

TABLEAU

Groups vs. Sets

INNOVATIVE. CREATIVE. EFFECTIVE.



TABLEAU GROUPS VS. SETS

Groups and sets within Tableau can be a little confusing if you are first starting off in Tableau. Mainly because groups are very similar to sets. However what separates them is that sets have the capability to be much more complex and dynamic. Each is suitable for various tasks within Tableau, depending on what you are trying to achieve. This paper will explain the differences between groups, constant sets, dynamic sets, and provide an example of each.

You can view the Tableau workbook by clicking on the Tableau icon here: 

GROUPS

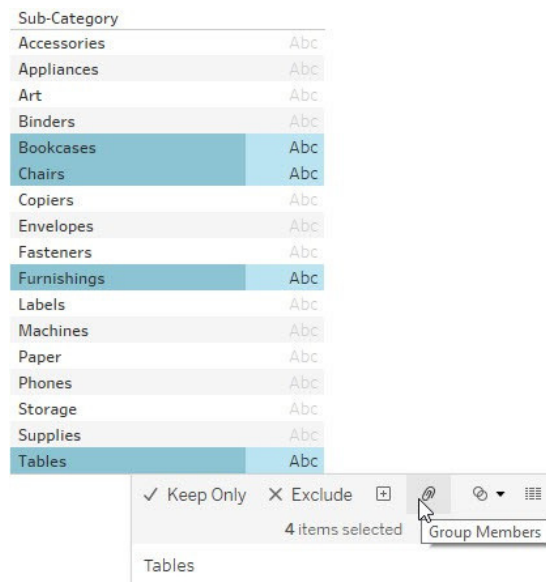
Groups are the easier of the two as they are a simpler version of sets. When you are making a group, you are selecting multiple items and grouping them into a higher category.

Example

A good example of grouping is if there is a subcategory of several products and you would like to group them together into a higher category. In this example, we will group the products into three main categories: Furniture, Office Supplies, and Technology.

Sub-Catego..	
Accessories	Abc
Appliances	Abc
Art	Abc
Binders	Abc
Bookcases	Abc
Chairs	Abc
Copiers	Abc
Envelopes	Abc
Fasteners	Abc
Furnishings	Abc
Labels	Abc
Machines	Abc
Paper	Abc
Phones	Abc
Storage	Abc
Supplies	Abc
Tables	Abc

You are able to group specific products into a new Category field. To select all the products that will be part of the furniture group, select each item while holding *CTRL* and then select the paper clip icon in the tooltip and choose *Group Members*. You will then have created your group for furniture.



It is important to understand that when you do this, you are not replacing the original sub-category, you are creating a new sub-category (group) using the information within the original dimension. The next group will be Office Supplies and will include: appliances, art, binders, envelopes, fasteners, labels, paper, storage, and supplies. The final group Technology will include: accessories, copiers, machines, and phones. Once all the products have been grouped, the end result will look like this.

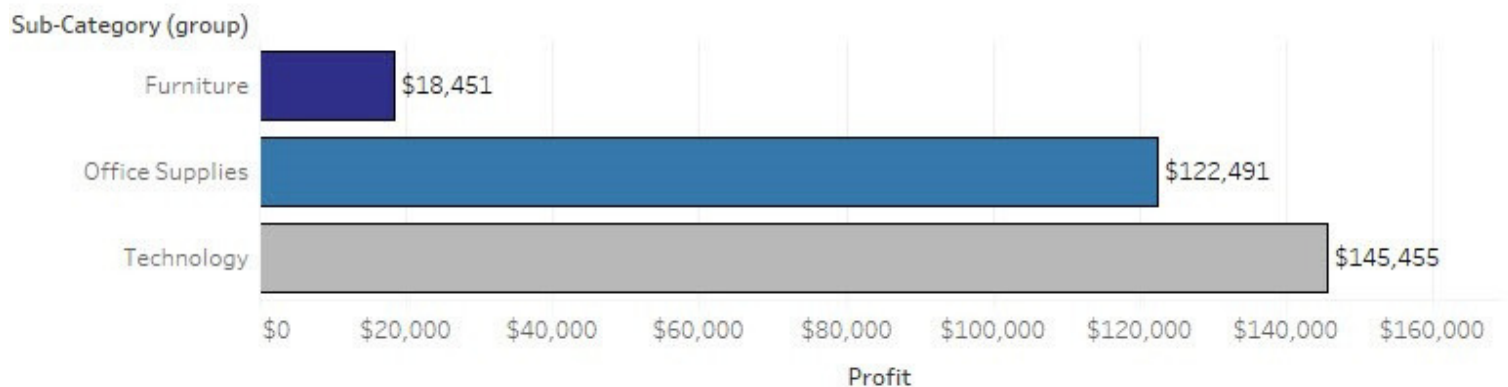
Sub-Category (group) 1	
Accessories, Copiers, Machin..	Abc
Appliances, Art, Binders and ..	Abc
Bookcases, Chairs, Furnishin..	Abc

