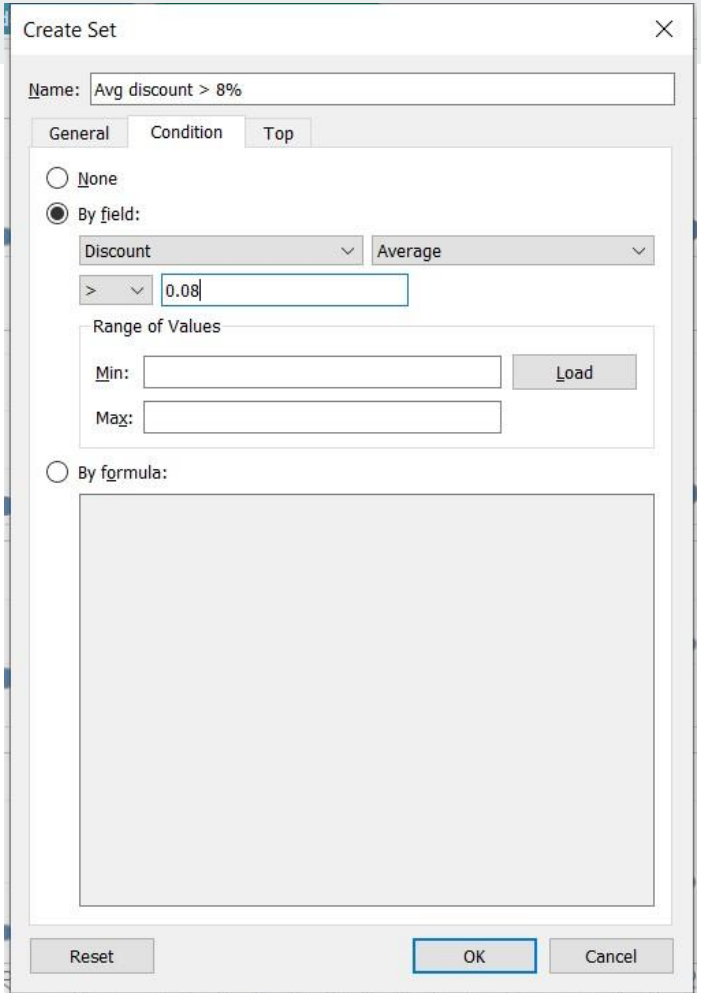


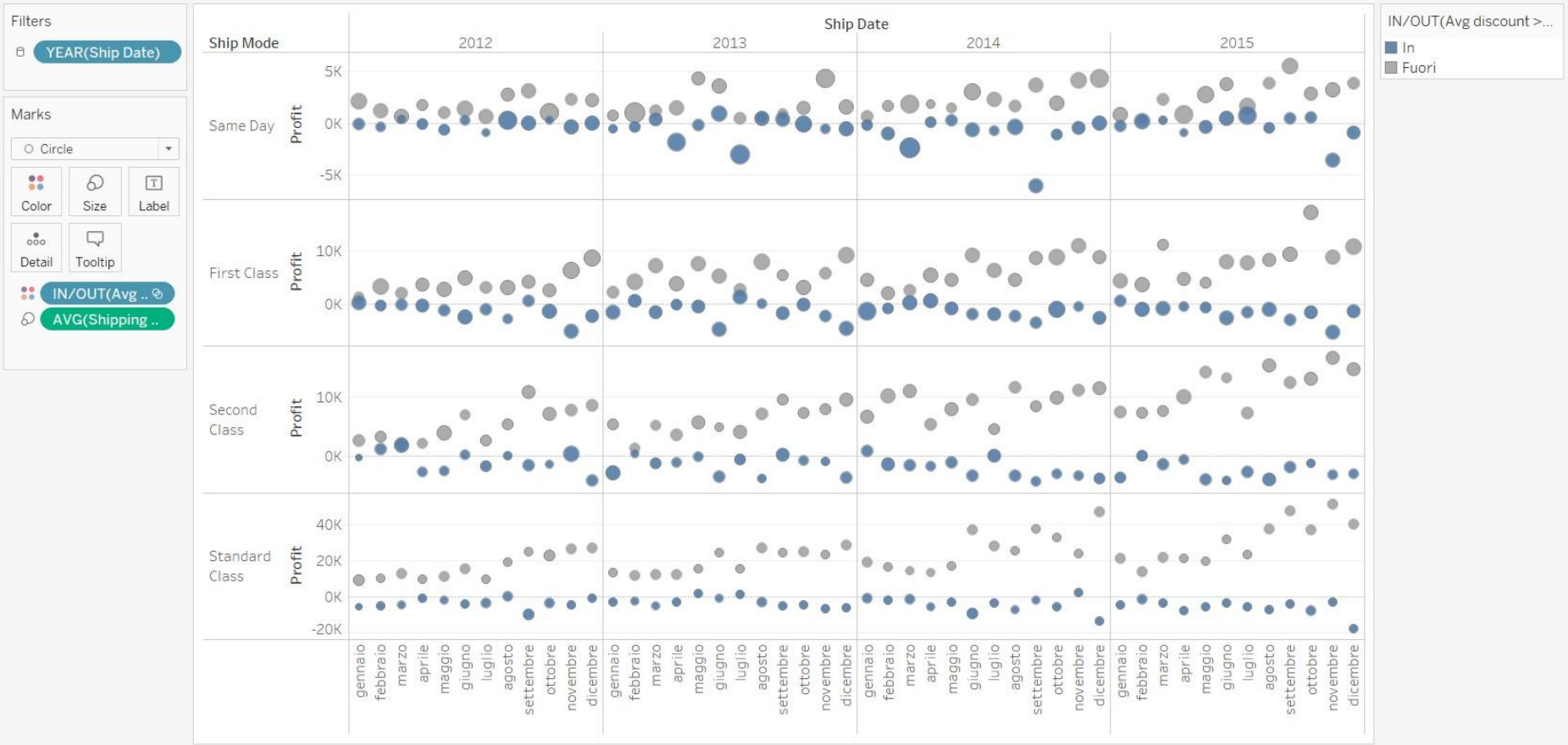
Creating sets

Create a dynamic set

- ➔ By field: select the dimension on which you want to apply the condition, the measurement you want to verify, and the operator. In our case, the condition includes in the set all items whose average discount value is greater than 0.08 (8%);
- ➔ By formula: manually type in the formula we created in the condition by field. Using formulas is useful when you want to **combine multiple fields**.

