
Manual for Report Module Users

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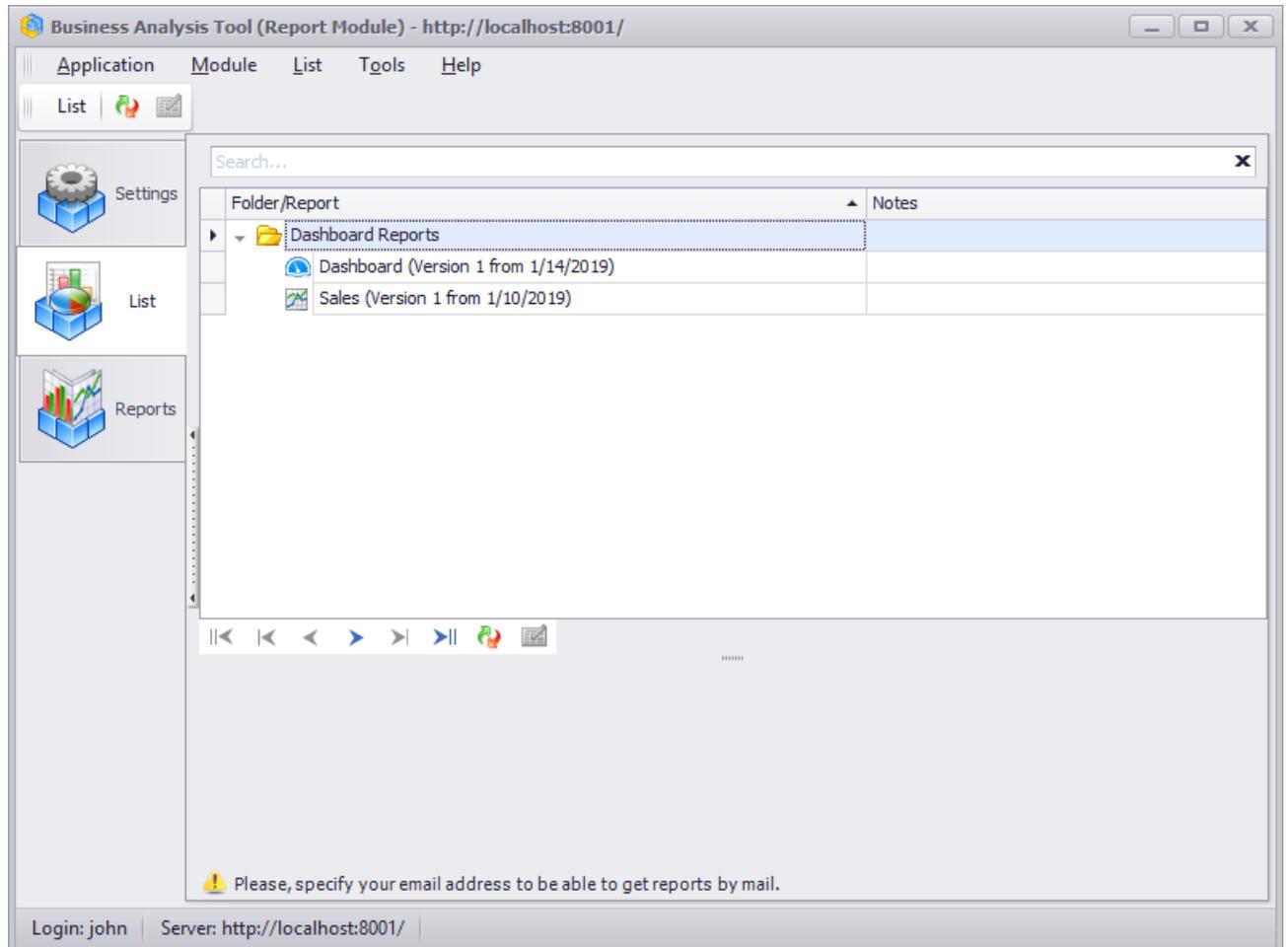
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1 Overview of the Report Module

Report module is the application for the reports viewing. It is only possible to view reports and add new pages to them, it is impossible to add or remove the report.

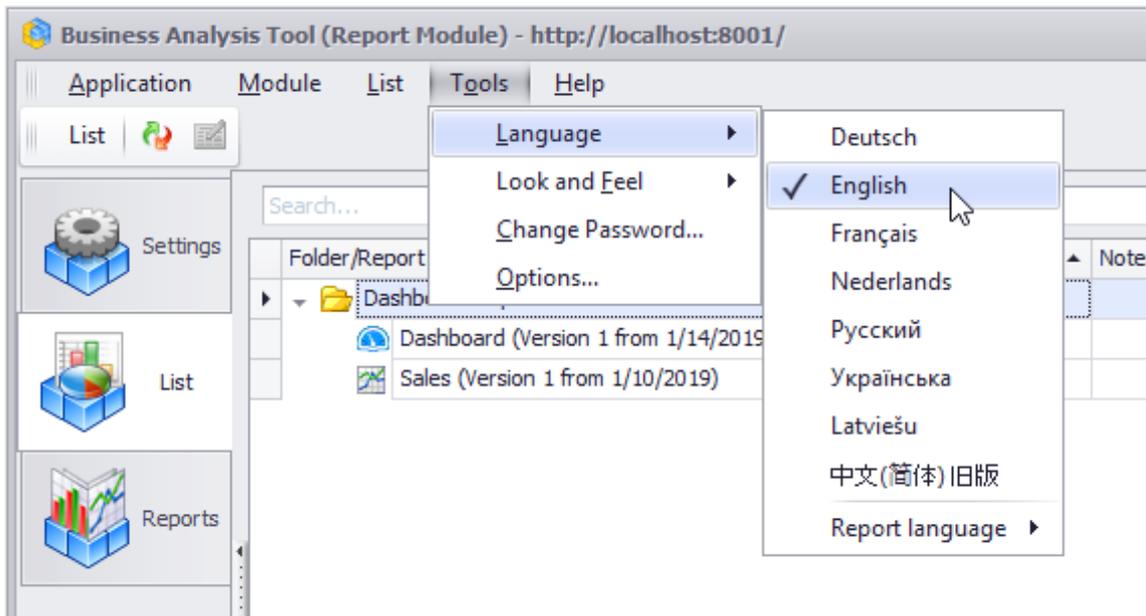
After launch of the application and successful log on you will see the main window of the report module:



You can see 2 tables to the left: “List” and “Settings”. You can see all available reports in the tree view on the “List” tab. On the “Settings” tab you can find data about your PC and about the user under which you’re logged on to Windows.

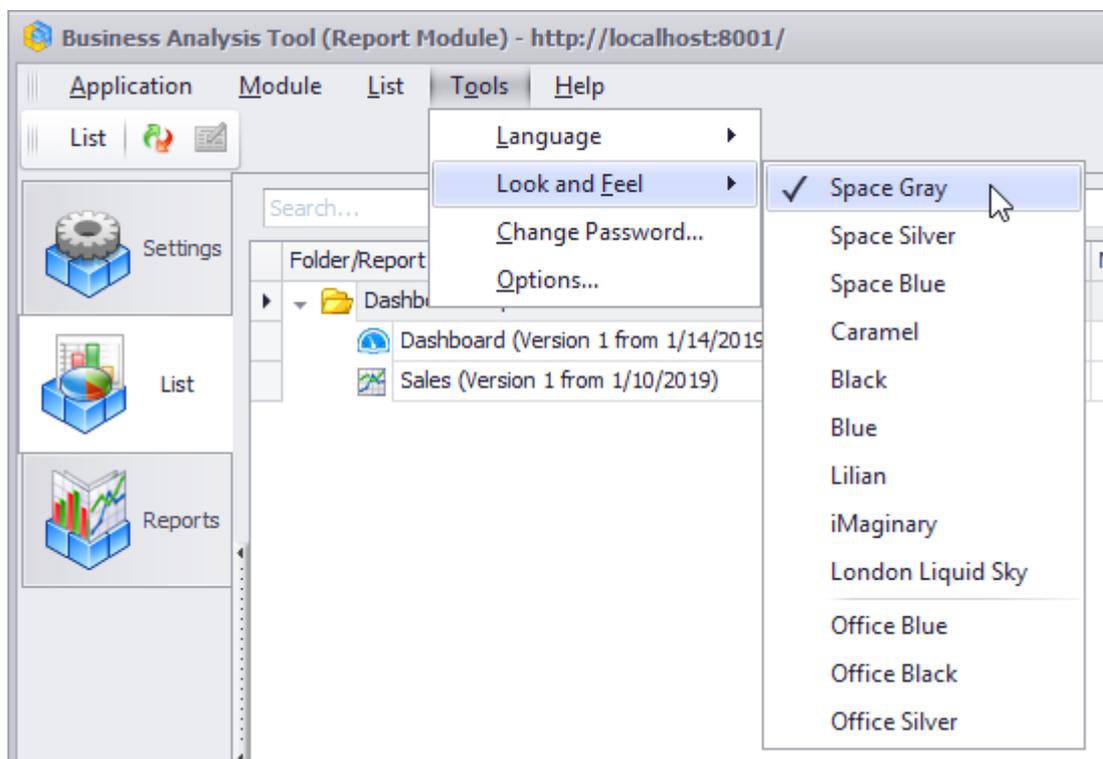
1.1 Language Selection

In order to change the language of the interface you need to enter the “Tools / Language” menu item and select the necessary language:



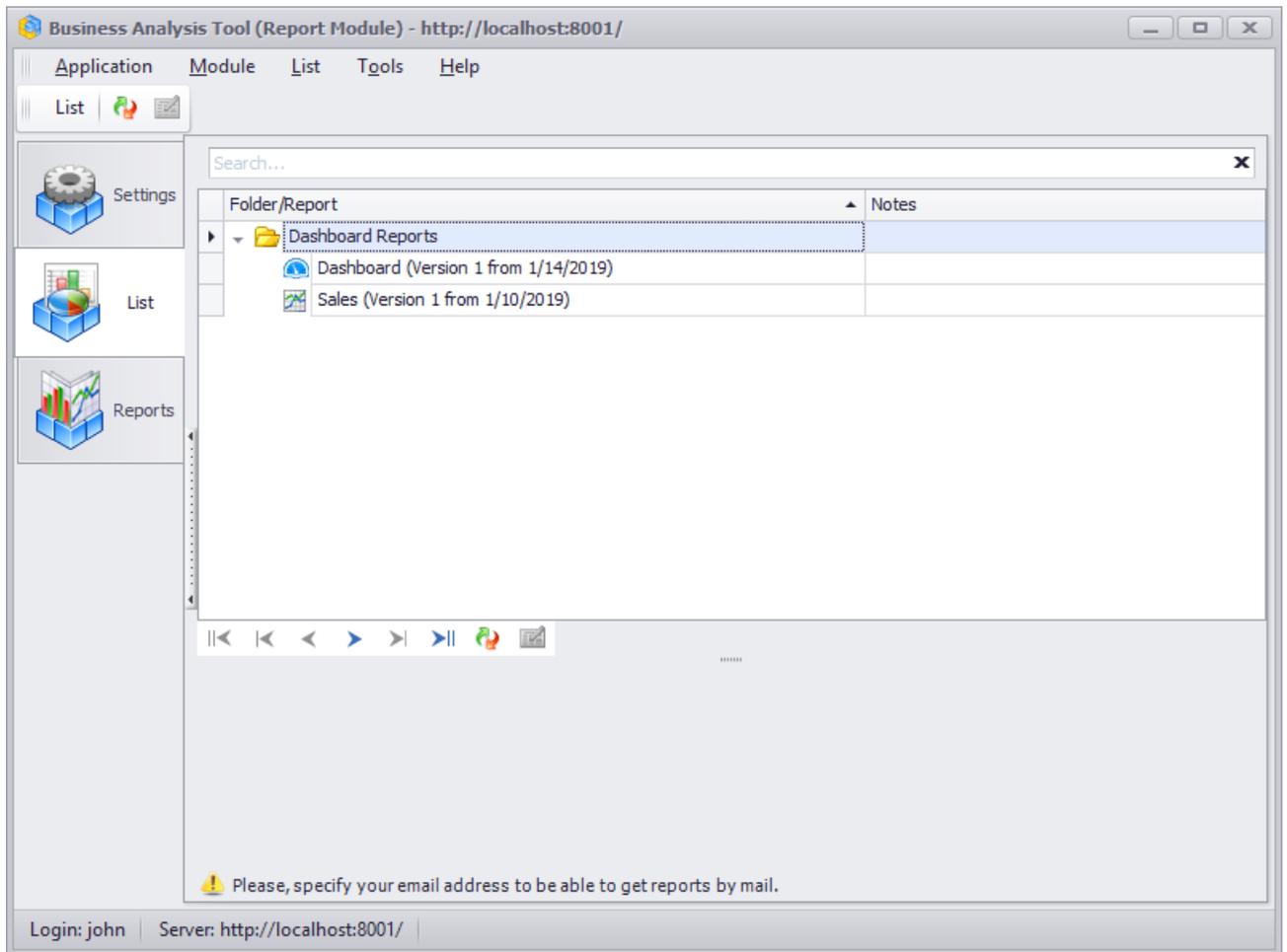
1.2 Themes

Theme (or skin) defines the outer view of the report module. You need to enter the “Tools/Look and Feel” menu item and select any theme of more than 10 possible themes:



2 Viewing Reports

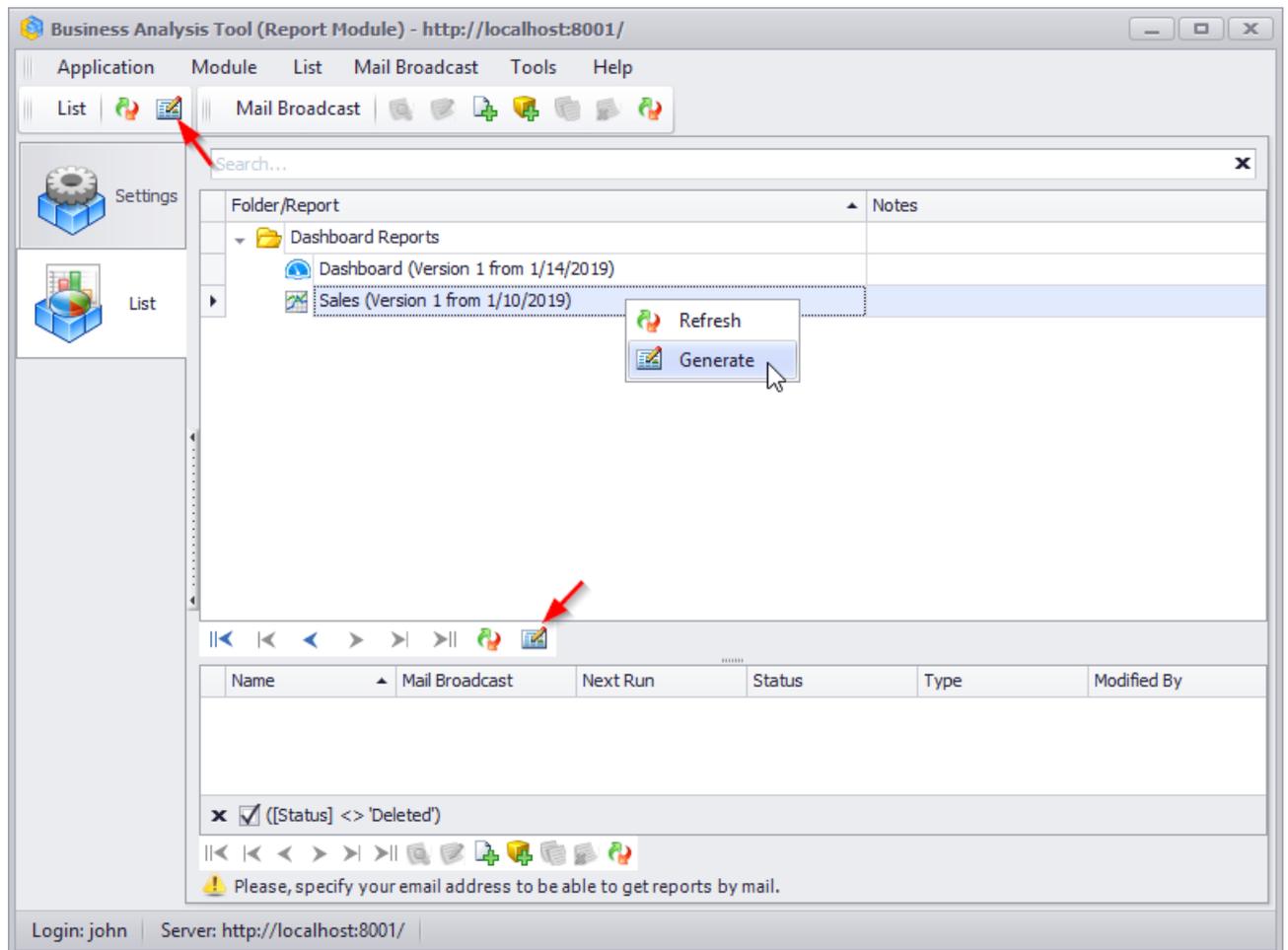
There exist two kinds of reports – an interactive dashboard and a report:



Now let's have a look at each of them separately.

2.1 How to open a report?

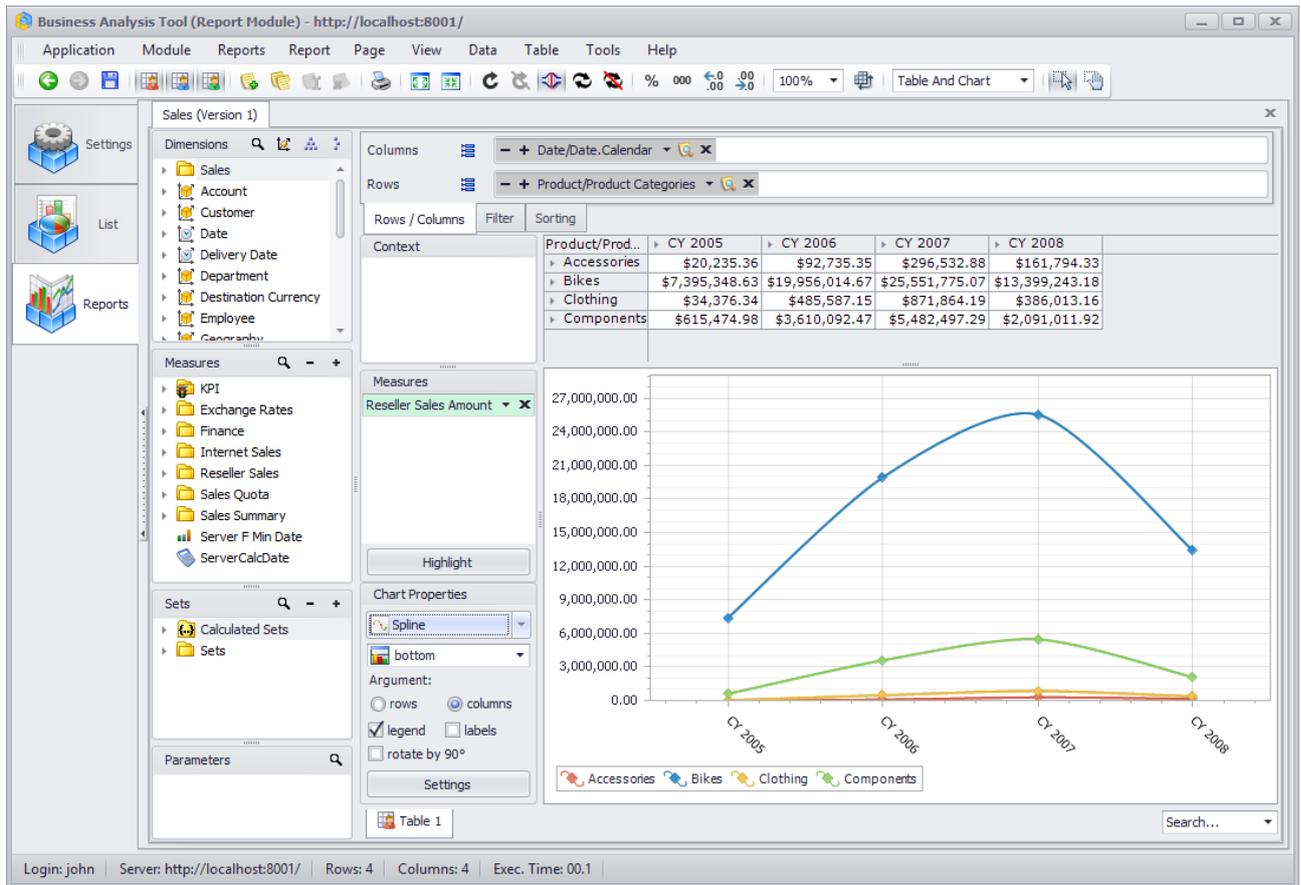
You can open a report in one of the following ways:



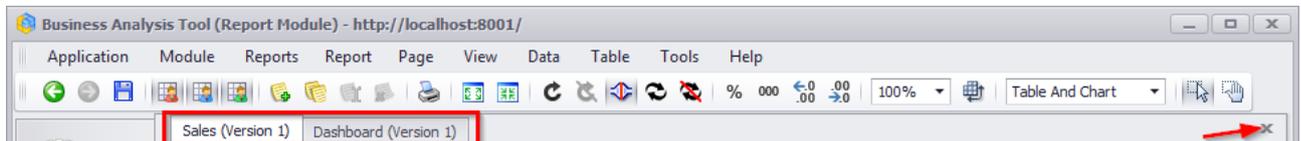
In order to open a report you have to do one of the following actions:

1. Double click on the report with the left mouse button;
2. Make the report active in the list and press Enter.
3. Press the button «Generate» in the bottom part of the screen or in the toolbar, or in the context menu opened with the help of right mouse button click.

When the report is opened, you will see an additional tab “Reports” added to the set of tabs:



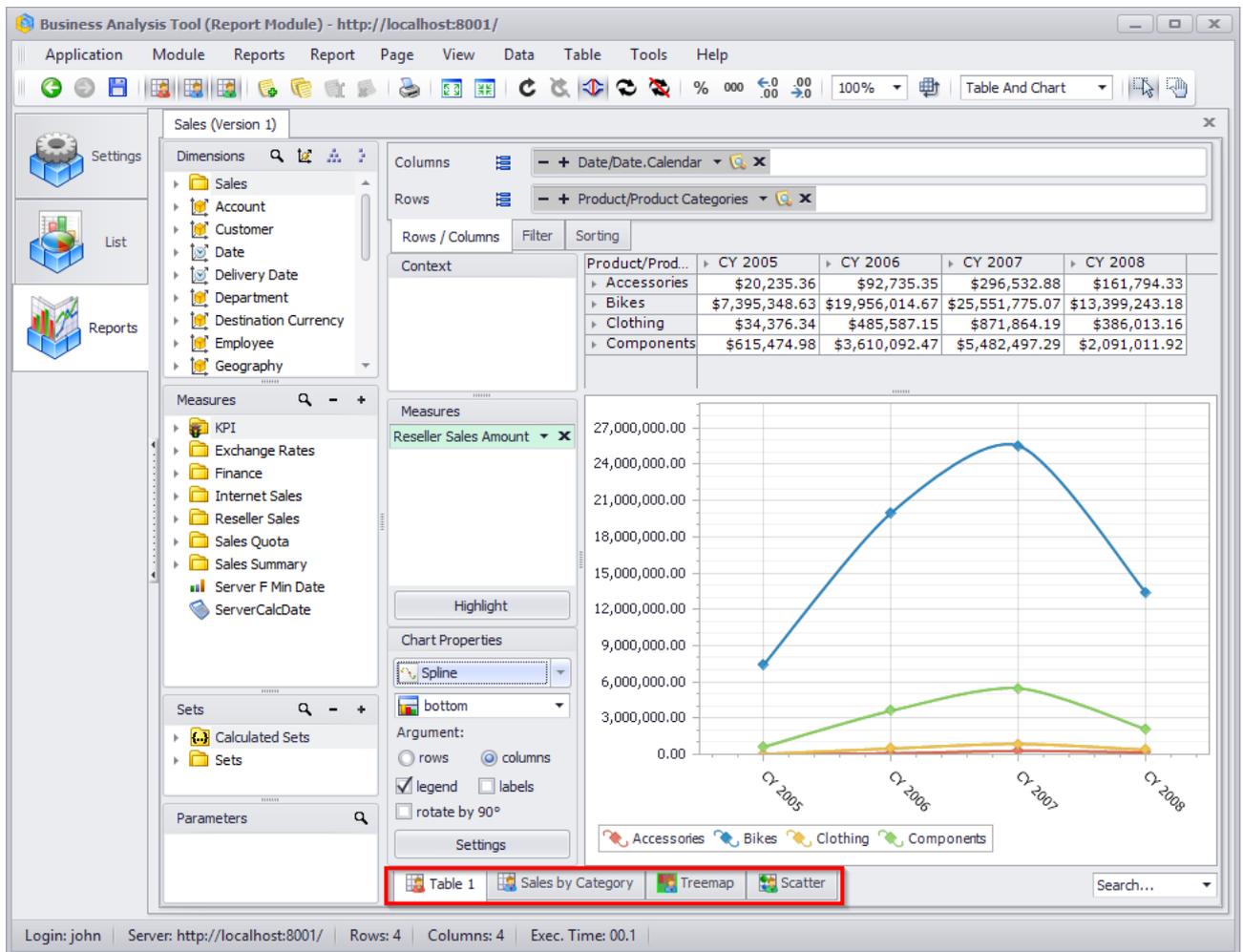
All generated reports will be placed on this tab. Note: you can generate several reports simultaneously. All generated reports will be placed on separate tabs and their location can be changed:



You can close the report using the cross icon in the upper right corner.

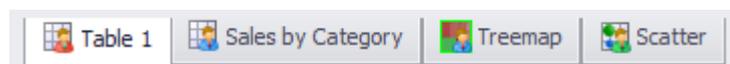
3 Report Pages

Each report consists of several pages. To understand better what is the report page, let us recall how Excel document looks like: each page has a table with data. Pages are displayed as tabs in the bottom part of the window:



Each page can have one of the following types:

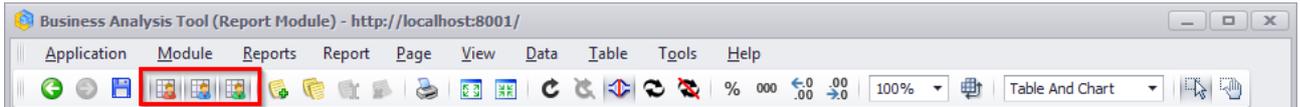
- Pages created by administrator (red color)
- Pages created by you (blue color)
- Pages created by you and shared with other users (blue color with green border)
- Pages created by other users which were shared with you (green color)



You can view administrator's pages and shared pages, and change their structure, but you have no right to save them. However, you can copy those pages and save yours.

You can add your own pages to any report. You can save all changes made on your own pages. You are the only one who can access your own pages (provided they are not shared by you), and no more users (even administrator) can view, modify or delete them. Next section of this document will show you how to create and delete pages.

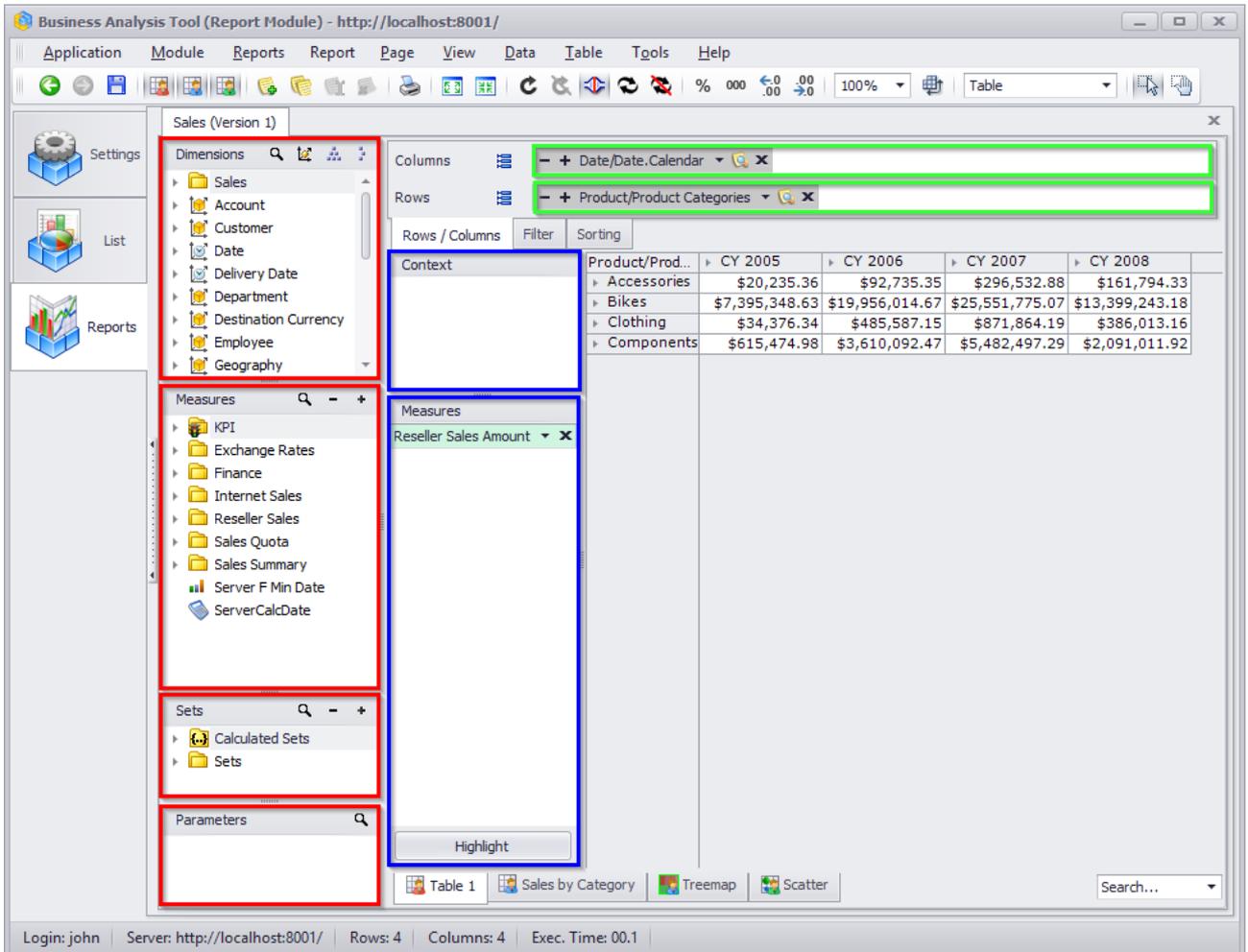
You can also filter the viewed pages to see yours, administrator's or shared, by pressing one of the buttons:



4 Working with reports

4.1 Basic Navigation on the Page

To demonstrate the page navigation let's open the report based on a test database of the retail sales:

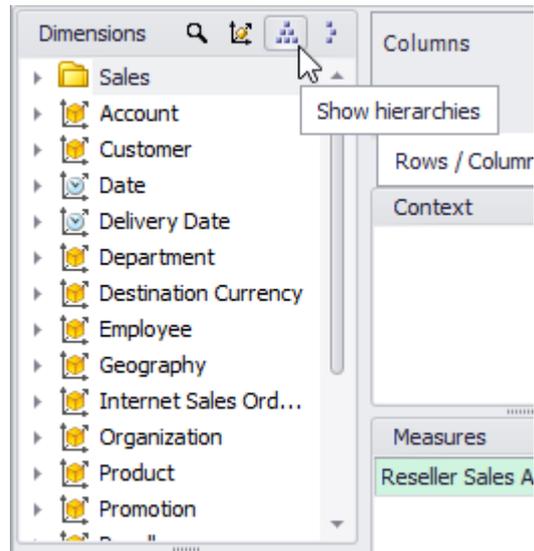


In the opened window you can see the following blocks:

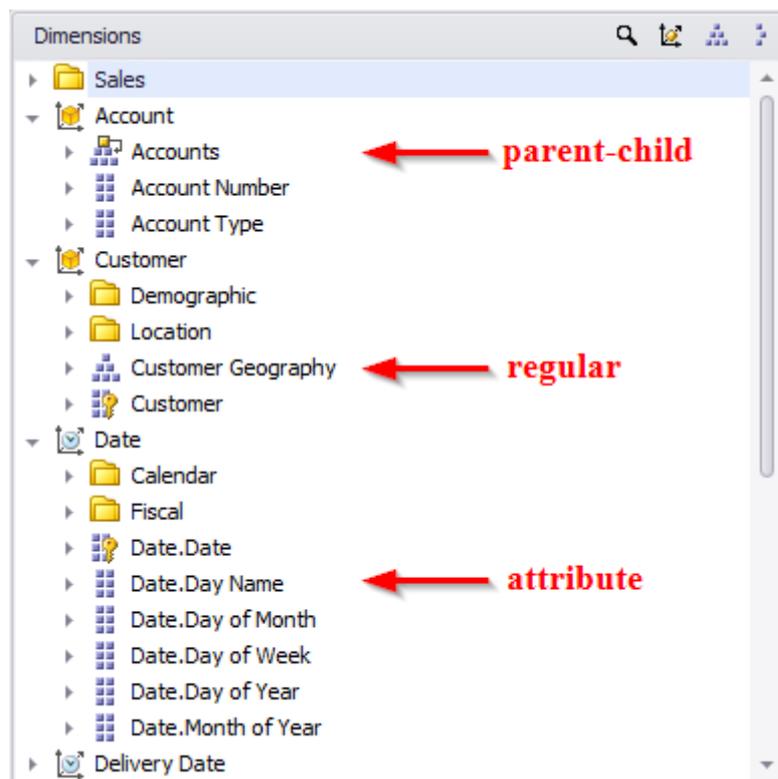
- Dimensions
- Measures
- Sets
- Parameters
- Context
- Measures

We can see the product families on rows and quarters of the year on columns. Inside the table the total amount of sales is displayed. The items which are in rows and columns (products, time, etc) are called dimensions. The values inside the table are called measures.

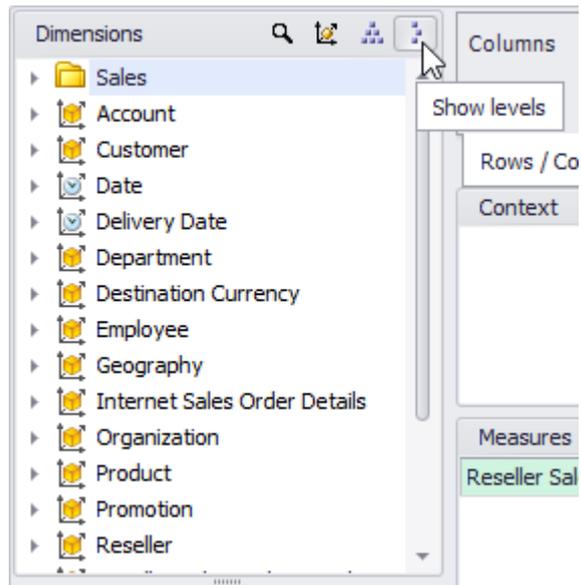
The section “Dimension” contains dimensions, hierarchies and levels:



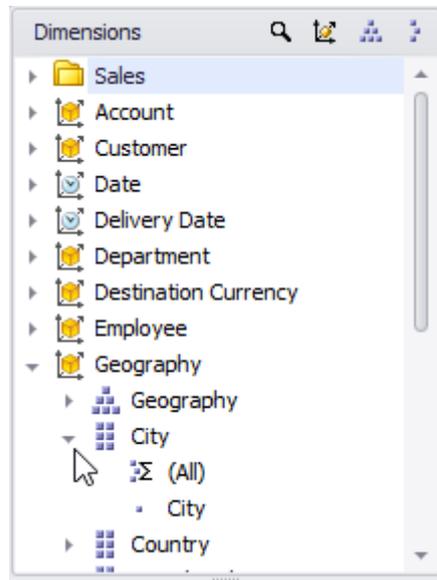
The hierarchies can be of several types: regular, attribute and parent-child:



You can see levels under the hierarchies:



You can see the levels of a hierarchy by pressing “▶”:



With the help of “+” and “-” buttons you can expand the data to the desired level of details in the table as well:

| Product/Product Categories | CY 2005 | CY 2006 | CY 2006 | | CY 2007 |
|----------------------------|----------------|-----------------|----------------|-----------------|-----------------|
| | | | H1 CY 2006 | H2 CY 2006 | |
| ▶ Accessories | \$20,235.36 | \$92,735.35 | \$16,579.48 | \$76,155.87 | \$296,532.88 |
| ▼ Bikes | \$7,395,348.63 | \$19,956,014.67 | \$7,623,185.44 | \$12,332,829.23 | \$25,551,775.07 |
| ▶ Mountain Bikes | \$4,545,336.51 | \$9,190,838.09 | \$4,023,621.76 | \$5,167,216.33 | \$8,854,263.03 |
| ▶ Road Bikes | \$2,850,012.12 | \$10,765,176.58 | \$3,599,563.68 | \$7,165,612.90 | \$11,294,381.37 |
| ▶ Touring Bikes | | | | | \$5,403,130.67 |
| ▶ Clothing | \$34,376.34 | \$485,587.15 | \$31,951.20 | \$453,635.96 | \$871,864.19 |
| ▶ Components | \$615,474.98 | \$3,610,092.47 | \$551,290.34 | \$3,058,802.14 | \$5,482,497.29 |

The level of details can be set in another way. You can see two shelves in the top part of the page: “Rows” and “Columns”. There are controls on them. Those controls allow us to know which data are displayed in the table. With the help of the dropdown you can set the necessary level of details:

The screenshot shows a BI tool interface with a table. The 'Rows' shelf contains 'Product/Product Categories' and a dropdown menu is open, showing options: '(All)', 'Category', 'Subcategory', and 'Product'. A red arrow points to the 'Subcategory' option. The table below shows data for 'CY 2006' (H1 and H2) and 'CY 2007'.

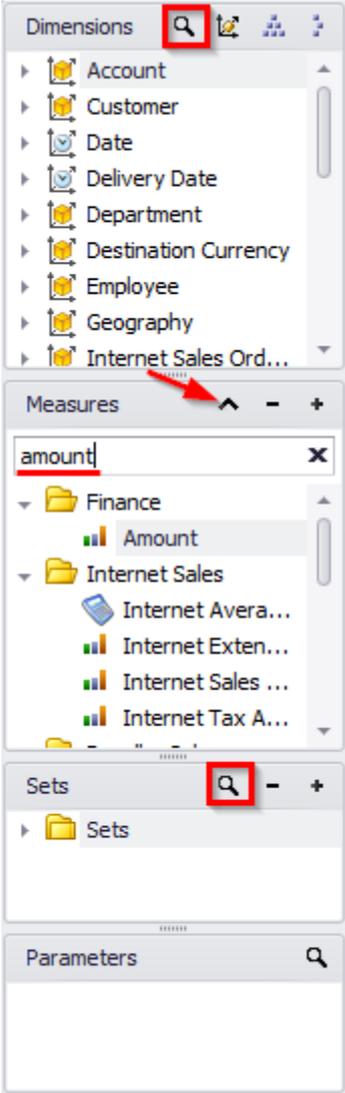
| | CY 2006 | | CY 2006 | | CY 2007 | CY 2008 |
|--------------|-----------------|----------------|-----------------|-----------------|------------------|-----------------|
| | | | H1 CY 2006 | H2 CY 2006 | | |
| | \$92,735.35 | \$16,579.48 | \$76,155.87 | \$296,532.88 | \$161,399,000.00 | \$13,399,000.00 |
| | \$19,956,014.67 | \$7,623,185.44 | \$12,332,829.23 | \$25,551,775.07 | \$13,399,000.00 | \$386,000.00 |
| | \$485,587.15 | \$31,951.20 | \$453,635.96 | \$871,864.19 | \$386,000.00 | \$386,000.00 |
| ▶ Components | \$615,474.98 | \$3,610,092.47 | \$551,290.34 | \$3,058,802.14 | \$5,482,497.29 | \$2,091,000.00 |

If you select some level of details, e.g. “Subcategory”,

The screenshot shows the 'Rows' shelf with 'Product/Product Categories' selected. A red arrow points to the '+' and '-' buttons on the left of the dropdown control.

you’ll be able to made detailing greater or smaller with the help of the buttons + and – (to the left of the control).

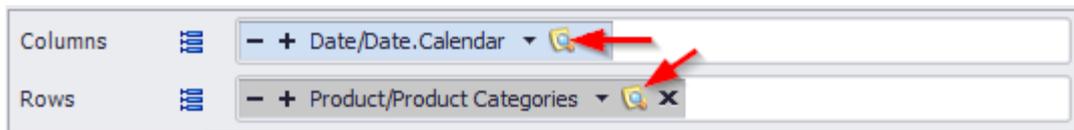
To search in the hierarchy tree of measures and sets of a specific level/measure/set, a quick search is provided:



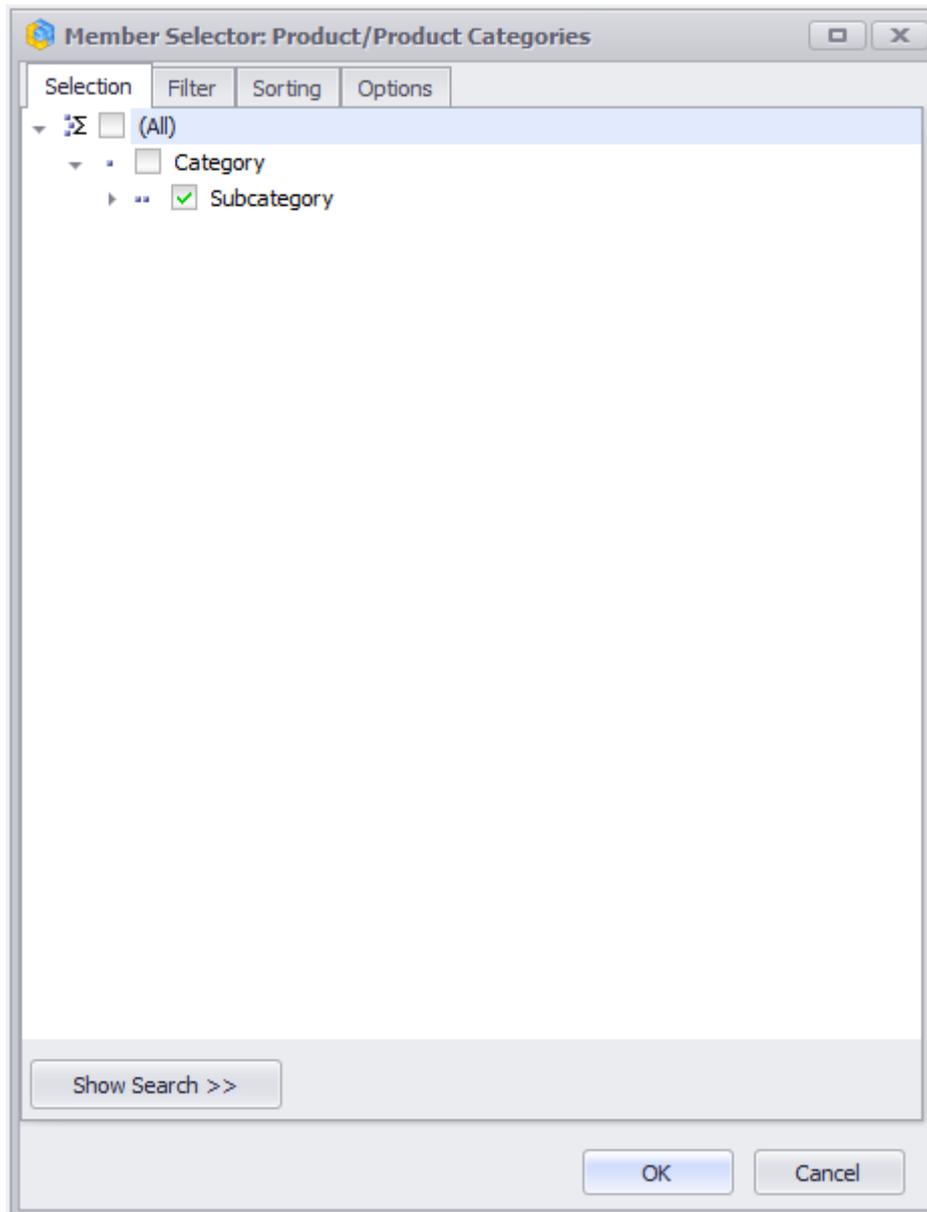
4.2 Member Selection

4.2.1 Manual Member Selection

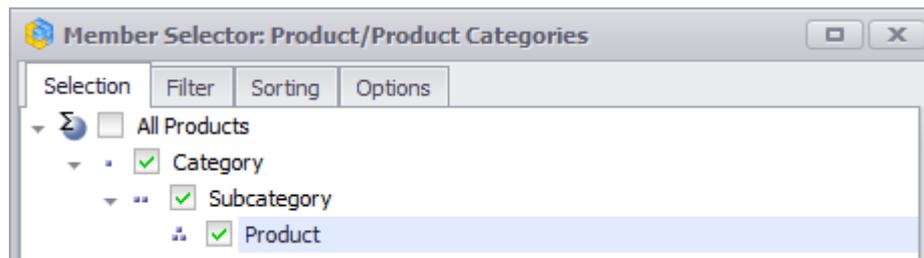
There is a possibility to set arbitrary selection of the items not only by levels, but also with the help of this button:



If you press it, you will get the member selector dialog. In this window there will be selected all those items which are displayed in the table:



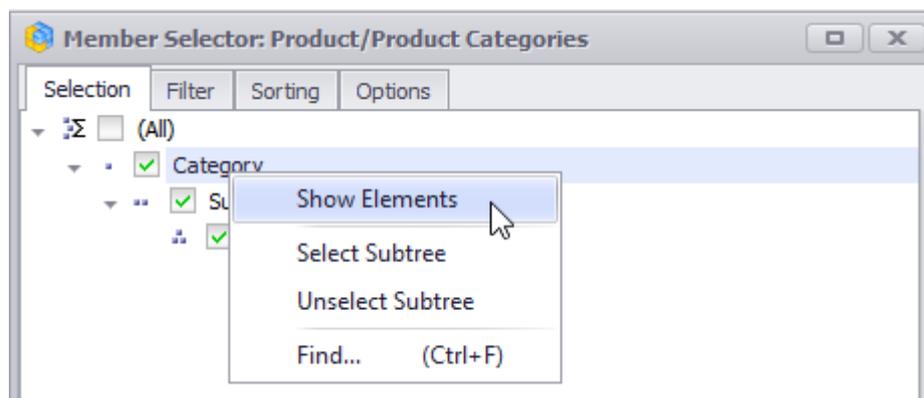
You can see the whole level “Subcategory” selected. You can select several levels at once, for example:



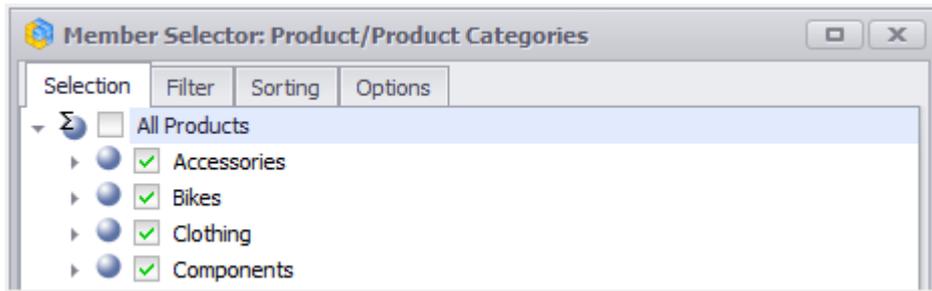
After you press «OK» you will get all three levels displayed in the rows of the table:

| Product/Product Categories | | CY 2005 | CY 2006 | CY 2007 | CY 2008 |
|----------------------------|--|-------------|-------------|--------------|--------------|
| [-] Accessories | | \$20,235.36 | \$92,735.35 | \$296,532.88 | \$161,794.33 |
| [-] Bike Racks | | | | \$118,428.47 | \$79,307.69 |
| Bi Hitch Rack - 4-Bike | | | | \$118,428.47 | \$79,307.69 |
| [-] Bottles and Cages | | | | \$4,481.33 | \$2,995.27 |
| B Water Bottle - 30 oz. | | | | \$4,481.33 | \$2,995.27 |
| [-] Cleaners | | | | \$6,733.09 | \$4,455.28 |
| Cl Bike Wash - Dissolver | | | | \$6,733.09 | \$4,455.28 |
| [-] Helmets | | \$20,235.36 | \$74,281.39 | \$113,443.66 | \$50,752.52 |
| Sport-100 Helmet, Black | | \$6,681.73 | \$5,416.35 | | |
| Sport-100 Helmet, Black | | | \$19,449.16 | \$12,417.67 | |
| Sport-100 Helmet, Black | | | | \$25,988.56 | \$17,961.90 |
| Sport-100 Helmet, Blue | | \$7,114.14 | \$6,217.44 | | |
| Sport-100 Helmet, Blue | | | \$20,228.81 | \$13,566.45 | |
| Sport-100 Helmet, Blue | | | | \$26,107.56 | \$17,818.46 |
| Sport-100 Helmet, Red | | \$6,439.49 | \$4,945.69 | | |
| Sport-100 Helmet, Red | | | \$18,023.94 | \$11,007.42 | |
| Sport-100 Helmet, Red | | | | \$24,356.00 | \$14,972.16 |
| [-] Hydration Packs | | | | \$41,531.96 | \$23,986.79 |
| H Hydration Pack - 70 oz. | | | | \$41,531.96 | \$23,986.79 |
| [-] Locks | | | \$10,084.70 | \$6,140.52 | |
| L Cable Lock | | | \$10,084.70 | \$6,140.52 | |
| [-] Pumps | | | \$8,369.26 | \$5,145.43 | |
| P Minipump | | | \$8,369.26 | \$5,145.43 | |
| [-] Tires and Tubes | | | | \$628.42 | \$296.78 |
| Ti Patch Kit/8 Patches | | | | \$628.42 | \$296.78 |

Member selector can show the selected items in two ways: using levels and using elements. In order to view the selection using elements you have to select “Show Elements” in the context menu:

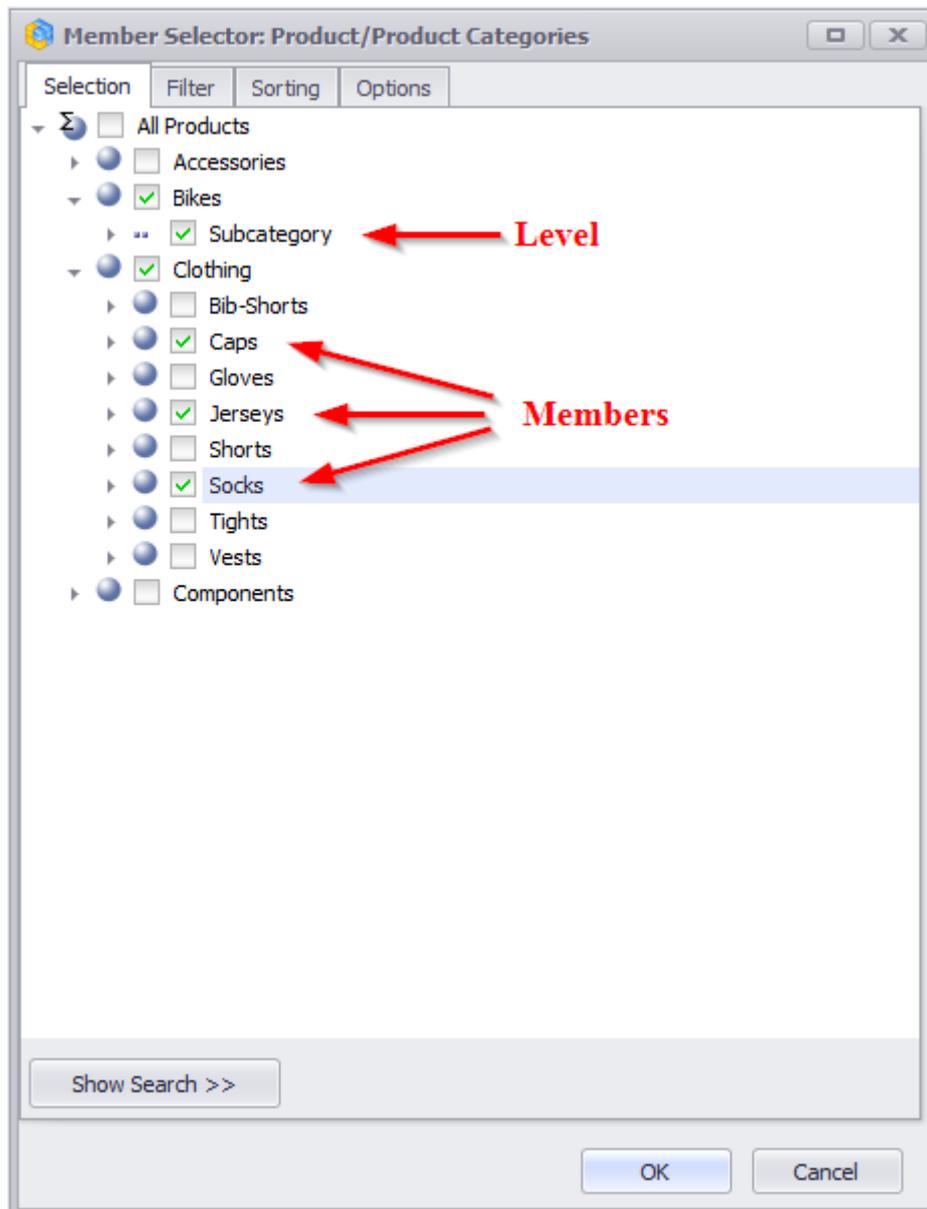


After this you will see the following:

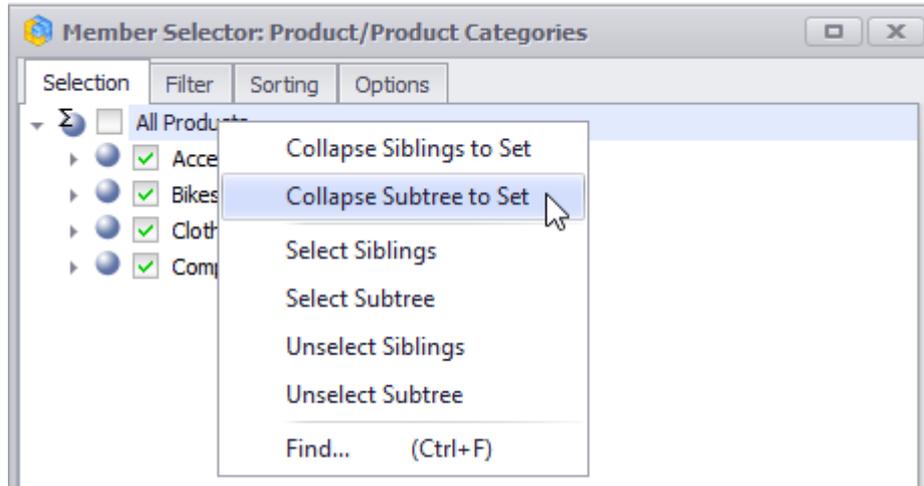


The list of categories is displayed by elements. Please, pay attention to the icons near the elements and sets.

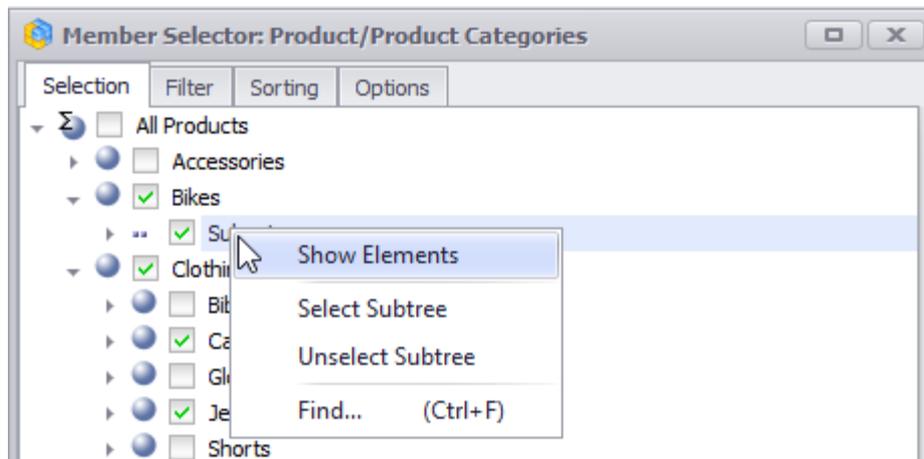
In the member selector window you can set the selection with combining levels and elements:



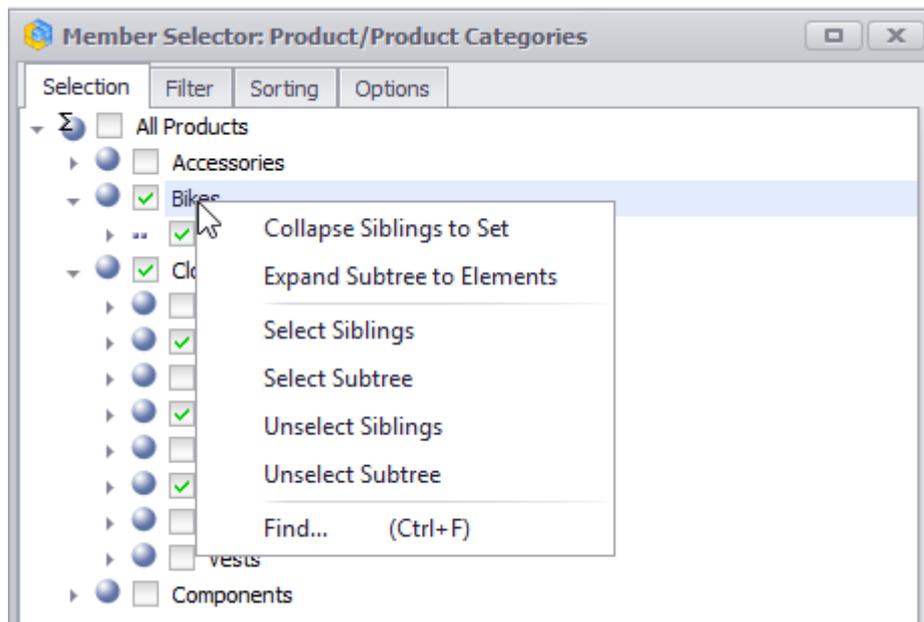
In order to make the selection as shown above you need to use the context menu which can be different depending on where you pressed the right mouse button: on the element or on the level:



Context menu for the level looks like this:



Context menu for the element looks like this:



All actions in this menu are obvious – you can try any of them on your own.

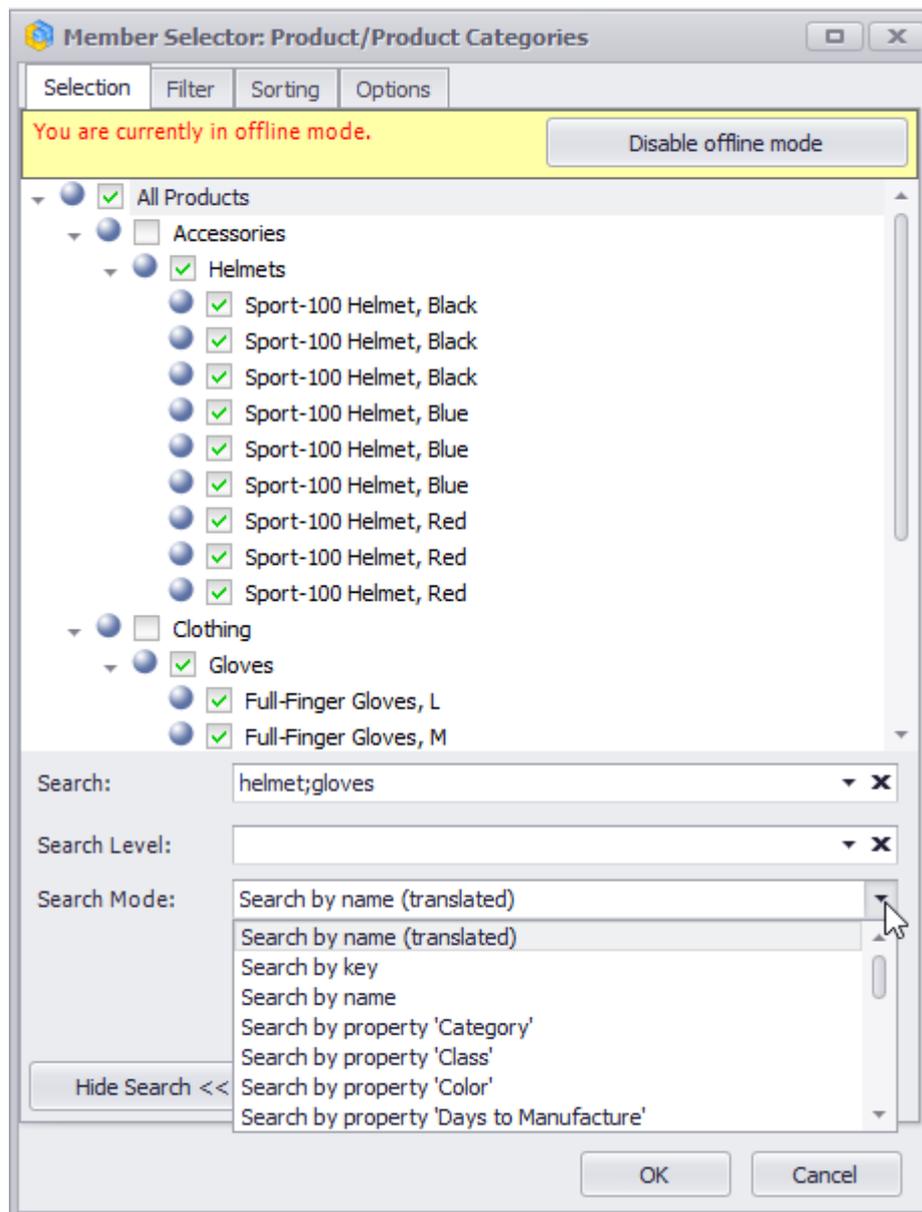
As a result of the selection shown on the picture above you will get this report:

| Product/Product Cat... | ▸ CY 2005 | ▸ CY 2006 | ▸ CY 2007 | ▸ CY 2008 |
|------------------------|----------------|-----------------|-----------------|-----------------|
| ▼ Bikes | \$7,395,348.63 | \$19,956,014.67 | \$25,551,775.07 | \$13,399,243.18 |
| ▸ Mountain Bikes | \$4,545,336.51 | \$9,190,838.09 | \$8,854,263.03 | \$3,902,246.74 |
| ▸ Road Bikes | \$2,850,012.12 | \$10,765,176.58 | \$11,294,381.37 | \$4,448,636.90 |
| ▸ Touring Bikes | | | \$5,403,130.67 | \$5,048,359.55 |
| ▼ Clothing | \$34,376.34 | \$485,587.15 | \$871,864.19 | \$386,013.16 |
| ▸ Caps | \$2,686.87 | \$9,387.61 | \$13,800.95 | \$5,665.91 |
| ▸ Jerseys | \$28,255.57 | \$110,243.77 | \$290,004.73 | \$150,804.63 |
| ▸ Socks | \$3,433.89 | \$3,139.50 | \$10,793.76 | \$7,271.66 |

As we can see, the table has all elements of the level “Subcategory” under the “Bikes” element, and three elements selected separately under “Clothing” element.

4.2.2 Searching

In the member selector form you can search for necessary members:



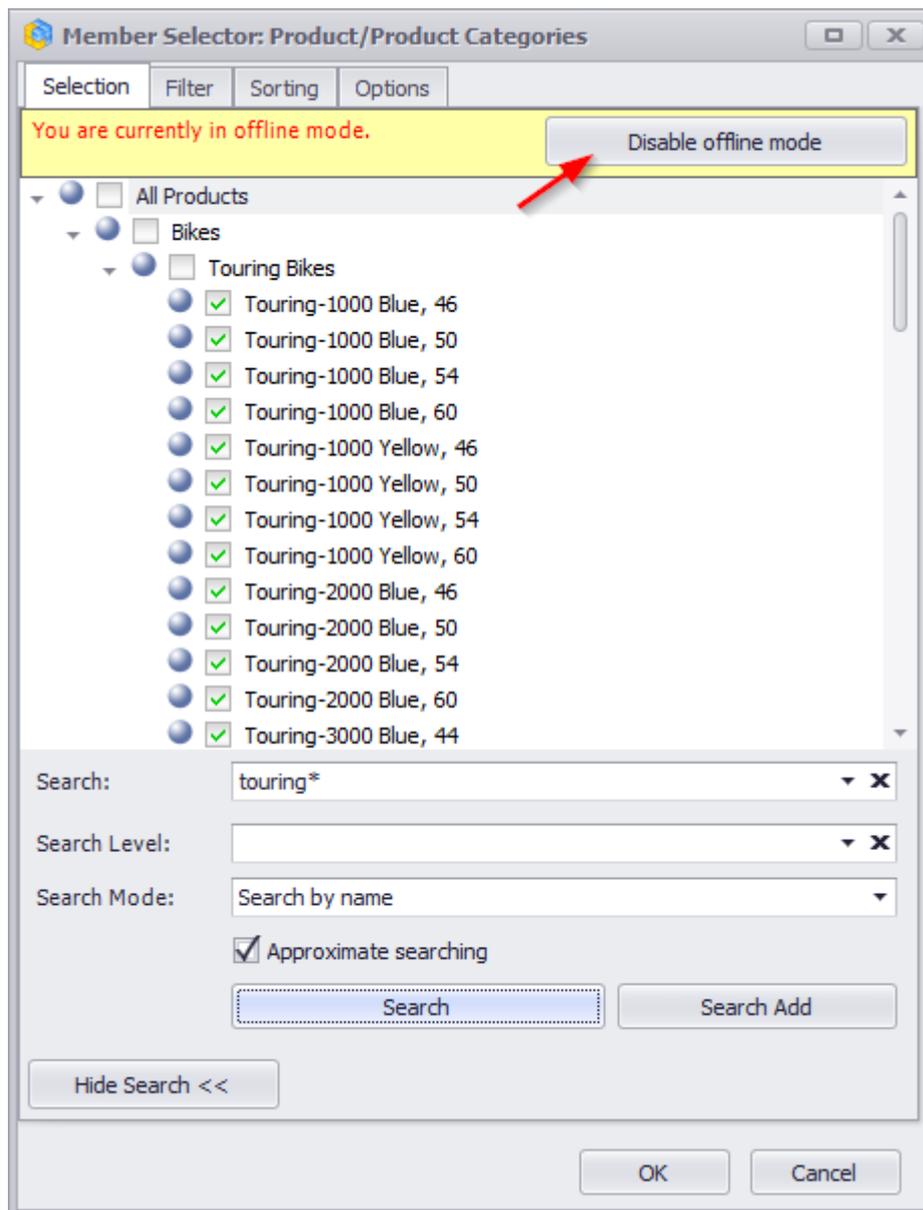
The button “Show Search / Hide Search” below opens or closes the search panel. On the search panel you can set the phrase, the level in the hierarchy where search will be performed (if not specified – the searching will be done on all levels) and the search mode:

- Search by name: your phrase will be searched among member names;
- Search by key: your phrase will be searched among member keys;
- Search by property ‘x’: your phrase will be searched among values of the property ‘x’ of the members.

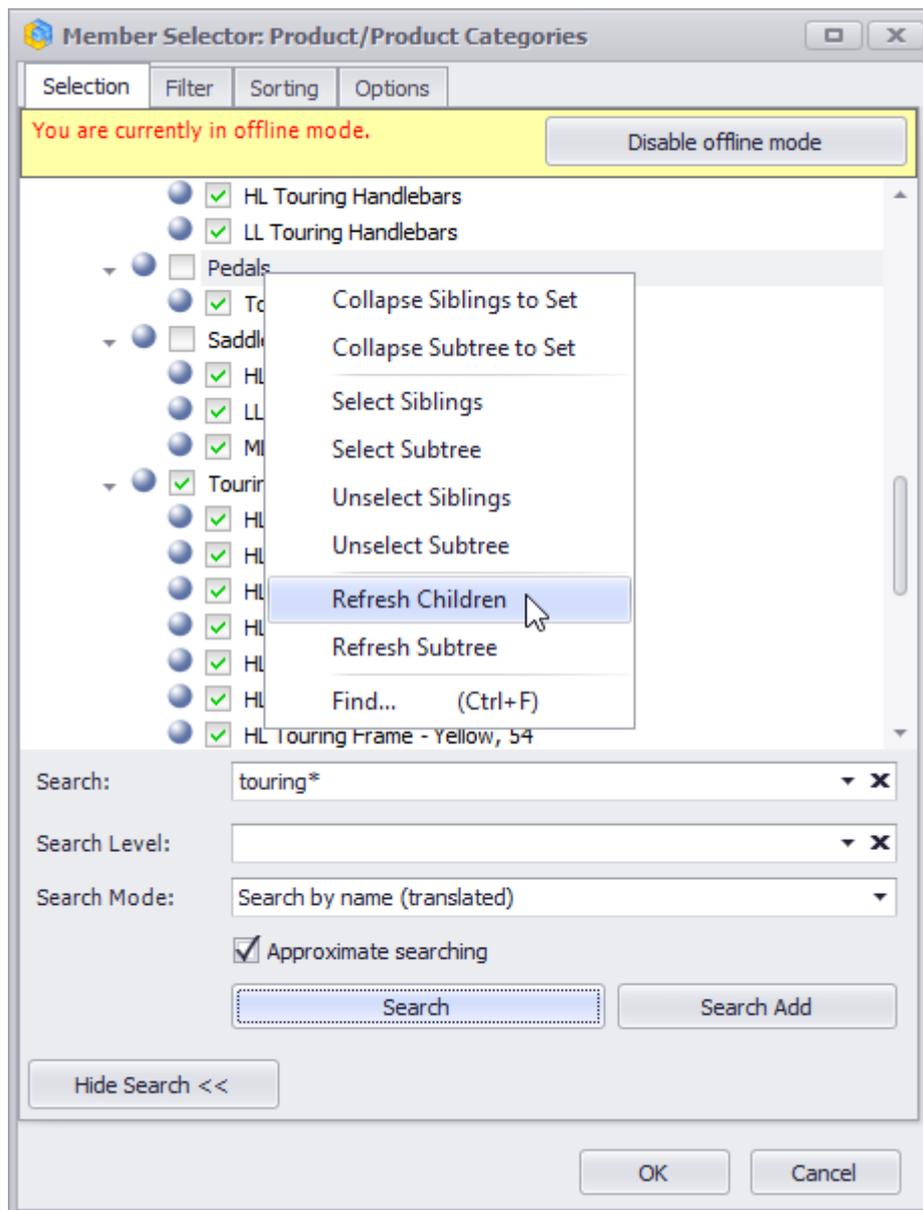
You can specify several words using “;”. Each word can be started or ended with “*”. For example, type touring* if you want to find all goods which start from touring. If you need to search for symbols “*” or “;” you have to specify \ before them, like this: <*» и <\;». In order to search for “\” you should specify “\\”.

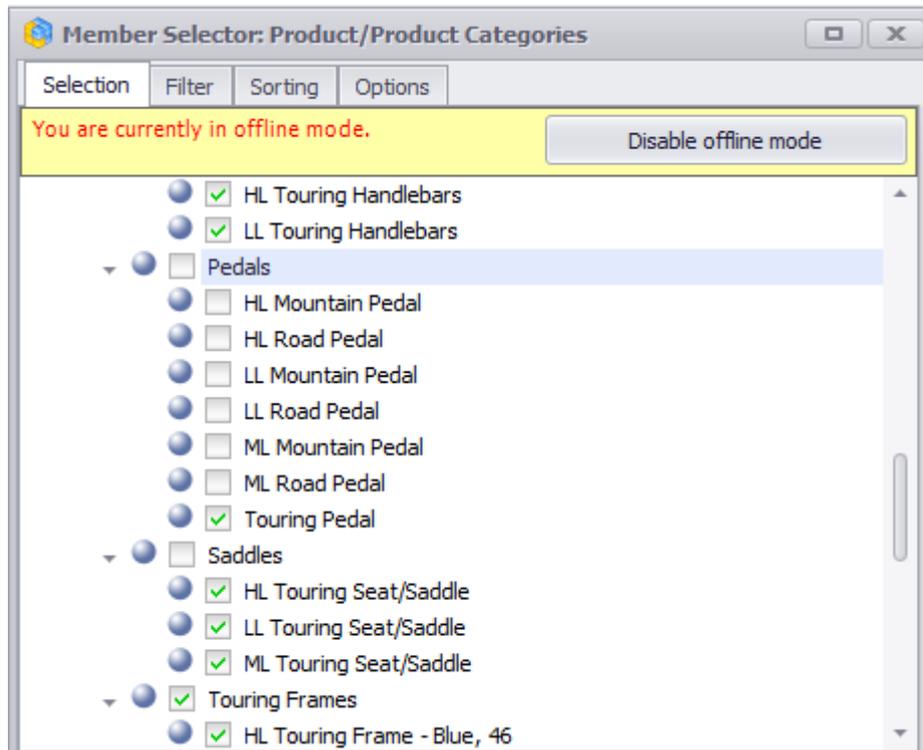
The option “Approximate searching” makes so that the application will search the words approximately. Thus, searching for <helmet;gloves> with checkbox “Approximate searching” set to “ON” is the same as searching for “*helmet*;gloves*” without it.

After successful searching of elements, the member selector turns into “offline mode”. It means that the member selector will show ONLY the elements which are the search result plus their parents. You can unplug the “offline mode” pressing this button:



In the offline mode you can show only those elements which you need. Using menu items “Refresh Children” and “Refresh Subtree” you can display all children of the selected element or all its subtree:

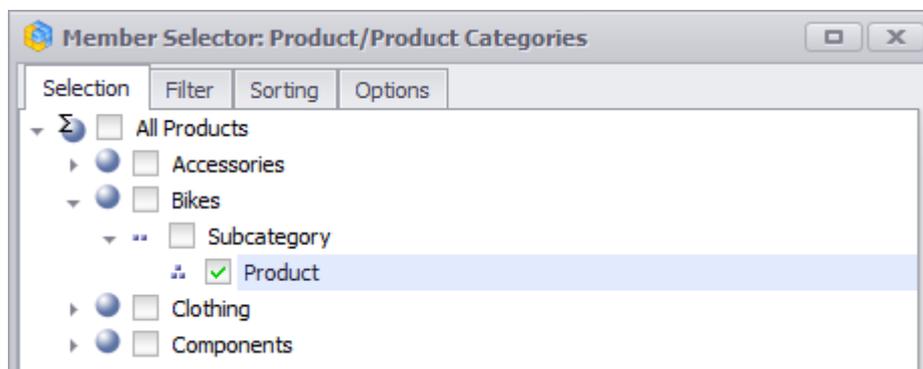




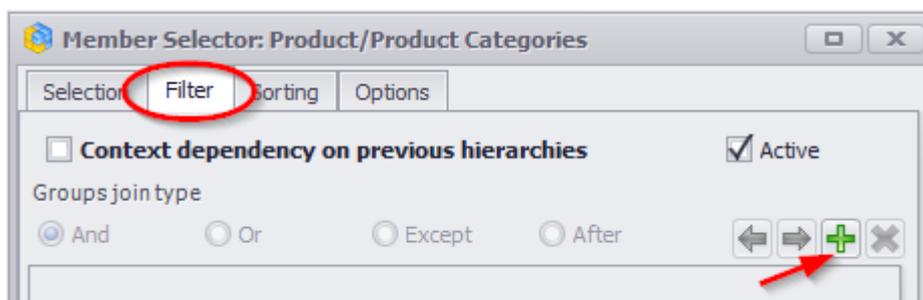
4.2.3 Filtering of Selected Elements

You can filter those elements which you've selected on the tab "Selection". There is a second tab "Filter" which is used for this.

Let us make an example: let us choose all mountain bikes which are in the top 10 by the sum of sales in the first quarter of 2007. In order to select them, please do the following.
Choose all bicycles:



Create a new filtering group on the tab "Filter":



Fill in the data in order to select top 10 as shown on the following picture:

Member Selector: Product/Product Categories

Selection Filter Sorting Options

Context dependency on previous hierarchies Active

Groups join type

And Or Except After

Group 1

Group name: Group 1

Conditions jointype

And Or Except After

Top 10 sales

Name: Top 10 sales

Level: All levels

Type: By measure value

Condition: x topmost members (TopCount)

Measure: The first measure among selected

X: 10

Ignore empty values

Override Context

Override Context for Hierarchy...

OK Cancel

In order to make so that the “Reseller Sales Amount” is to be computed using the 1st quarter of 2007 (but not all the time) you have to override context: press the button “Override Context for Hierarchy...”

Top 10 sales

Name: Top 10 sales

Level: All levels

Type: By measure value

Condition: x topmost members (TopCount)

Measure: Reseller Sales Amount

X: 10

Ignore empty values

Override Context

Override Context for Hierarchy...

Choose the time hierarchy:

Hierarchy

Please, choose a hierarchy:

* Date/Date.Calendar

OK Cancel

Choose the 1st quarter of 2007:

- Σ All Periods
 - ▶ CY 2005
 - ▶ CY 2006
 - ▼ CY 2007
 - ▼ H1 CY 2007
 - ▶ Q1 CY 2007
 - ▶ Q2 CY 2007
 - ▶ H2 CY 2007
 - ▶ CY 2008
 - ▶ CY 2010

After pressing «OK» you will get this:

The screenshot shows a dialog box titled "Top 10 sales". It contains the following fields and options:

- Name: Top 10 sales
- Level: All levels
- Type: By measure value
- Condition: x topmost members (TopCount)
- Measure: Reseller Sales Amount
- X: 10
- Ignore empty values
- Override Context: Date/Date.Calendar: All Periods.CY 2007.H1 CY 2007.Q1 CY 2007
- Button: Override Context for Hierarchy...

Add one more filtering condition:

The screenshot shows the "Member Selector: Product/Product Categories" dialog box with the "Filter" tab selected. It includes the following elements:

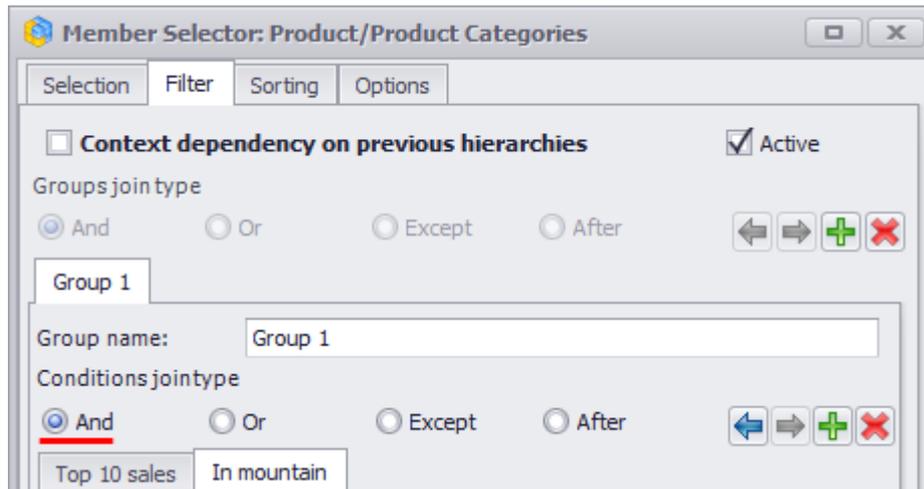
- Context dependency on previous hierarchies: (Active)
- Groups join type: And, Or, Except, After
- Group 1: Group name: Group 1
- Conditions jointype: And, Or, Except, After
- Top 10 sales: A red arrow points to the "+" button in the conditions jointype section.

In order to filter only mountain bikes fill in the following form:

The screenshot shows a dialog box titled "In mountain". It contains the following fields and options:

- Name: In mountain
- Level: All levels
- Type: By property
- Property: Name (translated)
- Comparison: as text
- Condition: members with values satisfying mask x
- X: mountain*

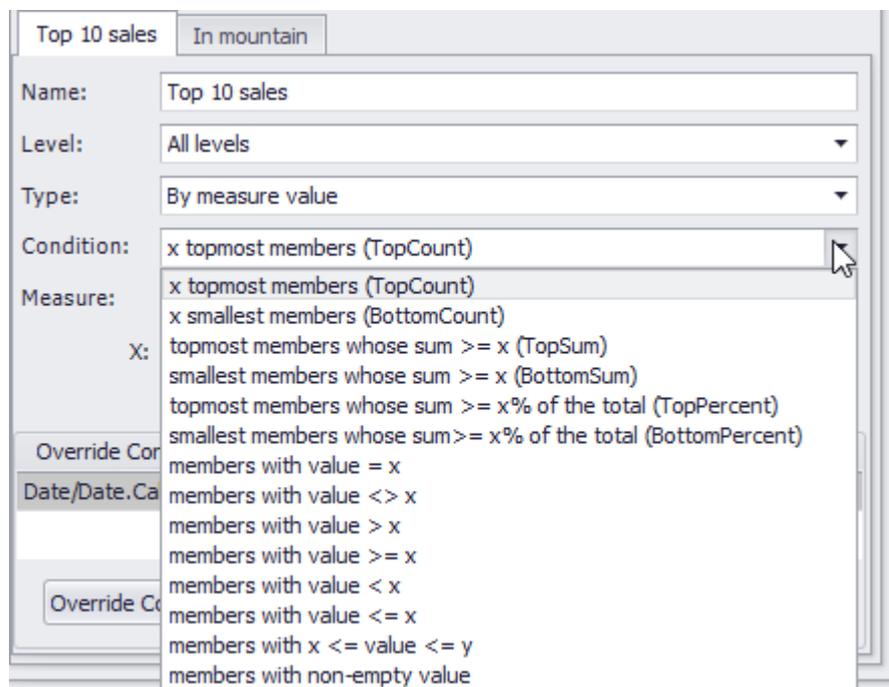
All filtering conditions are set. In order to make so that both conditions are applied to selected members, you have to select the “And” join type:



If you apply this filter, you will see the expected result:

| Product/Product Categ... | Q1 CY 2007 | Q2 CY 2007 |
|--------------------------|--------------|--------------|
| Mountain-200 Black, 38 | \$308,594.18 | \$372,526.05 |
| Mountain-200 Black, 42 | \$272,227.61 | \$313,512.02 |
| Mountain-200 Black, 46 | \$200,401.80 | \$221,302.60 |
| Mountain-200 Silver, 38 | \$241,113.25 | \$303,255.84 |
| Mountain-200 Silver, 42 | \$221,750.45 | \$231,170.43 |
| Mountain-200 Silver, 46 | \$223,713.32 | \$230,384.95 |

In the first condition you applied filtering by measure. In the second – using a property. When you’re filtering by measure value, you can select one of the following conditions:



The list of available conditions:

- Topmost members whose sum \geq X% of the total;
- Smallest members whose sum \geq X% of the total;
- Topmost members whose sum \geq X;

-
- Smallest members whose sum $\geq X$;
 - Members with value $= X$;
 - Members with value $\neq X$;
 - Members with value $> X$;
 - Members with value $\geq X$;
 - Members with value $< X$;
 - Members with value $\leq X$;
 - Members with value in the range from X to Y ;
 - Topmost X members;
 - Smallest X members;

If you filter elements by property, the list of conditions depends on the type of the property: is it text, numeric or date.

If the property type is numeric or date, the list of conditions is identical to the list for measure.

If the property is of text type, the list of conditions is as following:

- Members with values satisfying mask (the mask is case insensitive; you can use symbol «*» in the beginning and in the end of the mask);
- Members with values = X;
- Members with values <> X;
- Members with values > X;
- Members with values >= X;
- Members with values < X;
- Members with values <= X;
- Members with values in range between X and Y;
- Topmost X values;
- Smallest X values.

It is possible to change filter status:



4.2.4 Sorting of Selected Members

In most of the cases the dimension members are sorted by names, but you can override the method of member sorting.

Let us build the following report:

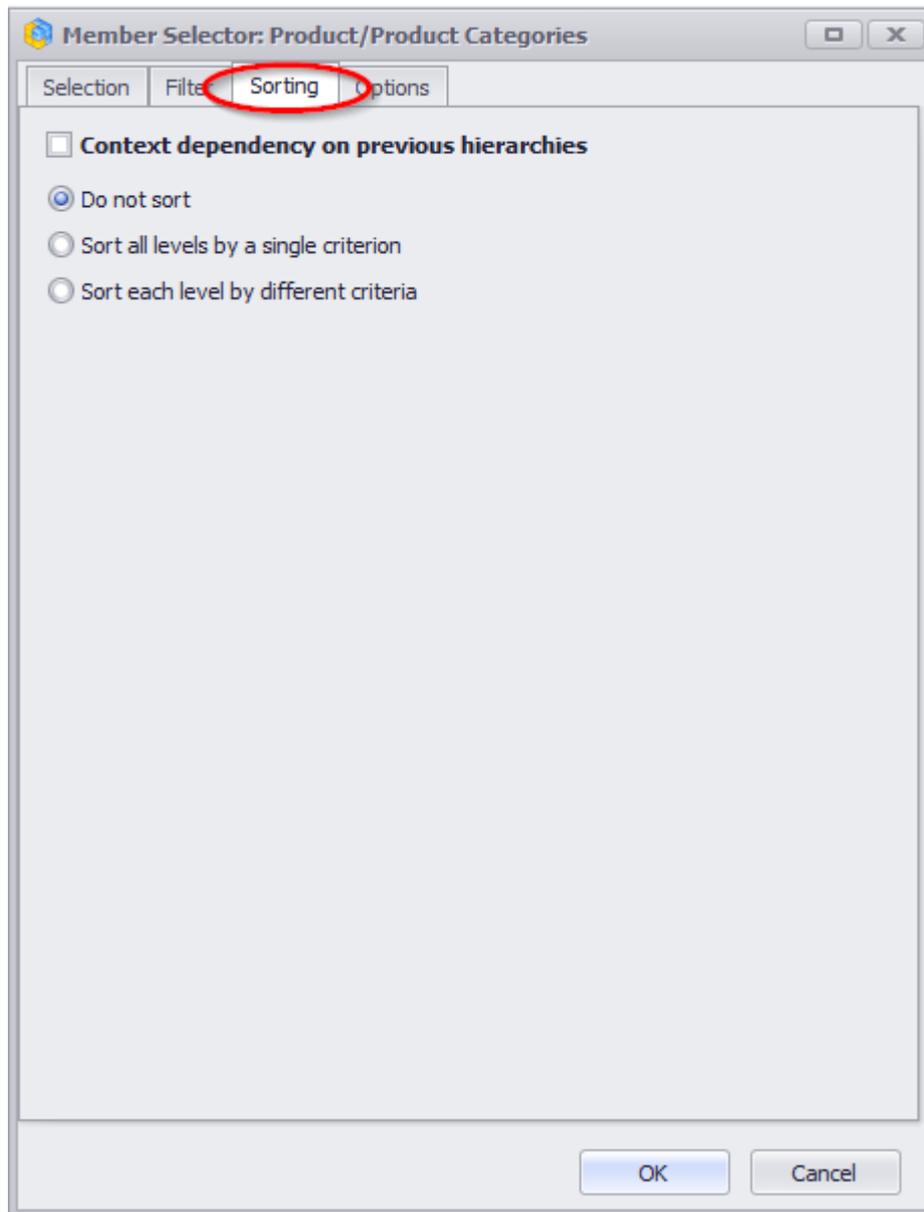
The screenshot shows a BI tool interface with the following configuration:

- Columns:** Date/Date.Calendar
- Rows:** Product/Product Categories
- Measures:** Reseller Sales Amount

The main table displays sales data for various product categories across two years (CY 2007 and CY 2008). The categories are sorted by their sales amount in 2007. The 'Components' category is expanded to show sub-categories.

| Product/Product.. | CY 2007 | CY 2008 |
|-------------------|-----------------|-----------------|
| Accessories | \$296,532.88 | \$161,794.33 |
| Bikes | \$25,551,775.07 | \$13,399,243.18 |
| Clothing | \$871,864.19 | \$386,013.16 |
| Components | \$5,482,497.29 | \$2,091,011.92 |
| Bottom Br... | \$30,792.82 | \$21,033.55 |
| Brakes | \$45,187.31 | \$20,831.40 |
| Chains | \$5,685.93 | \$3,691.78 |
| Cranksets | \$124,249.27 | \$79,693.34 |
| Derailleurs | \$44,321.13 | \$25,888.36 |
| Forks | \$28,259.07 | |
| Handlebars | \$88,710.99 | \$28,237.63 |
| Headsets | \$25,010.36 | |
| Mountain F... | \$2,067,908.64 | \$873,844.03 |
| Pedals | \$94,060.53 | \$53,423.38 |
| Road Fram... | \$1,631,377.27 | \$356,197.37 |
| Saddles | \$37,831.96 | \$17,997.43 |
| Touring Fr... | \$1,032,154.04 | \$610,173.64 |
| Wheels | \$226,947.94 | |

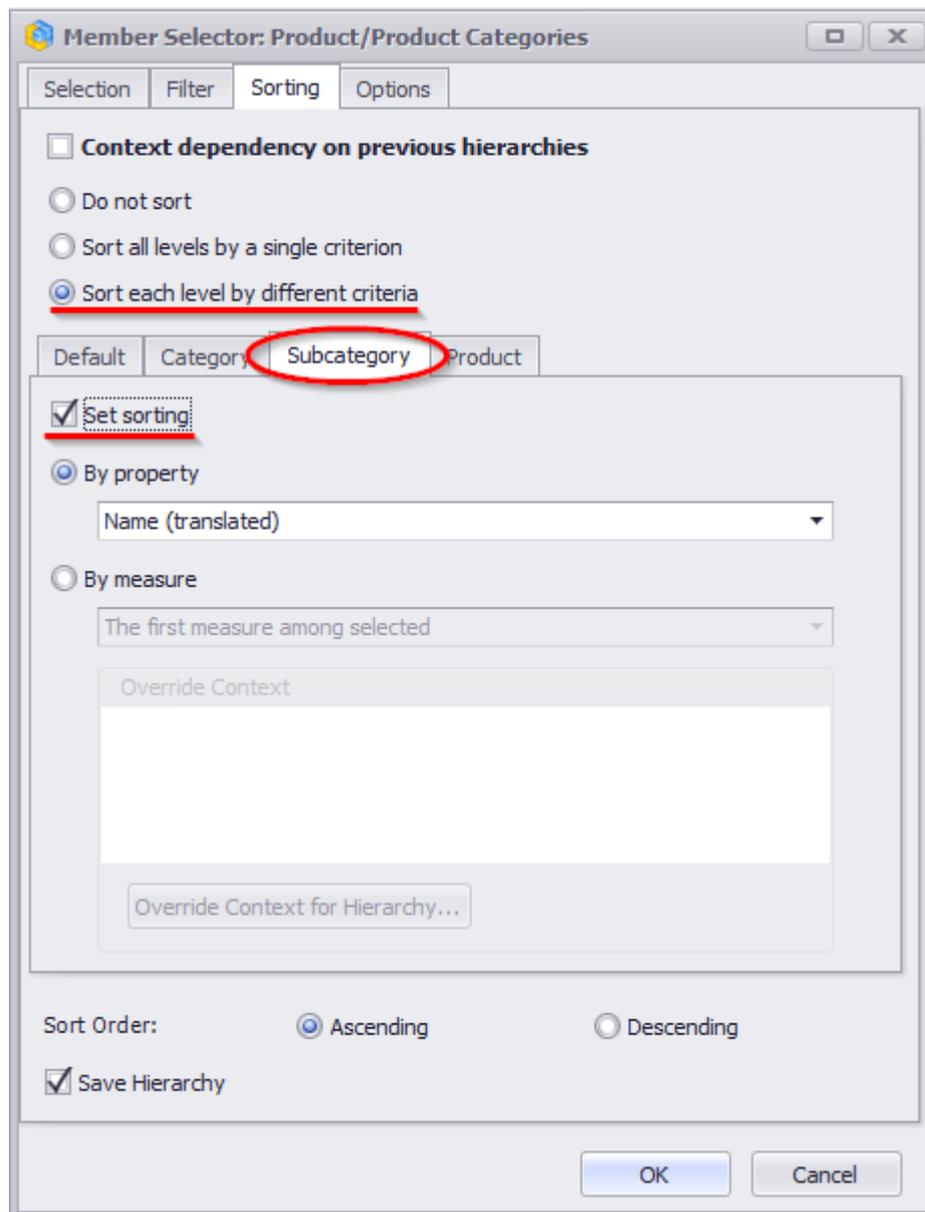
In order to set up sorting, open the member selector and choose the tab “Sorting”:



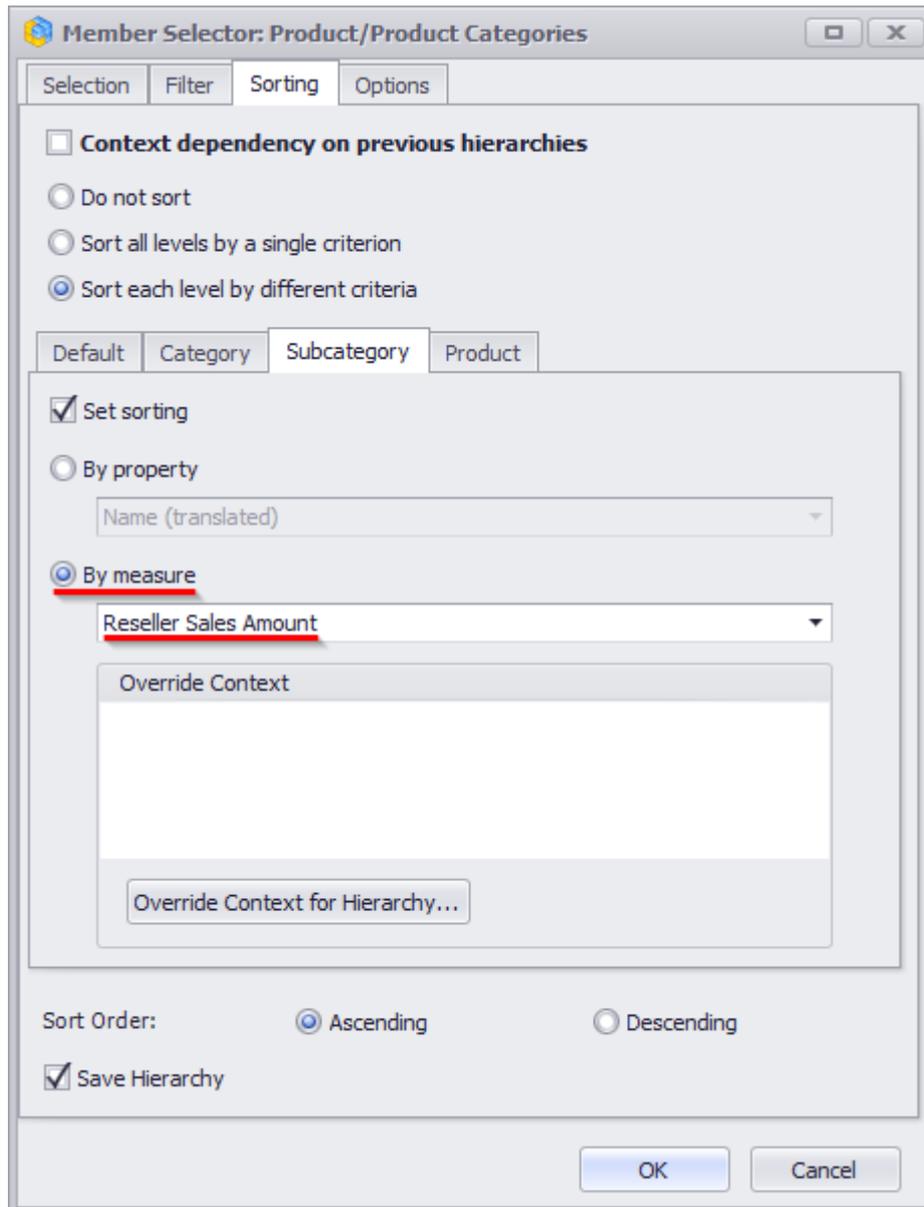
There are 3 options here:

- Do not sort;
- Sort all levels by a single criterion;
- Sort each level by different criteria.