Be sure to go in and rename each of the new groups! To re-name a group, right-click the group and select *Edit Alias*. Keep in mind, you are only changing how the data is viewed in the worksheet. The names of the data remains the same within the actual data source.

Columns	
Rows	Sub-Category (gro..)

Sub-Category (..	
Furniture	Abc
Office Supplies	Abc
Technology	Abc

After you have created your new groups, you can then drag *Profit* onto the columns and *Sub-Category (group)* onto rows to create a bar chart. The chart will show profit by the different product categories (the new groups that were created) and after a bit of formatting it can look like this:



You can also view which items are part of each group in the chart by dragging the original *sub-category* from the dimensions pane and dropping it onto rows. It will group all the products so you can easily compare the profits of each item.



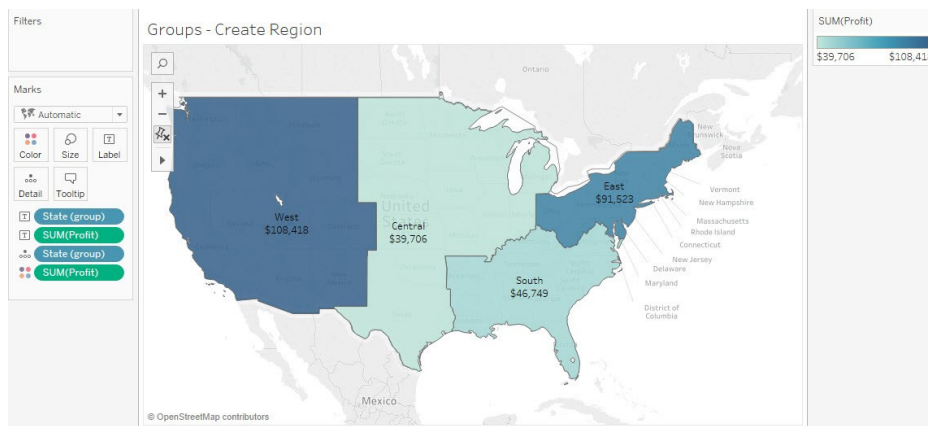
Overall, groups are pretty easy to both understand and work with. Using groups will make things much easier when working with large groups of data. It will allow you to simplify and categorize the data.

In the next worksheet, you will find another example of grouping states into four different groups; Central, East, West, and South. This was done in the same process, hold *CTRL*, select the states and then group them into a new field.