At this point, we move the new set to the Color shelf in the Marks pane so that the points of the chart that have been included in the set are colored blue.




Filters
YEAR(Ship Date)
Marks
Circle
Color
Size
Label
Detail
Tooltip
IN/OUT(Avg ..
AVG(Shipping ..
Ship Date
Ship Mode
2012
2013
2014
2015
Same Day
First Class
Second Class
Standard Class
Profit
5K
0K
-5K
10K
0K
10K
0K
40K
20K
0K
-20K
gennaio
febbraio
marzo
aprile
maggio
giugno
luglio
agosto
settembre
ottobre
novembre
dicembre
IN/OUT(Avg discount >...
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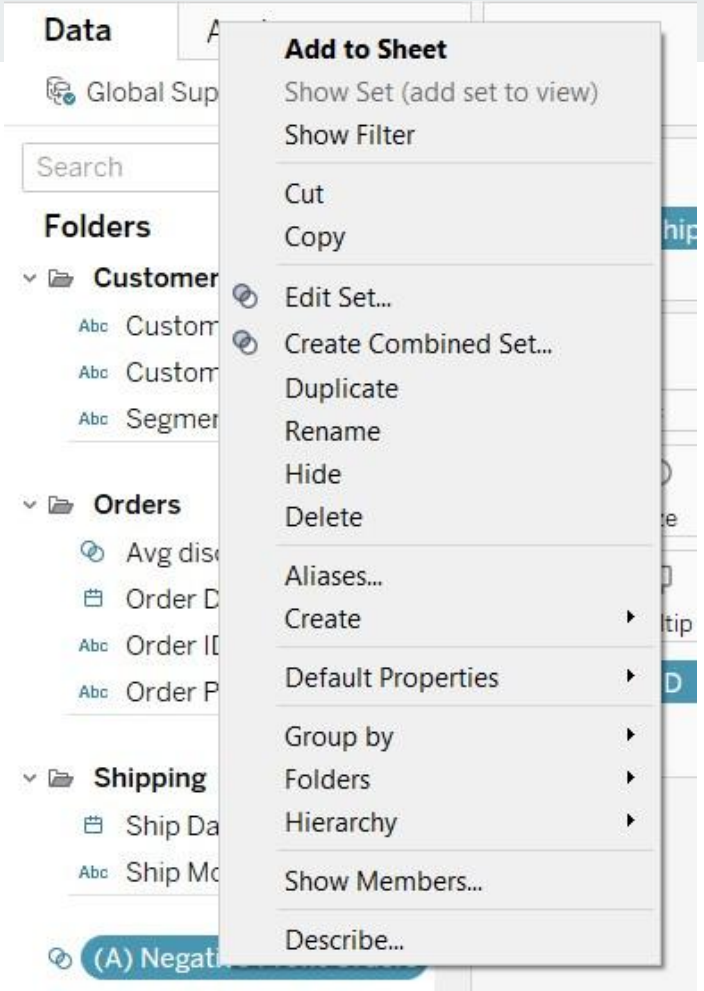
Creating sets