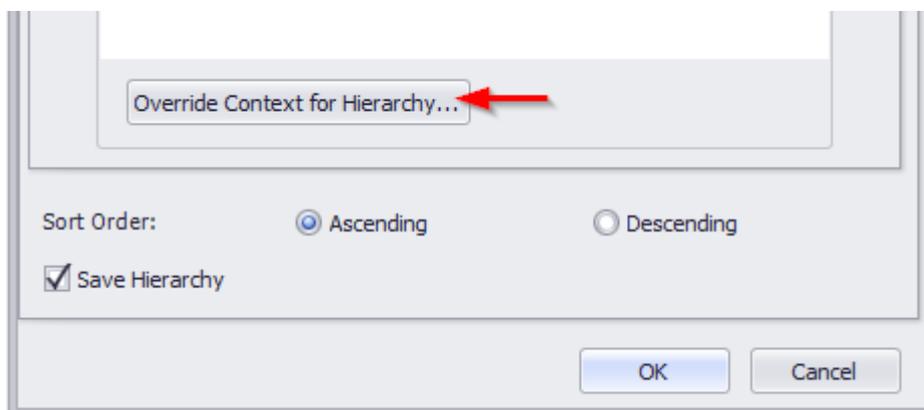
Let us sort the elements on the level Subcategory in descending order by Reseller Sales Amount in 2007. For this you have to select the last option – “Sort levels using different criterias”. Then select the tab which corresponds to the level Subcategory and switch on the sorting for this level:



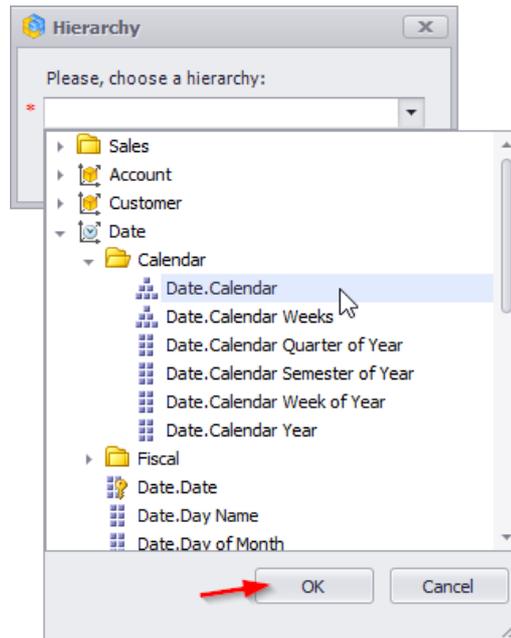
Choose “by measure” and in the dropdown list choose “Reseller Sales Amount”:



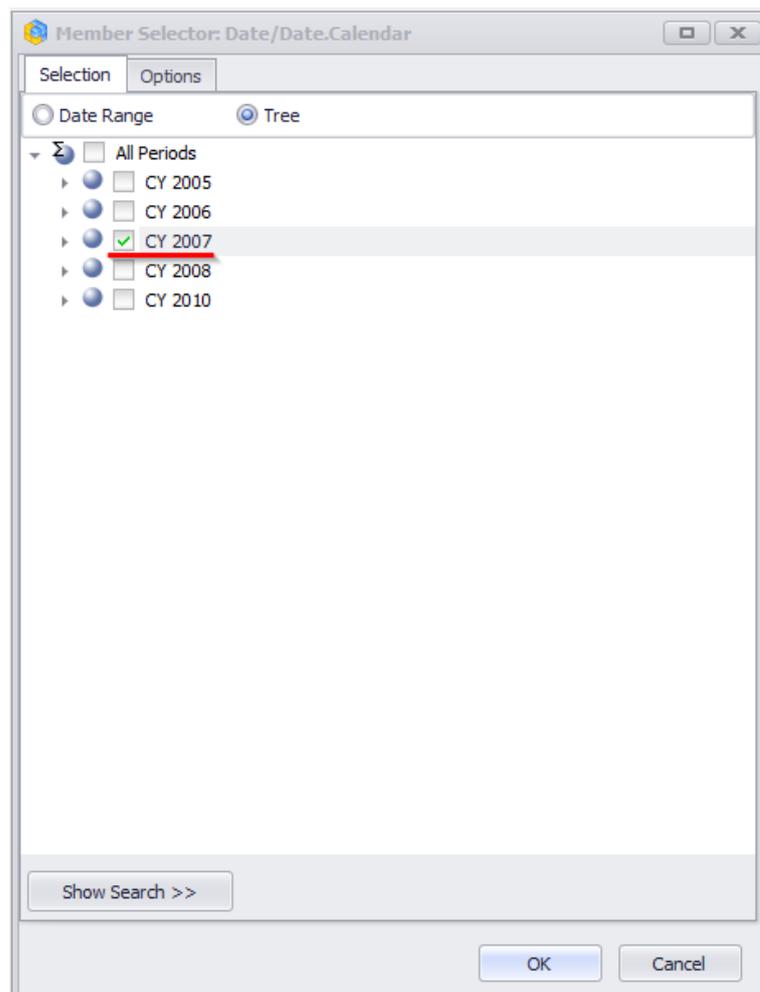
In order to take into account the values for the year 2007, you have to override context. For this press the button “Override Context for Hierarchy”:



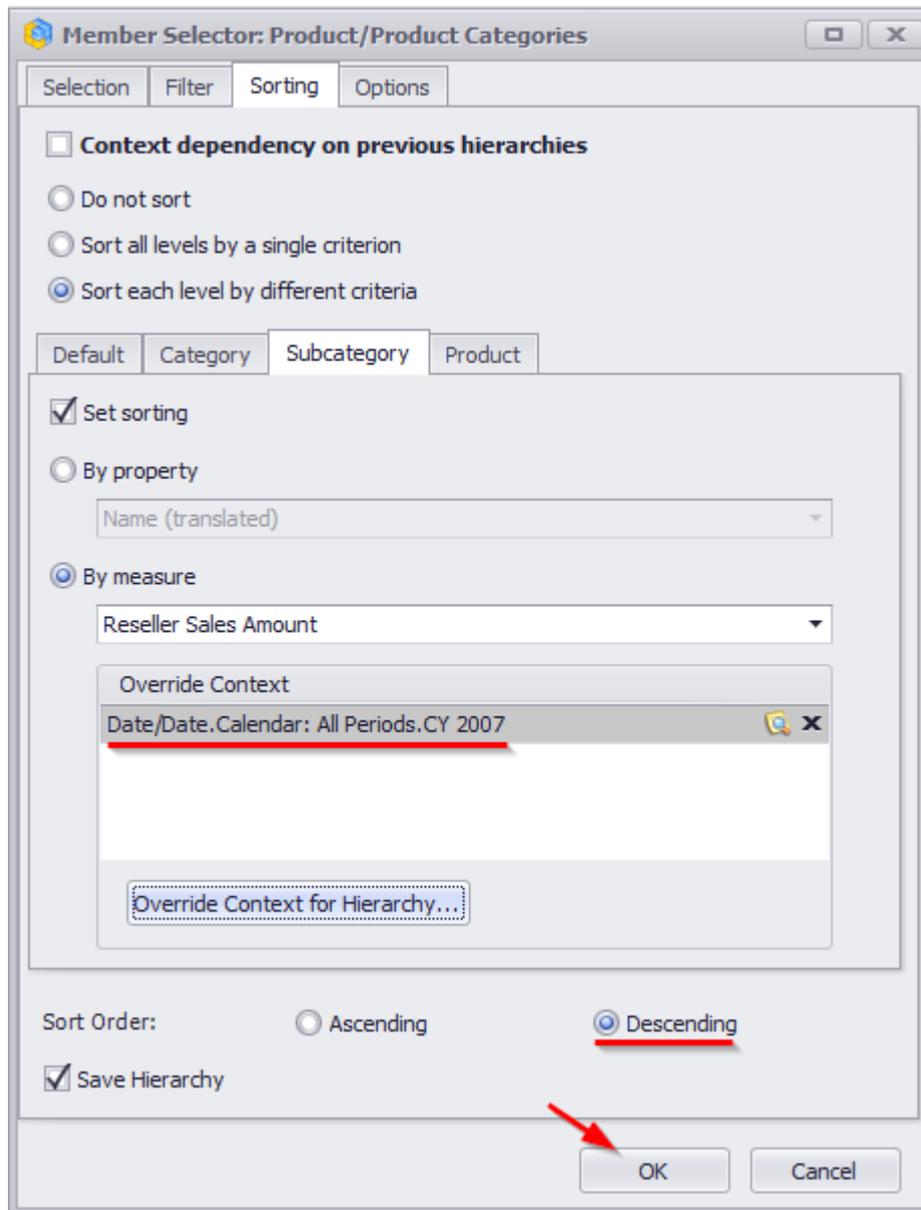
In the dialog box select the “Date.Calendar” hierarchy and press «OK»:



Again press «OK». You will have a member selector form where you have to select the year 2007 and press «OK»:



Finally, choose the descending sort order and press «OK»:



After this you'll see that all elements of the level "Subcategory" inside each group are sorted in descending order by the value of "Reseller Sales Amount" in the year 2007.

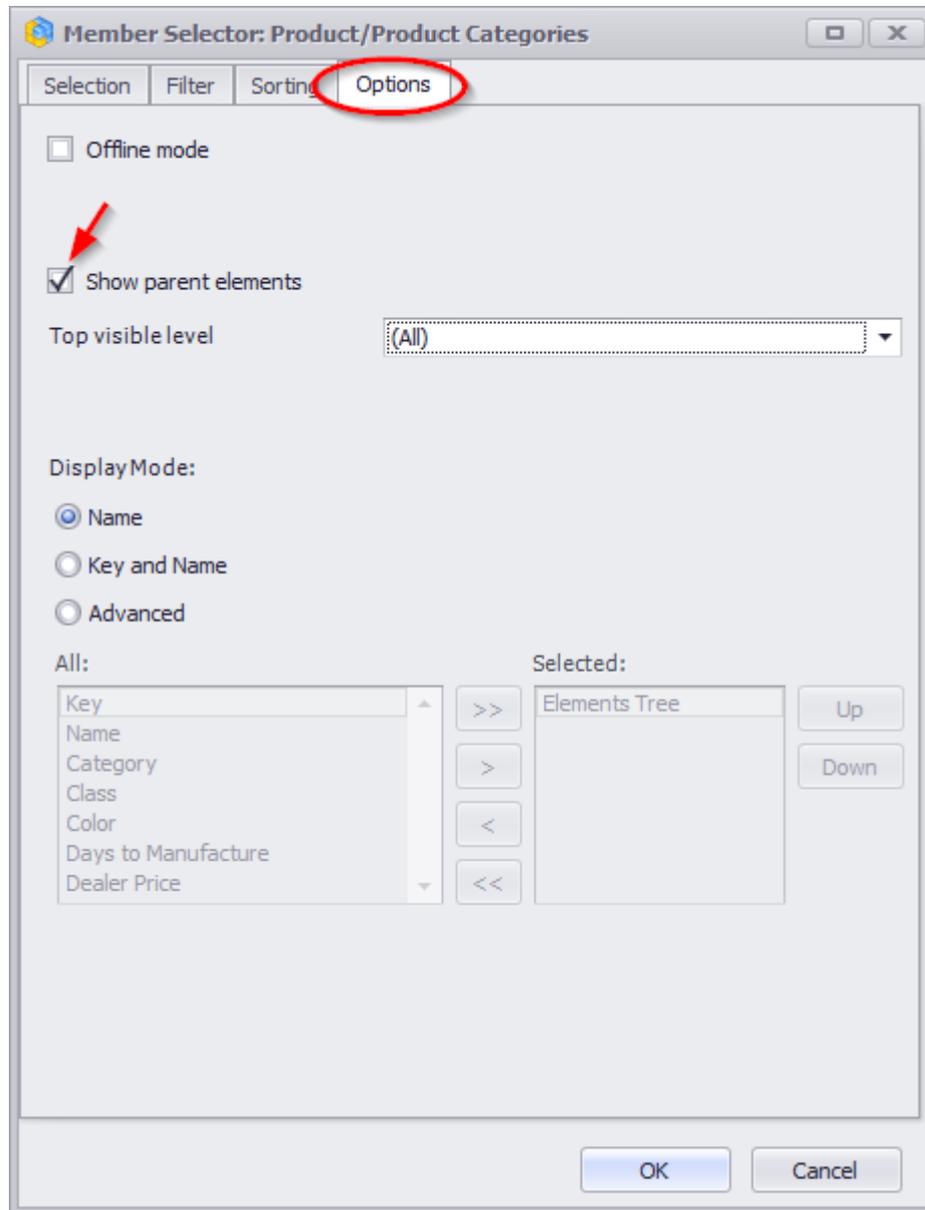
If you expand another product category, you will see that the elements on the "Subcategory" level are sorted in the same way. That is, the sorting is applied to all members of the selected level (in this case – "Subcategory") inside the categories:

| Product/Produc... | CY 2007 | CY 2008 |
|-------------------|-----------------|-----------------|
| ▶ Accessories | \$296,532.88 | \$161,794.33 |
| ▶ Bikes | \$25,551,775.07 | \$13,399,243.18 |
| ▼ Clothing | \$871,864.19 | \$386,013.16 |
| ▶ Jerseys | \$290,004.73 | \$150,804.63 |
| ▶ Shorts | \$179,301.33 | \$113,639.82 |
| ▶ Vests | \$131,993.28 | \$91,808.09 |
| ▶ Gloves | \$102,156.07 | \$16,823.04 |
| ▶ Tights | \$78,937.08 | |
| ▶ Bib-Shorts | \$64,876.99 | |
| ▶ Caps | \$13,800.95 | \$5,665.91 |
| ▶ Socks | \$10,793.76 | \$7,271.66 |
| ▼ Components | \$5,482,497.29 | \$2,091,011.92 |
| ▶ Mountain... | \$2,067,908.64 | \$873,844.03 |
| ▶ Road Fra... | \$1,631,377.27 | \$356,197.37 |
| ▶ Touring F... | \$1,032,154.04 | \$610,173.64 |
| ▶ Wheels | \$226,947.94 | |
| ▶ Cranksets | \$124,249.27 | \$79,693.34 |
| ▶ Pedals | \$94,060.53 | \$53,423.38 |
| ▶ Handlebars | \$88,710.99 | \$28,237.63 |
| ▶ Brakes | \$45,187.31 | \$20,831.40 |
| ▶ Derailleurs | \$44,321.13 | \$25,888.36 |
| ▶ Saddles | \$37,831.96 | \$17,997.43 |
| ▶ Bottom B... | \$30,792.82 | \$21,033.55 |
| ▶ Forks | \$28,259.07 | |
| ▶ Headsets | \$25,010.36 | |
| ▶ Chains | \$5,685.93 | \$3,691.78 |

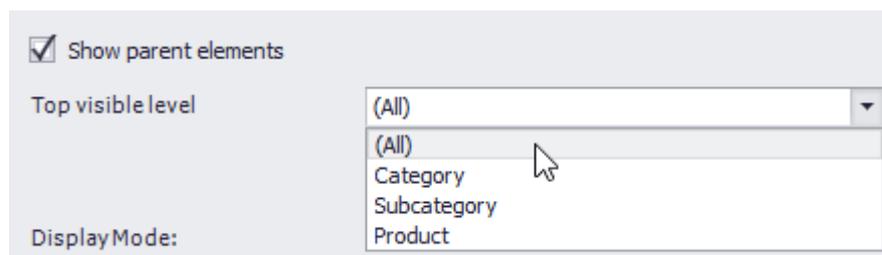
4.2.5 Additional options

4.2.5.1 Option “Show Parent Elements”

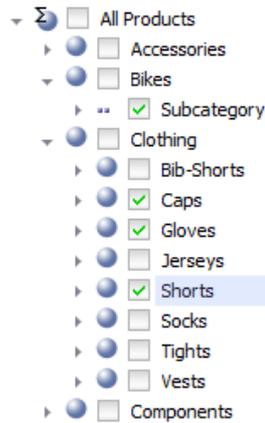
If you want to see for each element its parent elements, you don't obligatory need to include the parent elements into selection. You can use the option “Show Parent Elements” on the tab “Options” of the member selector form:



If you select this option, you will be able to set up the topmost level of the visible elements:



Select the level “(All)”, go to the first tab “Selection” and uncheck all parent elements:



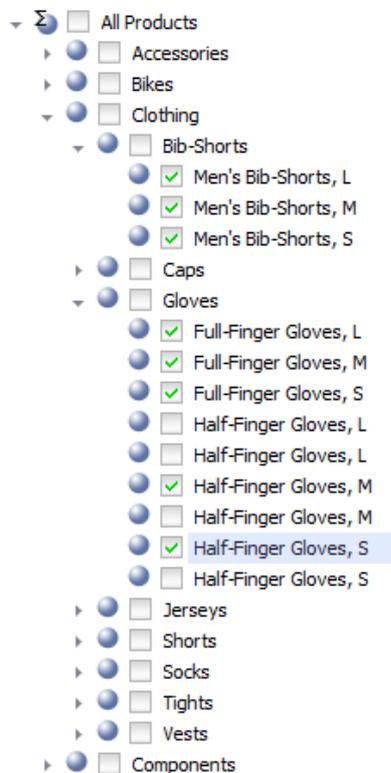
Close the member selector form by pressing «OK». You will see that the parent elements are visible in the captions of the rows:

| Product/Product Categ... | Q1 CY 2007 | Q2 CY 2007 | Q3 CY 2007 | Q4 CY 2007 |
|--------------------------|----------------|----------------|----------------|----------------|
| ▶ Mountain Bikes | \$1,890,325.97 | \$2,127,316.27 | \$2,530,563.65 | \$2,306,057.14 |
| ▶ Road Bikes | \$2,795,651.38 | \$3,271,296.85 | \$2,796,037.81 | \$2,431,395.34 |
| ▶ Touring Bikes | | | \$2,606,901.36 | \$2,796,229.31 |
| ▶ Caps | \$1,780.88 | \$2,924.48 | \$5,270.04 | \$3,825.55 |
| ▶ Gloves | \$25,381.10 | \$41,090.02 | \$20,948.74 | \$14,736.21 |
| ▶ Shorts | \$11,230.13 | \$21,406.93 | \$81,993.61 | \$64,670.66 |

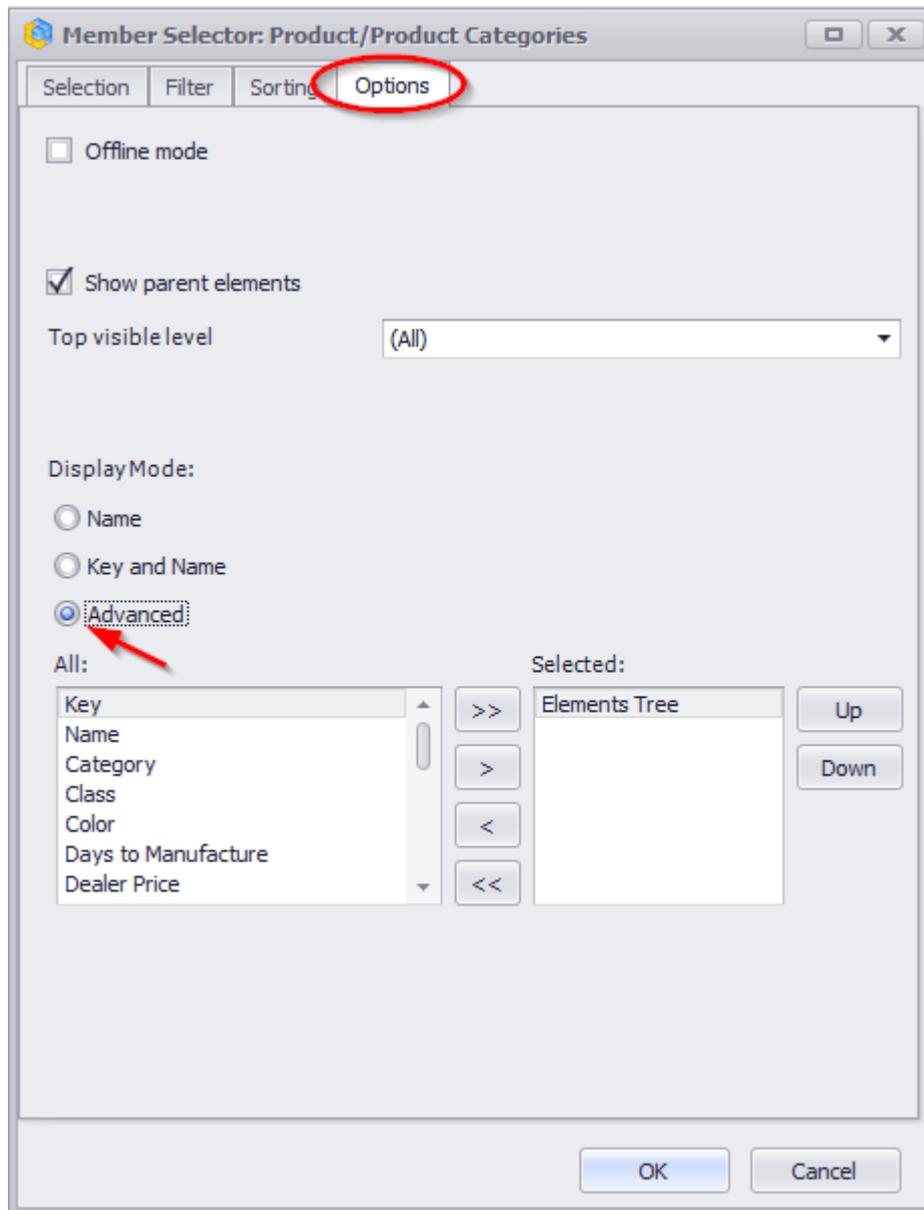
4.2.5.2 Option “Display Mode”

On the “Options” tab there is one more useful option – possibility to display properties of elements in the table.

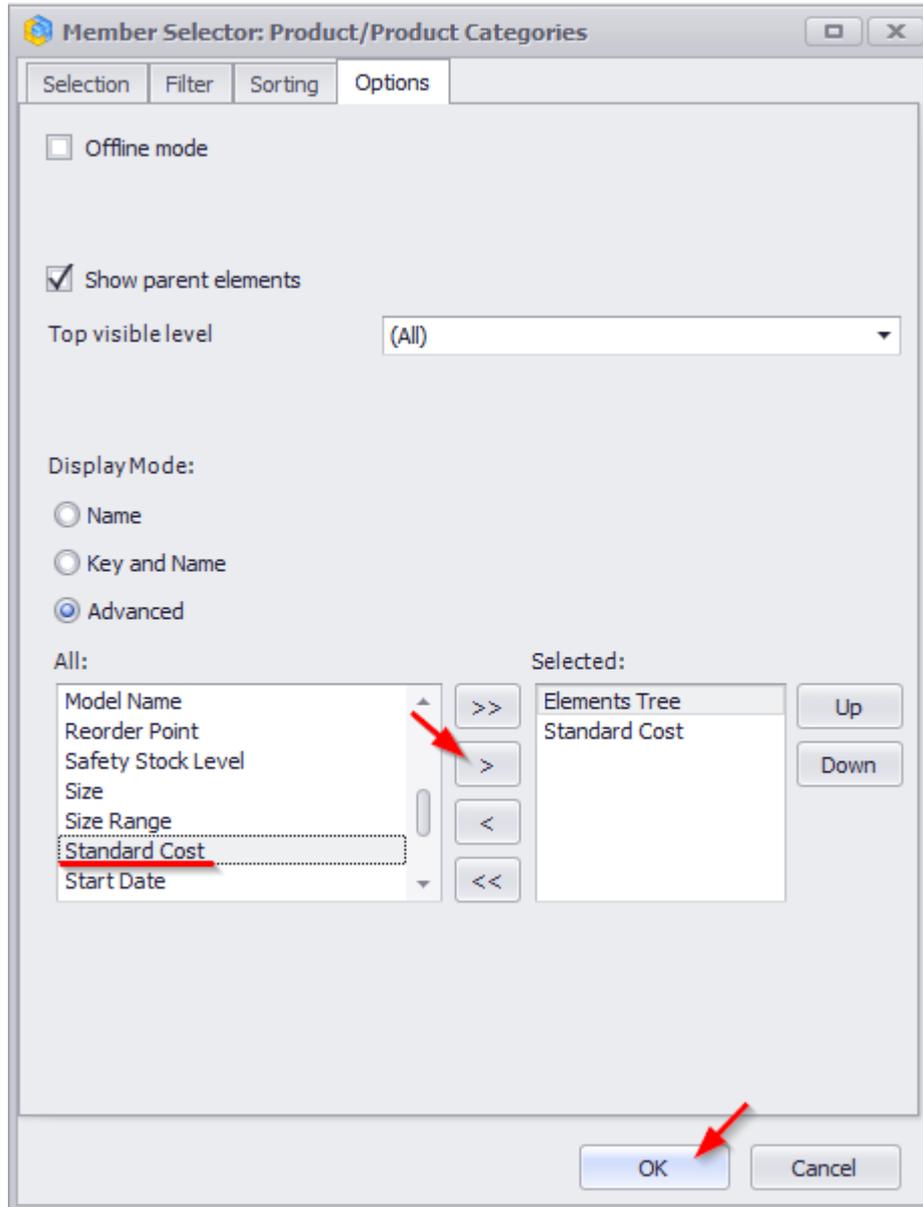
Select any set of goods in the member selector, for example:



Open the “Options” tab. Select the radio button “Advanced”:



Find the property “Standard Cost” and add it to the list of displayed properties, and press «OK»:

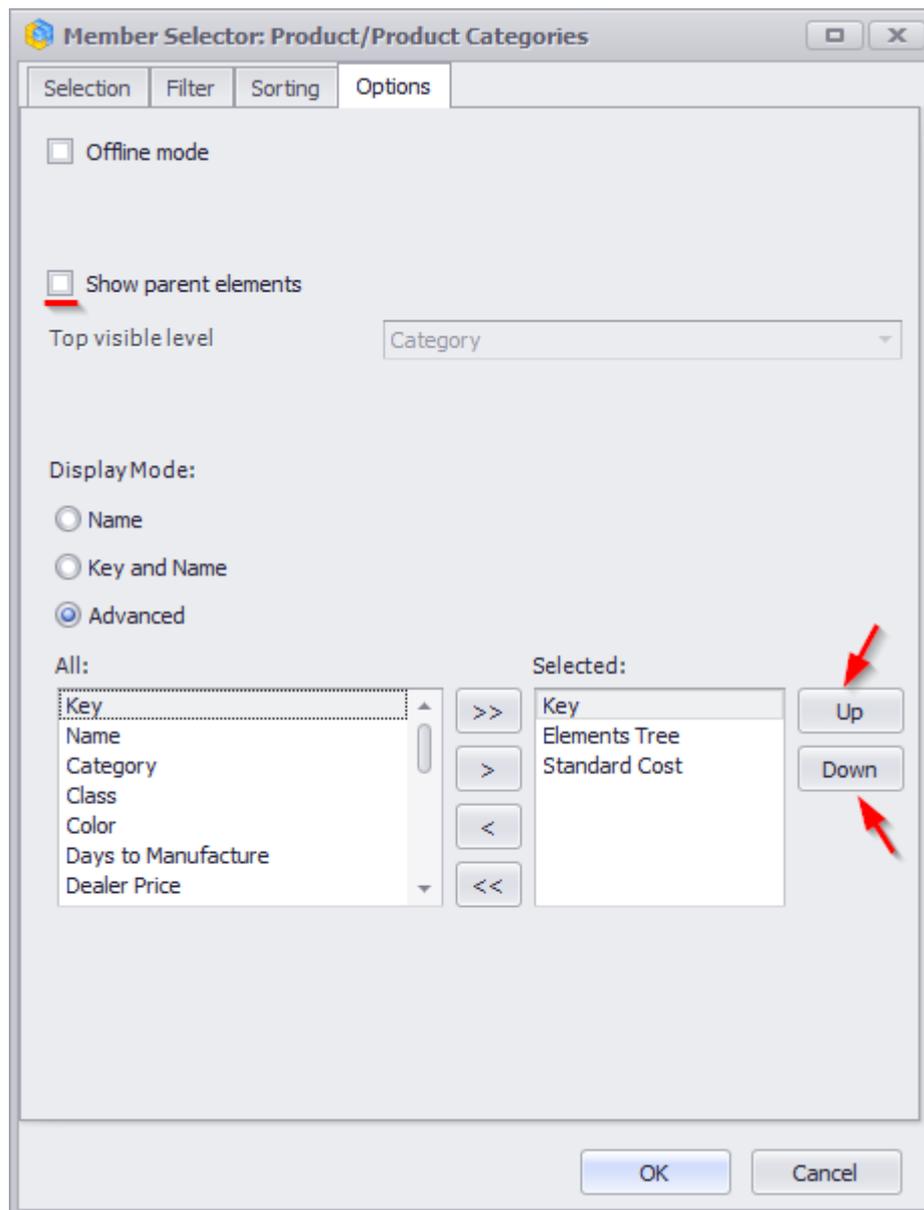


As a result, you will see prices near each product:

| Product/Product Categories | | Standa... | Q1 CY 2007 | Q2 CY 2007 | |
|------------------------------------|----------|-----------------------|------------|-------------|-------------|
| All Products Clothing Gloves | Bib-S... | Men's Bib-Shorts, L | 37.1209 | \$3,401.62 | \$7,937.12 |
| | | Men's Bib-Shorts, M | 37.1209 | \$11,014.78 | \$22,329.72 |
| | | Men's Bib-Shorts, S | 37.1209 | \$7,127.21 | \$13,066.55 |
| | | Full-Finger Gloves, L | 15.6709 | \$12,858.70 | \$17,113.39 |
| | | Full-Finger Gloves, M | 15.6709 | \$7,800.74 | \$12,479.46 |
| | | Full-Finger Gloves, S | 15.6709 | \$1,344.85 | \$2,894.84 |
| | | Half-Finger Gloves, M | 9.7136 | \$2,105.21 | \$4,838.85 |
| | | Half-Finger Gloves, S | 9.7136 | \$1,271.60 | \$2,096.28 |

Standard Cost: 9.7136

You can set up several properties to display. Let us add the ID of the goods before its name. Go back to the “Options” tab and add the property KEY0 to the displayed list and move it before the “Elements Tree” using the “Up/Down” buttons:

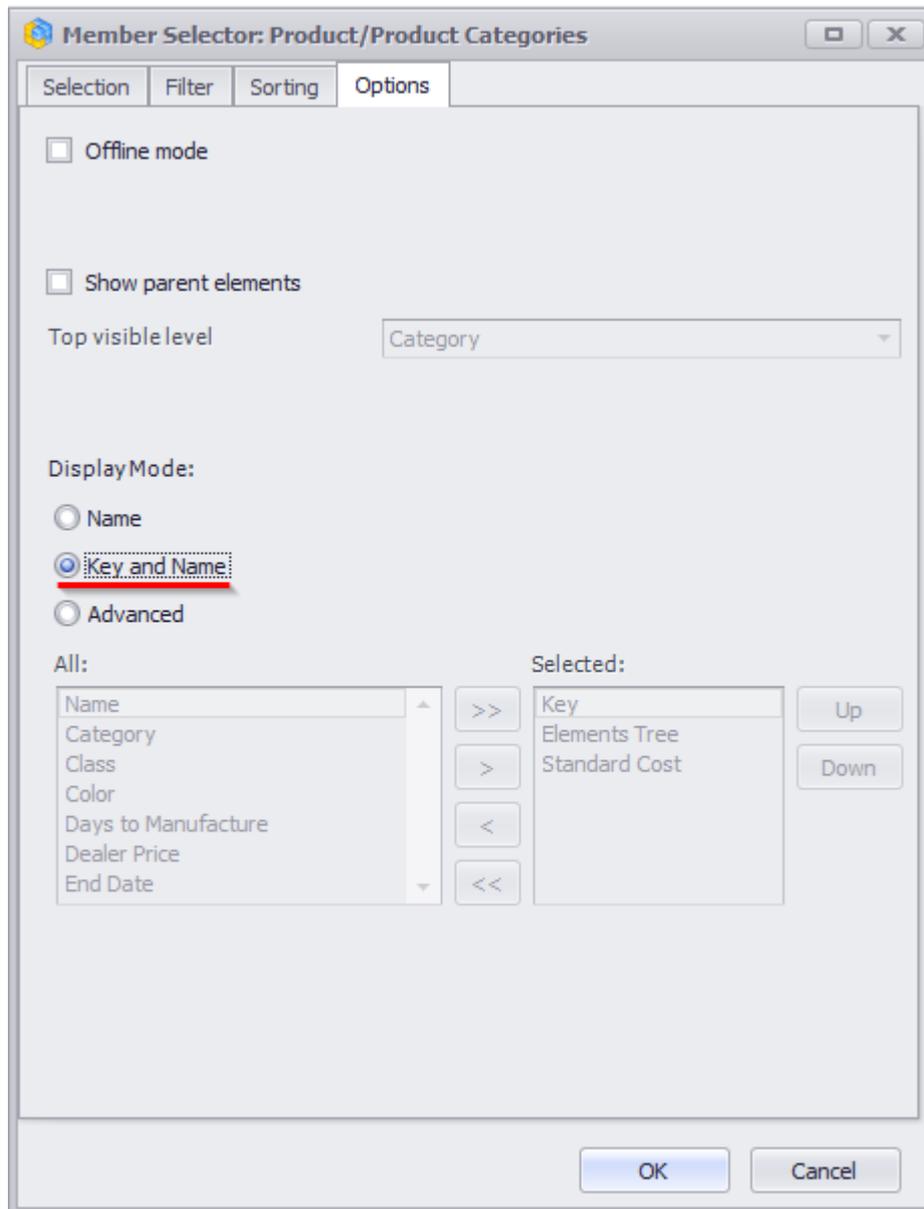


Press «OK» and you will see the following report:

| Кл... | Product/Product Ca... | Standa... | ▸ Q1 CY 2007 | ▸ Q2 CY 2007 |
|-------|-----------------------|-----------|--------------|--------------|
| 461 | Men's Bib-Shorts, L | 37.1209 | \$3,401.62 | \$7,937.12 |
| 460 | Men's Bib-Shorts, M | 37.1209 | \$11,014.78 | \$22,329.72 |
| 459 | Men's Bib-Shorts, S | 37.1209 | \$7,127.21 | \$13,066.55 |
| 470 | Full-Finger Gloves, L | 15.6709 | \$12,858.70 | \$17,113.39 |
| 469 | Full-Finger Gloves, M | 15.6709 | \$7,800.74 | \$12,479.46 |
| 468 | Full-Finger Gloves, S | 15.6709 | \$1,344.85 | \$2,894.84 |
| 464 | Half-Finger Gloves, M | 9.7136 | \$2,105.21 | \$4,838.85 |
| 462 | Half-Finger Gloves, S | 9.7136 | \$1,271.60 | \$2,096.28 |

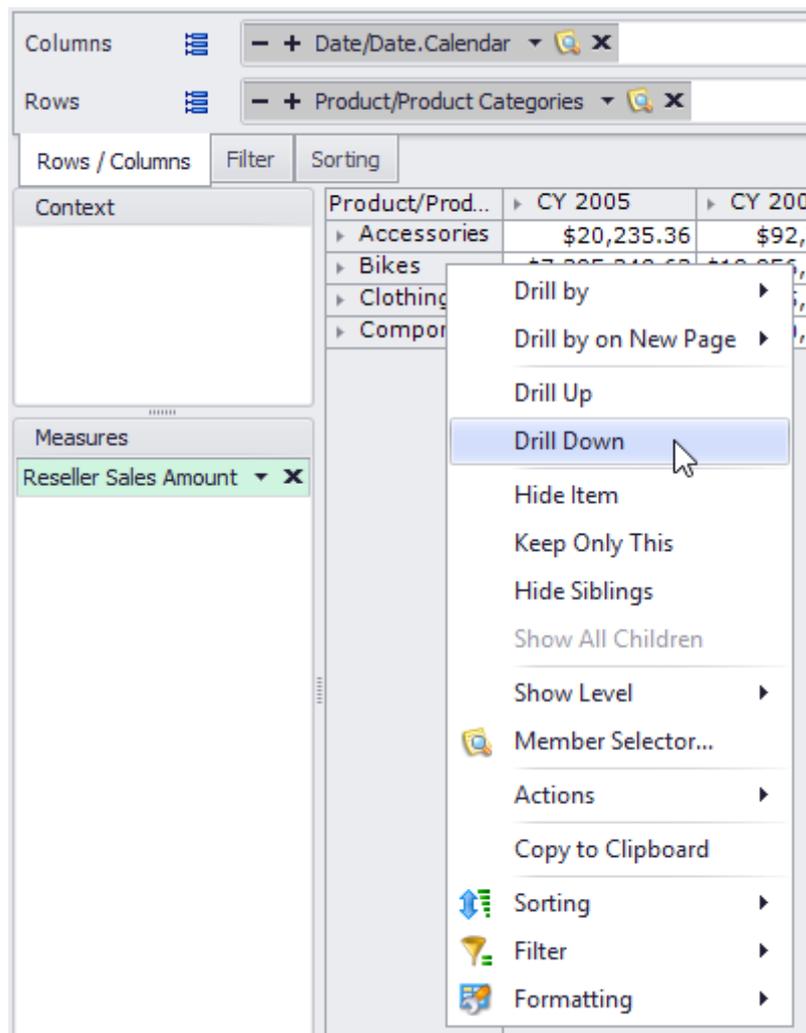
As you may see, to the left there are IDs of the goods, to the right – their prices.

You may have noticed that for quick displaying of the IDs and names there is a special mode “Key and Name”:



4.3 Selection in the Table

You can select the necessary items with the help of context menu (opens with the right mouse button) in the table:



We invoked the popup menu for the “Bikes” item on the picture. Let us look at every possible action.

The action “Show By” changes the structure of the table. Therefore we will look at it in the next section.

4.3.1 Drill Up/Down

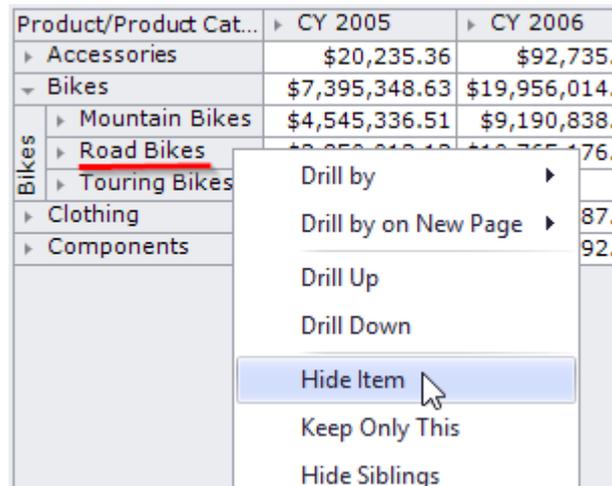
Operation “Drill down” makes so that the selection goes inside the element on the deeper level. If we apply it for “Bikes” we will see all product subcategories which belong to the “Bikes” category:

| Product/Product.. | CY 2005 | CY 2006 | CY 2007 | CY 2008 |
|-------------------|----------------|-----------------|-----------------|----------------|
| ▶ Mountain Bikes | \$4,545,336.51 | \$9,190,838.09 | \$8,854,263.03 | \$3,902,246.74 |
| ▶ Road Bikes | \$2,850,012.12 | \$10,765,176.58 | \$11,294,381.37 | \$4,448,636.90 |
| ▶ Touring Bikes | | | \$5,403,130.67 | \$5,048,359.55 |

Operation “Drill Up” is the opposite one to “Drill Down”.

4.3.2 Hide Item, Hide Siblings and Show All Children

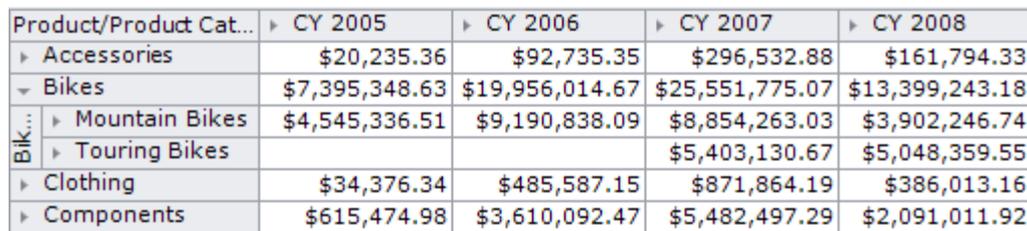
Operation “Hide Item” hides the item from the selection. If we apply it to the “Road Bikes” (as it is shown on the picture):



The screenshot shows a table with columns for 'Product/Product Cat...', 'CY 2005', and 'CY 2006'. The 'Bikes' category is expanded, showing 'Mountain Bikes', 'Road Bikes', and 'Touring Bikes'. A context menu is open over 'Road Bikes', with 'Hide Item' selected. The menu options are: Drill by, Drill by on New Page, Drill Up, Drill Down, Hide Item, Keep Only This, and Hide Siblings.

| Product/Product Cat... | CY 2005 | CY 2006 |
|------------------------|----------------|-----------------|
| Accessories | \$20,235.36 | \$92,735.00 |
| Bikes | \$7,395,348.63 | \$19,956,014.00 |
| Mountain Bikes | \$4,545,336.51 | \$9,190,838.00 |
| Road Bikes | | |
| Touring Bikes | | |
| Clothing | | |
| Components | | |

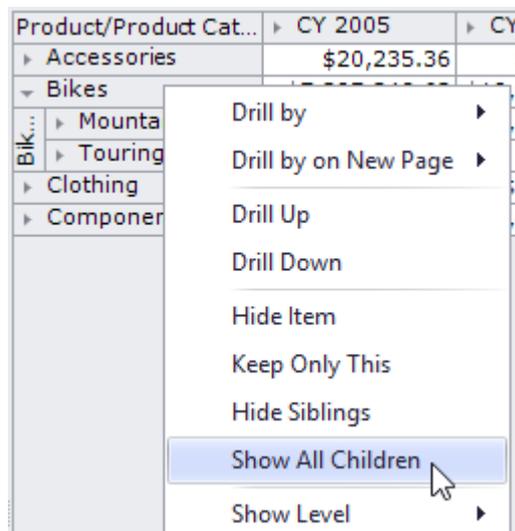
the element will disappear from the table:



The screenshot shows the same table as before, but 'Road Bikes' is no longer visible under the 'Bikes' category. The 'Bikes' category now only shows 'Mountain Bikes' and 'Touring Bikes'.

| Product/Product Cat... | CY 2005 | CY 2006 | CY 2007 | CY 2008 |
|------------------------|----------------|-----------------|-----------------|-----------------|
| Accessories | \$20,235.36 | \$92,735.35 | \$296,532.88 | \$161,794.33 |
| Bikes | \$7,395,348.63 | \$19,956,014.67 | \$25,551,775.07 | \$13,399,243.18 |
| Mountain Bikes | \$4,545,336.51 | \$9,190,838.09 | \$8,854,263.03 | \$3,902,246.74 |
| Touring Bikes | | | \$5,403,130.67 | \$5,048,359.55 |
| Clothing | \$34,376.34 | \$485,587.15 | \$871,864.19 | \$386,013.16 |
| Components | \$615,474.98 | \$3,610,092.47 | \$5,482,497.29 | \$2,091,011.92 |

In order to show all hidden elements under “Bikes” you need to select the item “Show All Children” for the “Bikes” element:



The screenshot shows the table with a context menu open over the 'Bikes' category. The menu options are: Drill by, Drill by on New Page, Drill Up, Drill Down, Hide Item, Keep Only This, Hide Siblings, Show All Children, and Show Level. 'Show All Children' is selected.

| Product/Product Cat... | CY 2005 | CY 2006 |
|------------------------|----------------|-----------------|
| Accessories | \$20,235.36 | \$92,735.00 |
| Bikes | \$7,395,348.63 | \$19,956,014.00 |
| Mountain Bikes | \$4,545,336.51 | \$9,190,838.00 |
| Touring Bikes | | |
| Clothing | | |
| Components | | |

After that the element “Road Bikes” will become visible again:

| Product/Product Cat... | CY 2005 | CY 2006 | CY 2007 | CY 2008 |
|------------------------|----------------|-----------------|-----------------|-----------------|
| ▶ Accessories | \$20,235.36 | \$92,735.35 | \$296,532.88 | \$161,794.33 |
| ▼ Bikes | \$7,395,348.63 | \$19,956,014.67 | \$25,551,775.07 | \$13,399,243.18 |
| ▶ Mountain Bikes | \$4,545,336.51 | \$9,190,838.09 | \$8,854,263.03 | \$3,902,246.74 |
| ▶ <u>Road Bikes</u> | \$2,850,012.12 | \$10,765,176.58 | \$11,294,381.37 | \$4,448,636.90 |
| ▶ Touring Bikes | | | \$5,403,130.67 | \$5,048,359.55 |
| ▶ Clothing | \$34,376.34 | \$485,587.15 | \$871,864.19 | \$386,013.16 |
| ▶ Components | \$615,474.98 | \$3,610,092.47 | \$5,482,497.29 | \$2,091,011.92 |

The action “Hide All Siblings” works in the same way as “Hide Item” with the only difference that it hides not the element itself, but the siblings of the element.