Groups - Grouping States

State (group..	State	Profit
Central	Illinois	-\$12,608
	Indiana	\$18,383
	Iowa	\$1,184
	Kansas	\$836
	Michigan	\$24,463
	Minnesota	\$10,823
	Missouri	\$6,436
	Nebraska	\$2,037
	North Dakota	\$230
	Oklahoma	\$4,854
	South Dakota	\$395
	Texas	-\$25,729
	Wisconsin	\$8,402
East	Connecticut	\$3,511
	Delaware	\$9,977
	District of Columbia	\$1,060
	Maine	\$454
	Maryland	\$7,031
	Massachusetts	\$6,786
	New Hampshire	\$1,707
	New Jersey	\$9,773
	New York	\$74,039

Now to create a map that will show the Sum of Profit by the regions field that was just created is pretty easy. In a new worksheet, double click *State* and Tableau will automatically create a map. Then simply grab *Profit* and drop it on *Color* and *Label*, grab *State (group)* and drop it on to *Label* and *Detail* and remove the *State* pill from *Details*. Format it to how you would like it and that's all it takes to create a map that uses states grouped by region!



SETS

Sets have the ability to be much more complex and dynamic than groups. Sets can be grouped across multiple dimensions and you can set conditions to make it a dynamic set. In Tableau, sets are combinations of different data, similar to filter results. Quite often sets are used to compare subsets of data in order to answer questions. When creating a set, you are grouping data from multiple dimensions. There are two different types of sets; constant and dynamic. The difference between the two types is that in a constant set, the data that is within the set will not change even if the data does. Where as in a dynamic set, the data within the set can change as the data changes. We will look at each type individually and show an example.

CONSTANT SET

A constant set will contain a specific list of values that have been chosen manually from one or more dimensions. The only way this data will ever change is if the set is changed manually. This is what sets it apart from a dynamic set.

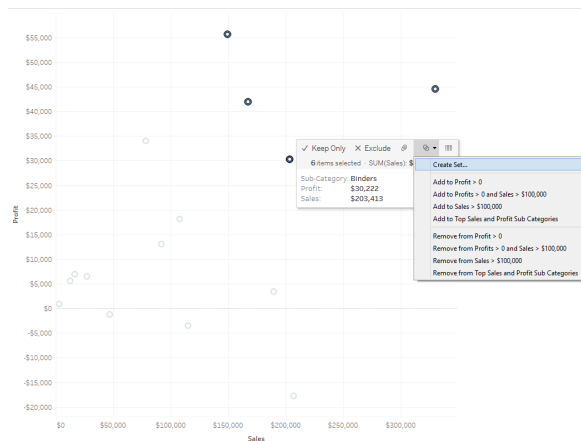
Example

Here we are plotting sub category by profit and sales which looks like this:

Sets - Constant



In this example, we will include those with high sales and high profit in the set so we can analyze that high profit/high sales group later. The first step is to manually highlight all of the points in the top right quadrant with high sales and profit. Once the points are highlighted, select *Create Set*.



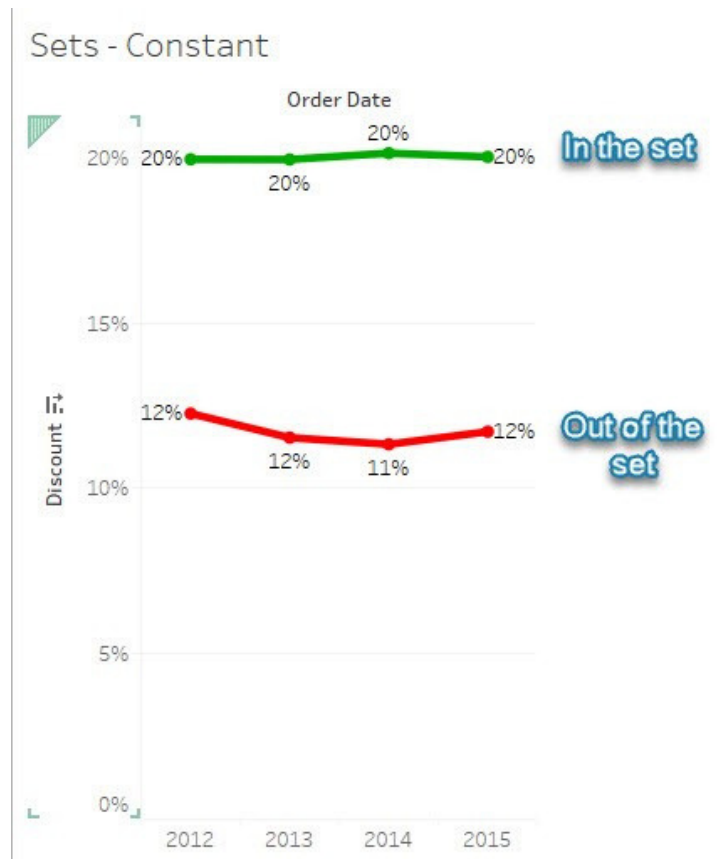
Name it *Top Sales and Profit Subcategories*. You will notice that Tableau grabbed all of the subcategories that were selected.