Create a combined set

Sets that are based on the same dimensions can be combined.

Move to the **Combining Sets** tab and right-click on the **(A) Negative Profits Orders** set in the Data Pane.

Select **Create Combined Set**.

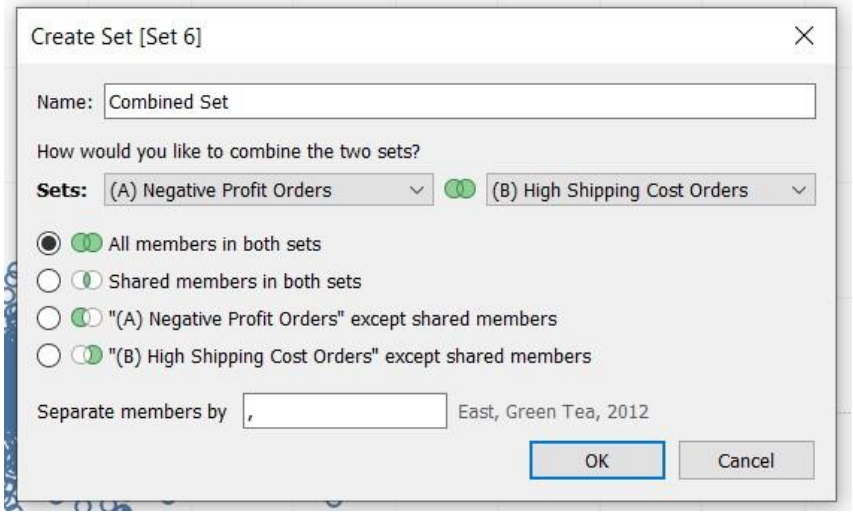


Creating sets

Create a combined set

In the window that pops up, you will need to select another Set to be combined with **(A) Negative Profit Orders**.

Let's choose another set based on **Order ID**, like **(B) High Shipping Cost Orders**.



Creating sets

Create a combined set

Now let's go through the possible combinations available:

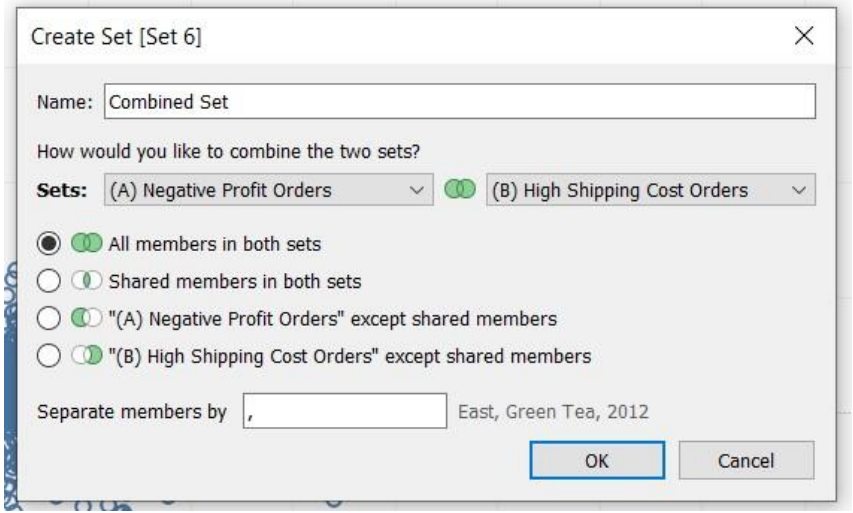
- ➔ All members in both sets means a union between the two sets;
- ➔ Shared members in both sets represents the intersection between the two sets;
- ➔ "(A) Negative Profit Orders" except shared members includes members from A minus the intersecting members with B;
- ➔ "(B) High Shipping Cost Orders" except shared members includes member from B minus the intersecting members with A.

Creating sets

Create a combined set

Let's go with **"(A) Negative Profit Orders" except shared members** and click **Ok**.

Now, drag and drop the newly created combined set to the **Color shelf** and see the points in the chart being colored blue.



Using sets as filters

Let’s go back to the **Set from Computation** sheet.

Remember we have decided to use colors to distinguish orders with and average discount > 8% from all the other orders.

Now suppose we only want to display the members of that set in the chart, and hide everything else.

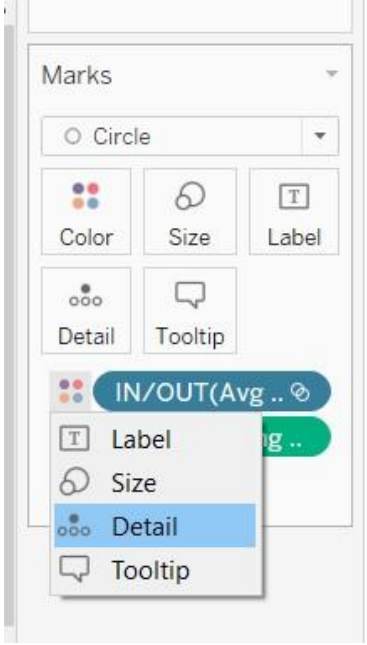
How can we do that?