Let us look at the example with more than 100 elements in the products list:

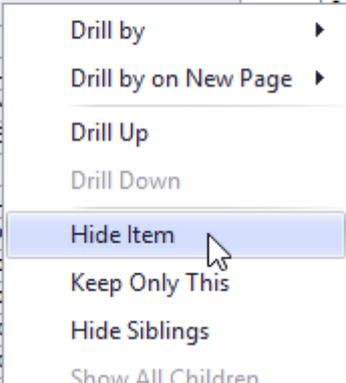
The screenshot displays a BI tool interface with the following components:

- Columns:** Date/Date.Calendar
- Rows:** Product
- Measures:** Reseller Sales Amount
- Main Table:**

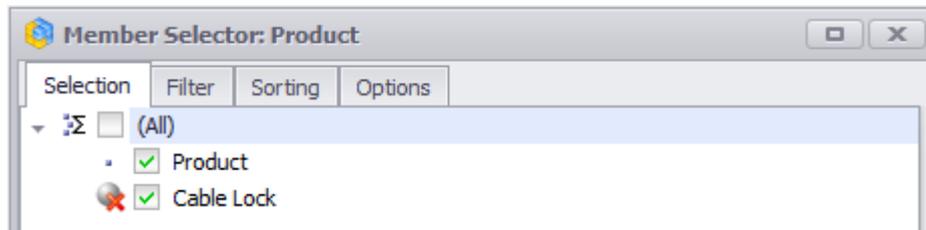
| Product | CY 2007 |
|--------------------------------|--------------|
| AWC Logo Cap | \$4,705.36 |
| AWC Logo Cap | \$9,095.59 |
| Bike Wash - Dissolver | \$6,733.09 |
| Cable Lock | \$6,140.52 |
| Chain | \$5,685.93 |
| Classic Vest, L | \$457.20 |
| Classic Vest, M | \$48,971.08 |
| Classic Vest, S | \$82,565.00 |
| Front Brakes | \$31,576.61 |
| Front Derailleur | \$26,903.77 |
| Full-Finger Gloves, L | \$29,972.09 |
| Full-Finger Gloves, M | \$20,280.20 |
| Full-Finger Gloves, S | \$4,239.68 |
| Half-Finger Gloves, L | \$1,667.21 |
| Half-Finger Gloves, L | \$5,839.70 |
| Half-Finger Gloves, M | \$6,944.06 |
| Half-Finger Gloves, M | \$18,380.76 |
| Half-Finger Gloves, S | \$3,367.88 |
| Half-Finger Gloves, S | \$11,464.49 |
| Hitch Rack - 4-Bike | \$118,428.47 |
| HL Bottom Bracket | \$22,597.14 |
| HL Crankset | \$87,145.10 |
| HL Fork | \$23,545.67 |
| HL Headset | \$8,307.02 |
| HL Mountain Frame - Black, 38 | \$89,809.75 |
| HL Mountain Frame - Black, 38 | \$118,224.96 |
| HL Mountain Frame - Black, 42 | \$152,382.12 |
| HL Mountain Frame - Black, 42 | \$234,830.40 |
| HL Mountain Frame - Silver, 38 | \$154,808.72 |
| HL Mountain Frame - Silver, 38 | \$249,229.20 |
| HL Mountain Frame - Silver, 42 | \$118,224.96 |
- Status Bar:** Rows: 266 (highlighted in red), Columns: 1, Exec. Time: 00.1

Let us assume we want to hide one of the products (“Cable Lock”):

| Product | CY 2007 |
|-----------------------|------------|
| AWC Logo Cap | \$4,705.36 |
| AWC Logo Cap | \$9,095.59 |
| Bike Wash - Dissolver | \$6,733.09 |
| Cable Lock | 140.52 |
| Chain | 685.93 |
| Classic Vest, L | 457.20 |
| Classic Vest, M | 971.08 |
| Classic Vest, S | 565.00 |
| Front Brakes | 576.61 |
| Front Derailleur | 903.77 |
| Full-Finger Glove | 972.09 |
| Full-Finger Glove | 280.20 |
| Full-Finger Glove | 239.68 |
| Half-Finger Glove | 667.21 |
| Half-Finger Glove | 839.70 |



After opening member selector again, we will see what products we’ve hidden:



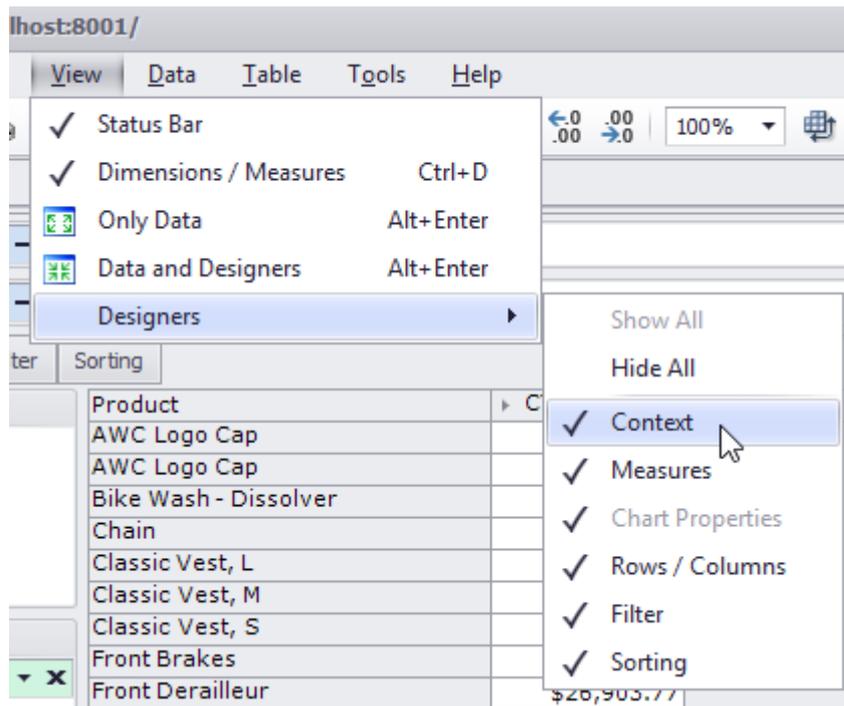
This functionality is switched on only in the case when the group contains more than 100 elements.

4.4 Change of the Page Structure

4.4.1 Page Structure

Under the term “Page structure” we mean all that information which describes what is the selection on the columns and rows, what is displayed inside the page, what is the format of the numbers, what filters and sorting rules exist, etc. If you were given enough rights by administrator, you will be able not only select the elements (as shown above), but also to change the page structure.

First of all make sure that in the menu “View” under submenu “Designers” all designers are selected:

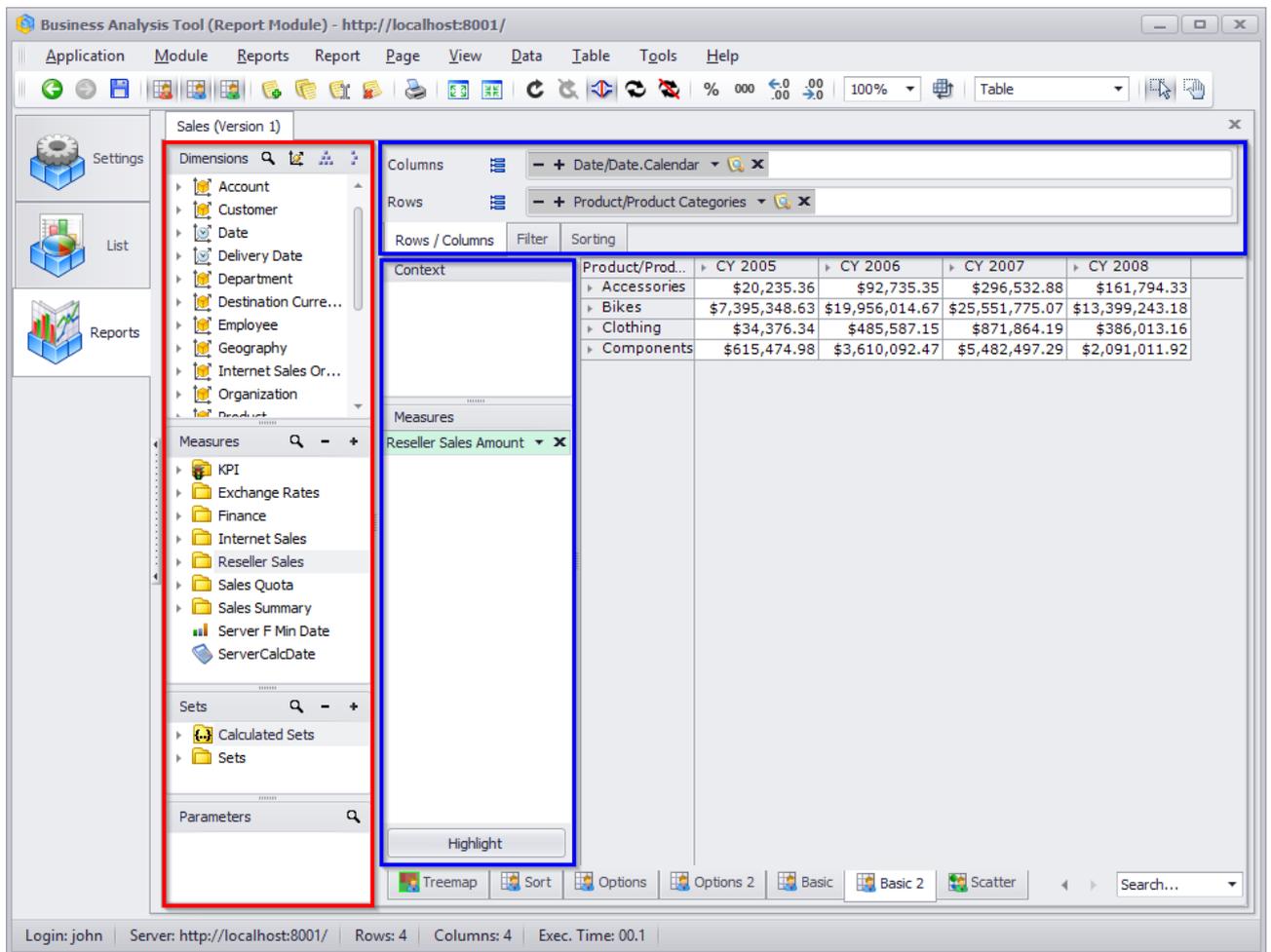


If not all are selected – choose “Data and Designers” menu item.

If you have no such menu items it means that administrator has restricted you from using the designers, so you may skip this section.

4.4.2 Designers

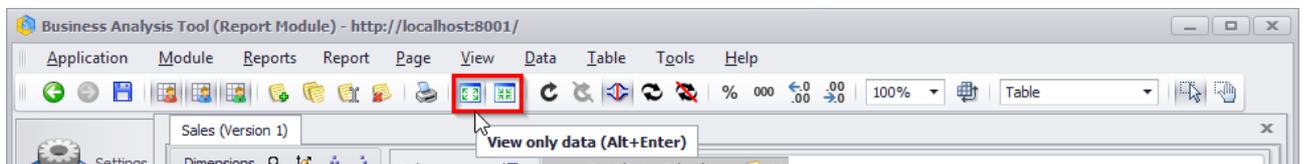
All pages can be divided into several zones:



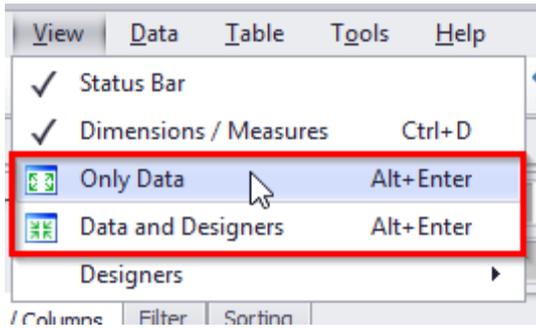
The area which is selected with red represents all dimensions and measures. You can drag and drop their elements to areas which are selected with blue. The latter are called “designers” – they defined the structure of the page.

There is the way to show or hide at once all designers in two ways:

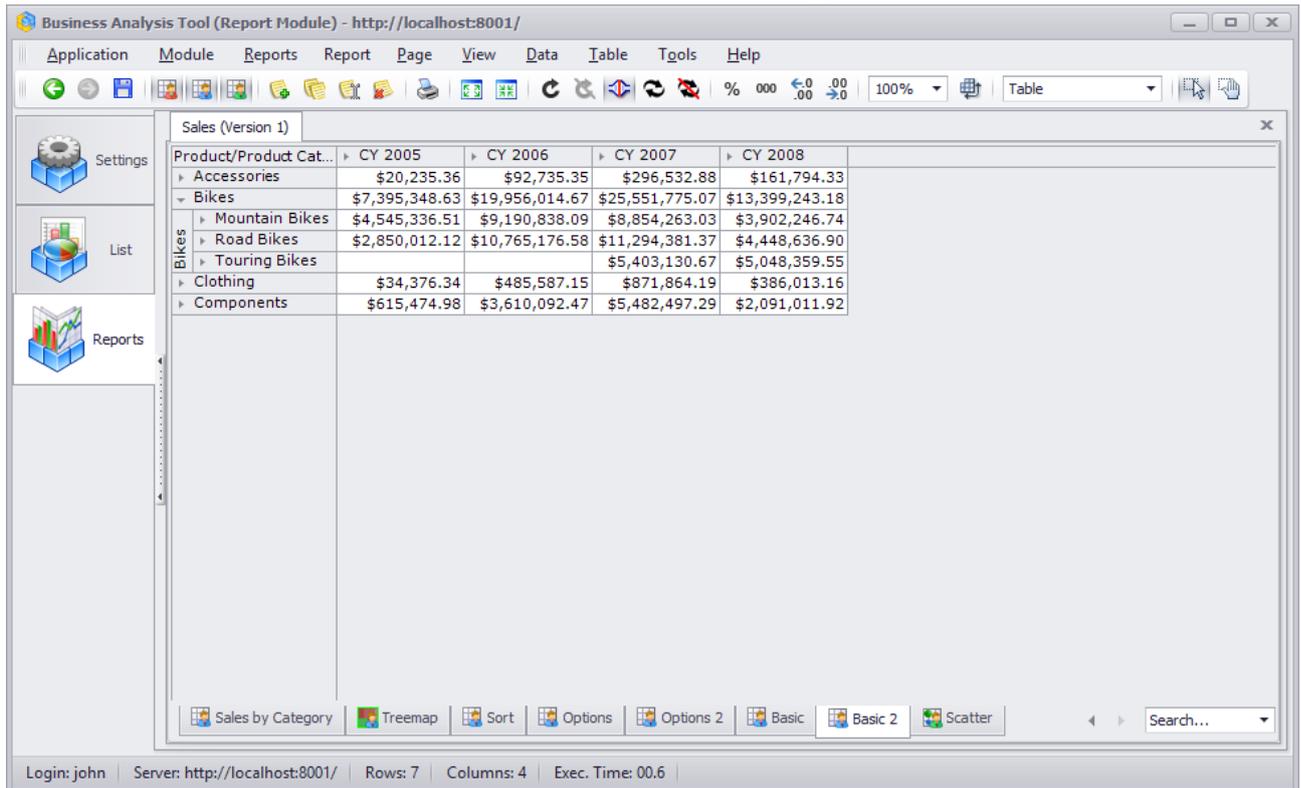
1. To press Alt+Enter on the keyboard.
2. To press button ”Data and Designers” or “Only Data” on the toolbar:



3. Enter the “View” menu and select one of the items:

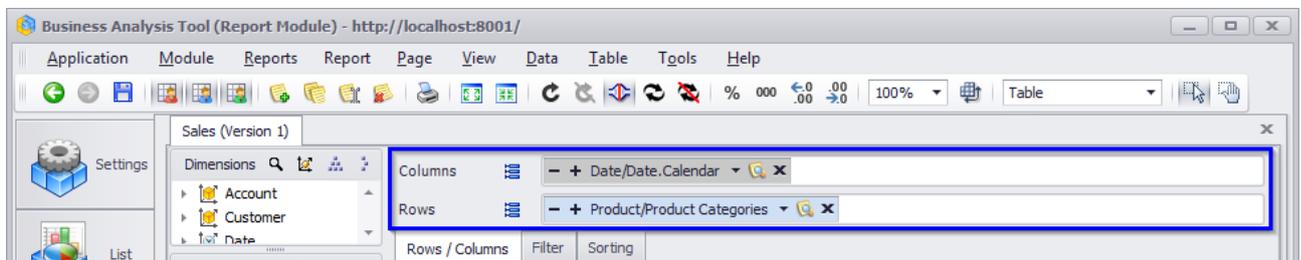


If you have hidden all designers, the report will look like this:



4.4.3 Designer “Rows / Columns”

This designer shows what is displayed on the rows and columns. It is located in the upper part of the window above the table:

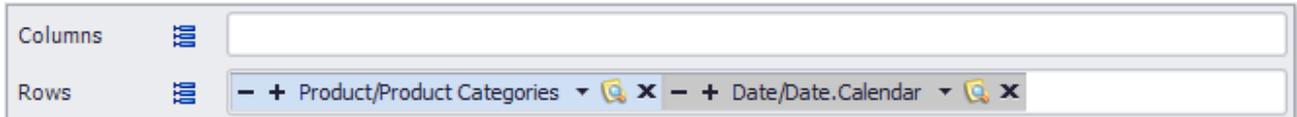


On our example we see that columns display time, and rows display products. Let’s show how this can be changed.

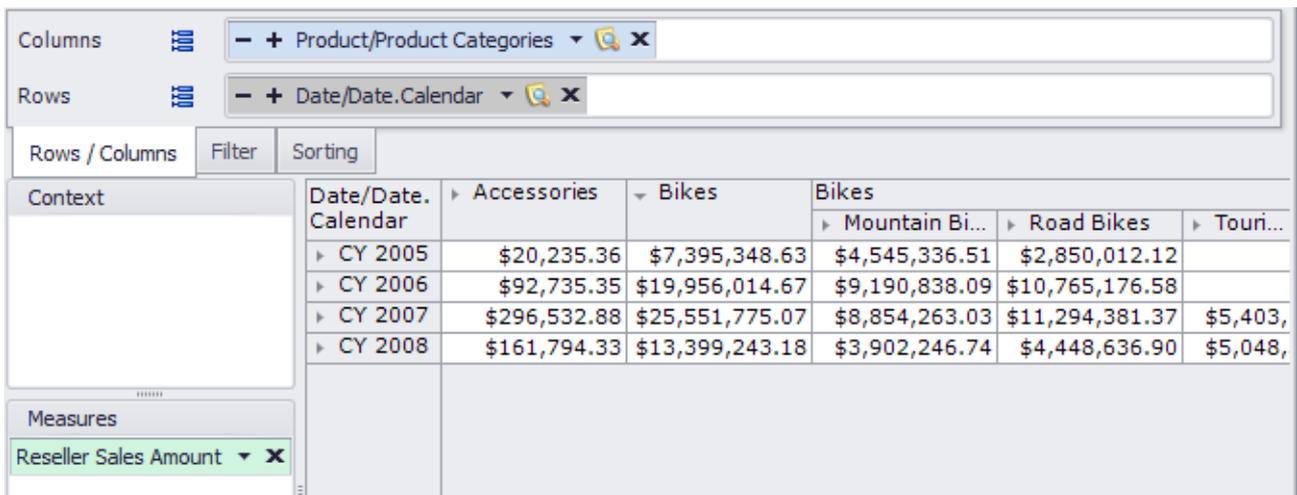
Drag the item “Date.Calendar” on rows:



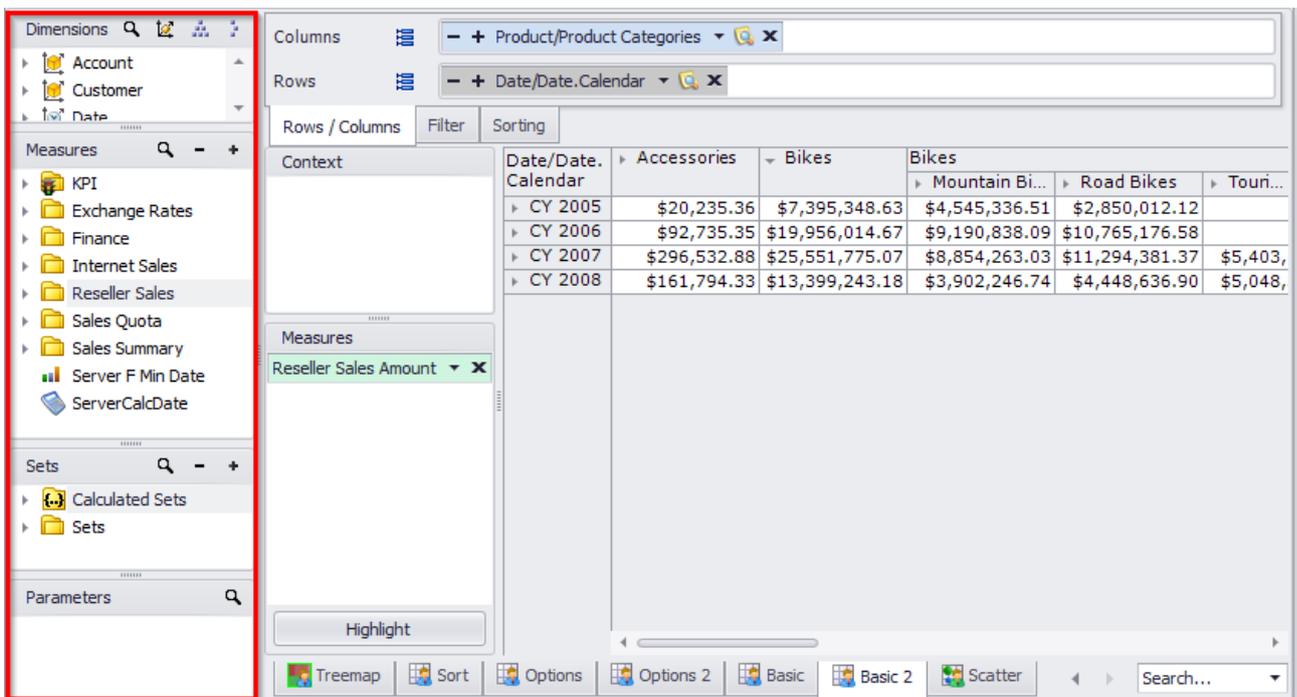
During the movement process you can notice a vertical red line shown in the place where the item will be dropped. The result after the movement will be the following:



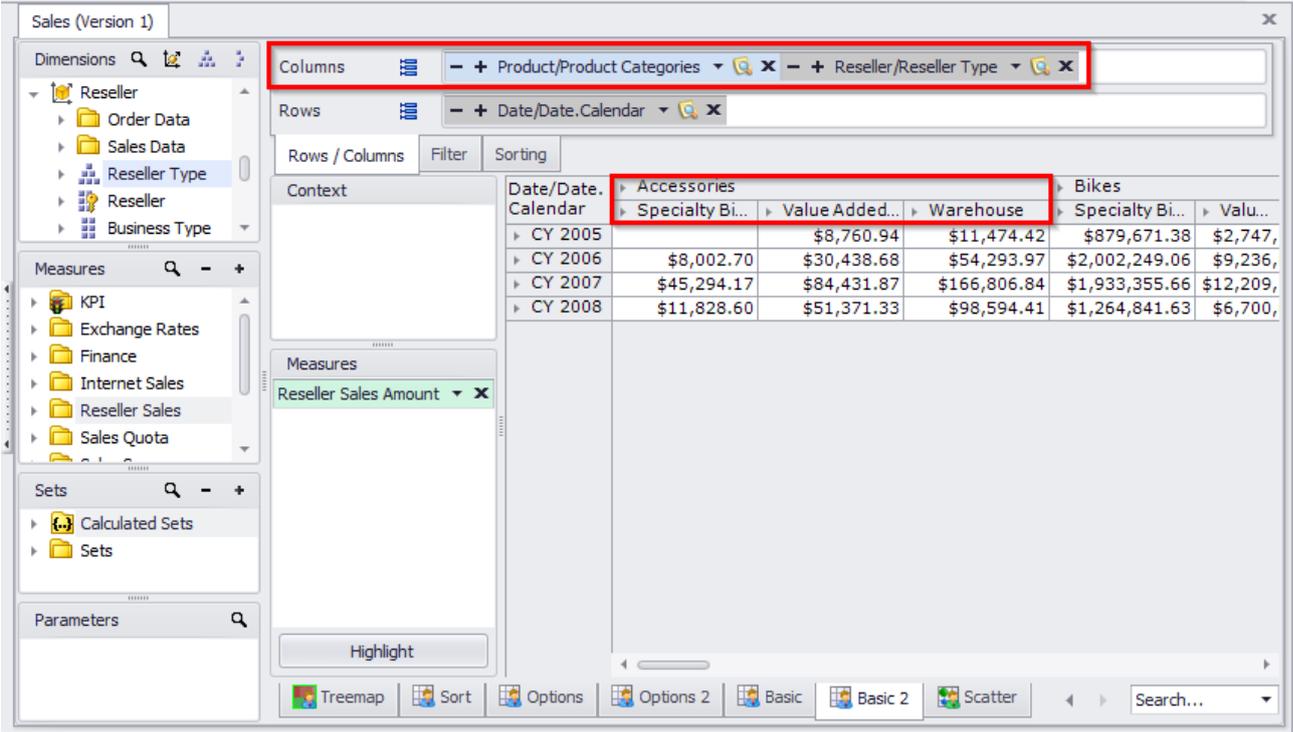
Drag the element “Product” on columns in the same way. After these operations the page will look like this:



You can drag and drop “Dimensions” and “Measures” (in the left part) on rows and columns:



Let's drag the item "Reseller Type" on columns and drop it after "Product Categories". We will get the following page:



The sets of "Reseller Type" and "Product Categories" are "crossjoined" and thus the page allows us to see which product was sold by which reseller.

In the same way you can combine arbitrary number of dimensions and measures on the rows or columns, getting arbitrary pivot table.

4.4.4 Context/Global context

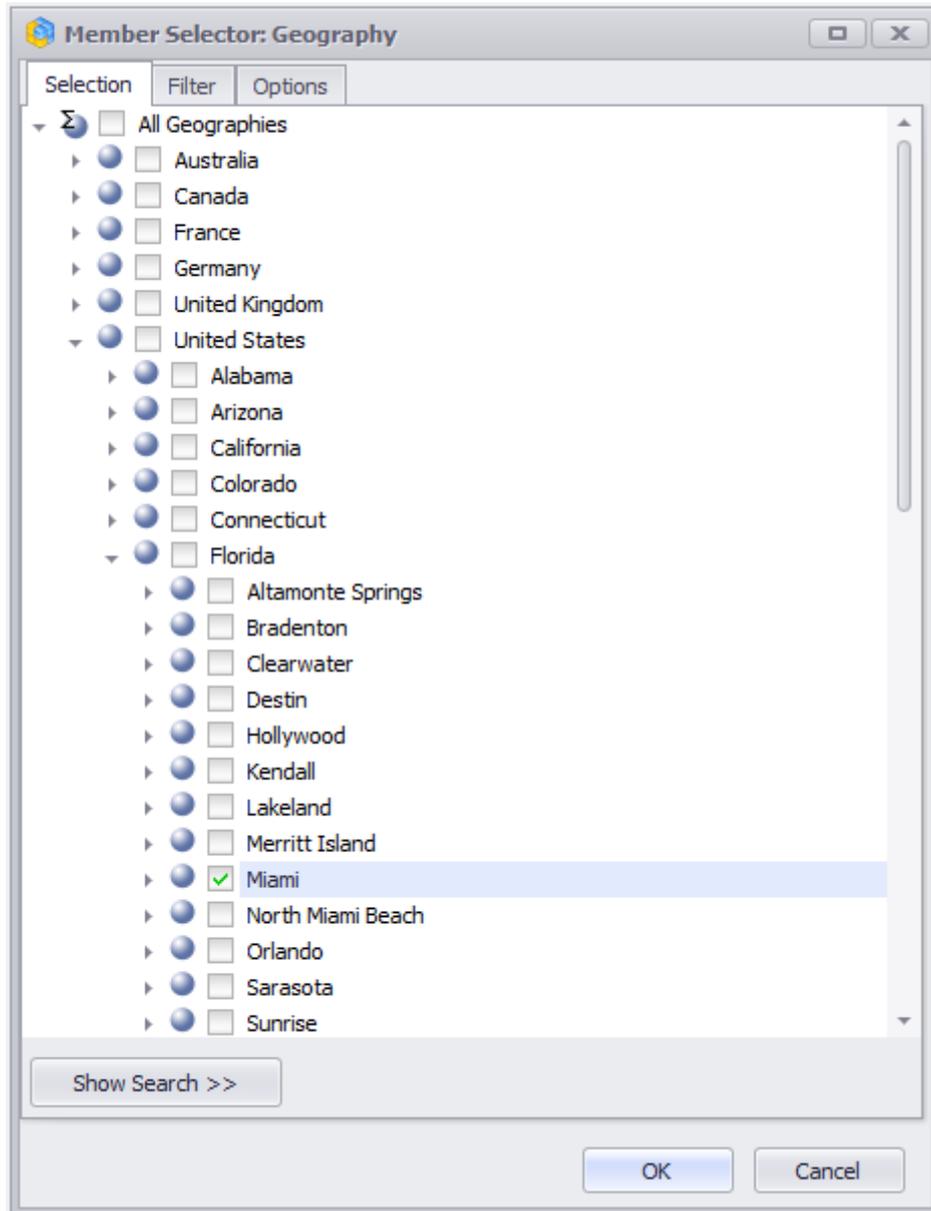
“Context” is the designer that limits the data which you’re watching. It is located to the left of the table:

The screenshot shows a BI tool interface with a table of sales data. The table has columns for Date/Date.Calendar, Accessories, and Bikes. The 'Context' pane on the left is highlighted with a red box. The 'Measures' pane shows 'Reseller Sales Amount'. The table data is as follows:

| Date/Date.Calendar | Accessories | | | Bikes | | |
|--------------------|-----------------|----------------|--------------|-----------------|-----------------|--------|
| | Specialty Bi... | Value Added... | Warehouse | Specialty Bi... | Value Added... | W |
| CY 2005 | | \$8,760.94 | \$11,474.42 | \$879,671.38 | \$2,747,138.35 | \$3,7 |
| CY 2006 | \$8,002.70 | \$30,438.68 | \$54,293.97 | \$2,002,249.06 | \$9,236,034.37 | \$8,7 |
| CY 2007 | \$45,294.17 | \$84,431.87 | \$166,806.84 | \$1,933,355.66 | \$12,209,159.69 | \$11,4 |
| CY 2008 | \$11,828.60 | \$51,371.33 | \$98,594.41 | \$1,264,841.63 | \$6,700,021.91 | \$5,4 |

You can drag dimensions into context (the same when you do it with columns and rows).

Let's assume we are interested in sales for "Miami". Drag the dimension "Geography" from the "Dimensions" into "Context". The member selector dialog will pop up:

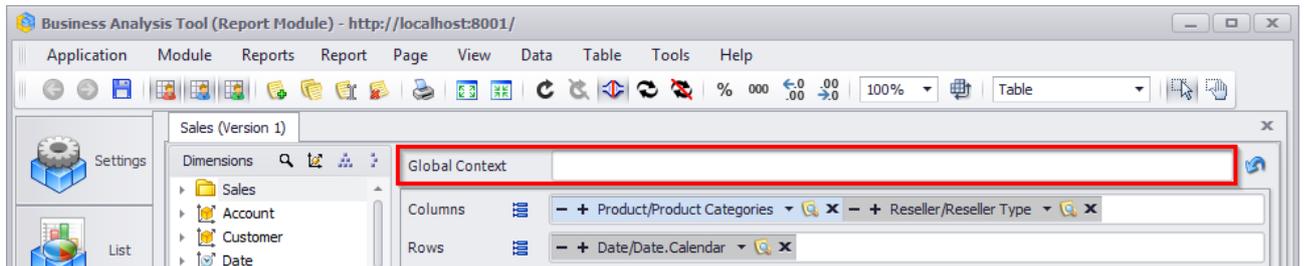


Select "Miami" and press «OK». You will get such report:

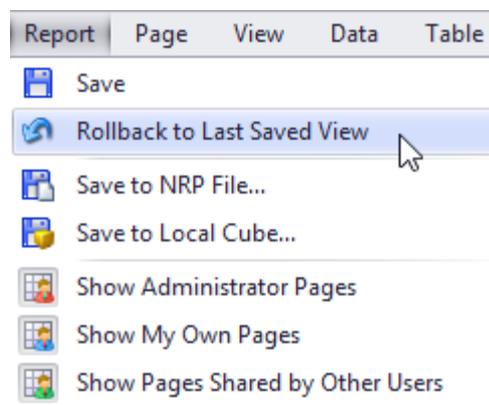
| Columns | | - + Product/Product Categories | | - + Reseller/Reseller Type | |
|-----------------------|--------|--------------------------------|-----------------|----------------------------|----------------|
| Rows | | - + Date/Date.Calendar | | | |
| Rows / Columns | Filter | Sorting | | | |
| Context | | Date/Date.Calendar | Accessories | Bikes | CI |
| Geography | X | | Specialty Bi... | Specialty Bi... | Value Added... |
| | | | Warehouse | Warehouse | Sp |
| | | ▸ CY 2005 | | \$4,685.80 | \$2,566.42 |
| | | ▸ CY 2006 | \$40.37 | \$13,816.44 | \$1,308.94 |
| | | ▸ CY 2007 | \$3,617.36 | \$21,742.39 | \$64,993.31 |
| | | ▸ CY 2008 | \$4.77 | \$13,646.08 | \$43,169.65 |
| | | | \$2,023.64 | | \$104,726.45 |
| Measures | | | | | |
| Reseller Sales Amount | X | | | | |

There is an item “Geography” in the context. It means that the table is currently displaying data for one city – Miami. In the same way you can drag other dimensions into context for making the selection narrower.

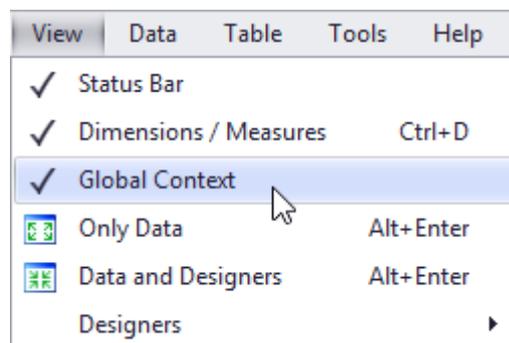
“Global context” is the context which is applied to all the pages of the report:



Only administrator can enable/disable global context. User can edit the global context (the bar will be painted yellow), but user cannot save his settings. User can revert his changes quickly by pressing the button  or by selecting this menu item:



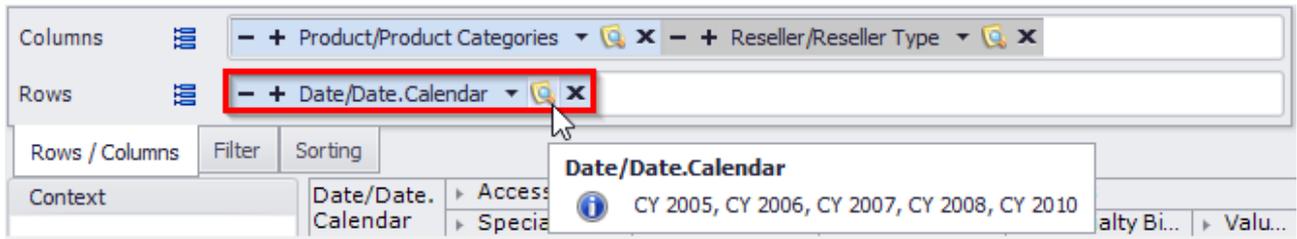
You can switch on/off the display of global context in the “View” menu:



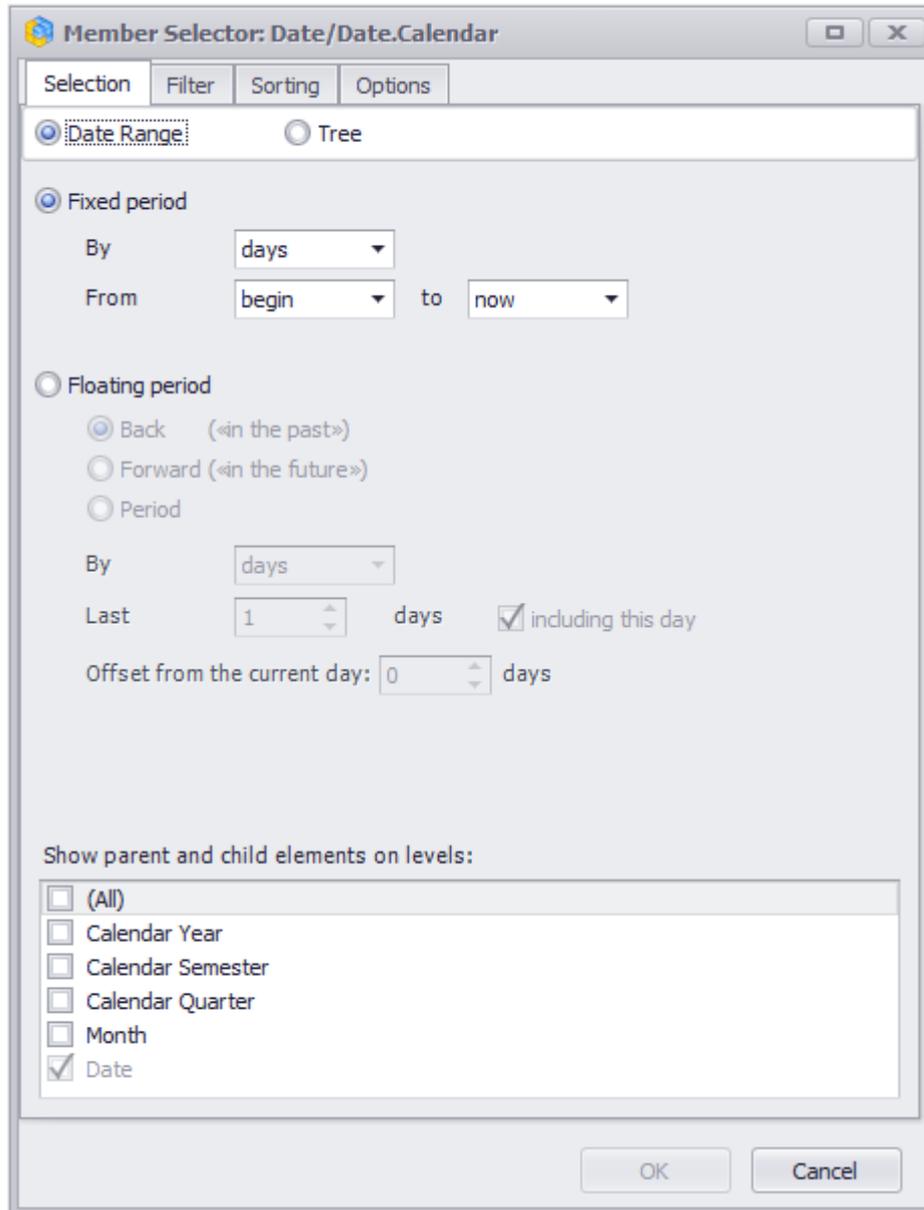
Global context has lower priority over the context of the page: if the same hierarchy is present in the global context and in the page context, the MDX query will take into account the page context.

4.4.5 Time Selection

The page may contain time dimension in rows, columns or context:



Member selector for time dimension will have additional functionality:



There are two radio buttons in the upper part of the dialog. If you select “Date Range” option you will have a possibility to set either fixed or floating time period.

If you use fixed period, you can set “from-to” date range. After pressing «OK» you will see the same selection in the table:

The screenshot shows a software interface with a table on the left and a configuration window on the right. The table has columns for 'Date/Date. Calendar', 'Accessories', and 'Specialty Bi...'. The rows are 'CY 2005', 'CY 2006', and 'CY 2007'. The 'CY 2006' row has a value of '\$8,002.70' and the 'CY 2007' row has a value of '\$45,294.17'. The configuration window is titled 'Member Selector: Date/Date.Calendar' and has tabs for 'Selection', 'Filter', 'Sorting', and 'Options'. The 'Date Range' tab is selected, and the 'Fixed period' radio button is chosen. The 'By' dropdown is set to 'years', and the 'From' and 'to' dropdowns are set to '2005' and '2007' respectively. The 'Floating period' radio button is unselected, and its options are 'Back (<<in the past>)', 'Forward (<<in the future>)', and 'Period'. The 'By' dropdown is set to 'years', the 'Last' dropdown is set to '14', and the 'including this year' checkbox is unchecked. The 'Offset from the current year' dropdown is set to '0'.

| Context | Date/Date. Calendar | Accessories | Specialty Bi... |
|---------|---------------------|-------------|-----------------|
| | CY 2005 | | |
| | CY 2006 | \$8,002.70 | |
| | CY 2007 | \$45,294.17 | |

The floating period allows the user to analyze not only the past period, but also to set the sample for the next days/weeks/months/years or specify the time interval. In addition to this, it became possible to set the offset in relation to the current date. Thus, each time you open a report, you will see information for the selected period in relation to the date when you opened the report.

Member Selector: Date/Date.Calendar

Selection Filter Sorting Options

Date Range Tree

Fixed period

By years

From 2005 to 2007

Floating period

Back («in the past»)

Forward («in the future»)

Period

By years

Last 3 years including this year

Offset from the current year: 0 years

Data will be shown from 1/1/2008 to 12/31/2010.

Show parent and child elements on levels:

- (All)
- Calendar Year
- Calendar Semester
- Calendar Quarter
- Month
- Date

OK Cancel

Let's look at a report example. Let's say the current date is September 1, 2007. The problem is that we need to analyze every day of sales for the last 5 days, starting from August 25, 2007. For this, the following parameters must be specified in the elements selection:

The screenshot shows the 'Member Selector: Date/Date.Calendar' dialog box. It has four tabs: 'Selection', 'Filter', 'Sorting', and 'Options'. The 'Date Range' tab is active. There are two radio buttons: 'Date Range' (selected) and 'Tree'. Under 'Fixed period', there are dropdowns for 'By' (days), 'From' (begin), and 'to' (now). Under 'Floating period', there are three radio buttons: 'Back (<<in the past>>)' (selected), 'Forward (<<in the future>>)', and 'Period'. Below these are dropdowns for 'By' (days), a spinner for 'Last' (5), the text 'days', a checked checkbox for 'including this day', and a spinner for 'Offset from the current day' (-7) followed by 'days'. A red-bordered box contains the text: 'Data will be shown from 8/21/2007 to 8/25/2007.' At the bottom, there are 'OK' and 'Cancel' buttons. A section titled 'Show parent and child elements on levels:' contains a list of checkboxes: '(All)', 'Calendar Year', 'Calendar Semester', 'Calendar Quarter', 'Month', and 'Date' (checked).

A note for administrators:

In order to make it possible to select in “Date range” mode it is necessary to design the dimension in appropriate way. The day key must be in format YYYYMMDD, the month key – in format YYYYMM, the week key – YYYYWW, the quarter key – YYYYQ, the year key – YYYY. Moreover, there must be a description for the hierarchy which “tells” the application what level is responsible for the day, what for the month and what for the year. For example: « [YMD=Day, YM=Month, YQ=Quarter, QW=Week, Y=Year] ». Day is the name of the day level, Month – of the month level, Year – of the year level, Week is the name of the week level, Quarter is the name of the Quarter level. It’s not necessary for all five level to be present in description. If the name of one of the levels contains spaces it should be enclosed in square brackets [...].

4.5 Measures Designer

This designer allows you to set the measures that will be displayed in the table. The picture below displays only one measure – the store sales:

The screenshot shows the Measures Designer interface. On the left, the 'Measures' list contains 'Reseller Sales Amount'. The main table displays data for 'Reseller Sales Amount' across four years (CY 2005 to CY 2008) for various product categories. The 'Measures' list is highlighted with a red box.

| Product/Product Categories | Reseller Sales Amount | Reseller Sales Amount | Reseller Sales Amount | Reseller Sales Amount |
|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | CY 2005 | CY 2006 | CY 2007 | CY 2008 |
| Accessories | \$20,235.36 | \$92,735.35 | \$296,532.88 | \$161,794.33 |
| Bikes | \$7,395,348.63 | \$19,956,014.67 | \$25,551,775.07 | \$13,399,243.18 |
| Clothing | \$34,376.34 | \$485,587.15 | \$871,864.19 | \$386,013.16 |
| Components | \$615,474.98 | \$3,610,092.47 | \$5,482,497.29 | \$2,091,011.92 |

Drag the measure “Reseller Order Count” from the list of the measures (to the left) onto the “Measures” designer:

The screenshot shows the Measures Designer interface with two measures in the 'Measures' list: 'Reseller Sales Amount' and 'Reseller Order Count'. The main table displays data for both measures across two years (CY 2005 and CY 2006) for various product categories. The 'Measures' list and the 'Reseller Order Count' column in the table are highlighted with red boxes.

| Product/Product Categories | Reseller Sales Amount | Reseller Order Count | Reseller Sales Amount | Reseller Order Count |
|----------------------------|-----------------------|----------------------|-----------------------|----------------------|
| | CY 2005 | | CY 2006 | |
| Accessories | \$20,235.36 | 135 | \$92,735.35 | 356 |
| Bikes | \$7,395,348.63 | 345 | \$19,956,014.67 | 850 |
| Clothing | \$34,376.34 | 242 | \$485,587.15 | 644 |
| Components | \$615,474.98 | 205 | \$3,610,092.47 | 702 |

As you see, the table has changed its view. Now it displays 2 measures “Reseller Sales Amount” and “Reseller Order Count” in different columns.

You can drag the measures from columns to rows:



After doing this you will get the following table:

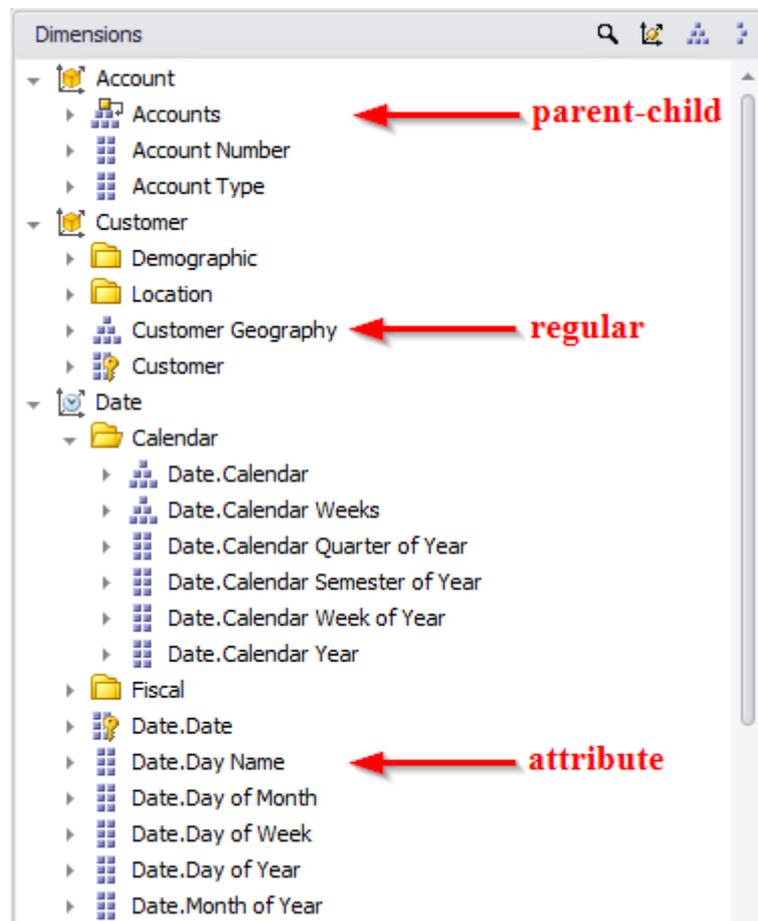
| Product/Prod... | Measures | CY 2005 | CY 2006 | CY 2007 | C |
|-----------------|-----------------------|----------------|-----------------|-----------------|-------|
| Accessories | Reseller Sales Amount | \$20,235.36 | \$92,735.35 | \$296,532.88 | \$ |
| | Reseller Order Count | 135 | 356 | 531 | |
| Bikes | Reseller Sales Amount | \$7,395,348.63 | \$19,956,014.67 | \$25,551,775.07 | \$13, |
| | Reseller Order Count | 345 | 850 | 1,234 | |
| Clothing | Reseller Sales Amount | \$34,376.34 | \$485,587.15 | \$871,864.19 | \$ |
| | Reseller Order Count | 242 | 644 | 963 | |
| Components | Reseller Sales Amount | \$615,474.98 | \$3,610,092.47 | \$5,482,497.29 | \$2, |
| | Reseller Order Count | 205 | 702 | 1,138 | |

Note: the measures are displayed in rows (not in columns).