You will now have a new set available in the pane on the left titled *Top Sales and Profit Sub Categories*. You can now color the chart by dragging this set on to the Colors mark. You can now clearly see what items are in and out of the set.



It is very easy to distinguish who is part of the set and who is not. Keep in mind that the data in this set has been chosen manually and the values included in this set will not change, even if the data does. Now that you have created a constant set, you can use it in other visualizations.

For example, we can use this set to analyze if this set is giving more discounts compared to the low sales/profit group. You can create a time series with discount and order date and split it with the new set. To achieve this simply, drag Order Date onto columns and AVG(Discount) onto rows. From there, hold CTRL and drag AVG(Discount) on Labels and the set *Top Sales and Profit Sub Categories* on the Color mark. After a bit of formatting, the graph will look like this...



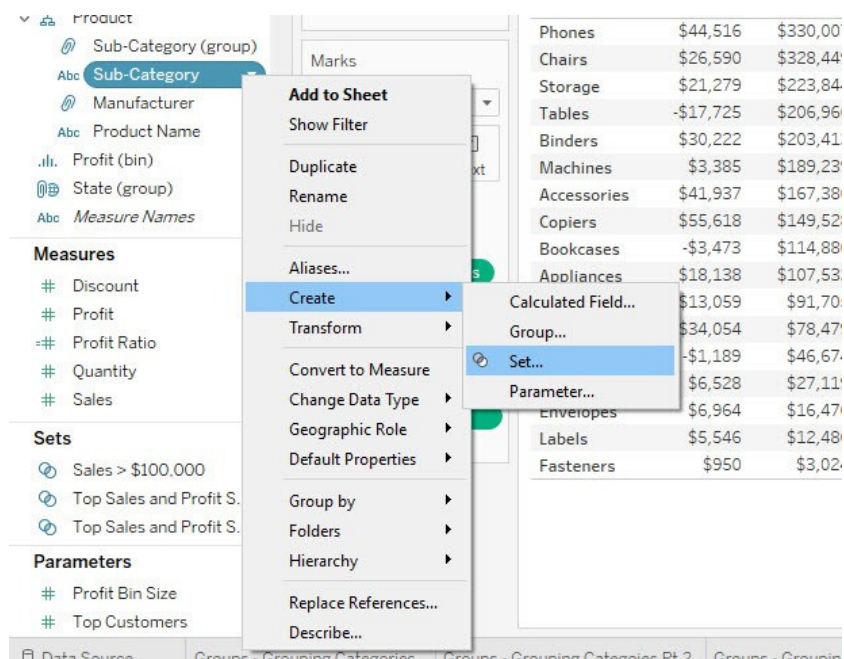
You can now see those that are in the set receive roughly a 20% discount compared to those not in the set, receive around a 12% discount. Therefore a larger discount does translate into higher profits and sales.