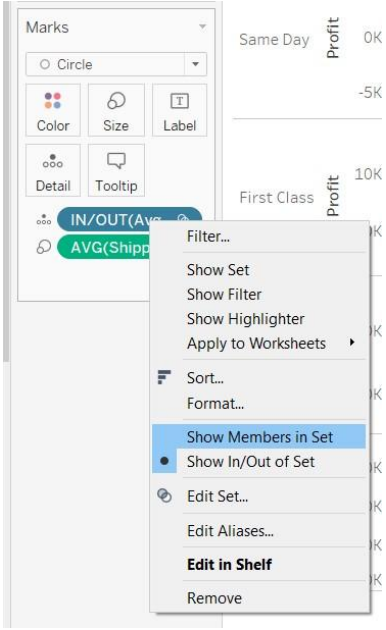
Using sets as filters

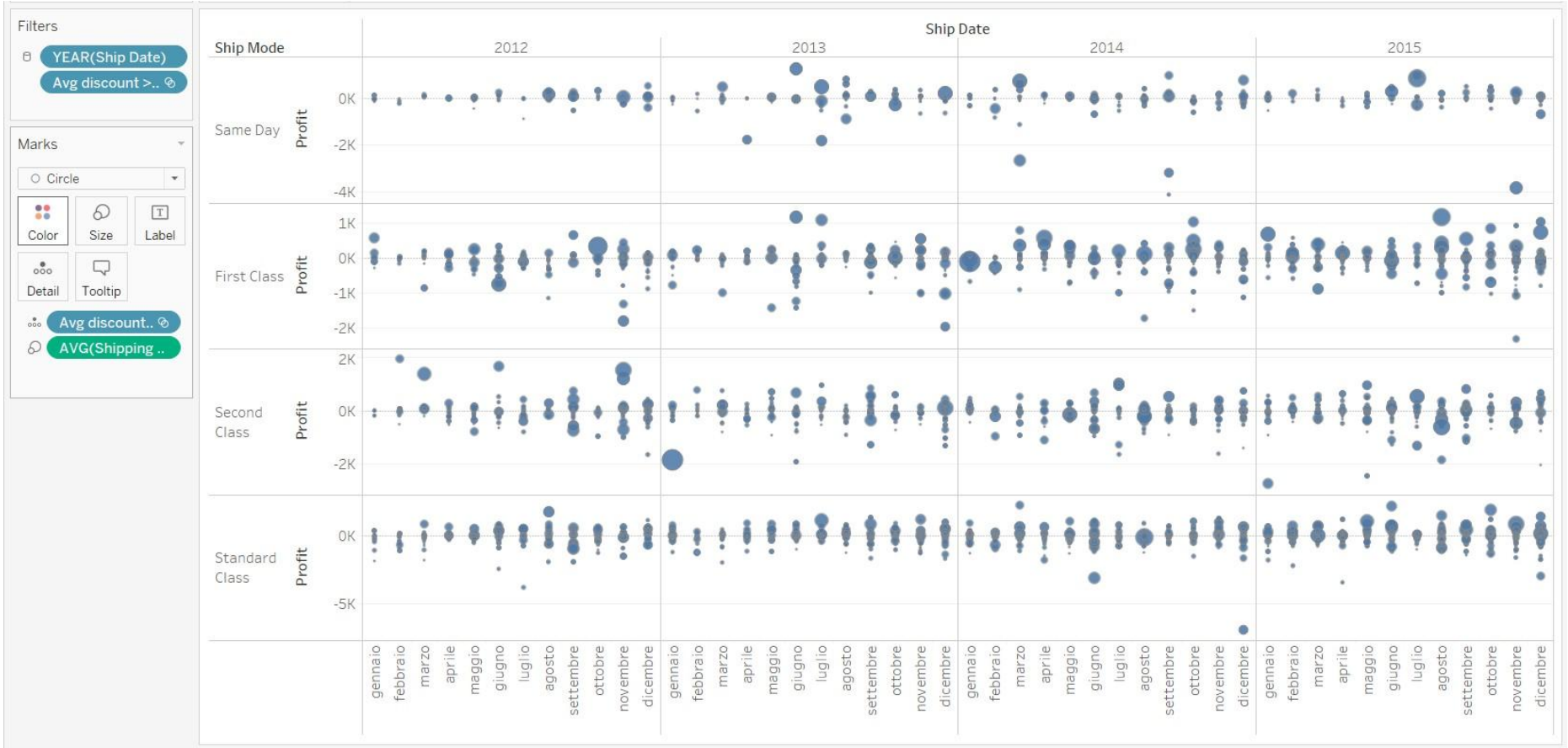
- ➔ Move to the Marks pane and change the type of the **IN/OUT (Avg Discount > 8%)** from Color to Detail;

- ➔ Right-click on the **IN/OUT (Avg Discount > 8%)** pill and select **Show Members in Set**.

You will see that the **IN/OUT (Avg Discount > 8%)** pill as been added to the Filter pane shelf and the view has been filtered accordingly.






Filters
YEAR(Ship Date)
Avg discount >..
Marks
Circle
Color
Size
Label
Detail
Tooltip
Avg discount..
AVG(Shipping ..
Ship Date
Ship Mode
2012
2013
2014
2015
Same Day
First Class
Second Class
Standard Class
Profit
0K
-2K
-4K
1K
-1K
2K
-5K
gennaio
febbraio
marzo
aprile
maggio
giugno
luglio
agosto
settembre
ottobre
novembre
dicembre

Work on your own!

Up next:

➔ It’s time to work on your projects

Play around with what we’ve seen today with different data sources (or start working on your projects)

Additional free data sources are available 🔗 here

Recap and lessons learned

Recap

- Sets:
  - Create a static set;
  - Create a dynamic set;
  - Create a combined set;
  - Work with sets..

Takeaway

Link to the solution workbook for the lesson: 🔗 TBD