4.6 Other Operations Changing the Page Structure

4.6.1 Virtual Hierarchies

The hierarchies can be of several types: regular, attribute and parent-child:



In the section 3 of this document we've already described the types of hierarchies. Let us look at the table where there are more than one attribute hierarchies:

Columns: - + Geography X Reseller Sales Amount X Reseller Freight Cost X

Rows: - Product/Category X - Date/Date.Calendar Year X - Product/Color X

Rows / Columns Filter Sorting

| Context | | Product/Cat egory | Date/Dat e.Calendar Year | Product /Color | Canada | | United States | |
|--|-------------|----------------------|--------------------------------|-------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | | | | | Reseller Sales Amount | Reseller Freight Cost | Reseller Sales Amount | Reseller Freight Cost |
| Measures Reseller Sales Amount X Reseller Freight Cost X | Accessories | CY 2005 | Black | \$1,897.53 | \$47.44 | \$4,784.20 | \$119.61 | |
| | | | Blue | \$1,635.11 | \$40.88 | \$5,479.03 | \$136.98 | |
| | | | Red | \$1,614.92 | \$40.37 | \$4,824.57 | \$120.62 | |
| | | CY 2006 | Black | \$5,963.77 | \$149.09 | \$16,302.48 | \$407.56 | |
| | | | Blue | \$6,524.98 | \$163.12 | \$17,569.55 | \$439.24 | |
| | | | NA | \$4,763.25 | \$119.08 | \$11,677.41 | \$291.94 | |
| | | CY 2007 | Red | \$5,243.16 | \$131.08 | \$15,714.46 | \$392.86 | |
| | | | Black | \$8,329.42 | \$208.24 | \$20,293.73 | \$507.35 | |
| | | | Blue | \$8,163.86 | \$204.10 | \$21,556.86 | \$538.92 | |
| | | | NA | \$26,180.02 | \$654.50 | \$70,443.32 | \$1,761.09 | |
| | | CY 2008 | Red | \$7,491.11 | \$187.28 | \$19,280.58 | \$482.02 | |
| | | | Silver | \$7,964.01 | \$199.10 | \$19,561.85 | \$489.05 | |
| | Black | | \$3,843.78 | \$96.09 | \$8,314.99 | \$207.88 | | |
| | Blue | | \$3,224.20 | \$80.61 | \$9,198.05 | \$229.95 | | |
| | NA | | \$17,546.06 | \$438.65 | \$40,844.67 | \$1,021.12 | | |
| | Bikes | CY 2005 | Red | \$3,338.02 | \$83.45 | \$7,029.84 | \$175.75 | |
| | | | Silver | \$4,404.14 | \$110.10 | \$10,639.64 | \$265.99 | |
| | | | Black | \$507,901.19 | \$12,697.53 | \$2,332,825.50 | \$58,320.64 | |
| | | CY 2006 | Red | \$581,300.92 | \$14,532.53 | \$1,845,610.00 | \$46,140.26 | |
| | | | Silver | \$281,519.17 | \$7,037.98 | \$1,846,191.85 | \$46,154.80 | |
| | | | Black | \$1,625,381.48 | \$40,634.55 | \$6,314,977.53 | \$157,874.47 | |
| | | | Red | \$1,370,917.24 | \$34,272.94 | \$4,665,086.86 | \$116,627.21 | |
| | | CY 2007 | Silver | \$724,911.93 | \$18,122.80 | \$3,043,003.18 | \$76,075.09 | |
| | | | Yellow | \$217,073.33 | \$5,426.83 | \$693,736.58 | \$17,343.42 | |
| Black | | | \$1,739,647.98 | \$43,491.21 | \$6,358,849.63 | \$158,971.29 | | |
| Blue | | | \$399,869.98 | \$9,996.75 | \$1,578,302.59 | \$39,457.58 | | |
| Red | | | \$605,779.65 | \$15,144.50 | \$2,189,360.17 | \$54,734.03 | | |
| CY 2008 | Silver | \$718,004.88 | \$17,950.13 | \$2,567,325.63 | \$64,183.16 | | | |
| | Yellow | \$954,363.21 | \$23,859.09 | \$3,446,146.65 | \$86,153.69 | | | |
| | Black | \$605,109.85 | \$15,127.75 | \$2,446,852.45 | \$61,171.34 | | | |
| | Blue | \$287,780.51 | \$7,194.52 | \$1,366,761.47 | \$34,169.05 | | | |
| | Red | \$26,388.18 | \$659.70 | \$159,795.09 | \$3,994.88 | | | |
| Clothing | CY 2005 | Silver | \$362,532.81 | \$9,063.32 | \$1,274,149.65 | \$31,853.75 | | |
| | | Yellow | \$627,898.27 | \$15,697.46 | \$2,703,776.89 | \$67,594.45 | | |

Highlight

Let us join all the attribute hierarchies into one virtual hierarchy by pressing these buttons:

Columns: - + Geography X Reseller Sales Amount X Reseller Freight Cost X

Rows: - Product/Category X - Date/Date.Calendar Year X - Product/Color X

As a result, out table will look like this:

| Product/Category | Canada | | United States | |
|------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | Reseller Sales Amount | Reseller Freight Cost | Reseller Sales Amount | Reseller Freight Cost |
| Accessories | \$118,127.35 | \$2,953.20 | \$303,515.23 | \$7,587.93 |
| CY 2005 | \$5,147.56 | \$128.69 | \$15,087.81 | \$377.20 |
| Black | \$1,897.53 | \$47.44 | \$4,784.20 | \$119.61 |
| Blue | \$1,635.11 | \$40.88 | \$5,479.03 | \$136.98 |
| Red | \$1,614.92 | \$40.37 | \$4,824.57 | \$120.62 |
| CY 2006 | \$22,495.16 | \$562.38 | \$61,263.90 | \$1,531.61 |
| Black | \$5,963.77 | \$149.09 | \$16,302.48 | \$407.56 |
| Blue | \$6,524.98 | \$163.12 | \$17,569.55 | \$439.24 |
| NA | \$4,763.25 | \$119.08 | \$11,677.41 | \$291.94 |
| Red | \$5,243.16 | \$131.08 | \$15,714.46 | \$392.86 |
| CY 2007 | \$58,128.43 | \$1,453.22 | \$151,136.35 | \$3,778.43 |
| Black | \$8,329.42 | \$208.24 | \$20,293.73 | \$507.35 |
| Blue | \$8,163.86 | \$204.10 | \$21,556.86 | \$538.92 |
| NA | \$26,180.02 | \$654.50 | \$70,443.32 | \$1,761.09 |
| Red | \$7,491.11 | \$187.28 | \$19,280.58 | \$482.02 |
| Silver | \$7,964.01 | \$199.10 | \$19,561.85 | \$489.05 |
| CY 2008 | \$32,356.20 | \$808.91 | \$76,027.18 | \$1,900.69 |
| Black | \$3,843.78 | \$96.09 | \$8,314.99 | \$207.88 |
| Blue | \$3,224.20 | \$80.61 | \$9,198.05 | \$229.95 |
| NA | \$17,546.06 | \$438.65 | \$40,844.67 | \$1,021.12 |
| Red | \$3,338.02 | \$83.45 | \$7,029.84 | \$175.75 |
| Silver | \$4,404.14 | \$110.10 | \$10,639.64 | \$265.99 |
| Bikes | \$11,636,380.59 | \$290,909.60 | \$44,832,751.73 | \$1,120,819.12 |
| CY 2005 | \$1,370,721.27 | \$34,268.04 | \$6,024,627.35 | \$150,615.71 |
| Black | \$507,901.19 | \$12,697.53 | \$2,332,825.50 | \$58,320.64 |
| Red | \$581,300.92 | \$14,532.53 | \$1,845,610.00 | \$46,140.26 |
| Silver | \$281,519.17 | \$7,037.98 | \$1,846,191.85 | \$46,154.80 |
| CY 2006 | \$3,938,283.99 | \$98,457.12 | \$14,716,804.14 | \$367,920.19 |
| Black | \$1,625,381.48 | \$40,634.55 | \$6,314,977.53 | \$157,874.47 |
| Red | \$1,370,917.24 | \$34,272.94 | \$4,665,086.86 | \$116,627.21 |
| Silver | \$724,911.93 | \$18,122.80 | \$3,043,003.18 | \$76,075.09 |
| Yellow | \$217,073.33 | \$5,426.83 | \$693,736.58 | \$17,343.42 |
| CY 2007 | \$4,417,665.71 | \$110,441.68 | \$16,139,984.68 | \$403,499.75 |
| Black | \$1,739,647.98 | \$43,491.21 | \$6,358,849.63 | \$158,971.29 |

Virtual hierarchies are easily recognizable: they are highlighted with a different color.

You also have the option to Expand / Minimize all level elements for virtual hierarchies in a way similar to the usual hierarchies.

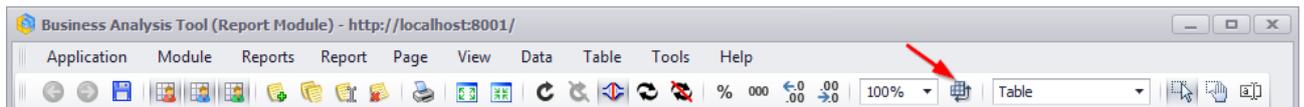
Let's, for example, minimize all the elements of the "Date\Date.Calendar" "Year" level:

Now the report will look as follows:

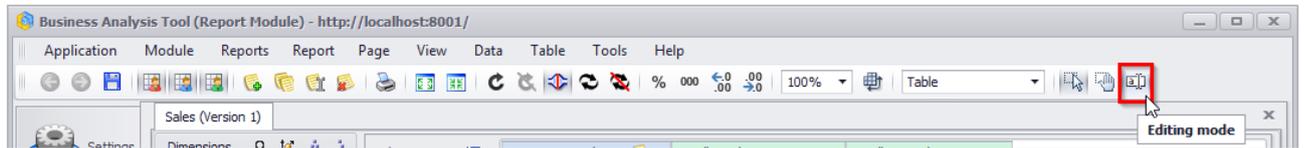
| Columns | | - + Geography X Reseller Sales Amount X Reseller Freight Cost X | | | |
|----------------|-----------------------------------|---|-----------------------|-----------------------|-----------------------|
| Rows | | - + Product/Category X - + Calendar Year X Color X | | | |
| Rows / Columns | Filter | Sorting | | | |
| Context | Product/Category, Date/Date.Ca... | Canada | | United States | |
| | | Reseller Sales Amount | Reseller Freight Cost | Reseller Sales Amount | Reseller Freight Cost |
| | Accessories | \$118,127.35 | \$2,953.20 | \$303,515.23 | \$7,587.93 |
| | CY 2005 | \$5,147.56 | \$128.69 | \$15,087.81 | \$377.20 |
| | CY 2006 | \$22,495.16 | \$562.38 | \$61,263.90 | \$1,531.61 |
| | CY 2007 | \$58,128.43 | \$1,453.22 | \$151,136.35 | \$3,778.43 |
| | CY 2008 | \$32,356.20 | \$808.91 | \$76,027.18 | \$1,900.69 |
| | Bikes | \$11,636,380.59 | \$290,909.60 | \$44,832,751.73 | \$1,120,819.12 |
| | CY 2005 | \$1,370,721.27 | \$34,268.04 | \$6,024,627.35 | \$150,615.71 |
| | CY 2006 | \$3,938,283.99 | \$98,457.12 | \$14,716,804.14 | \$367,920.19 |
| | CY 2007 | \$4,417,665.71 | \$110,441.68 | \$16,139,984.68 | \$403,499.75 |
| | CY 2008 | \$1,909,709.62 | \$47,742.76 | \$7,951,335.55 | \$198,783.48 |
| | Clothing | \$378,947.63 | \$9,473.73 | \$1,037,436.95 | \$25,936.02 |
| | CY 2005 | \$7,913.33 | \$197.83 | \$26,463.00 | \$661.57 |
| | CY 2006 | \$115,643.91 | \$2,891.11 | \$317,939.41 | \$7,948.51 |
| | CY 2007 | \$177,893.39 | \$4,447.35 | \$495,443.62 | \$12,386.14 |
| | CY 2008 | \$77,497.00 | \$1,937.43 | \$197,590.92 | \$4,939.80 |
| | Components | \$2,244,470.02 | \$56,111.79 | \$7,434,097.31 | \$185,852.58 |
| | CY 2005 | \$129,577.29 | \$3,239.43 | \$485,897.68 | \$12,147.45 |
| | CY 2006 | \$746,576.15 | \$18,664.41 | \$2,526,542.06 | \$63,163.58 |
| CY 2007 | \$997,617.89 | \$24,940.47 | \$3,284,551.84 | \$82,113.87 | |
| CY 2008 | \$370,698.68 | \$9,267.48 | \$1,137,105.72 | \$28,427.69 | |
| Measures | | | | | |
| | Reseller Sales Amount X | | | | |
| | Reseller Freight Cost X | | | | |

4.6.2 Swapping Rows and Columns

There is a way to quickly swap rows and columns with the help of this button on the toolbar:

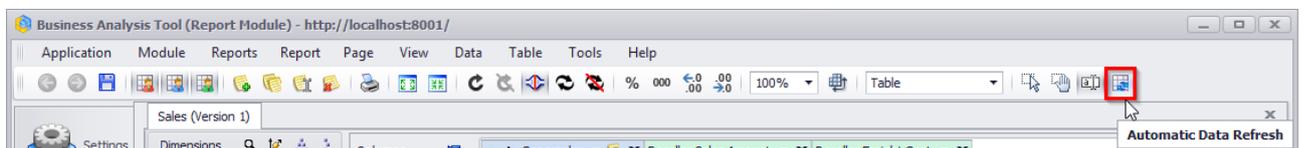


4.6.3 Data Editing (Write Back)



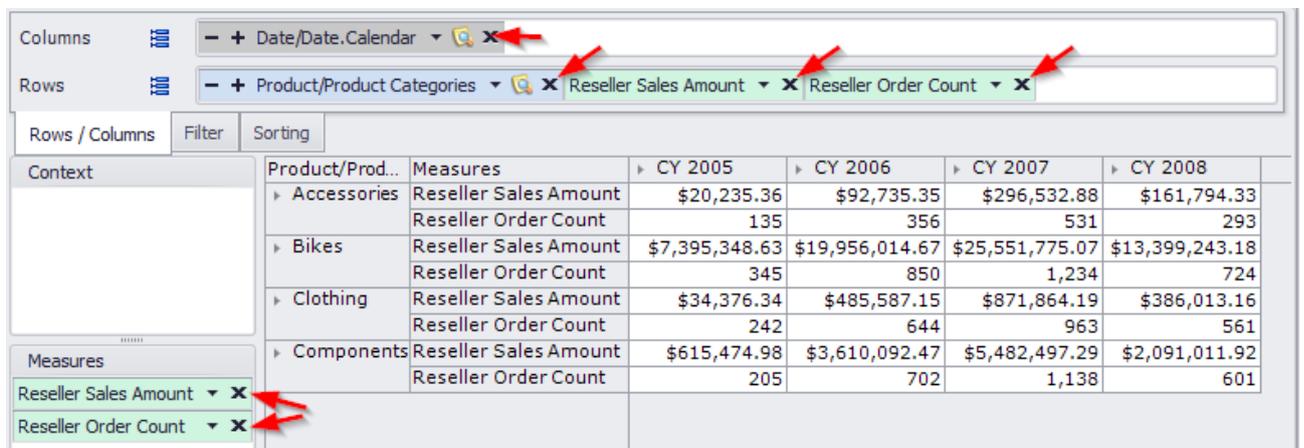
This mode allows to edit data in the cubes. In order to edit data it is necessary for administrator to allow this functionality for the user, and it is necessary to have a measure group that supports the writeback mode.

During editing data it is possible to automatically update all the other data after finishing the edit operation:



4.6.4 Removing Controls from Rows, Columns and Context

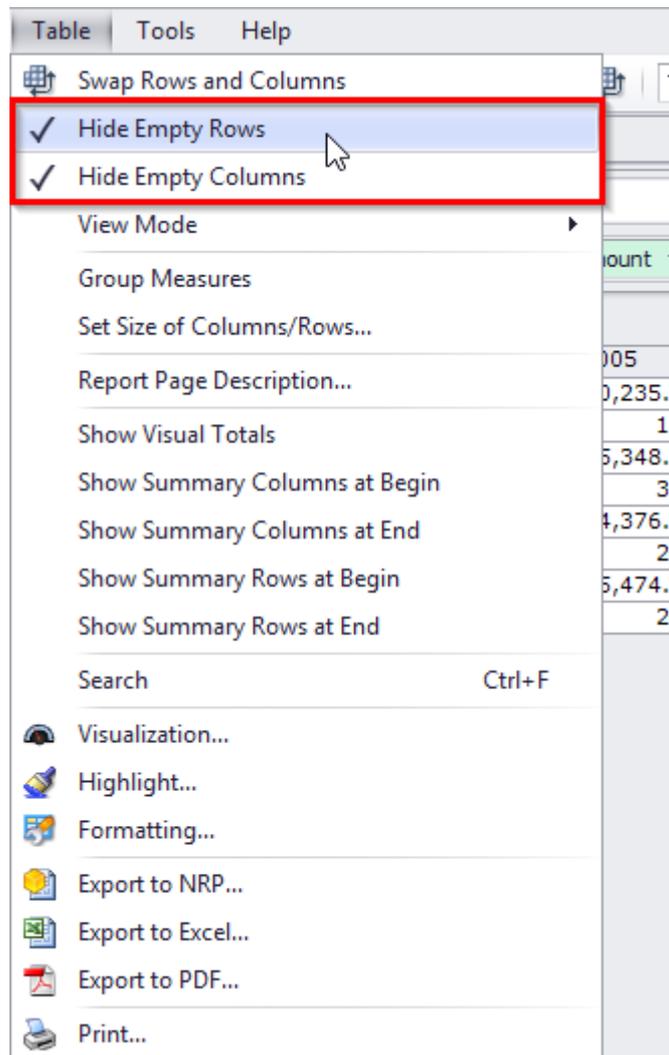
Each control on designers has a cross icon:



By pressing it you can remove the control from the page. The corresponding dimension will not be displayed in the table after you delete its control.

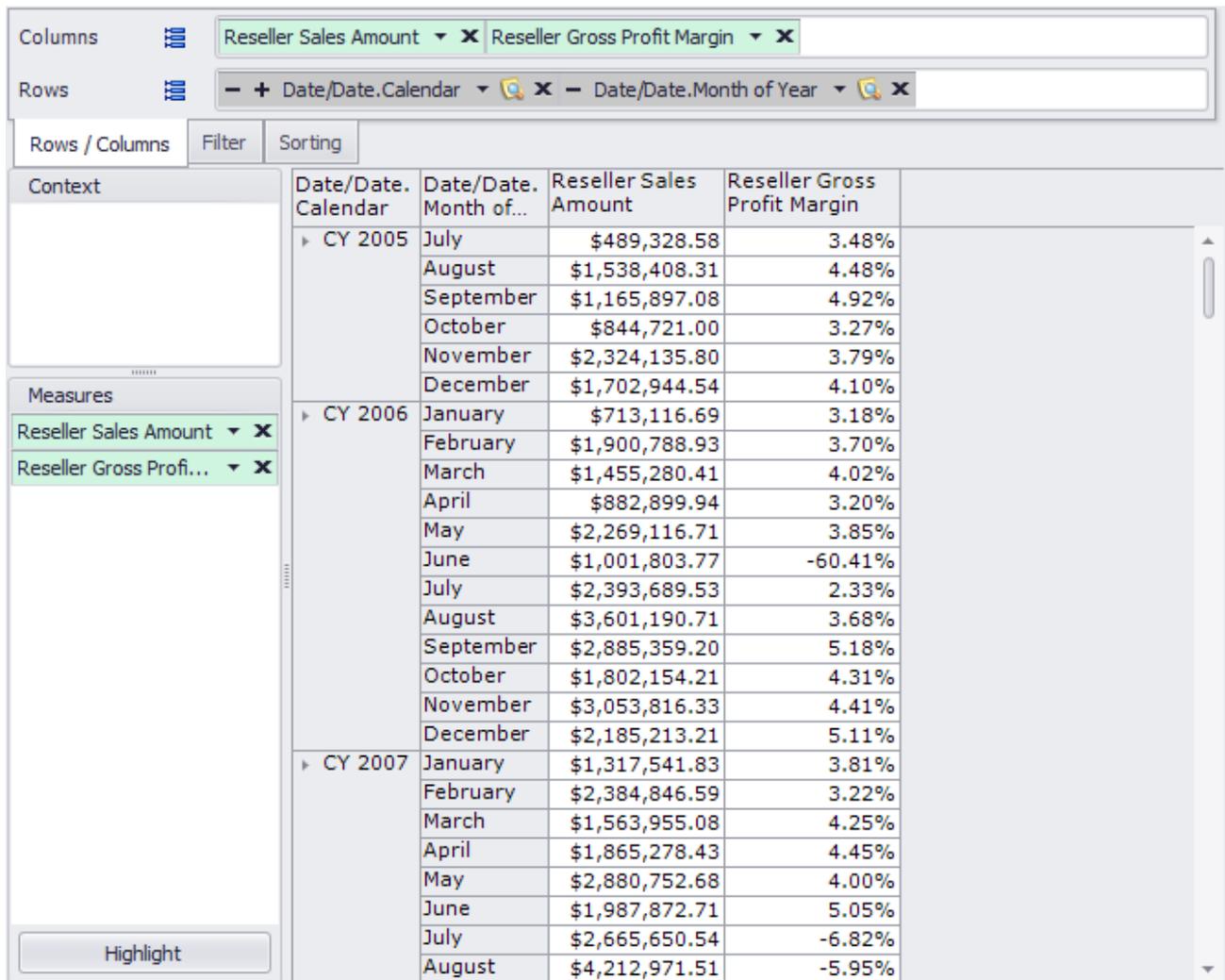
4.6.5 Hiding Empty Rows and Columns

Sometimes it happens that the whole row or column has no data. To prevent the displaying of empty rows and columns on the page you can select the menu items “Hide Empty Rows” and “Hide Empty Columns” in the “Table” menu:



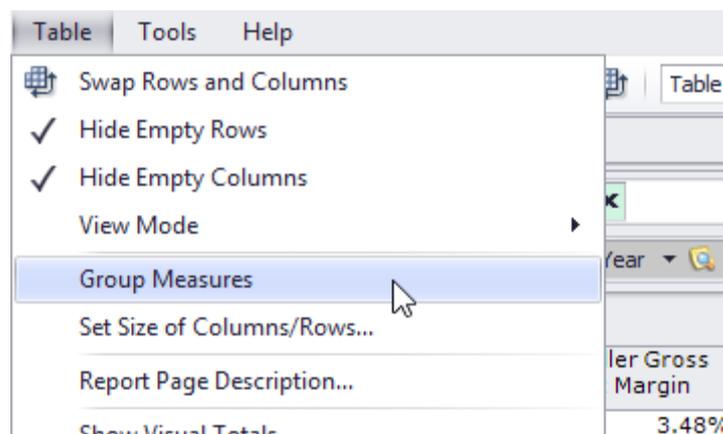
4.6.6 Grouping of Measures

Let us look at the report where there are several measures from one folder:



| Context | Date/Date.Calendar | Date/Date.Month of... | Reseller Sales Amount | Reseller Gross Profit Margin | |
|-----------|--------------------|-----------------------|-----------------------|------------------------------|---------|
| CY 2005 | July | | \$489,328.58 | 3.48% | |
| | August | | \$1,538,408.31 | 4.48% | |
| | September | | \$1,165,897.08 | 4.92% | |
| | October | | \$844,721.00 | 3.27% | |
| | November | | \$2,324,135.80 | 3.79% | |
| | December | | \$1,702,944.54 | 4.10% | |
| | CY 2006 | January | | \$713,116.69 | 3.18% |
| | | February | | \$1,900,788.93 | 3.70% |
| | | March | | \$1,455,280.41 | 4.02% |
| | | April | | \$882,899.94 | 3.20% |
| | | May | | \$2,269,116.71 | 3.85% |
| | | June | | \$1,001,803.77 | -60.41% |
| July | | | \$2,393,689.53 | 2.33% | |
| August | | | \$3,601,190.71 | 3.68% | |
| September | | | \$2,885,359.20 | 5.18% | |
| October | | | \$1,802,154.21 | 4.31% | |
| November | | | \$3,053,816.33 | 4.41% | |
| December | | | \$2,185,213.21 | 5.11% | |
| CY 2007 | January | | \$1,317,541.83 | 3.81% | |
| | February | | \$2,384,846.59 | 3.22% | |
| | March | | \$1,563,955.08 | 4.25% | |
| | April | | \$1,865,278.43 | 4.45% | |
| | May | | \$2,880,752.68 | 4.00% | |
| | June | | \$1,987,872.71 | 5.05% | |
| | July | | \$2,665,650.54 | -6.82% | |
| | August | | \$4,212,971.51 | -5.95% | |

There is a possibility of grouping them. In the menu “Table” select the item “Group Measures”:



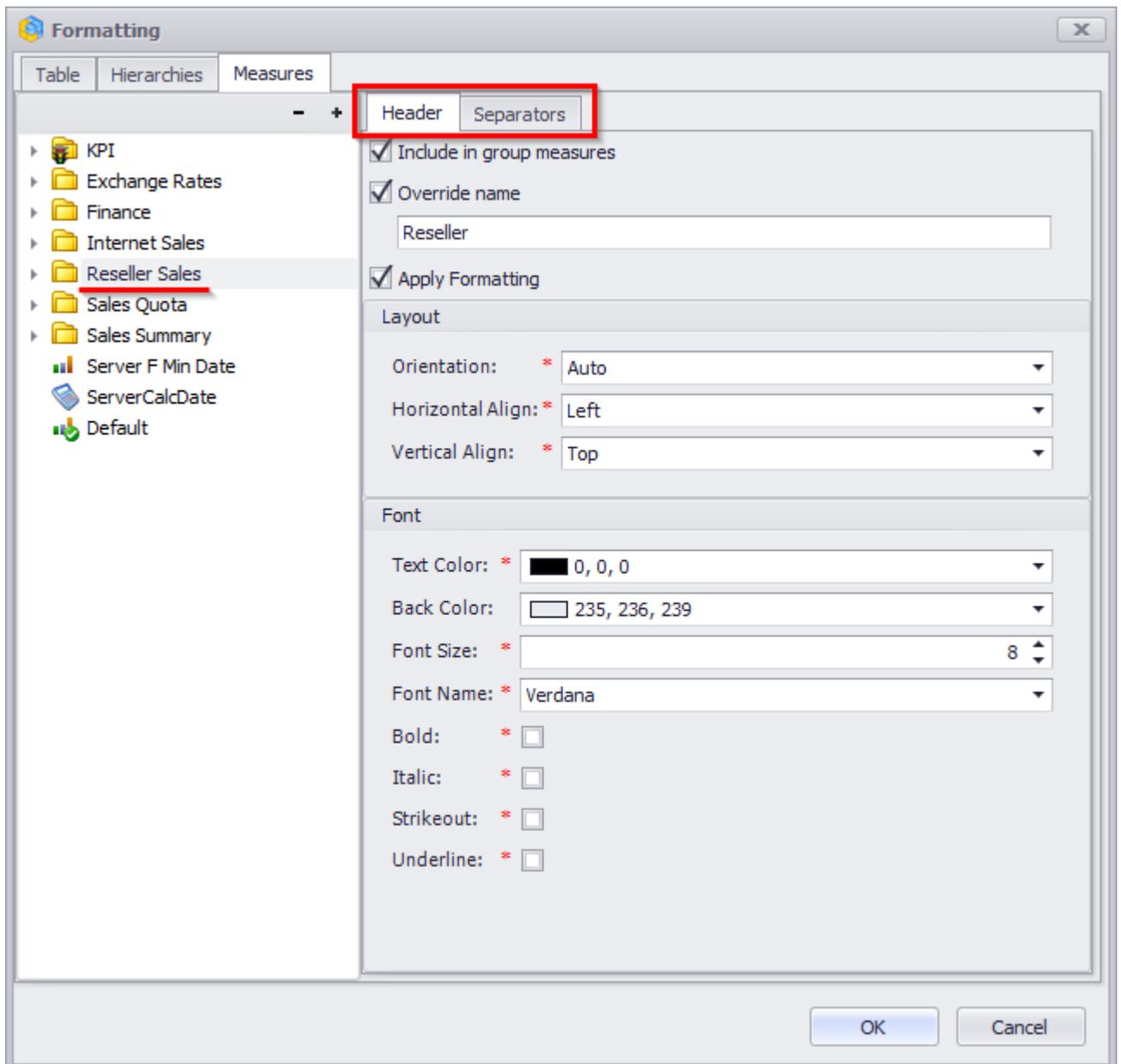
As a result, the table will become as following:

| Date/Date.Calendar | | Date/Date.Month of Year | Reseller Sales Amount | Reseller Gross Profit Margin |
|--------------------|-----------|-------------------------|-----------------------|------------------------------|
| CY 2005 | July | | \$489,328.58 | 3.48% |
| | August | | \$1,538,408.31 | 4.48% |
| | September | | \$1,165,897.08 | 4.92% |
| | October | | \$844,721.00 | 3.27% |
| | November | | \$2,324,135.80 | 3.79% |
| | December | | \$1,702,944.54 | 4.10% |
| CY 2006 | January | | \$713,116.69 | 3.18% |
| | February | | \$1,900,788.93 | 3.70% |
| | March | | \$1,455,280.41 | 4.02% |
| | April | | \$882,899.94 | 3.20% |
| | May | | \$2,269,116.71 | 3.85% |

Grouping of measures means to display the folders as captions. Later you can rename and format the folders. If you click the right mouse button on the header, you will have this:

| Date/Date.Calendar | | Date/Date.Month of Year | Reseller Sales Amount | Reseller Gross Profit Margin |
|--------------------|-----------|-------------------------|-----------------------|------------------------------|
| CY 2005 | July | | \$489,328.58 | 3.48% |
| | August | | \$1,538,408.31 | 4.48% |
| | September | | \$1,165,897.08 | 4.92% |
| | October | | \$844,721.00 | 3.27% |
| | November | | \$2,324,135.80 | 3.79% |
| | December | | \$1,702,944.54 | 4.10% |
| CY 2006 | January | | \$713,116.69 | 3.18% |
| | February | | \$1,900,788.93 | 3.70% |
| | March | | \$1,455,280.41 | 4.02% |
| | April | | \$882,899.94 | 3.20% |
| | May | | \$2,269,116.71 | 3.85% |

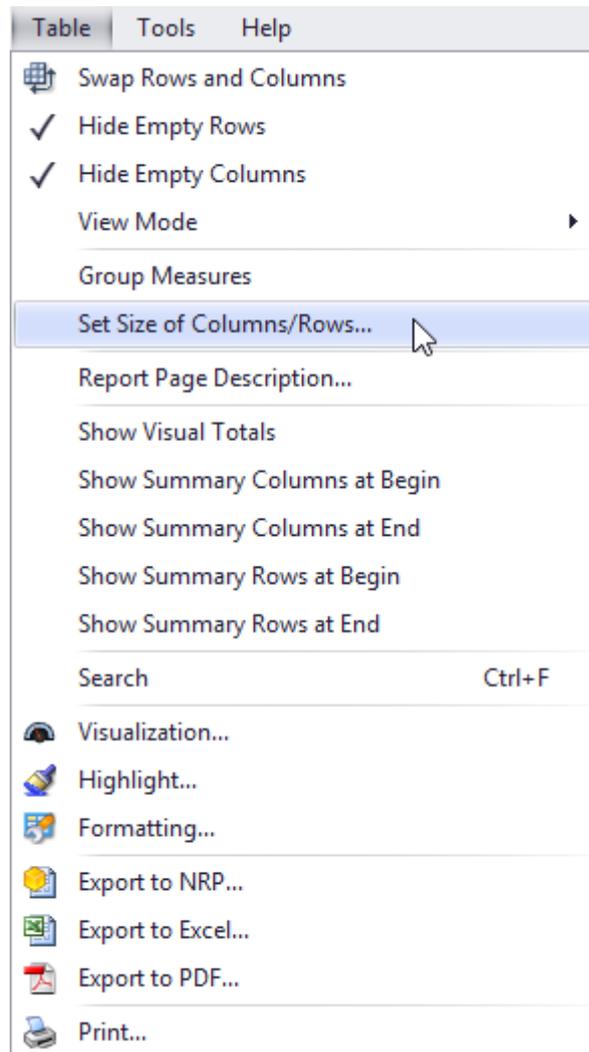
In the “Formatting” dialog box we have two tabs – “Header” and “Separators”:



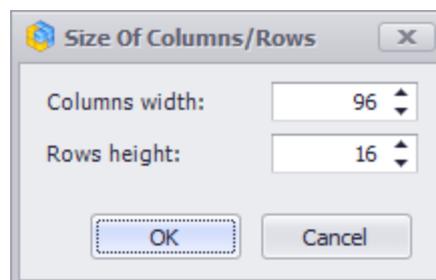
The first tab allows to change the name and set up the format rules for the header of the measure. The tab “Separators” allows to set up the size and color for rows/columns separators and to define the thickness and color of the lines.

4.6.7 Size of columns/rows

You can set the size of columns / rows on pages of the Table type. To do this, select “Set Size of Columns / Rows ...” from the “Table” main menu:



This submenu allows the user to specify the same width for all columns and the same height for all rows of the table:



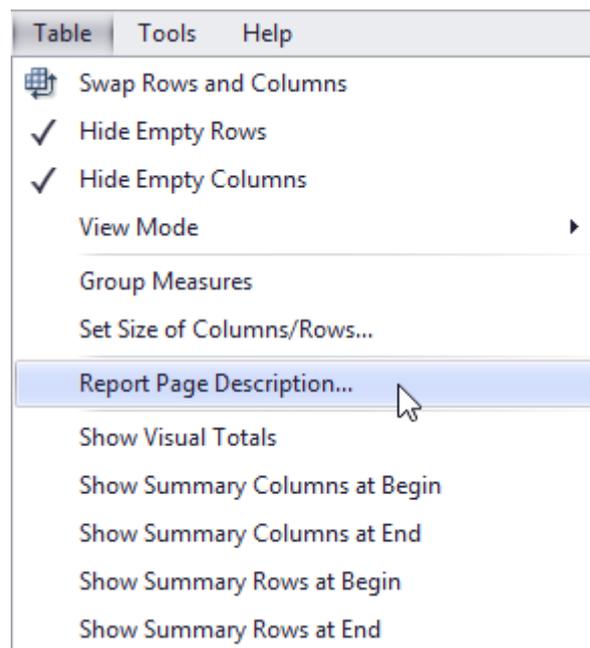
4.6.8 Description of a Page

For any report you can create a description using any text, used hierarchies and RTF formatting.

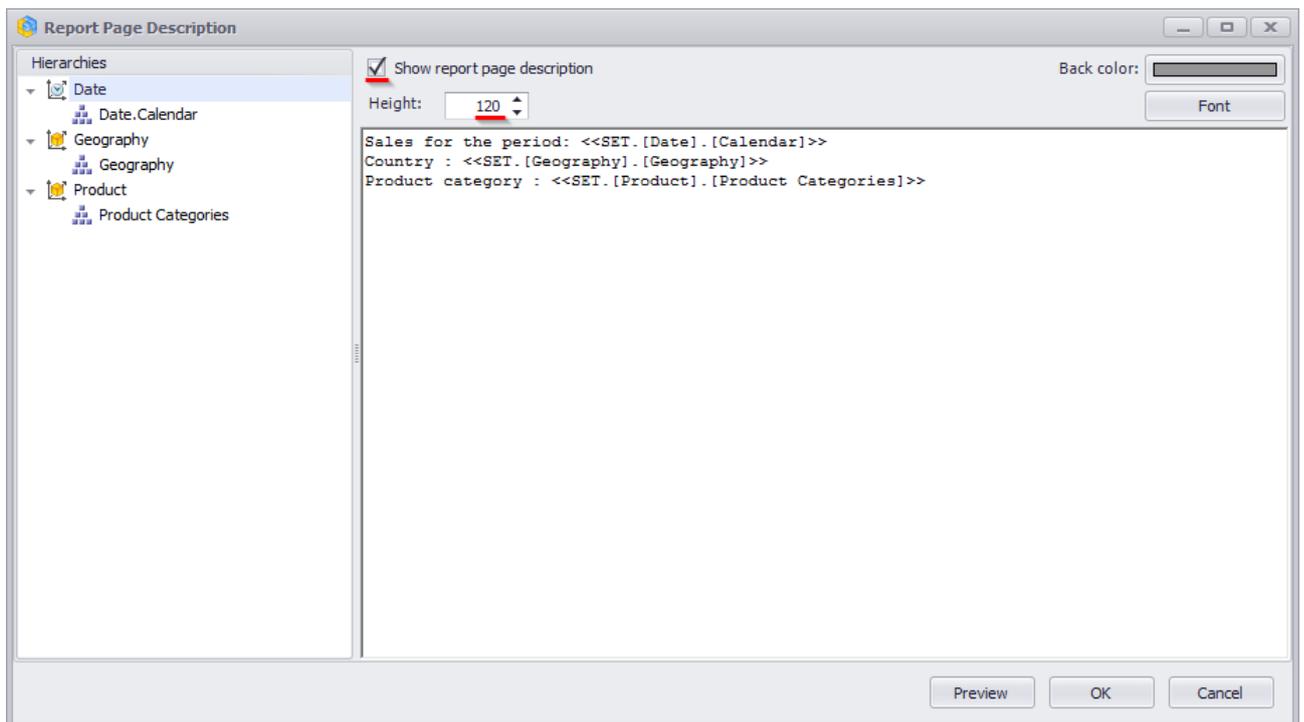
Let us look at the example:

| Geography | Product/Product Categories | Reseller Order Count | Reseller Sales Amount | Reseller Gross Profit | Reseller Gross Profit Margin |
|----------------|----------------------------|----------------------|-----------------------|-----------------------|------------------------------|
| Canada | Accessories | 100 | \$27,642.71 | \$8,959.46 | 32.41% |
| | Bikes | 251 | \$5,309,005.26 | (\$25,647.77) | -0.48% |
| | Clothing | 192 | \$123,557.24 | \$23,671.13 | 19.16% |
| France | Accessories | 15 | \$5,096.23 | \$1,412.53 | 27.72% |
| | Bikes | 28 | \$654,238.20 | (\$3,826.06) | -0.58% |
| | Clothing | 22 | \$27,843.63 | \$6,461.22 | 23.21% |
| United Kingdom | Accessories | 14 | \$3,880.07 | \$1,136.19 | 29.28% |
| | Bikes | 27 | \$646,688.34 | \$18,160.04 | 2.81% |
| | Clothing | 24 | \$24,160.21 | \$5,788.02 | 23.96% |
| United States | Accessories | 362 | \$76,351.70 | \$25,014.55 | 32.76% |
| | Bikes | 889 | \$20,741,431.50 | \$46,898.49 | 0.23% |
| | Clothing | 648 | \$344,402.42 | \$64,281.83 | 18.66% |

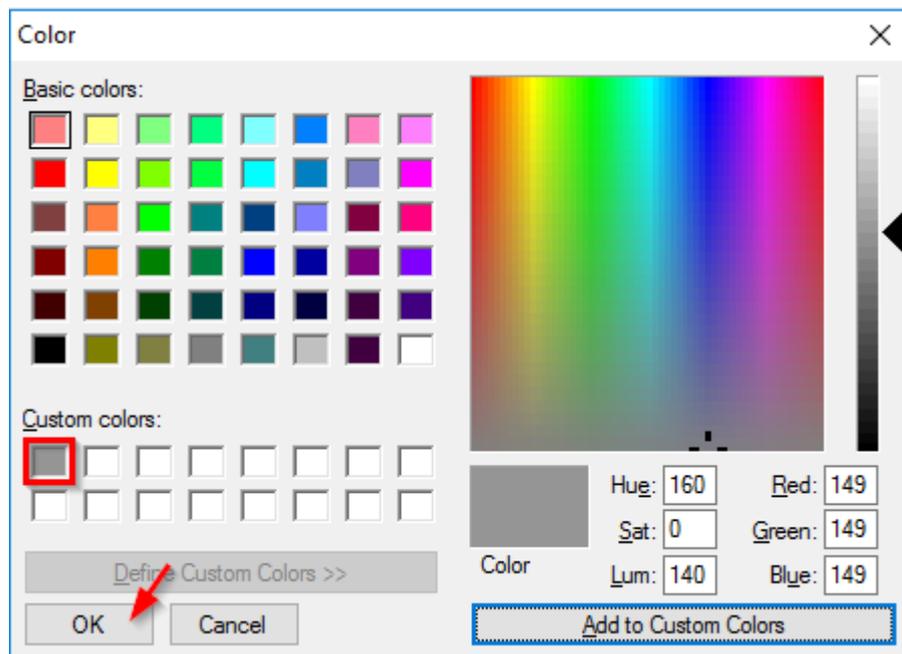
In the “Table” menu select the “Report Page Description”:

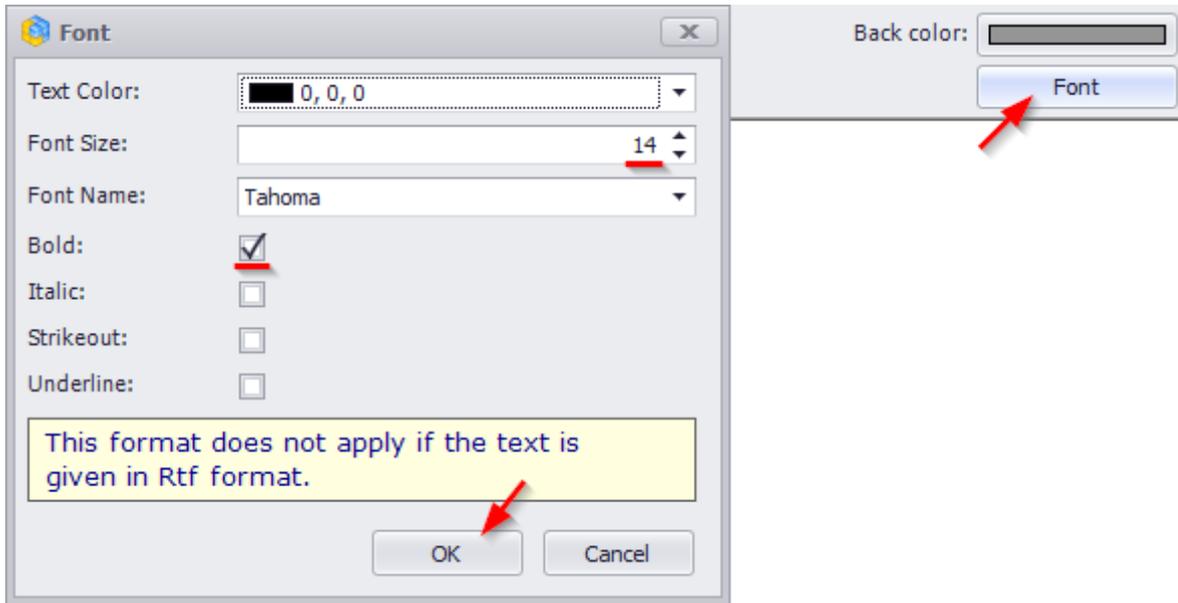


In the left part there is a list of hierarchies which are used on the report page. Using the mouse drag some hierarchies into the text:



Let us set up the height of the description field equal to 140 pixels, set up the font color and the font parameters:





In the “Report Page Description” window press «OK». As a result, the table will contain the page “Report Page Description” with the following text:

Business Analysis Tool (Report Module) - http://localhost:8001/

Application Module Reports Report Page View Data Table Tools Help

Sales (Version 1)

Dimensions: Account, Customer, Date, Calendar, Date.Calendar, Date.Calen..., Date.Calen..., Date.Calen...

Measures: Reseller Gross..., Reseller Order..., Reseller Ratio t..., Reseller Sales A..., Reseller Stand..., Reseller Tax A...