DYNAMIC SETS

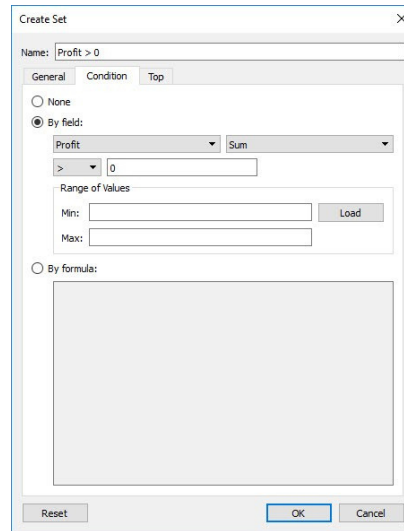
In dynamic sets, you are able to create a dynamic calculation across multiple dimensions. This will be helpful whenever you will be updating or filtering your data. The constant set is ok for a quick ad hoc analysis and a dynamic set is good when you are going to be analyzing the data continuously. Here is an example of how we can achieve similar results as the constant set but doing it with a dynamic set so we don't have to go in and manually change the set every time.

Example

If you were comparing sales and profit for each sub-category again you can grab the sub-categories that have positive profit and more than \$100,000 in sales and put them in a constant set. However, if the data changed and the sub-categories profits and sales changed the set would not update to reflect the new numbers. So we would need to create a dynamic set to recalculate who is in and out that set every time the data changed. To create a dynamic set for Profit > 0, right-click Sub-Category, go to Create and select Set.



Rather than using the General settings, select the *Condition* tab. Using this tab, we are able to set more specific conditions for this set. In this example, set it by field, the fields will be *Profit*, *Sum* and if the value is greater than (>) 0.

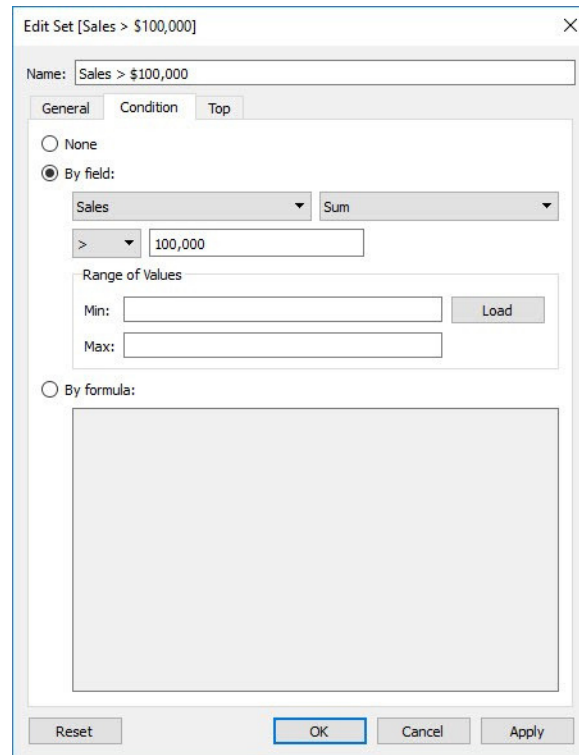


When you create this set, it will tell Tableau that if the Sum of Profit is greater than 0 it is in the set.