Sets: Calculated Sets, Sets

Parameters

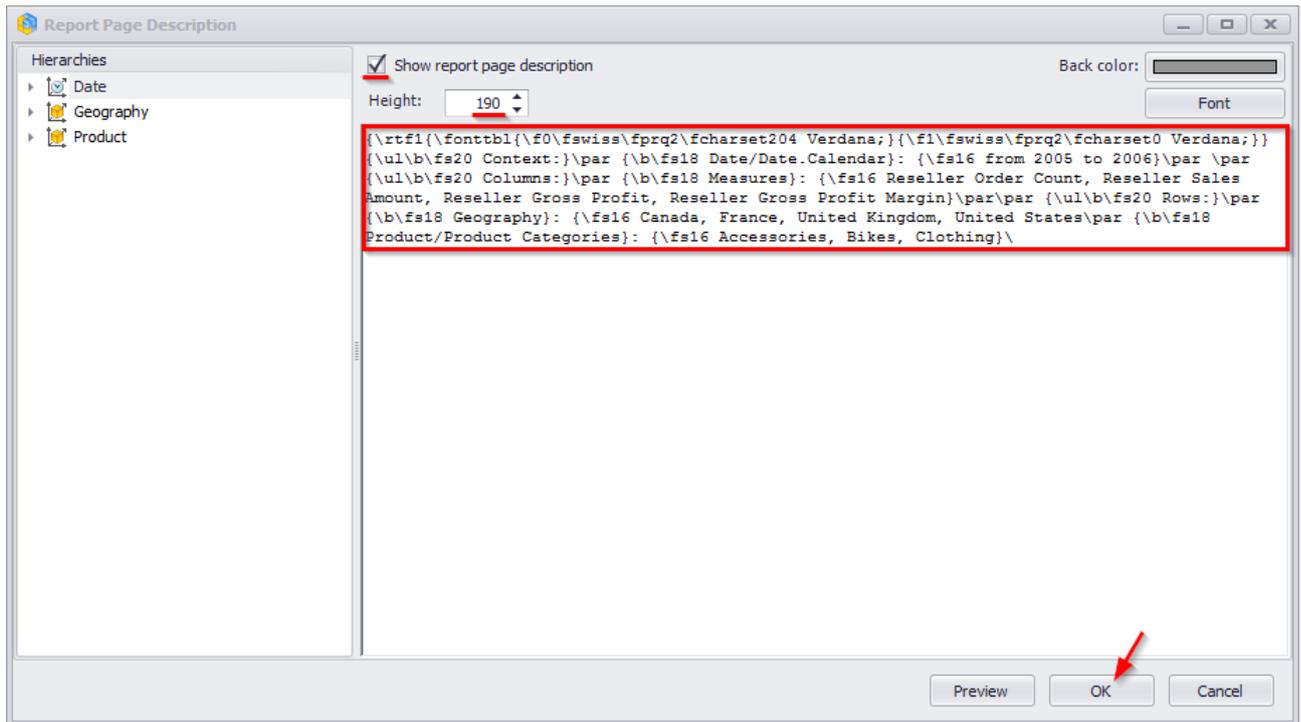
Sales for the period: CY 2005, CY 2006
Country : Canada, France, United Kingdom, United States
Product category : Accessories, Bikes, Clothing

| Report Page Description | Rows / Columns | Filter | Sorting | | | | |
|---|----------------|----------------------------|----------------------|-----------------------|-----------------------|------------------------------|--|
| Context | Geography | Product/Product Categories | Reseller Order Count | Reseller Sales Amount | Reseller Gross Profit | Reseller Gross Profit Margin | |
| Date/Date.Calendar | Canada | Accessories | 100 | \$27,642.71 | \$8,959.46 | 32.41% | |
| <input type="checkbox"/> All Periods | | Bikes | 251 | \$5,309,005.26 | (\$25,647.77) | -0.48% | |
| <input checked="" type="checkbox"/> CY 2005 | | Clothing | 192 | \$123,557.24 | \$23,671.13 | 19.16% | |
| <input checked="" type="checkbox"/> CY 2006 | France | Accessories | 15 | \$5,096.23 | \$1,412.53 | 27.72% | |
| <input type="checkbox"/> CY 2007 | | Bikes | 28 | \$654,238.20 | (\$3,826.06) | -0.58% | |
| <input type="checkbox"/> CY 2008 | | Clothing | 22 | \$27,843.63 | \$6,461.22 | 23.21% | |
| <input type="checkbox"/> CY 2010 | United Kingdom | Accessories | 14 | \$3,880.07 | \$1,136.19 | 29.28% | |
| | | Bikes | 27 | \$646,688.34 | \$18,160.04 | 2.81% | |
| | | Clothing | 24 | \$24,160.21 | \$5,788.02 | 23.96% | |
| | United States | Accessories | 362 | \$76,351.70 | \$25,014.55 | 32.76% | |
| | | Bikes | 889 | \$20,741,431.50 | \$46,898.49 | 0.23% | |
| | | Clothing | 648 | \$344,402.42 | \$64,281.83 | 18.66% | |

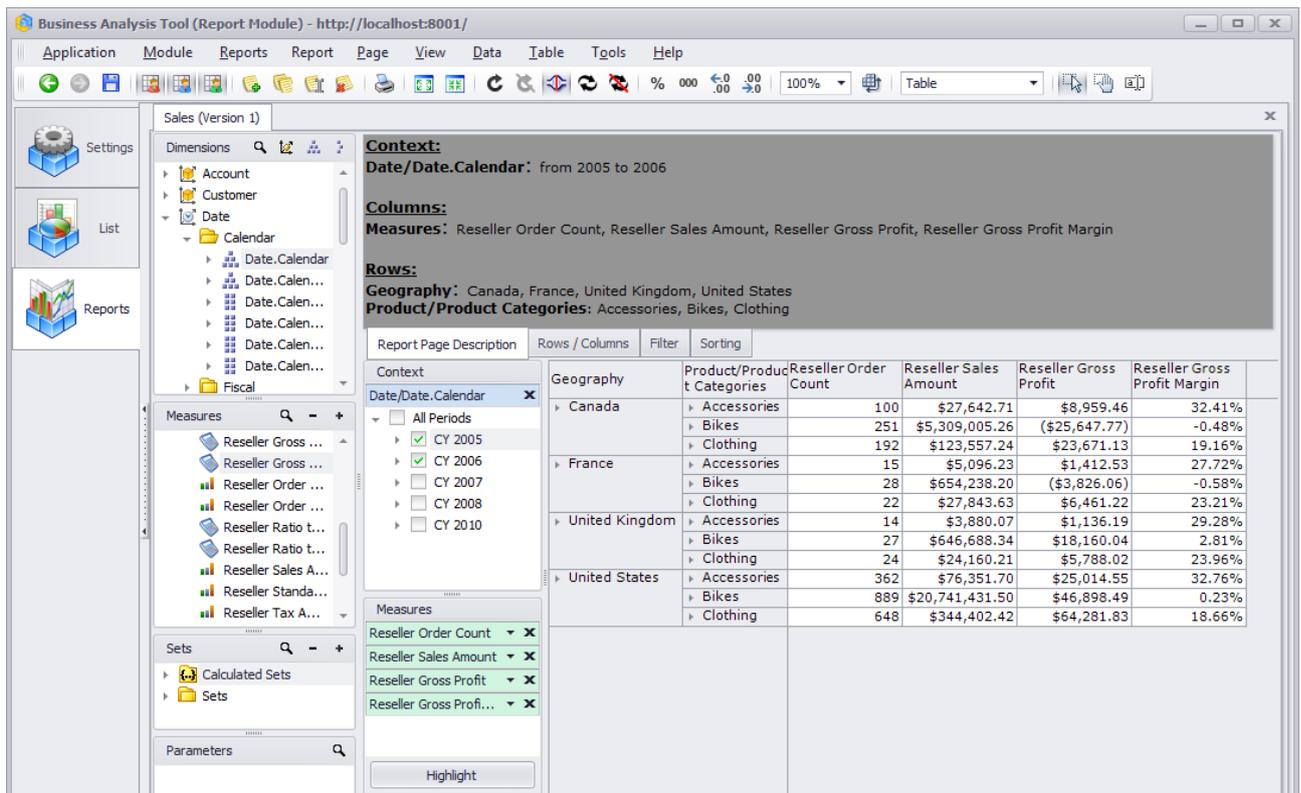
Measures: Reseller Order Count, Reseller Sales Amount, Reseller Gross Profit, Reseller Gross Profit...

Highlight

Let us look at the way to set up description using RTF. Let us insert into the description field the prepared RTF text:



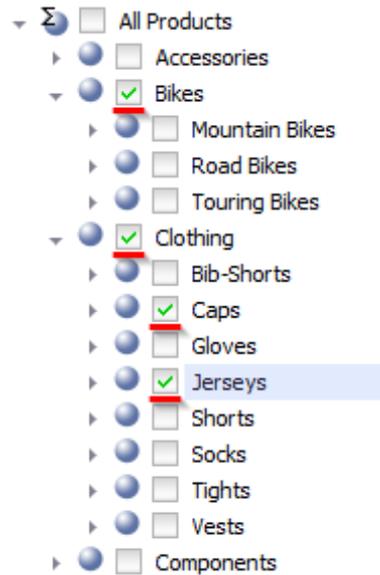
The table will have the following description:



If the RTF format is used, the formatting of the text and font is not applied. Tables with the description can be exported to Excel.

4.6.9 Displaying Totals

In order to explain what is “Visual Totals” let us build the following report. On the rows we will place the “Product Categories” hierarchy with the following selection:



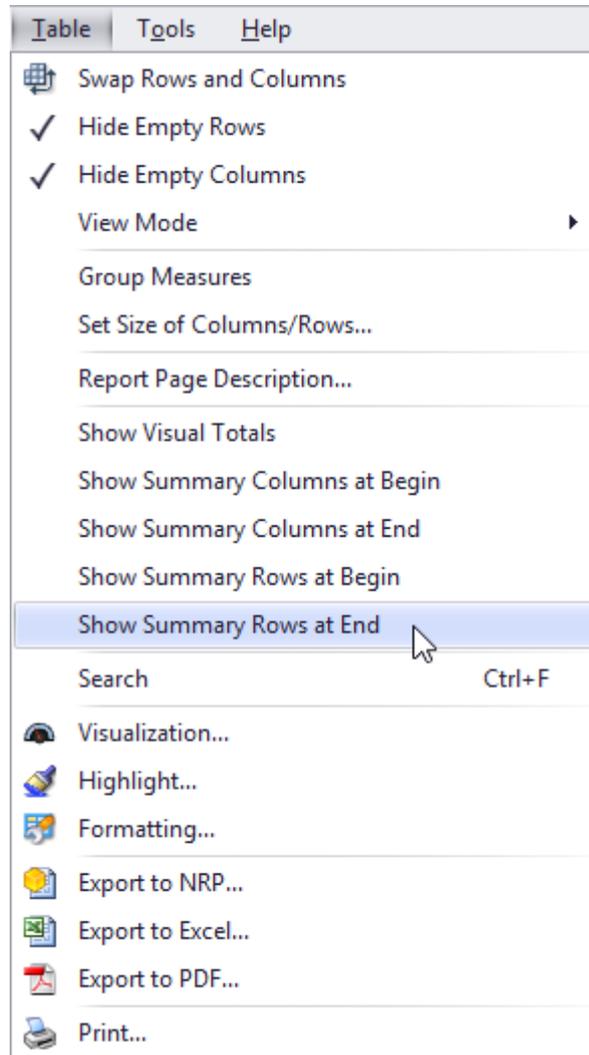
On the columns let us place the years from the “Date.Calendar” hierarchy. Inside the table – the “Reseller Order Quantity” measure. You will get the following report:

| Columns | | - + Date/Date.Calendar ▾ 🔍 ✕ Reseller Order Quantity ▾ ✕ | | | | |
|----------------|--------|--|-------------------------|-------------------------|-------------------------|-------------------------|
| Rows | | - + Product/Product Categories ▾ 🔍 ✕ | | | | |
| Rows / Columns | Filter | Sorting | | | | |
| Context | | Product/Product Categories | ▸ CY 2005 | ▸ CY 2006 | ▸ CY 2007 | ▸ CY 2008 |
| | | Reseller Order Quantity | Reseller Order Quantity | Reseller Order Quantity | Reseller Order Quantity | Reseller Order Quantity |
| | | ▸ Bikes | 6,126 | 22,231 | 31,310 | 15,348 |
| | | ▾ Clothing | 2,132 | 16,927 | 31,623 | 13,815 |
| | | ▸ Caps | 520 | 1,853 | 2,677 | 1,071 |
| | | ▸ Jerseys | 983 | 3,881 | 9,642 | 4,873 |
| Measures | | Reseller Order Qua... ▾ ✕ | | | | |

4.6.9.1 Summary Rows and Columns

You can add summary rows and columns to the report. These rows and columns will show the SUM of the elements on the topmost visible level in the report.

In the “Table” menu select the items “Show Summary Columns” and/or “Show Summary Rows”:



Then you will get the following report:

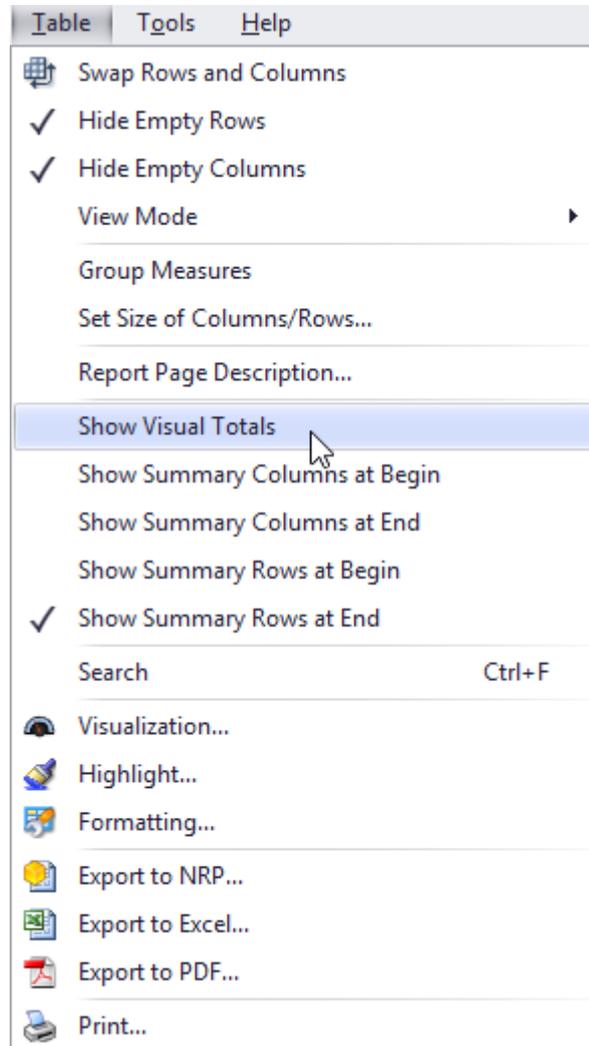
| Product/Product Categories | ▸ CY 2005 | ▸ CY 2006 | ▸ CY 2007 | ▸ CY 2008 |
|----------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | Reseller Order Quantity | Reseller Order Quantity | Reseller Order Quantity | Reseller Order Quantity |
| ▸ Bikes | 6,126 | 22,231 | 31,310 | 15,348 |
| ▾ Clothing | 2,132 | 16,927 | 31,623 | 13,815 |
| ▸ Caps | 520 | 1,853 | 2,677 | 1,071 |
| ▸ Jerseys | 983 | 3,881 | 9,642 | 4,873 |
| Total | 8,258 | 39,158 | 62,933 | 29,163 |

As you may see, in the summary row there is a sum of “Bikes” and “Clothing”.

4.6.9.2 Visual Totals

In the sample report (above) you can see that the row with “Clothing” there is a total of all kinds of clothing, but NOT just 2 selected elements (“Caps” and “Jerseys”).

In order to see the totals for only visible elements, you have to select “Show Visual Totals” item in the “Table” menu:



If you switch on “Show Visual Totals”, you will see this:

| Product/Product Categories | ▸ CY 2005 | ▸ CY 2006 | ▸ CY 2007 | ▸ CY 2008 |
|----------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| | Reseller Order Quantity | Reseller Order Quantity | Reseller Order Quantity | Reseller Order Quantity |
| ▸ Bikes | 6,126 | 22,231 | 31,310 | 15,348 |
| ▾ Clothing | 1,503 | 5,734 | 12,319 | 5,944 |
| ▸ Caps | 520 | 1,853 | 2,677 | 1,071 |
| ▸ Jerseys | 983 | 3,881 | 9,642 | 4,873 |
| Total | 7 629 | 27 965 | 43 629 | 21 292 |

Now in the row “Clothing” you may see summary values of ONLY two selected subitems – “Caps” and “Jerseys”.

Here is one more example of the visual totals:

Columns: - + Date/Date.Calendar

Rows: - + Product/Product Categories

Rows / Columns | Filter | Sorting

Context

Measures: Sales Amount

Highlight

| Product/Product... | CY 2007 | CY 2008 |
|--------------------|-----------------|-----------------|
| Accessories | \$590,242.59 | \$568,844.58 |
| Bike Racks | \$134,868.47 | \$102,227.69 |
| Bike Stands | \$18,921.00 | \$20,670.00 |
| Bottles an... | \$27,761.60 | \$36,513.19 |
| Cleaners | \$9,777.94 | \$8,629.03 |
| Fenders | \$19,408.34 | \$27,211.24 |
| Helmets | \$206,027.20 | \$183,504.58 |
| Hydration... | \$58,303.91 | \$47,522.51 |
| Locks | \$6,140.52 | |
| Pumps | \$5,145.43 | |
| Tires and T... | \$103,888.18 | \$142,566.34 |
| Bikes | \$34,910,877.69 | \$22,561,568.03 |
| Clothing | \$1,010,112.16 | \$587,537.80 |
| Components | \$5,482,497.29 | \$2,091,011.92 |

Let us hide one of the elements from the group “Accessories”:

| Product/Product... | CY 2007 | CY 2008 |
|--------------------|-----------------|-----------------|
| Accessories | \$590,242.59 | \$568,844.58 |
| Bike Racks | \$134,868.47 | \$102,227.69 |
| Bike Stands | \$18,921.00 | \$20,670.00 |
| Bottles an... | \$27,761.60 | \$36,513.19 |
| Cleaners | \$9,777.94 | \$8,629.03 |
| Fenders | \$19,408.34 | \$27,211.24 |
| Helmets | \$206,027.20 | \$183,504.58 |
| Hydration... | \$58,303.91 | \$47,522.51 |
| Locks | \$6,140.52 | |
| Pumps | \$5,145.43 | |
| Tires and | \$103,888.18 | \$142,566.34 |
| Bikes | \$34,910,877.69 | \$22,561,568.03 |
| Clothing | \$1,010,112.16 | \$587,537.80 |
| Component: | \$5,482,497.29 | \$2,091,011.92 |

Context menu for Helmets:

- Drill by
- Drill by on New Page
- Drill Up
- Drill Down
- Hide Item
- Keep Only This

As a result, the report will look like this:

| Product/Product.. | CY 2007 | CY 2008 |
|-------------------|---------------------|-----------------|
| ↳ Accessories | <u>\$590,242.59</u> | \$568,844.58 |
| ↳ Bike Racks | \$134,868.47 | \$102,227.69 |
| ↳ Bike Stands | \$18,921.00 | \$20,670.00 |
| ↳ Bottles and... | \$27,761.60 | \$36,513.19 |
| ↳ Cleaners | \$9,777.94 | \$8,629.03 |
| ↳ Fenders | \$19,408.34 | \$27,211.24 |
| ↳ Hydration P... | \$58,303.91 | \$47,522.51 |
| ↳ Locks | \$6,140.52 | |
| ↳ Pumps | \$5,145.43 | |
| ↳ Tires and Tu... | \$103,888.18 | \$142,566.34 |
| ↳ Bikes | \$34,910,877.69 | \$22,561,568.03 |
| ↳ Clothing | \$1,010,112.16 | \$587,537.80 |
| ↳ Components | \$5,482,497.29 | \$2,091,011.92 |

The sum of this group of goods remains unchanged.

We'll use the visual totals to display the real summary of the selected goods:

The screenshot shows the Business Analysis Tool (Report Module) interface. The main window displays a report table with columns for Product/Product.., CY 2007, and CY 2008. The 'Accessories' group is expanded, showing sub-items like Bike Racks, Bike Stands, etc. A context menu is open over the table, listing various actions such as 'Swap Rows and Columns', 'Hide Empty Rows', 'Show Visual Totals' (which is highlighted), 'Show Summary Columns at Begin', and 'Print...'. The interface includes a sidebar with 'Settings', 'List', and 'Reports' sections, and a top menu bar with 'Application', 'Module', 'Reports', 'Report', 'Page', 'View', 'Data', 'Table', 'Tools', and 'Help'.

Now the report will look like this:

| Product/Product.. | ▸ CY 2007 | ▸ CY 2008 |
|-------------------|-----------------|-----------------|
| ▾ Accessories | \$384,215.39 | \$385,340.00 |
| ▸ Bike Racks | \$134,868.47 | \$102,227.69 |
| ▸ Bike Stands | \$18,921.00 | \$20,670.00 |
| ▸ Bottles and... | \$27,761.60 | \$36,513.19 |
| ▸ Cleaners | \$9,777.94 | \$8,629.03 |
| ▸ Fenders | \$19,408.34 | \$27,211.24 |
| ▸ Hydration P... | \$58,303.91 | \$47,522.51 |
| ▸ Locks | \$6,140.52 | |
| ▸ Pumps | \$5,145.43 | |
| ▸ Tires and Tu... | \$103,888.18 | \$142,566.34 |
| ▸ Bikes | \$34,910,877.69 | \$22,561,568.03 |
| ▸ Clothing | \$1,010,112.16 | \$587,537.80 |
| ▸ Components | \$5,482,497.29 | \$2,091,011.92 |

4.6.10 Operation “Show By” of the Context Menu

In the context menu there is an operation “Show By”. Let us look at the example. Assume you have a report of the following structure:

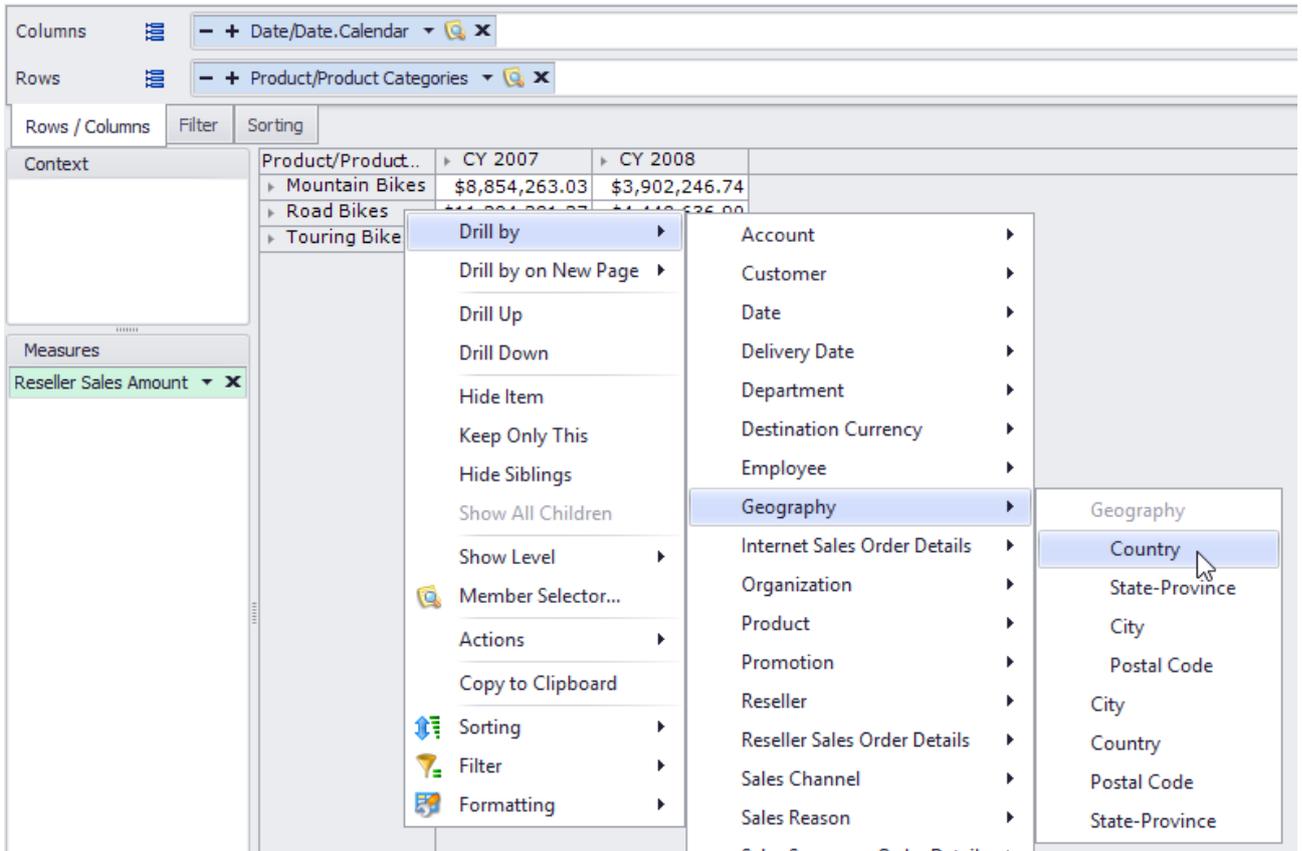
The screenshot shows a report viewer interface. At the top, there are two sections: 'Columns' and 'Rows'. The 'Columns' section has a dropdown menu set to 'Date/Date.Calendar'. The 'Rows' section has a dropdown menu set to 'Product/Product Categories'. Below these sections are three tabs: 'Rows / Columns', 'Filter', and 'Sorting'. The main area of the interface is a table with the following data:

| Product/Product.. | ▸ CY 2007 | ▸ CY 2008 |
|-------------------|-----------------|----------------|
| ▸ Mountain Bikes | \$8,854,263.03 | \$3,902,246.74 |
| ▸ Road Bikes | \$11,294,381.37 | \$4,448,636.90 |
| ▸ Touring Bikes | \$5,403,130.67 | \$5,048,359.55 |

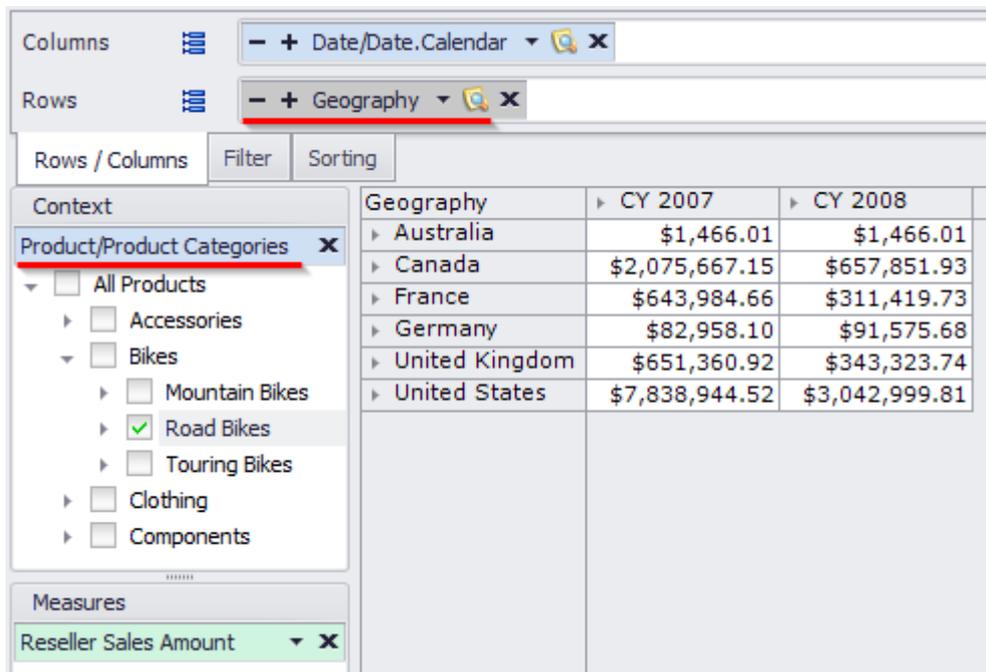
On the left side of the interface, there is a 'Context' menu and a 'Measures' section. The 'Measures' section has a dropdown menu set to 'Reseller Sales Amount'. At the bottom left, there is a 'Highlight' button.

Let us do the “Show By” operation in order to look the sum of sales for a specific product (for example, for “Road Bikes”) by all countries.

Select menu items Show By → Geography → Country:



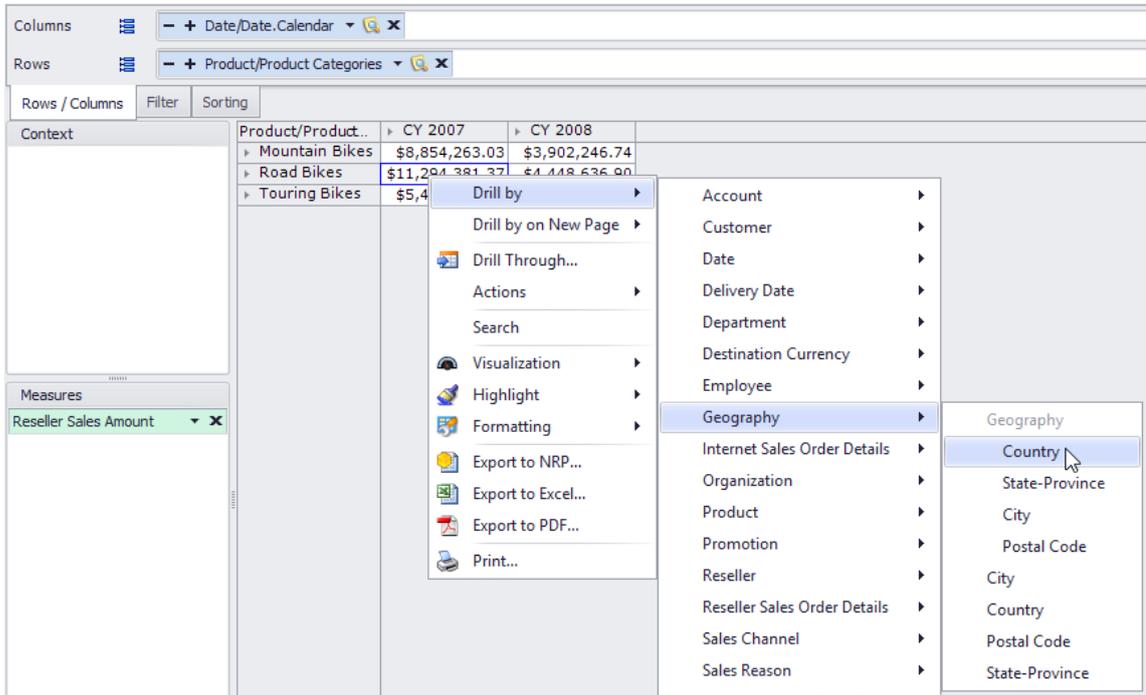
As a result we will have the following report:



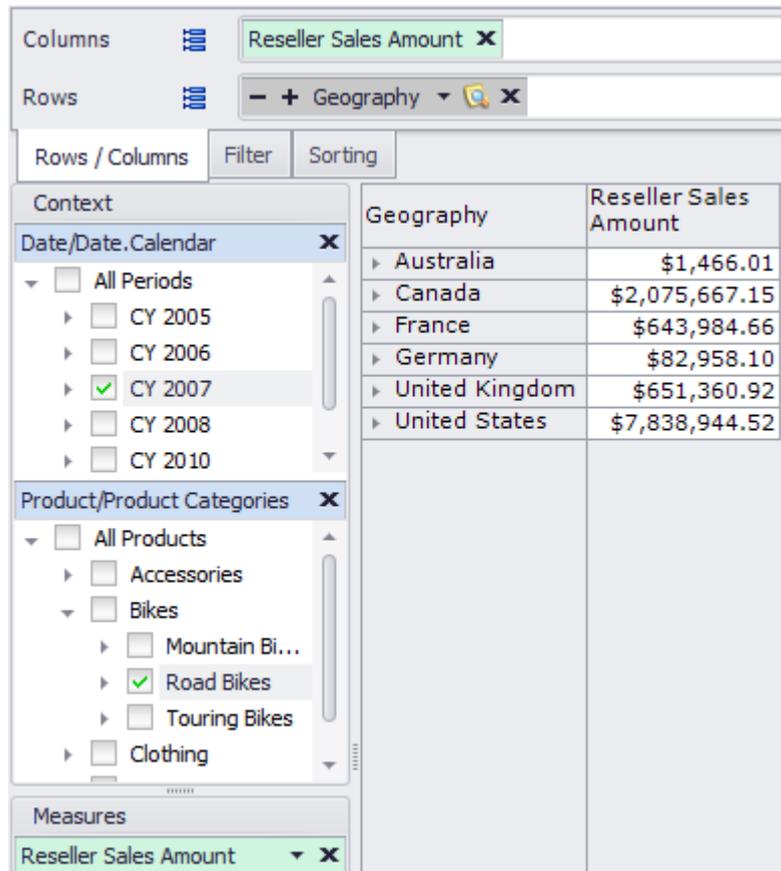
As we can see, we have a report of sales by countries. The “Product” hierarchy has come to the context. If you show the member selector for the context, you will see that the only one item is selected there – the one for which you’ve made the operation “Show By”.

Therefore, we are watching sales only for “Road bikes”.

In a similar way “Show by” is working for table cells. If you perform “Show by” on the cell where “Road Bikes” and “CY 2007” intersect, you will get a report which displays sales in all countries for Road Bikes in the calendar year 2007:



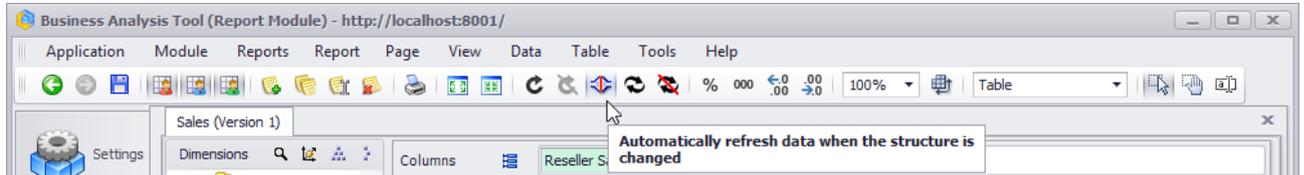
As you may see, the context has 2 items – “Road Bikes” and “CY 2007”:



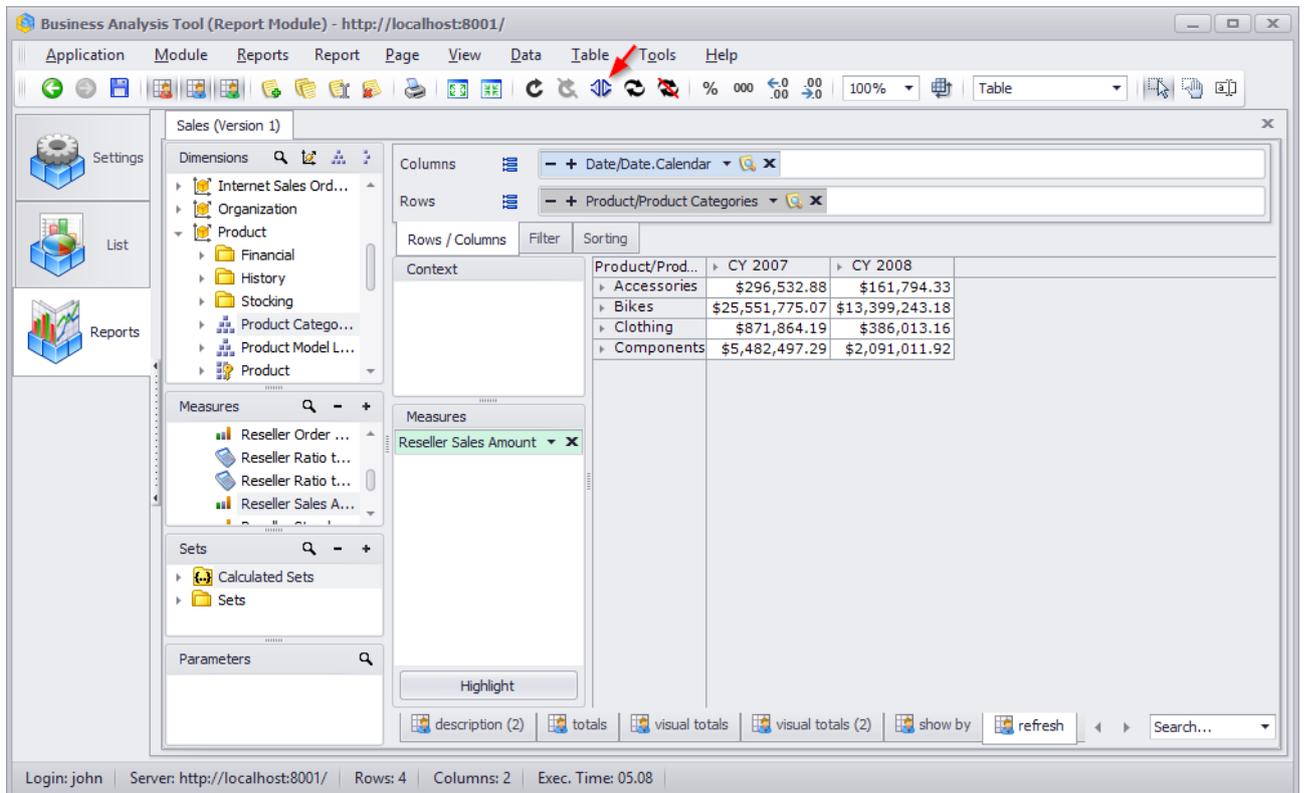
4.7 Data Refreshing on the Page

Each page has an important option – «Automatically change data when the structure is changed». If this option is on, after each change of the page structure the new data will be displayed. If this option is off, you can change the structure of the page first (data will not be automatically refreshed), and then you can manually refresh the data. During the time you make modifications the requests will not be automatically sent to the server.

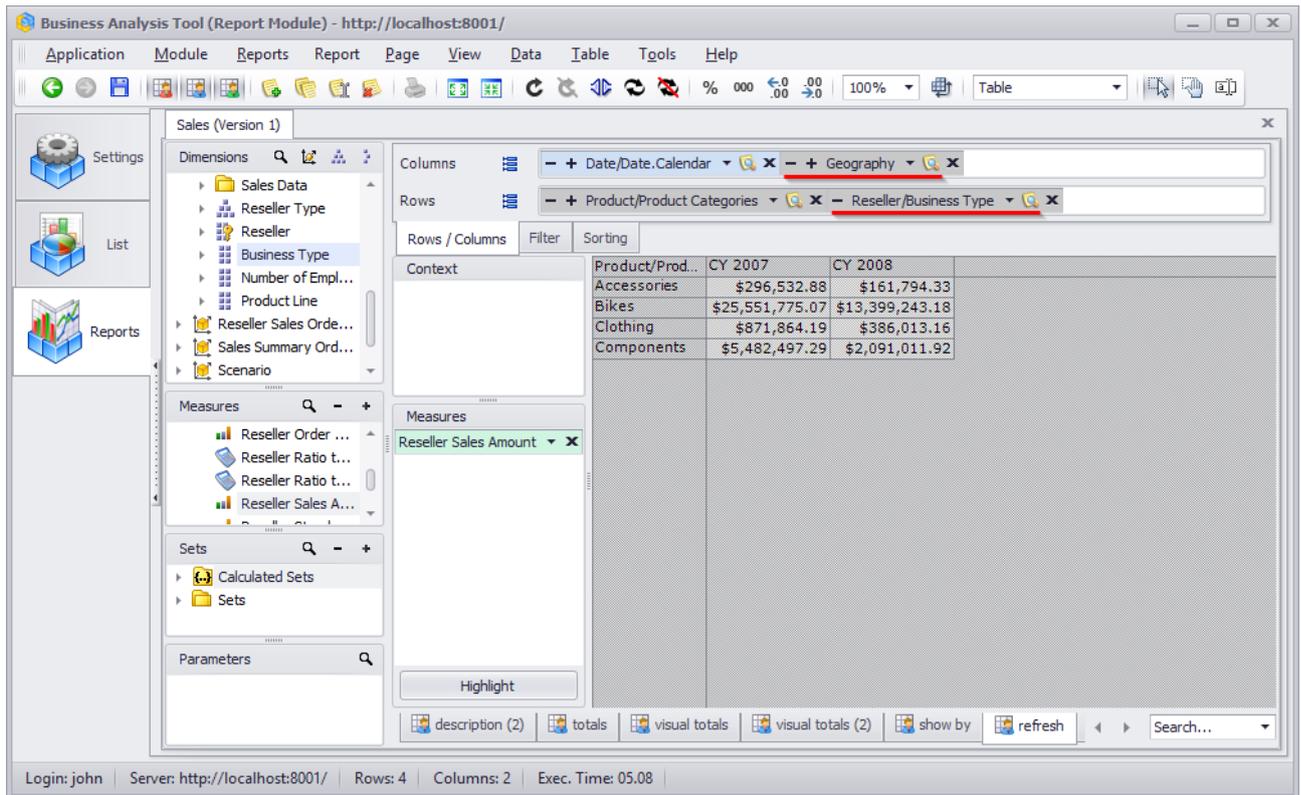
This option is switched on/off by using this button:



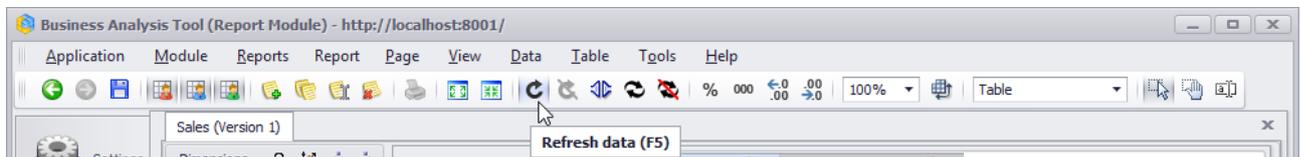
Let's assume we have the following page:



and upper mentioned option is turned off. Let's change the page structure by dragging more dimensions and measures into the designers:



Note: after changing page structure you see old data. This happens because the option is off. If we press «Refresh Data» now:



the data will be refreshed according to the new structure:

The screenshot shows the Business Analysis Tool (Report Module) interface. The main window displays a pivot table titled 'Sales (Version 1)'. The columns are set to 'Date/Date.Calendar' and 'Geography'. The rows are set to 'Product/Product Categories' and 'Reseller/Business Type'. The pivot table shows sales data for CY 2007, broken down by Product Category (Accessories, Bikes, Clothing, Components) and Reseller/Business Type (Specialty Bike Shop, Value Added Reseller, Warehouse). The data is further segmented by Geography (Australia, Canada, France, Germany, Un...). The 'Reseller Sales Amount' is the measure displayed.

| Product/Product Categories | Reseller/Business Type | CY 2007 | | | | |
|----------------------------|------------------------|--------------|----------------|----------------|--------------|-------|
| | | Australia | Canada | France | Germany | Un... |
| Accessories | Specialty Bike Shop | \$4,689.59 | \$8,510.44 | \$4,956.87 | \$2,397.31 | \$ |
| | Value Added Reseller | \$10,832.21 | \$12,713.63 | \$1,483.44 | \$3,481.22 | \$ |
| | Warehouse | \$65.99 | \$36,904.36 | \$20,199.66 | \$14,751.74 | \$1 |
| Bikes | Specialty Bike Shop | \$138,458.60 | \$296,077.35 | \$170,628.06 | \$68,510.43 | \$13 |
| | Value Added Reseller | \$321,025.36 | \$1,790,549.89 | \$402,857.82 | \$260,016.12 | \$76 |
| | Warehouse | \$221,162.00 | \$2,331,038.47 | \$1,221,082.88 | \$491,987.09 | \$79 |
| Clothing | Specialty Bike Shop | \$7,946.81 | \$31,718.36 | \$12,119.86 | \$4,604.46 | \$ |
| | Value Added Reseller | \$16,637.50 | \$42,392.92 | \$7,772.35 | \$9,569.84 | \$2 |
| | Warehouse | \$1,538.17 | \$103,782.11 | \$46,692.27 | \$29,439.24 | \$3 |
| Components | Specialty Bike Shop | \$10,534.18 | \$20,078.34 | \$11,243.36 | \$11,419.36 | \$ |
| | Value Added Reseller | \$50,485.49 | \$205,970.68 | \$67,163.83 | \$52,629.50 | \$9 |
| | Warehouse | \$64,055.06 | \$771,568.87 | \$407,603.63 | \$150,060.37 | \$27 |

Do not forget to switch on this option for further reading.

There is also a possibility to «Refresh data on all pages» at once. It will take time dependently on the number and complexity of pages.

4.8 Charting

A chart is a part of a report. It may be not displayed, displayed alone or with a table. The view mode of a chart can be changed on the toolbar or in the “Table / View Mode” menu:

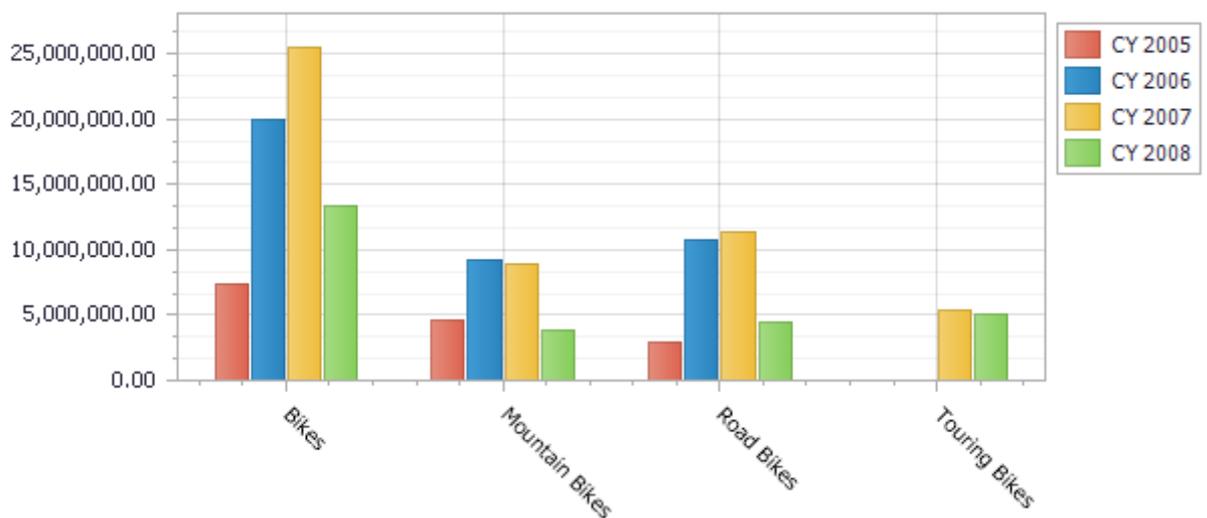
The screenshot shows the Business Analysis Tool (Report Module) interface. The main window displays a report titled "Sales (Version 1)". The report includes a table with columns for "Product/Product Categories" and years "CY 2005", "CY 2006", "CY 2007", and "CY 2008". The table data is as follows:

| Product/Product Categories | CY 2005 | CY 2006 | CY 2007 | CY 2008 |
|----------------------------|----------------|-----------------|-----------------|-----------------|
| Bikes | \$7,395,348.63 | \$19,956,014.67 | \$25,551,775.07 | \$13,399,243.18 |
| Mountain Bikes | \$4,545,336.51 | \$9,190,838.09 | \$8,854,263.03 | \$3,902,246.74 |
| Road Bikes | \$2,850,012.12 | \$10,765,176.58 | \$11,294,381.37 | \$4,448,636.90 |
| Touring Bikes | | | \$5,403,130.67 | \$5,048,359.55 |

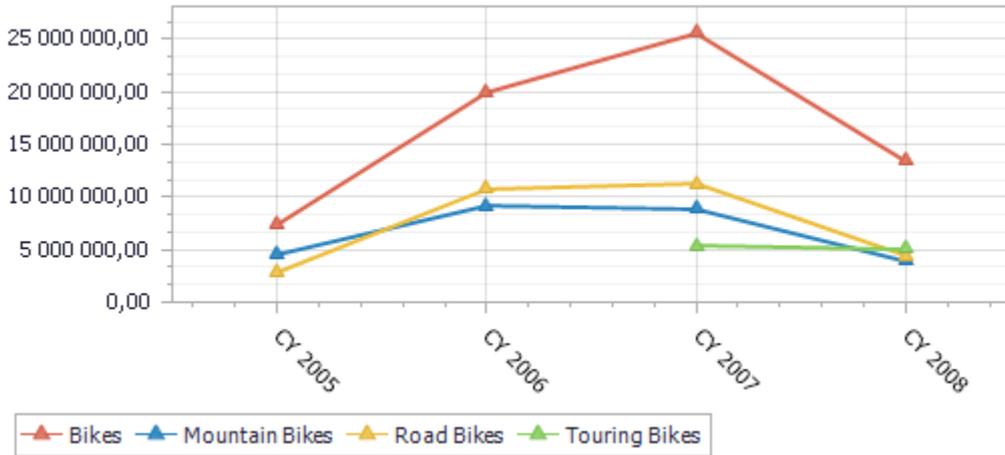
Below the table is a bar chart showing "Reseller Sales Amount" for each product category across the years. The chart is a grouped bar chart with "Bikes", "Mountain Bikes", "Road Bikes", and "Touring Bikes" on the X-axis and sales amount on the Y-axis. The chart is currently set to "Table And Chart" view. The "Measures" panel is highlighted, showing "Reseller Sales Amount" as the measure, "Bar" as the chart type, and "columns" as the argument.

In the lower left corner you may see the chart parameters:

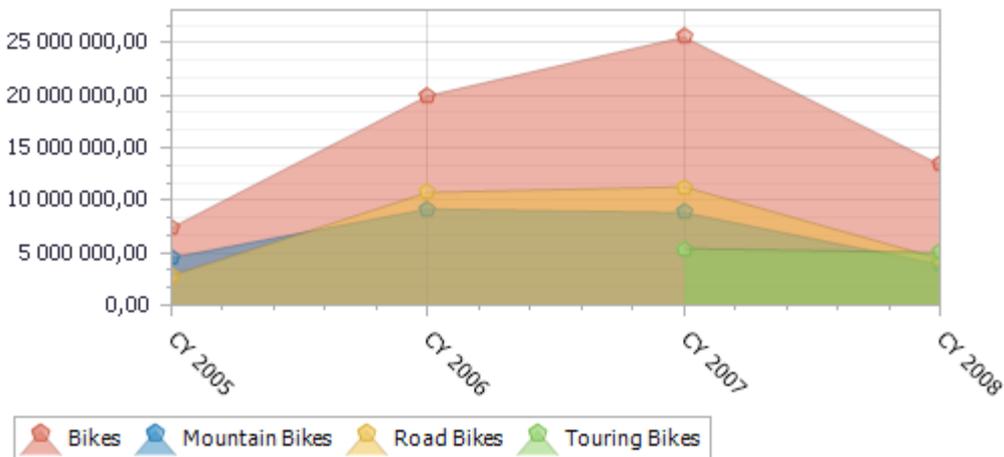
- **Layout:** influences where the chart will be displayed – below the table or to the right of it.
- **Argument.** The chart displays the data which are in the table. On the screenshot above you may see “Argument = Columns”. It means that the columns of the table will be placed on the X axis. If we change the argument on “Rows”, we would see this:



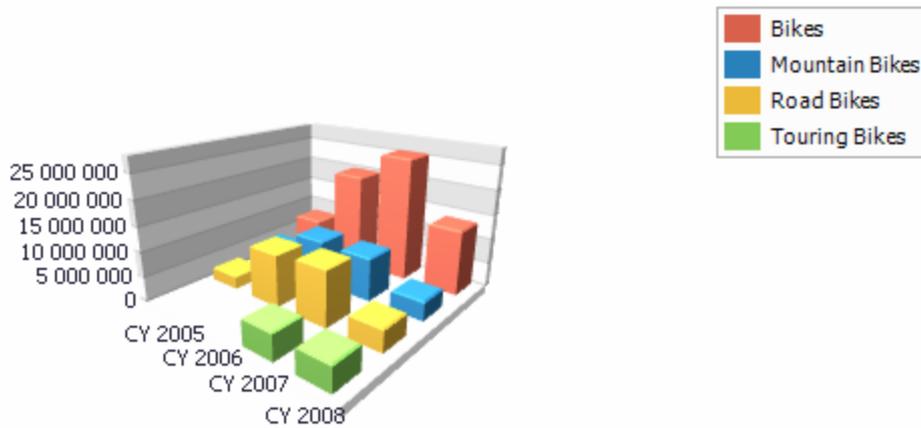
- **Type.** This parameter sets up the type of the chart. Now you see bars, which can be changed onto lines:



area:



3D chart:

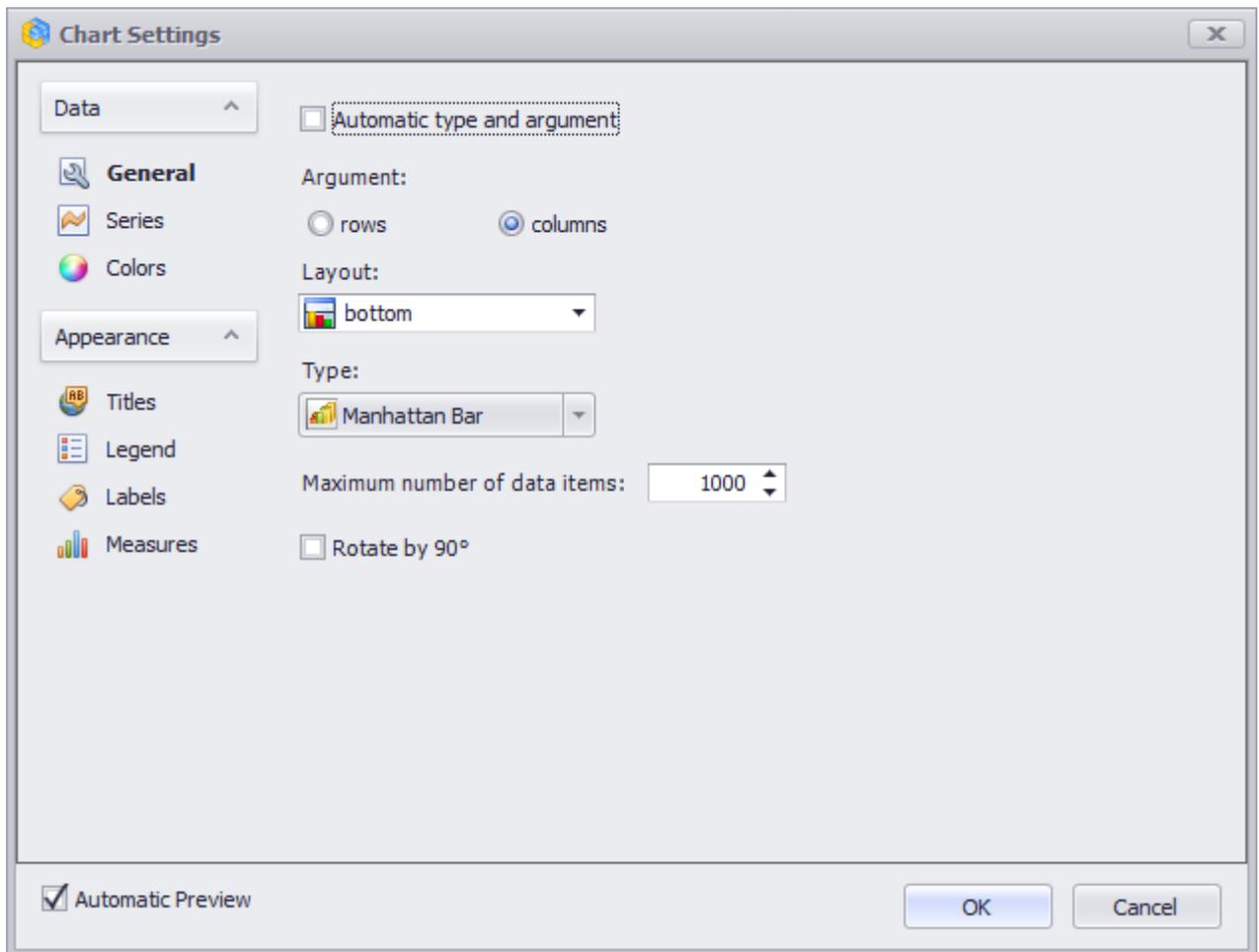


and other types of chart. We propose you to make some experiments with the type of a chart on your own.

- **Properties.** Among the properties are: “Legend” (you see it in the top right corner), “Rotate by 90°” and “Labels” (labels are the numeric labels which are displayed over bars or lines).
- **Settings.**

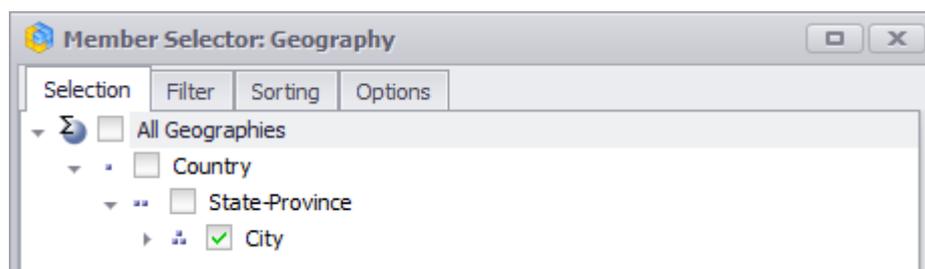
4.8.1 Chart Settings

If you press the button “Settings” in the bottom of the page, you will see the following form:



4.8.1.1 Maximum Number of Data Items

On the “Data” tab you may set the maximum number of items which can be displayed in the chart. Let us create the following example: put all the cities of the hierarchy “Geography”:



On the columns we will display years, the measure “Reseller Sales Amount” will be displayed in the table. Switch on the chart:

The screenshot shows a BI tool interface with the following components:

- Columns:** Date/Date.Calendar
- Rows:** Geography
- Measures:** Reseller Sales Amount
- Table:**

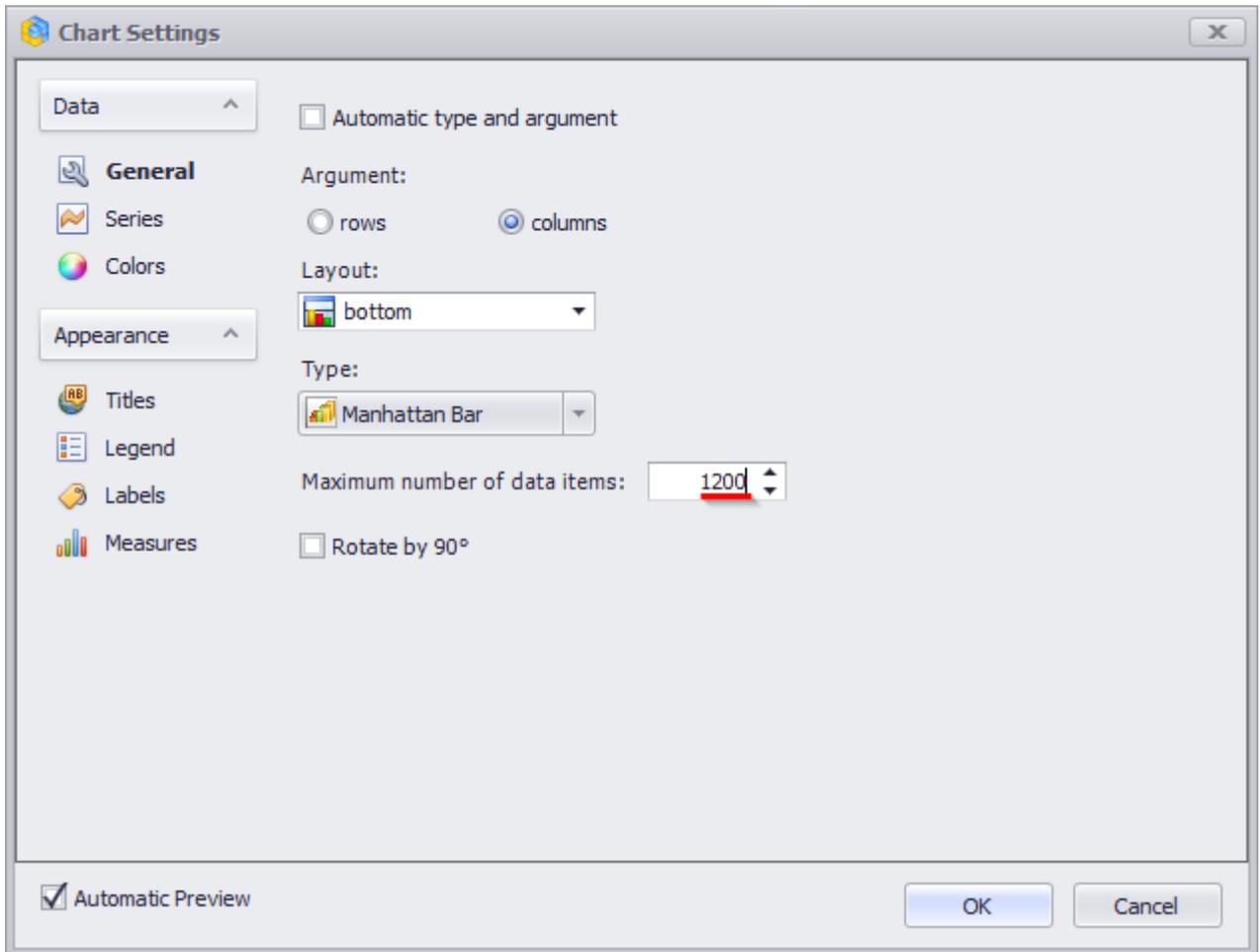
| Geography | CY 2005 | CY 2006 | CY 2007 | CY 2008 |
|--------------|---------|---------|--------------|--------------|
| Darlinghu... | | | \$4,665.14 | \$2,672.46 |
| Lane Cove | | | \$82,703.79 | \$66,292.72 |
| Lavender... | | | \$168,955.65 | \$109,435.51 |
| Malabar | | | | \$2,860.88 |
| Matrville | | | \$3,386.25 | \$3,085.74 |
| Milsons P... | | | \$89,960.91 | \$55,446.83 |
| Newcastle | | | \$56,990.80 | \$48,599.33 |
| North Ryde | | | \$18,093.04 | \$27,438.45 |
| North Sy... | | | \$7,684.97 | \$14,608.49 |
| Rhodes | | | \$118,610.91 | \$133,851.58 |
| Silverwater | | | \$3,179.53 | \$5,226.94 |
| Sydney | | | \$52,851.60 | \$52,669.29 |
| Hawthorne | | | \$21,039.37 | \$18,032.11 |
- Chart Properties:**
 - Manhattan Bar
 - bottom
 - Argument: rows columns
 - legend labels
 - rotate by 90°

Too much data: 1163 elements.

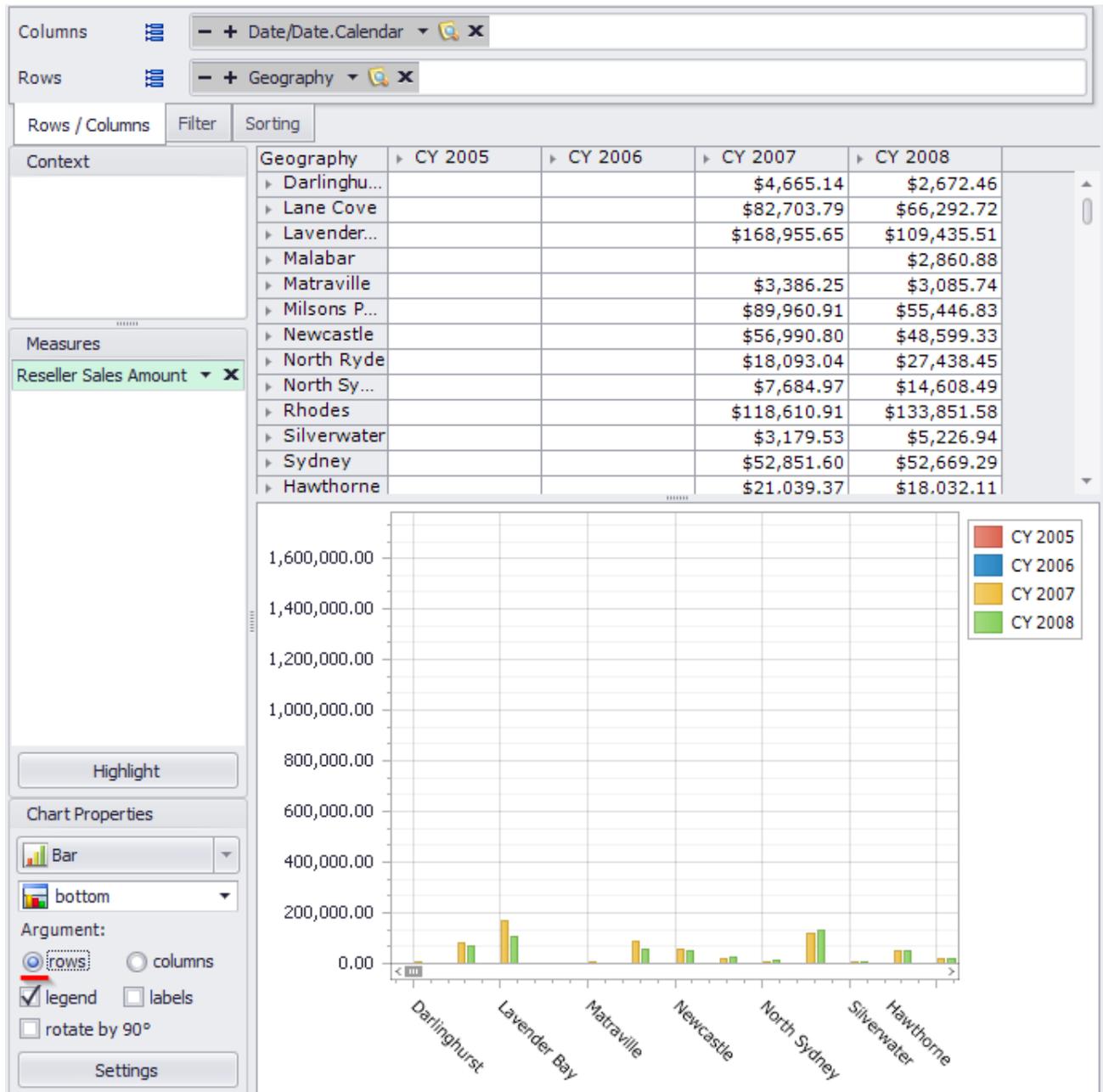
[Draw chart \(it can take some time\)](#)

[Change chart settings](#)

As you may see, there are 1163 elements on the chart. This is a big amount – bigger than the allowed number in the settings. In order to change the settings, press the button “Settings” and change the setting onto 1200:



After pressing «OK» you will see the following:



Pay attention to the fact that the chart can be painted for a long time in the case if there is a huge number of elements on the chart. In order to avoid waiting you can set up maximum amount of elements, so that the chart will be painted only when the number of elements is less than the maximum amount.

As you may see, when «Too much data» message is displayed, there are two available options: “Draw Chart” and “Change chart settings”:

Too much data: 1163 elements.

[Draw chart \(it can take some time\)](#)

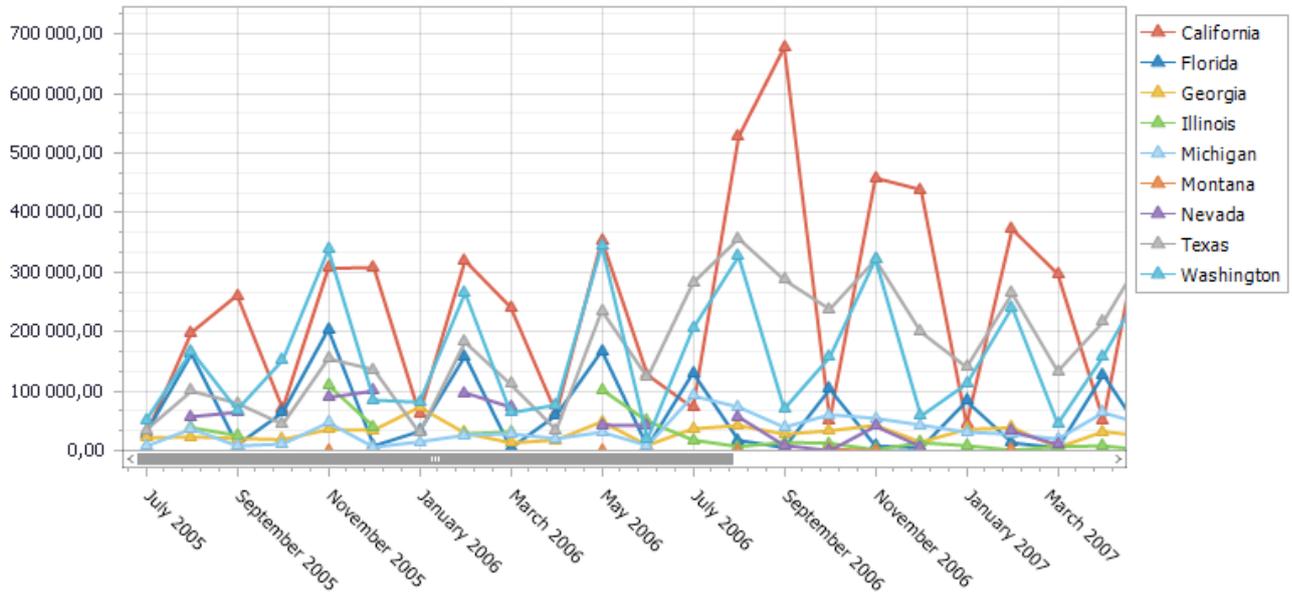
[Change chart settings](#)

If you press the link “Draw chart”, the chart will be drawn but the settings will not change. The chart will be visible until you change the structure of the report.

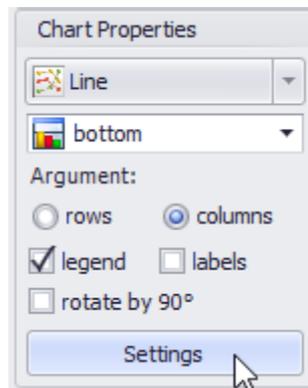
The link “Change chart settings” does the same as the button “Settings” in the bottom left corner of the page – it will open the form for changing the chart settings.

4.8.1.2 Scrolling

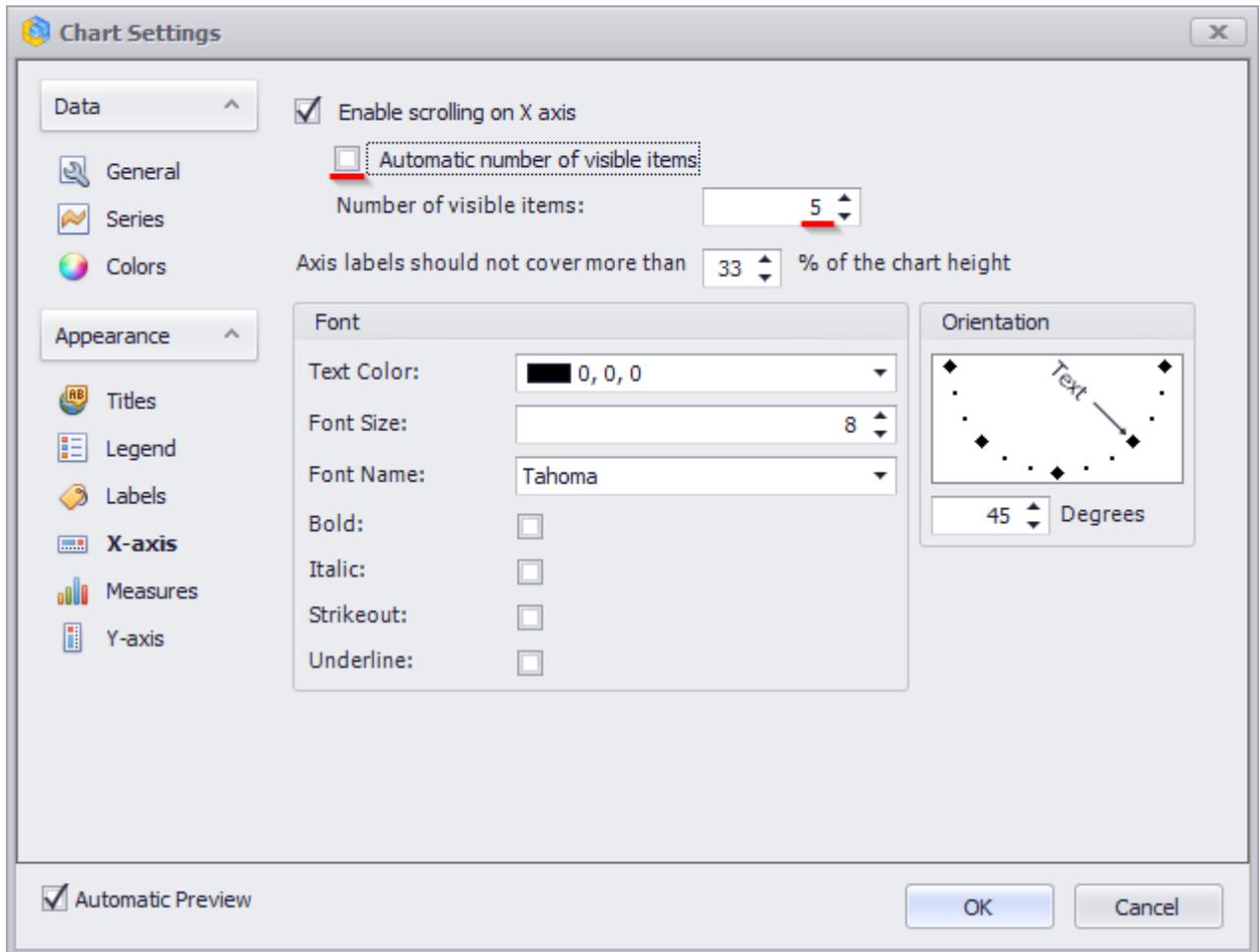
Sometimes we have a situation when the X axis contains too much elements. As a result, the chart becomes unreadable:



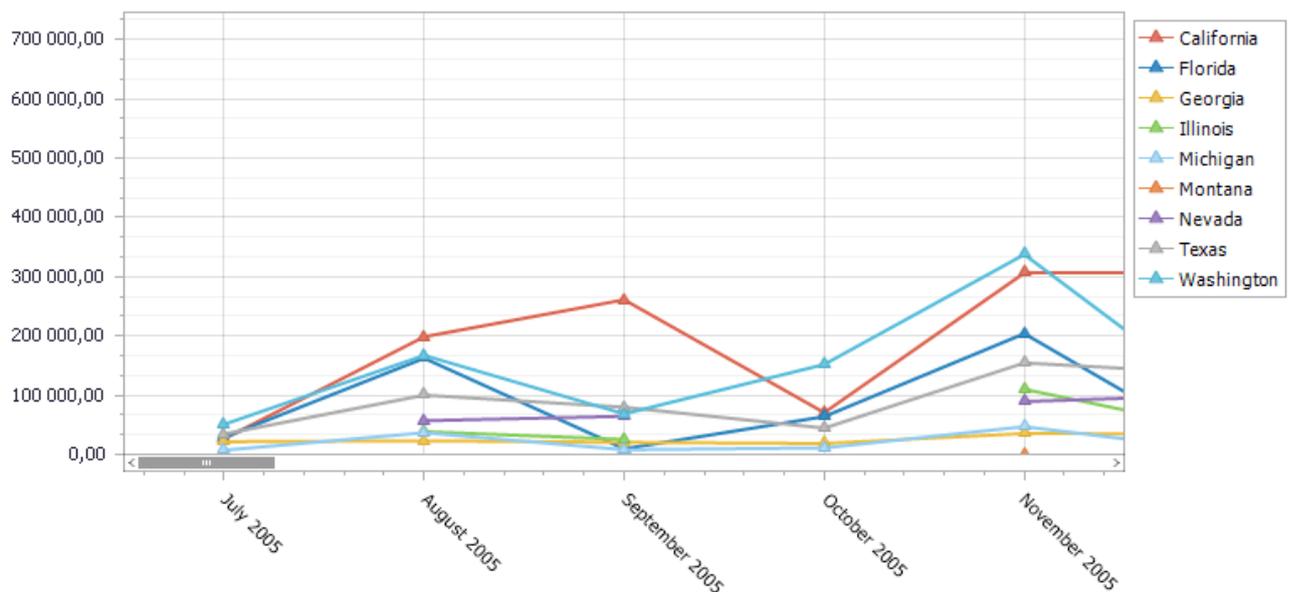
In order to correct the situation open the settings dialog:



On the tab “X-axis” switch on the scrolling on the X axis and set the number of elements equal to 20:



After this action, the chart will become much more readable and you will be able to scroll it using the scrolling on the X axis:



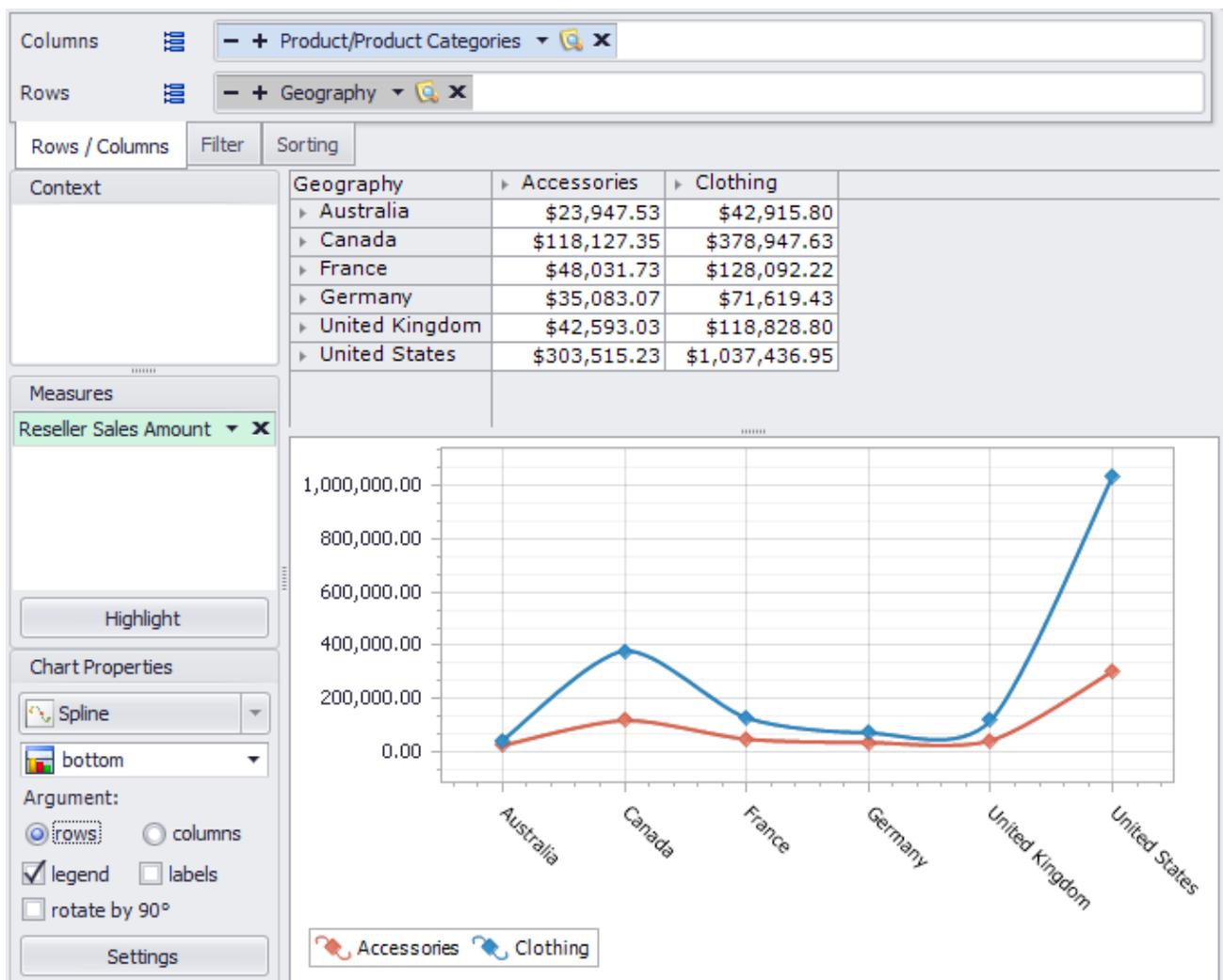
4.8.1.3 Minimal and Maximal Values for a Chart

There are several ways how we can set up the axis range on the Y axis:

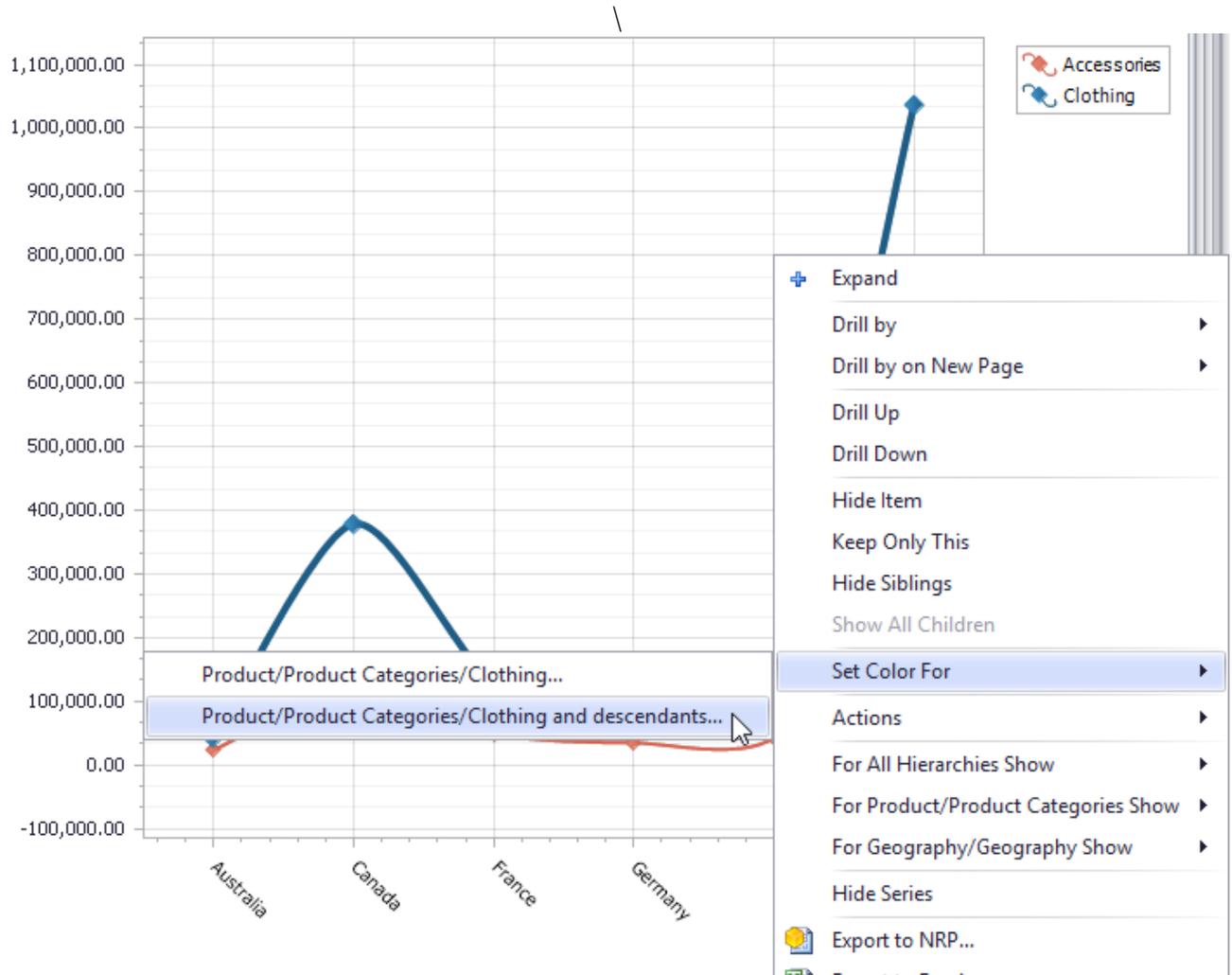
- Full;
- From minimum to maximum;
- From some [Value1] to maximum;
- From minimum to [Value2];
- From [Value1] to [Value2].

4.8.1.4 Coloring Series

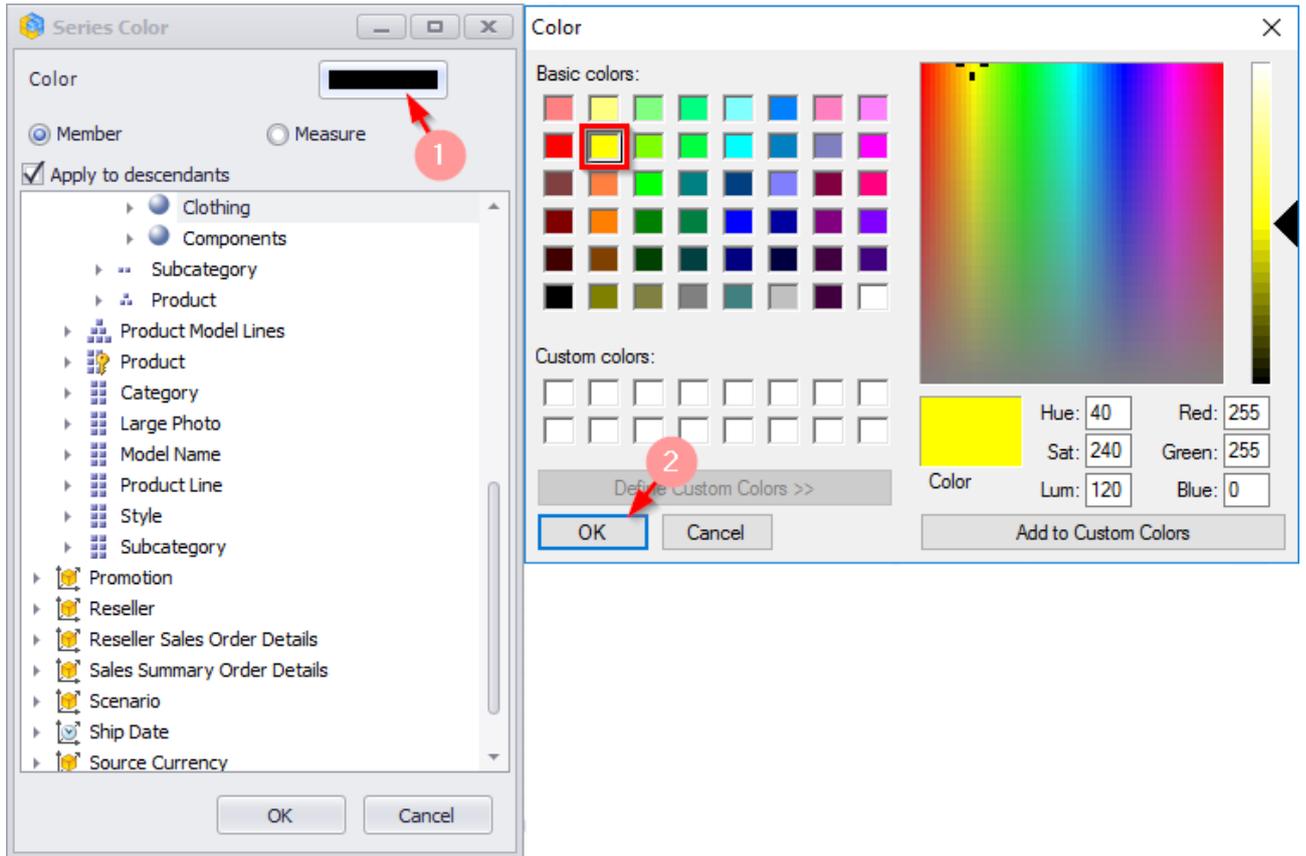
Let us look at the example of setting the colors for chart series. Let us assume we have the following table with a chart:



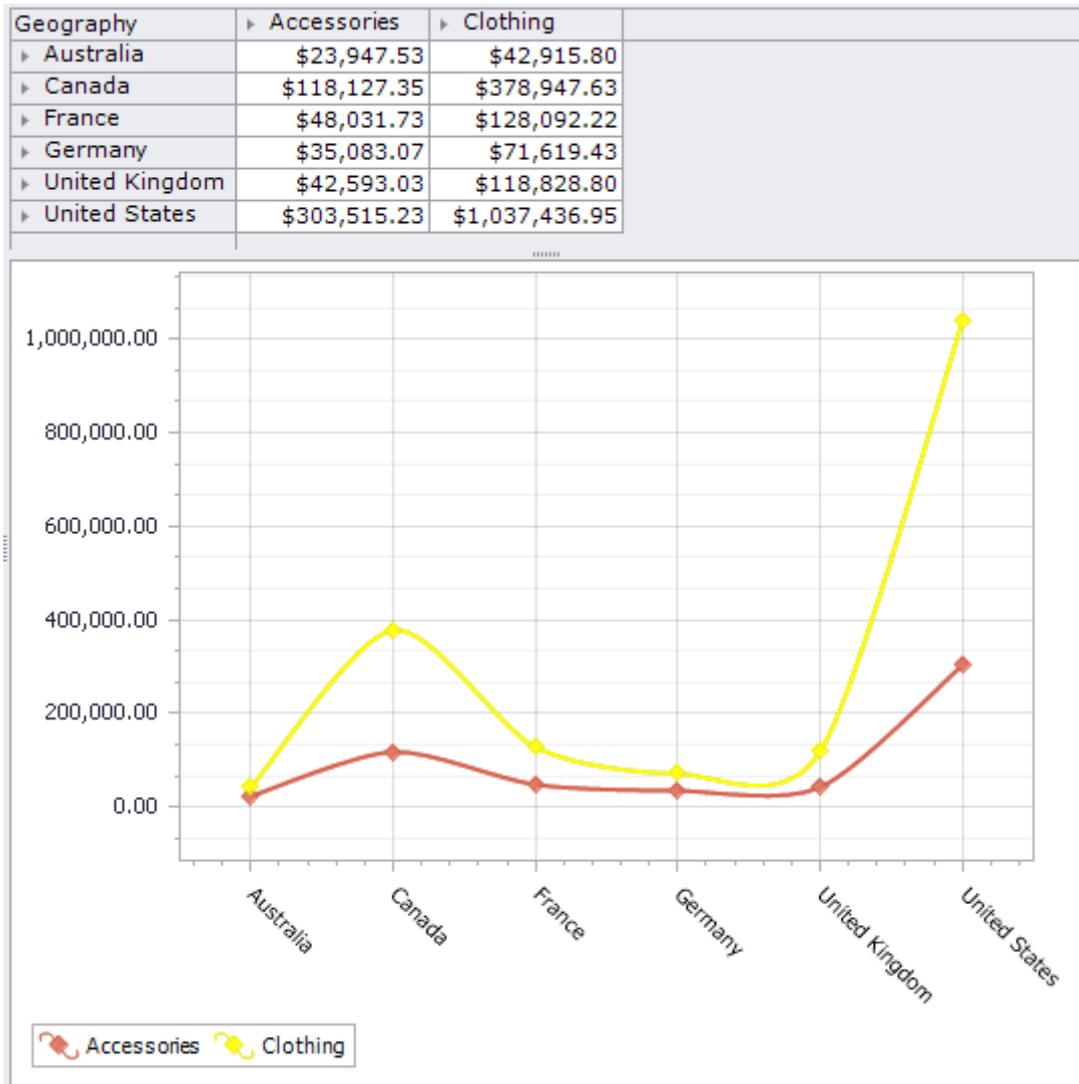
Let us color the whole category Accessories and all the subcategories into green, and let us color “Closing” into yellow. Click the right mouse button on the series or on the item in the legend:



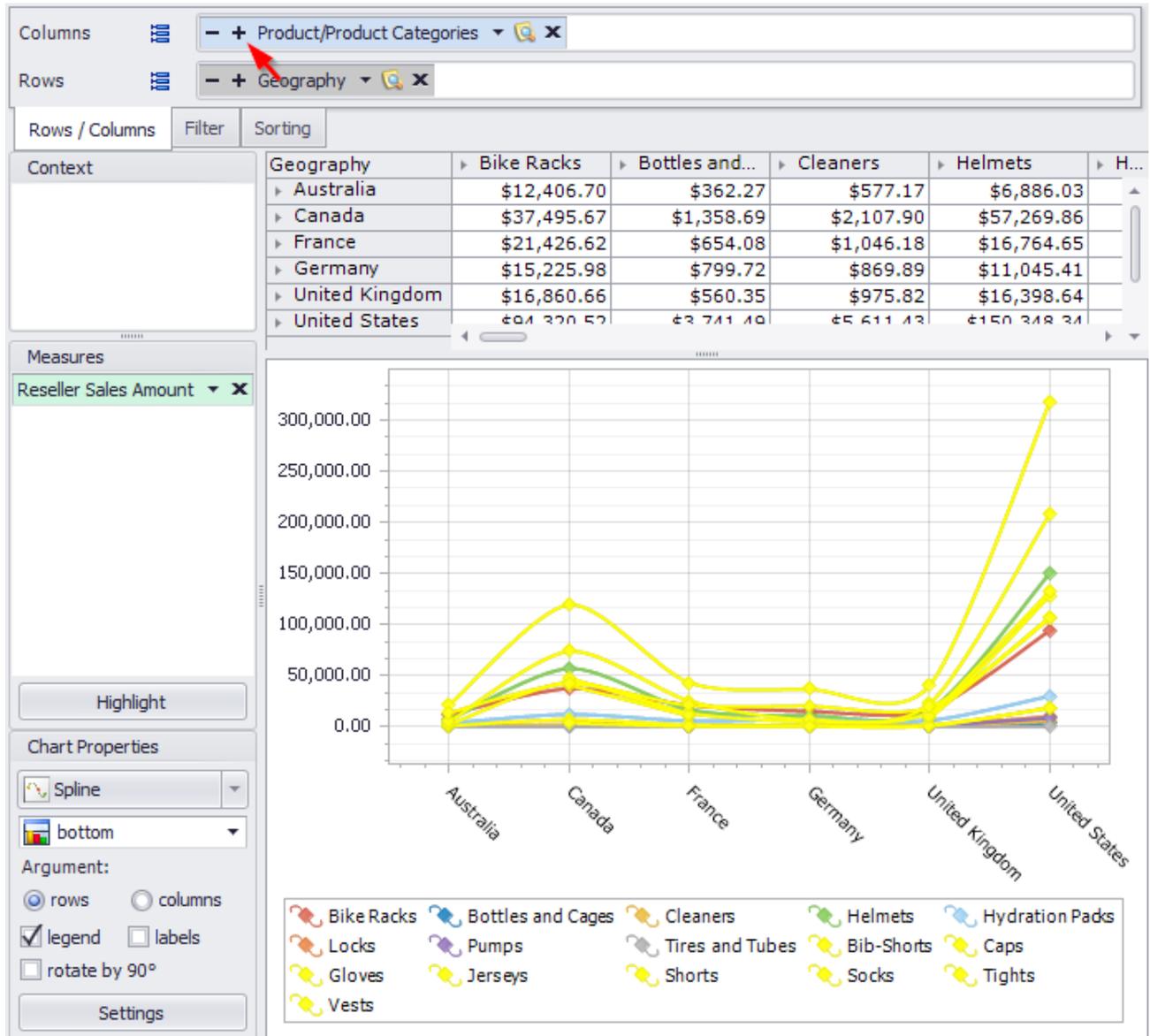
In this window do the following:



As a result we will get the following chart:

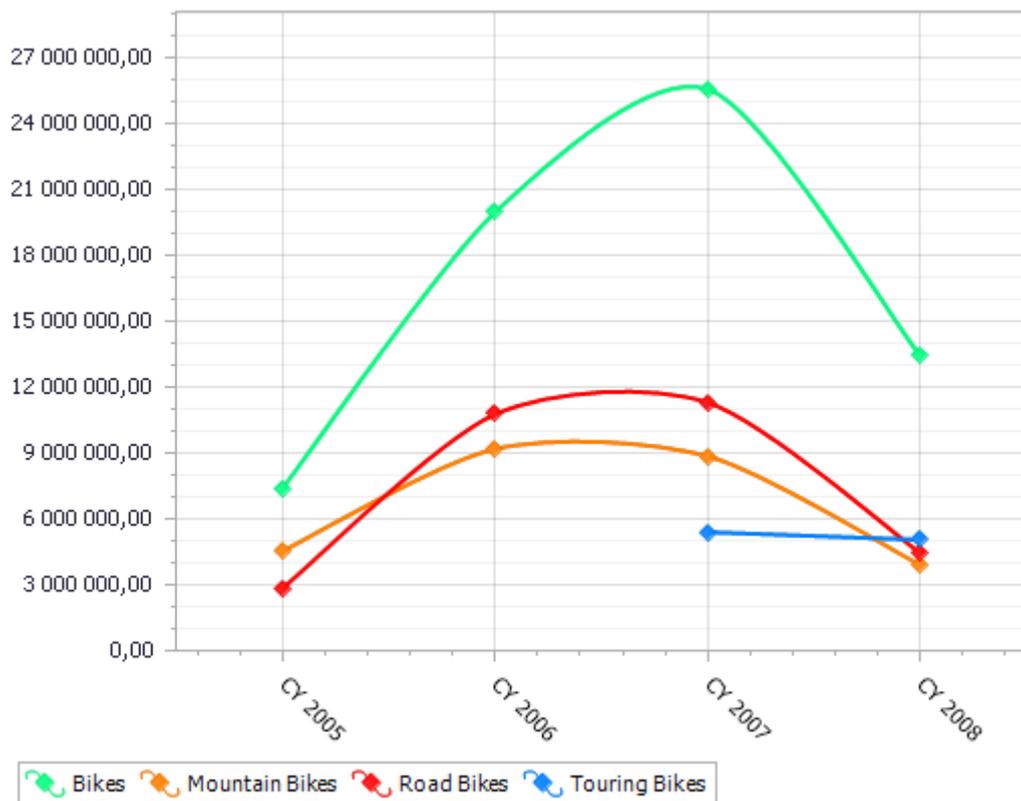
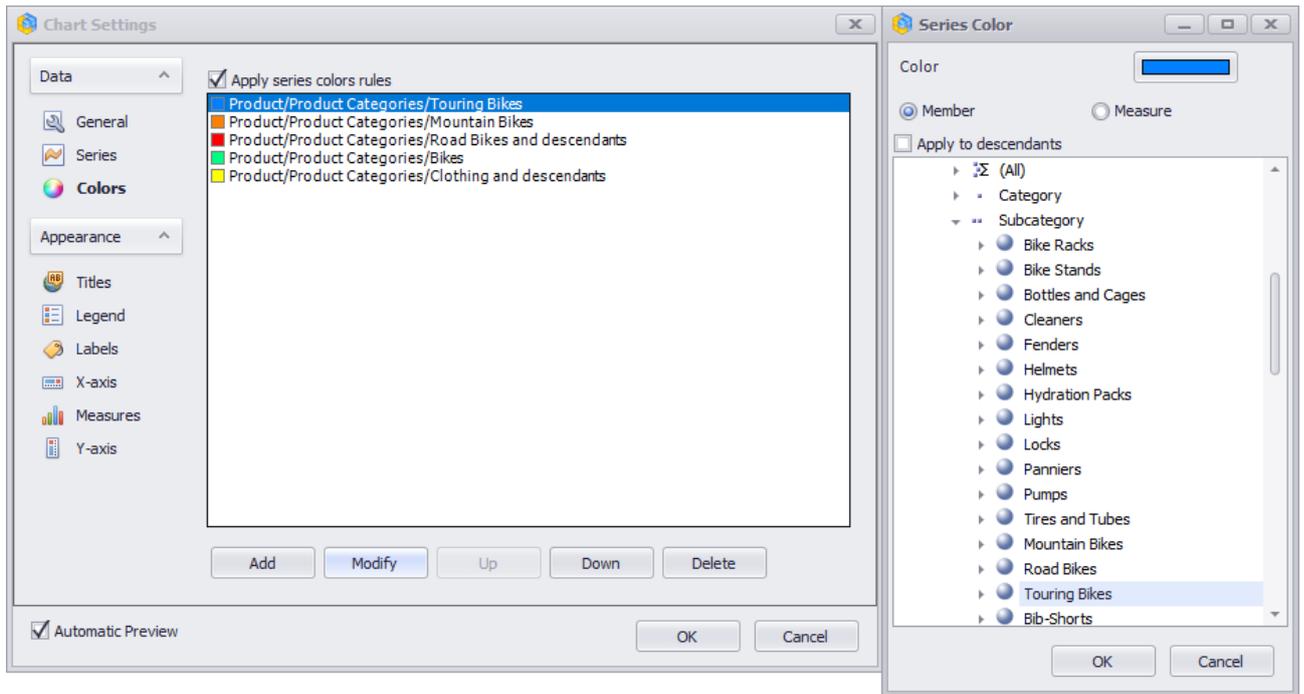


Let us move one level below:



Each category and all elements below it now have its own color which can be changed.