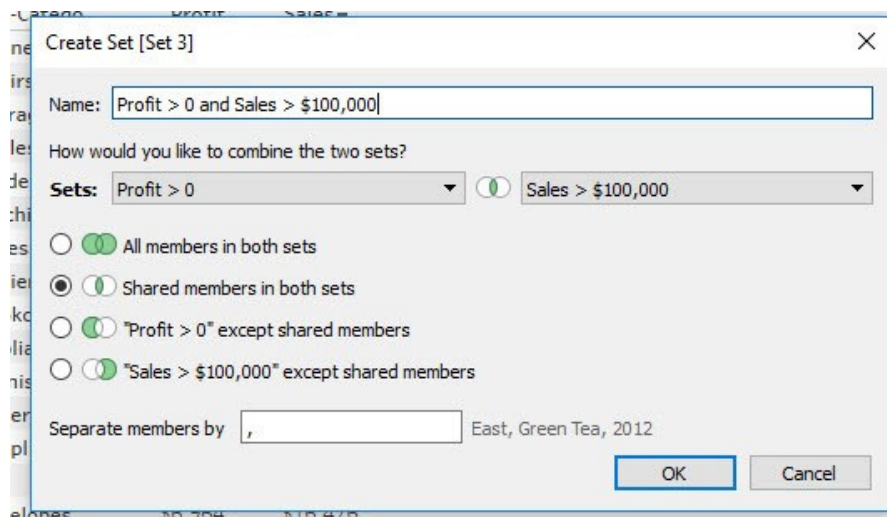
Sets - Dynamic

Sub-Catego..	In / Out of P..	Profit	Sales
Accessories	In	\$41,937	\$167,380
Appliances	In	\$18,138	\$107,532
Art	In	\$6,528	\$27,119
Binders	In	\$30,222	\$203,413
Bookcases	Out	-\$3,473	\$114,880
Chairs	In	\$26,590	\$328,449
Copiers	In	\$55,618	\$149,528
Envelopes	In	\$6,964	\$16,476
Fasteners	In	\$950	\$3,024
Furnishings	In	\$13,059	\$91,705
Labels	In	\$5,546	\$12,486
Machines	In	\$3,385	\$189,239
Paper	In	\$34,054	\$78,479
Phones	In	\$44,516	\$330,007
Storage	In	\$21,279	\$223,844
Supplies	Out	-\$1,189	\$46,674
Tables	Out	-\$17,725	\$206,966

Using the same process you can create another set for Sales over \$100,000.



Now you can create a combined set using the 2 sets you just created. You can create this by right-clicking on one of the sets and choose Create Combined Set. This will allow you to create an inner-join which means Tableau will only grab people who are part of both of these sets.



Now all in one chart you are able to see what items are in and out of each set plus the combined set for both Profit and Sales!

Sets - Dynamic

Sub-Catego..	In/Out of S..	In/Out of P..	In/Out of P..	Profit	Sales
Phones	In	In	In	\$44,516	\$330,007
Chairs	In	In	In	\$26,590	\$328,449
Storage	In	In	In	\$21,279	\$223,844
Tables	In	Out	Out	-\$17,725	\$206,966
Binders	In	In	In	\$30,222	\$203,413
Machines	In	In	In	\$3,385	\$189,239
Accessories	In	In	In	\$41,937	\$167,380
Copiers	In	In	In	\$55,618	\$149,528
Bookcases	In	Out	Out	-\$3,473	\$114,880
Appliances	In	In	In	\$18,138	\$107,532
Furnishings	Out	In	Out	\$13,059	\$91,705
Paper	Out	In	Out	\$34,054	\$78,479
Supplies	Out	Out	Out	-\$1,189	\$46,674
Art	Out	In	Out	\$6,528	\$27,119
Envelopes	Out	In	Out	\$6,964	\$16,476
Labels	Out	In	Out	\$5,546	\$12,486
Fasteners	Out	In	Out	\$950	\$3,024

Now with this combined set we can create the chart! Simply drag *SUM(Profit)* onto columns and *SUM(Sales)* on to rows. Drag *Sub-category* onto the *Label* mark and then again on to the *Detail* mark. Lastly, drag the combined set that you just created on to the *Color* mark. Add a border, change the transparency, change the size of the marks and maybe change the colors used in the chart and voila!

Sets - Dynamic



For dynamic sets, if the data is updated in the data source the set will as well! Now you don't need to go back into the workbook and update it! Creating a dynamic set is a much more efficient way to showcase this information.

As you can see groups and sets within Tableau are very similar. Depending on the data and situation, you will know which will be a better fit. There are a couple of key-points for each to remember and understand.

Groups

- Groups are multiple values that are grouped into a higher category.
- Groups will work within a single dimension.
- Groups do not replace the original dimension. A new dimension is created based on the information that is selected.
- Groups will not automatically update if the data is changed.

Sets

- Sets is grouping data across multiple dimensions and can have conditions.
- Sets can include calculated fields and therefore the data can update automatically when data is changed (dynamic set).
- If data is selected manually, the set will not update automatically if the data is changed (constant set).
- Sets are often used to drill down into the data in order to answer specific questions.