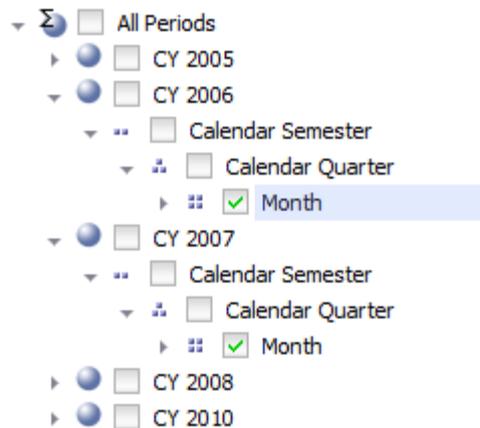
You can also set the color for every element of a group:



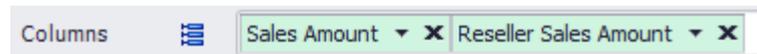
4.8.2 Settings for Displaying of Measures

Let us look at how several measures are displayed on a chart on the following example of a report:

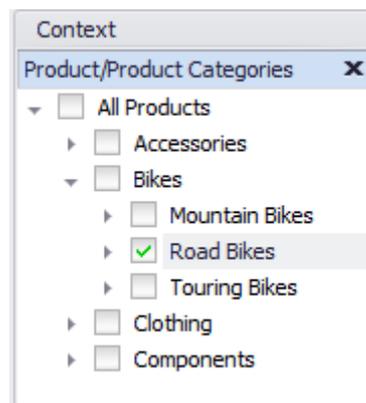
On the rows we have all months of the years 2006 and 2007 selected:



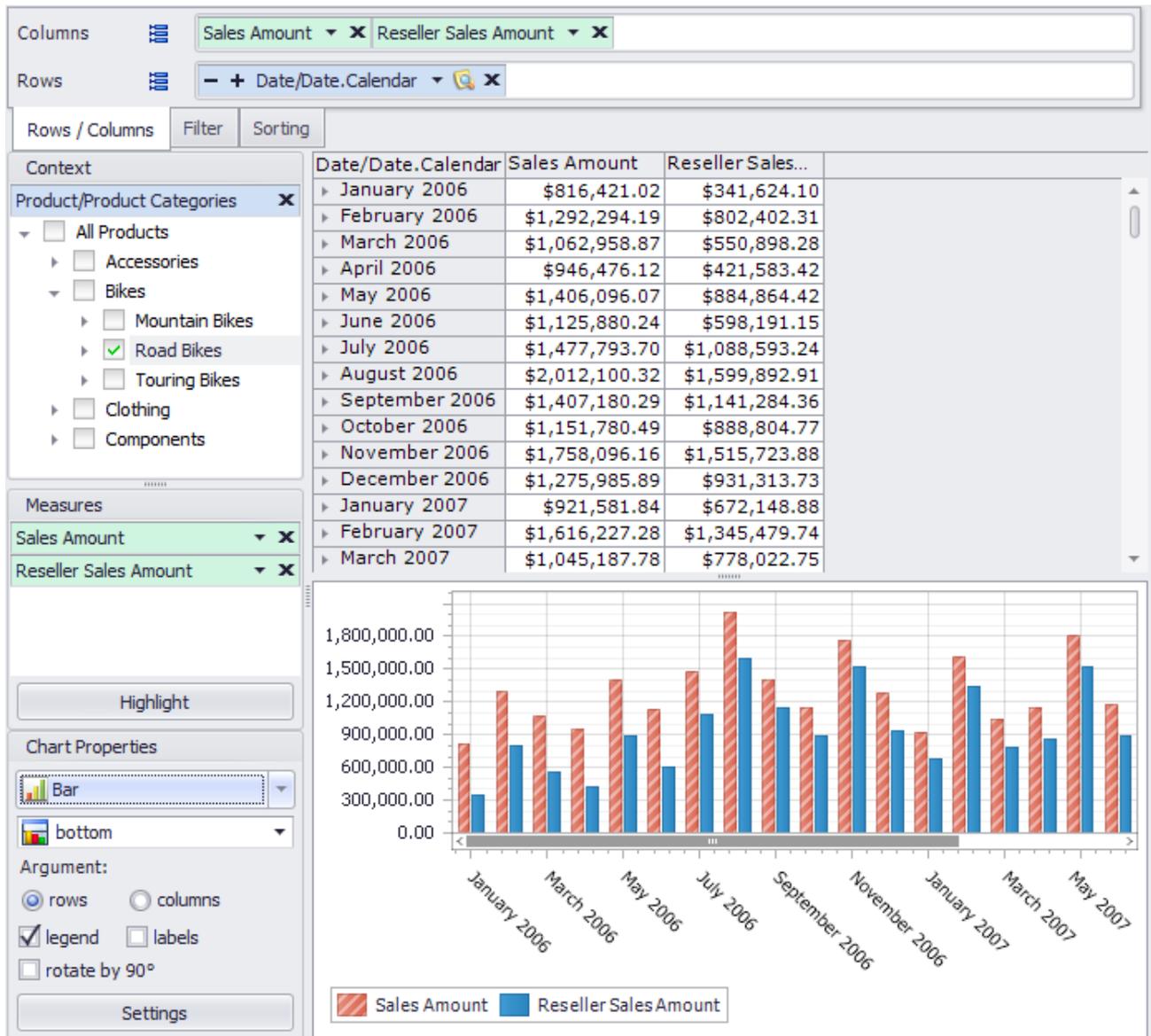
On the columns there are “Sales Amount” and “Reseller Sales Amount”:



In the context we have “Road Bikes” selected:



The report shows us the sales amount of road bikes by month of the years 2006 and 2007:



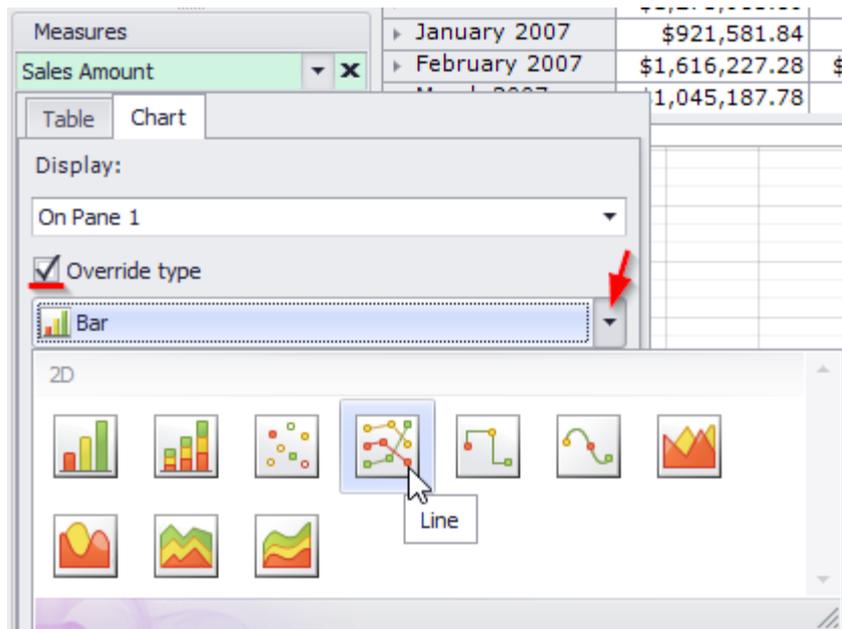
But in case we have 2 measures displayed on the chart it is difficult to analyze how the reseller sales amount change. It would be nice if the summary sales are displayed by line over the bars.

Let us change the way how the “Sales Amount” is displayed. Press the button on the “Sales Amount” control which opens the settings for this measure, as shown on the picture:

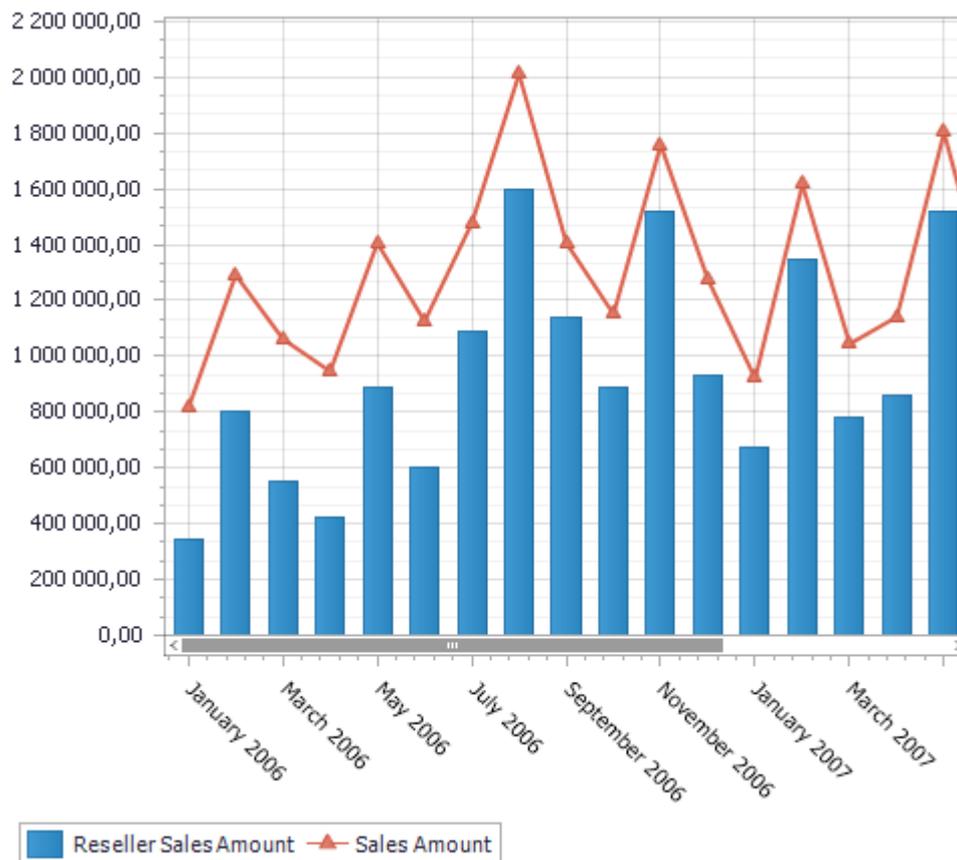
The screenshot shows a software interface with a 'Context' pane on the left and a 'Measures' pane below it. The 'Context' pane shows a tree view of product categories, with 'Road Bikes' selected. The 'Measures' pane shows 'Sales Amount' selected. A red circle highlights the dropdown arrow on the 'Sales Amount' measure name. A dialog box is open over the 'Sales Amount' measure, showing settings for display location and type. The dialog has 'Table' and 'Chart' tabs, with 'Table' selected. The 'Display:' section has a dropdown menu set to 'On Pane 1' and an 'Override type' checkbox. Below this is a dropdown menu for the display type, currently set to 'Bar'. At the bottom of the dialog are 'Apply' and 'Cancel' buttons.

| Context | Date/Date.Calendar | Sa |
|----------------------------|--------------------|----|
| Product/Product Categories | January 2006 | |
| All Products | February 2006 | \$ |
| Accessories | March 2006 | \$ |
| Bikes | April 2006 | |
| Mountain Bikes | May 2006 | \$ |
| Road Bikes | June 2006 | \$ |
| Touring Bikes | July 2006 | \$ |
| Clothing | August 2006 | \$ |
| Components | September 2006 | \$ |
| | October 2006 | \$ |
| | November 2006 | \$ |
| | December 2006 | \$ |
| | January 2007 | |
| | February 2007 | \$ |
| | March 2007 | \$ |

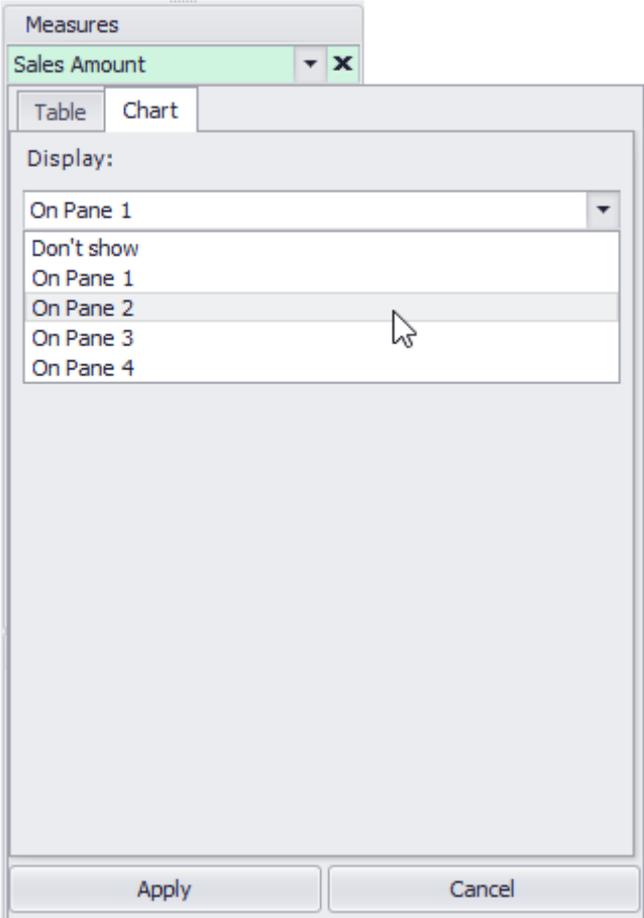
Check the box “Override type” and select the line type:



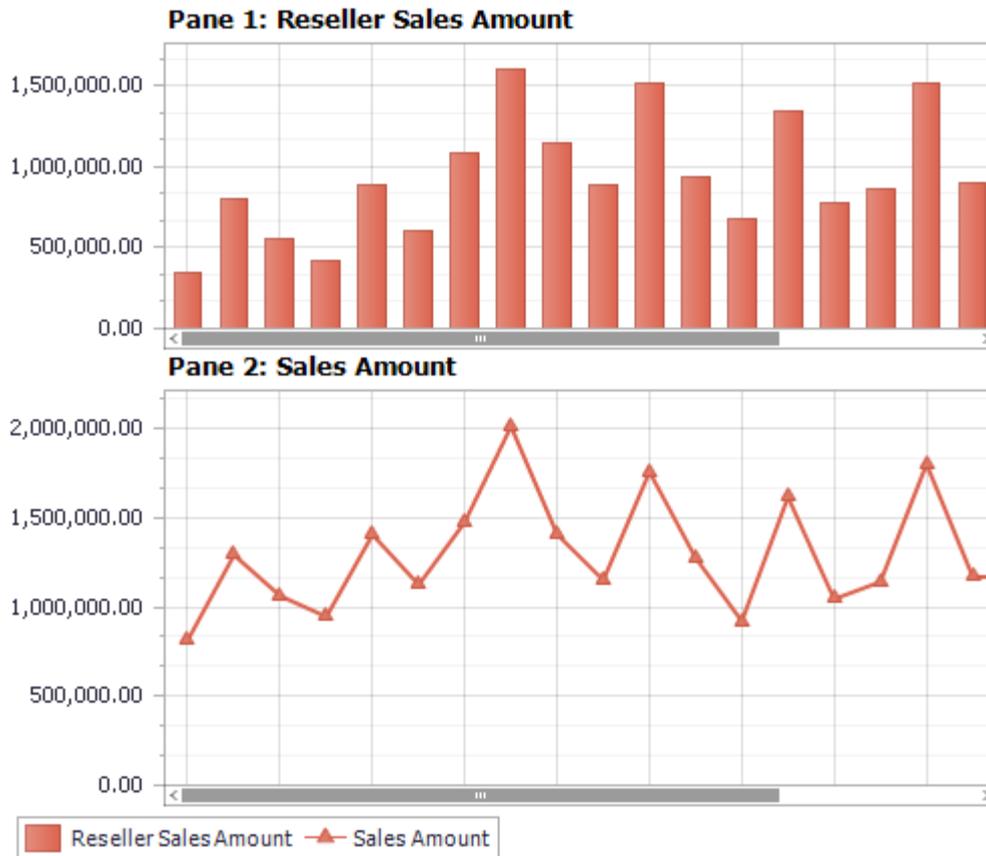
Press the button “Apply”. The chart now looks like this:



You can also display charts for different measures on different panes. In the same settings dialog for “Sales Amount” set the parameter “Display” equal to “On Pane 2”:



Press the button “Apply”. You will get the following chart:



You can display each measure on one of four available panes, or you can also select «Don't show» option in order to avoid displaying a measure on the chart.

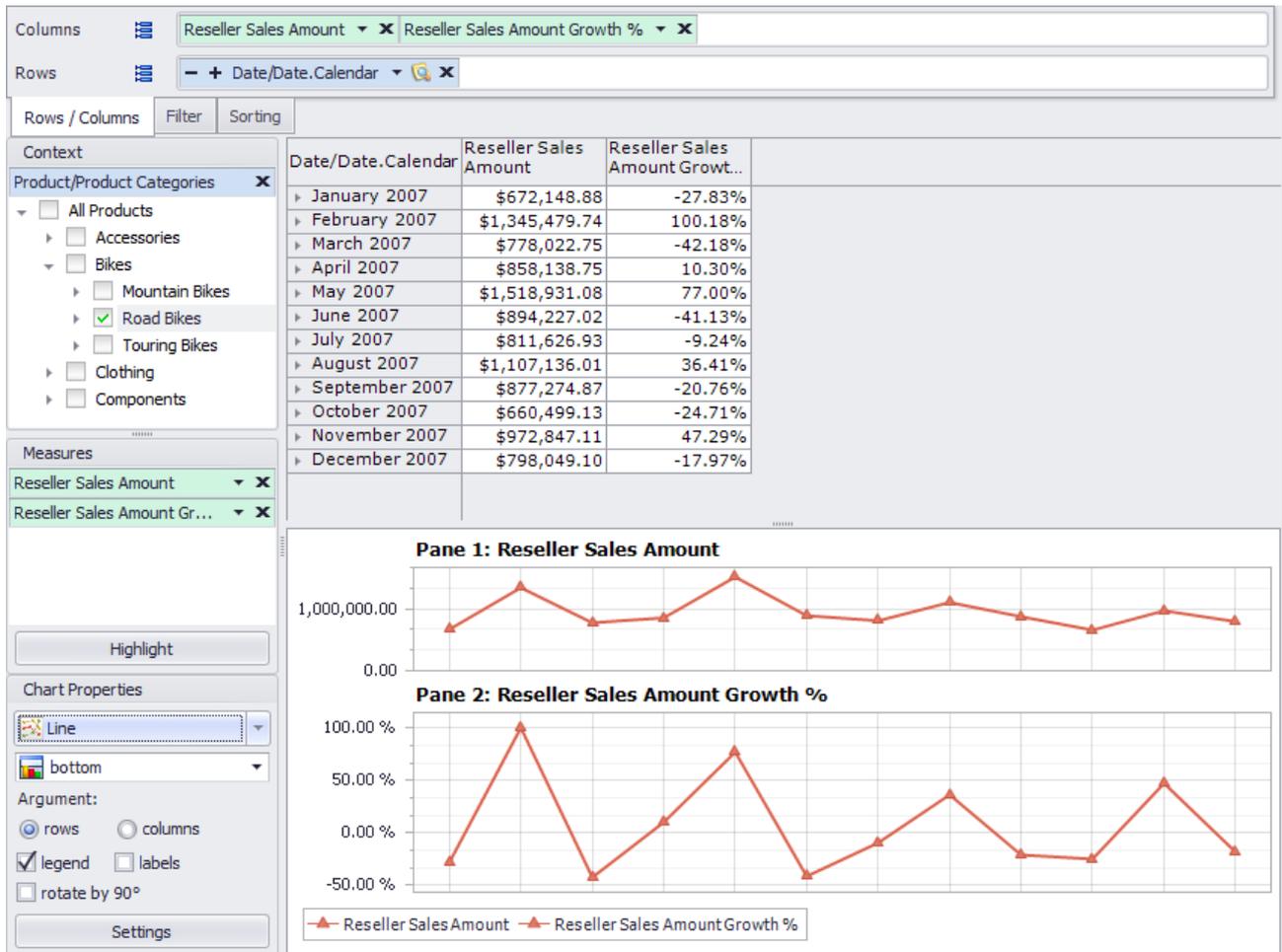
Let us look at the chart where one of the measures displays the percentage growth. Let us select all the months of the year 2007 on rows:

- Σ All Periods
- ▶ CY 2005
- ▶ CY 2006
- ▼ CY 2007
 - ▼ Calendar Semester
 - ▼ Calendar Quarter
 - ▶ Month
- ▶ CY 2008
- ▶ CY 2010

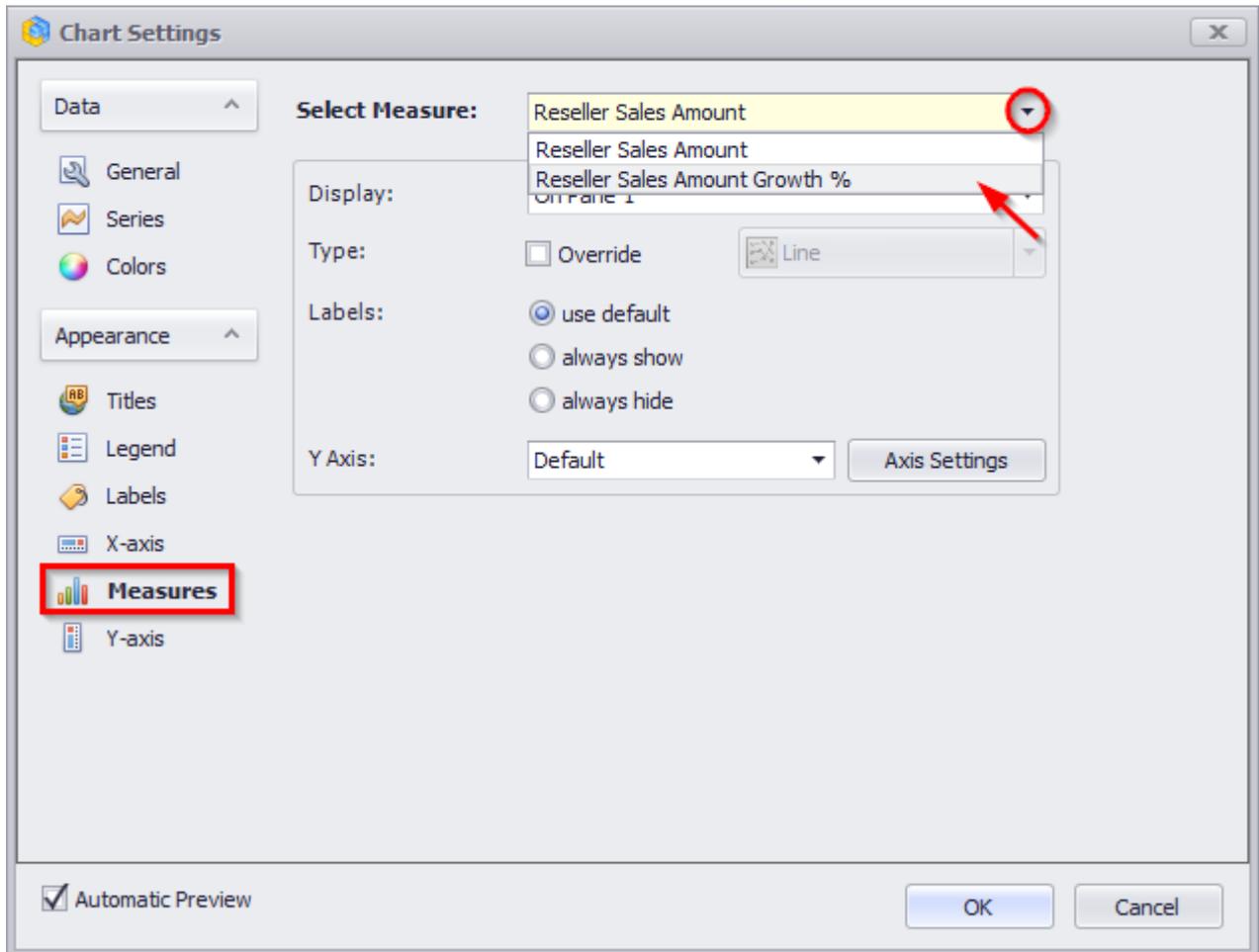
Put the measures “Reseller Sales Amount” and “Reseller Sales Amount Growth%” onto columns:



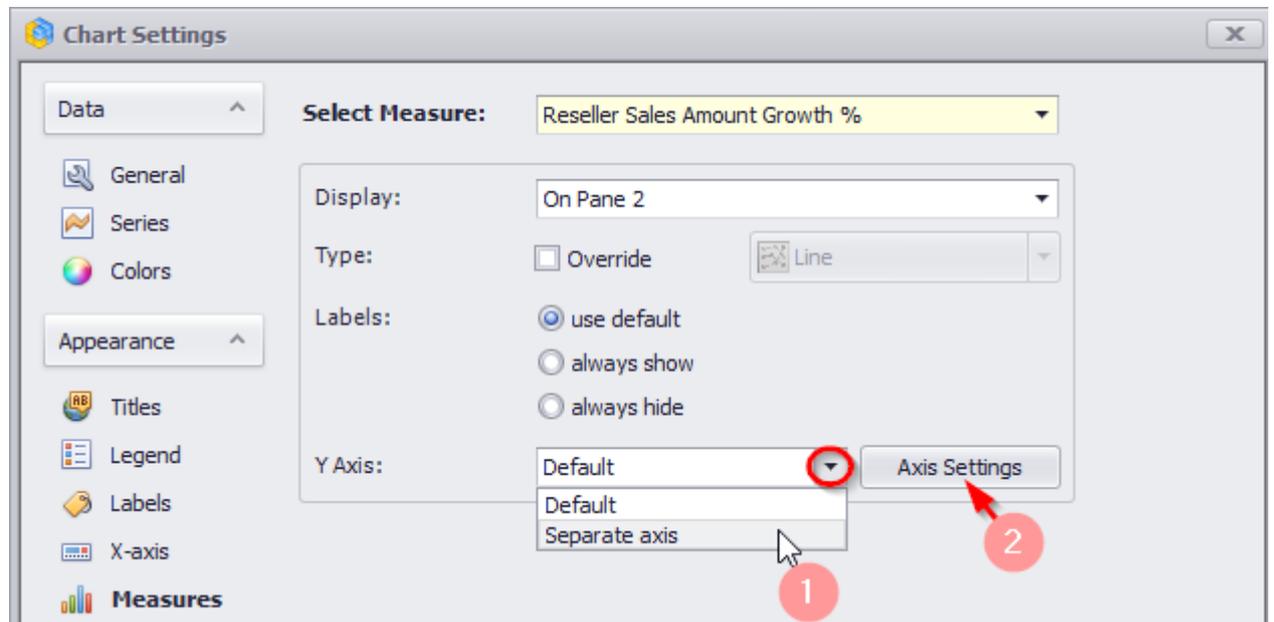
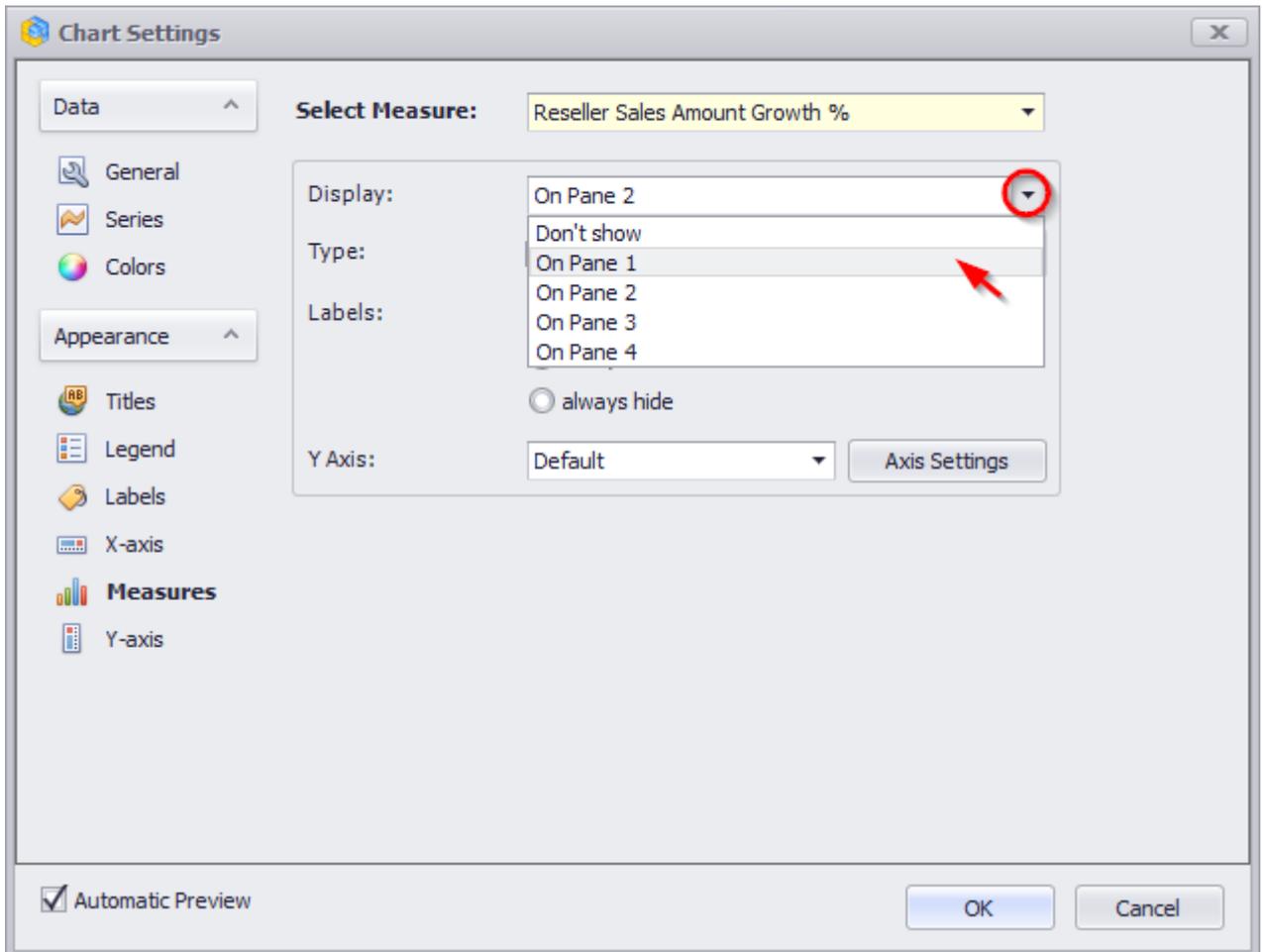
Put "Road Bikes" into context:



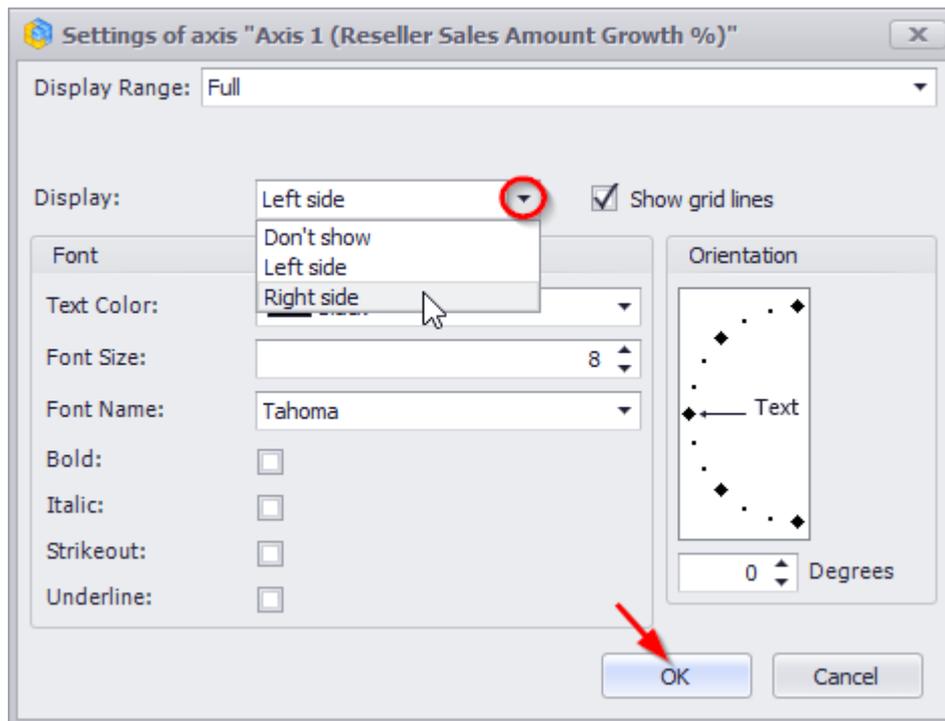
Let us show how to make a separate axis for the measure “Reseller Sales Amount Growth %”:



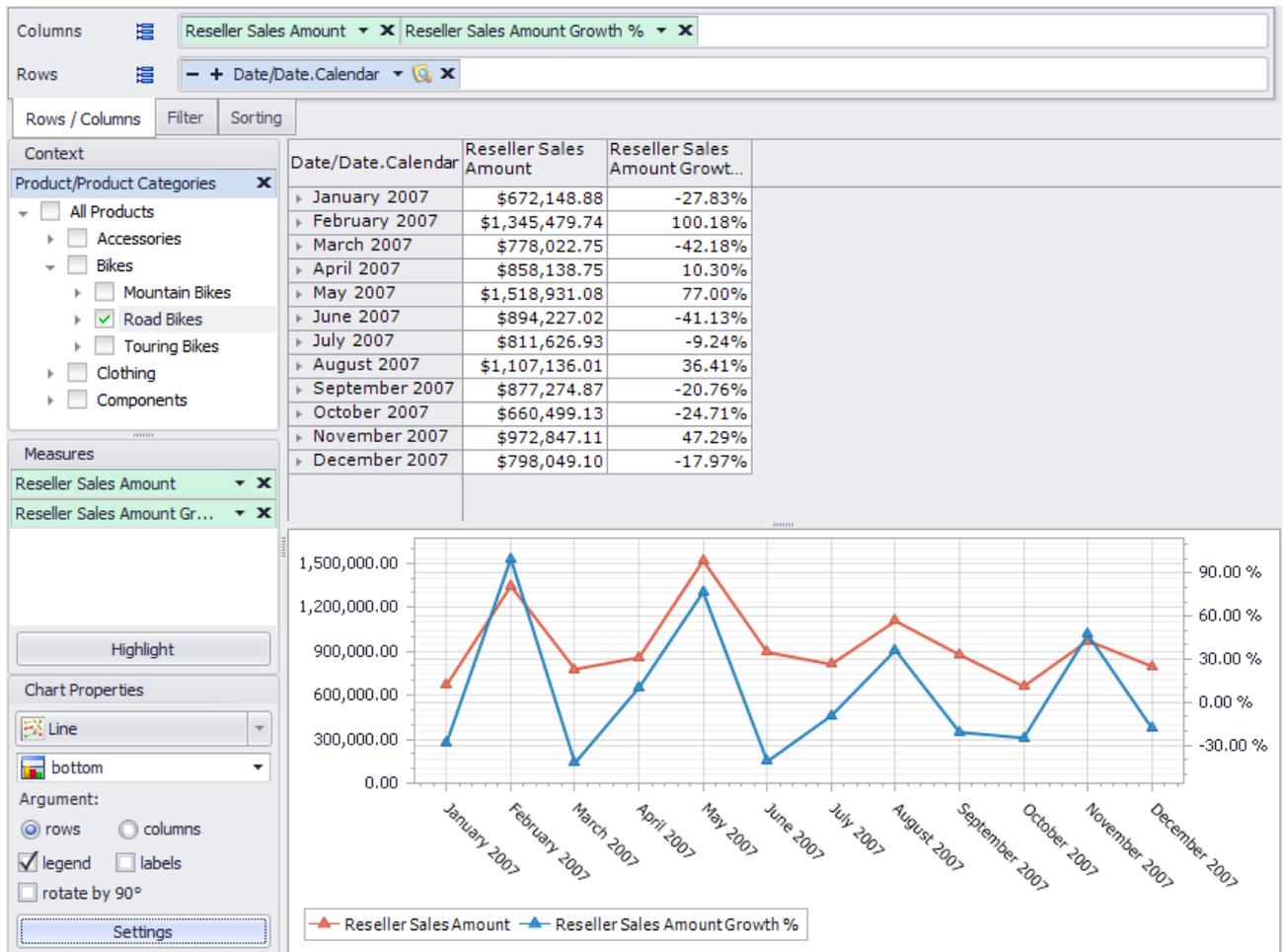
Put it onto pane 1 (the same pane where the measure “Reseller Sales Amount” is):



Now let us set up the axis:



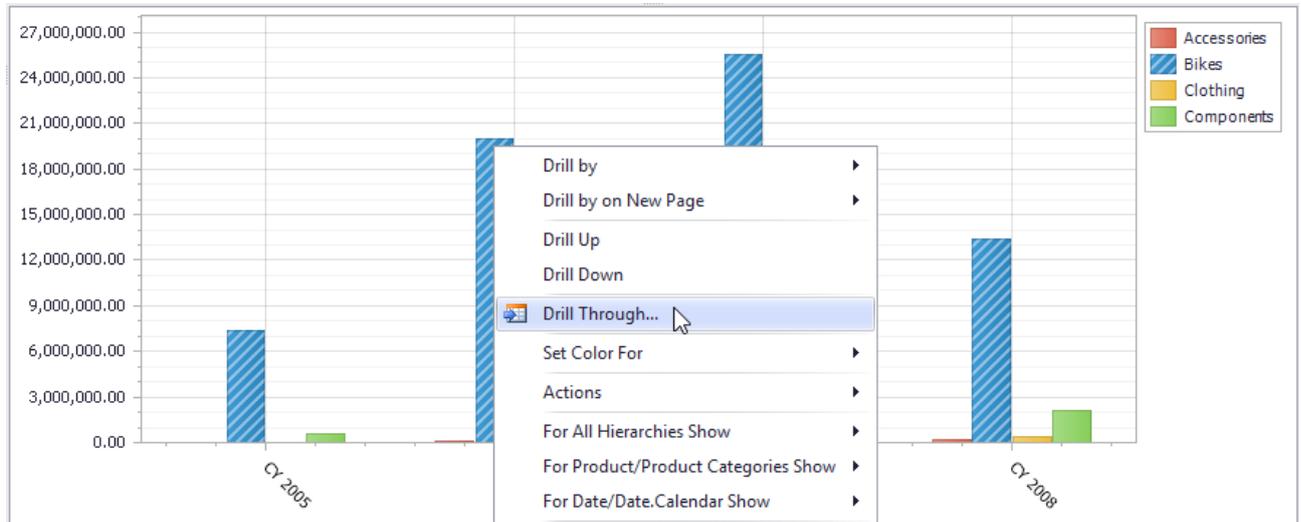
The chart looks like this:



We have a chart with two measures at once, each measure has its own axis.

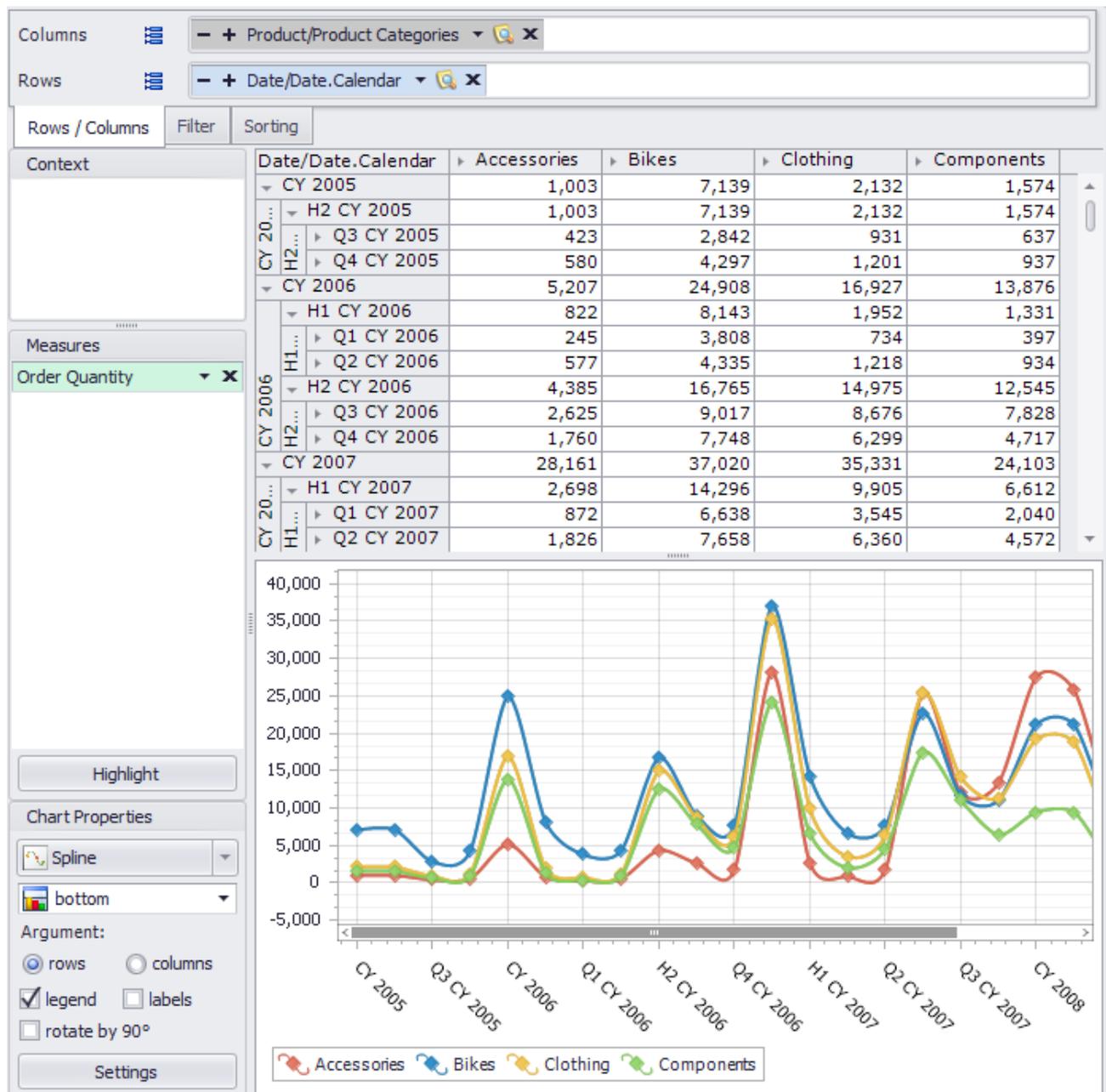
4.8.3 Additional Possibilities of Charts

Since the bars (points, sectors, etc.) of the chart display values of the table, you can use the operations like “Drill through” and “Show by” on them. These operations are available in the context menu:



Also you can print the chart from the context menu or save it as an image in PNG format.

Three is a possibility to choose which levels to display on the chart. Let us look at the example:



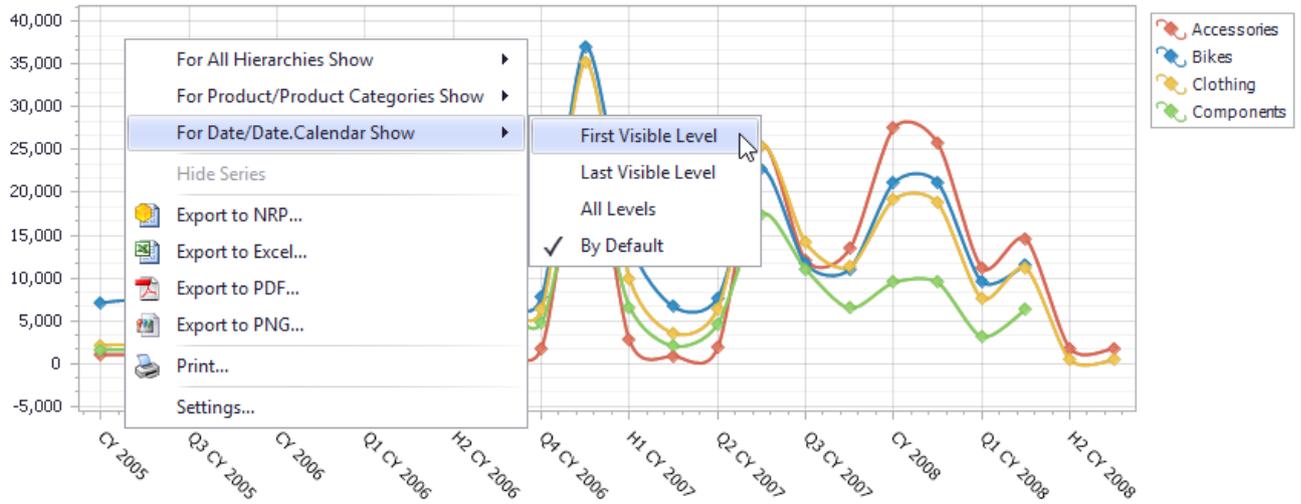
All levels are displayed by default. But we have a possibility to display the following options:

- First Visible Level
- Last Visible Level
- All Levels

For each hierarchy of the report there is a possibility to choose between:

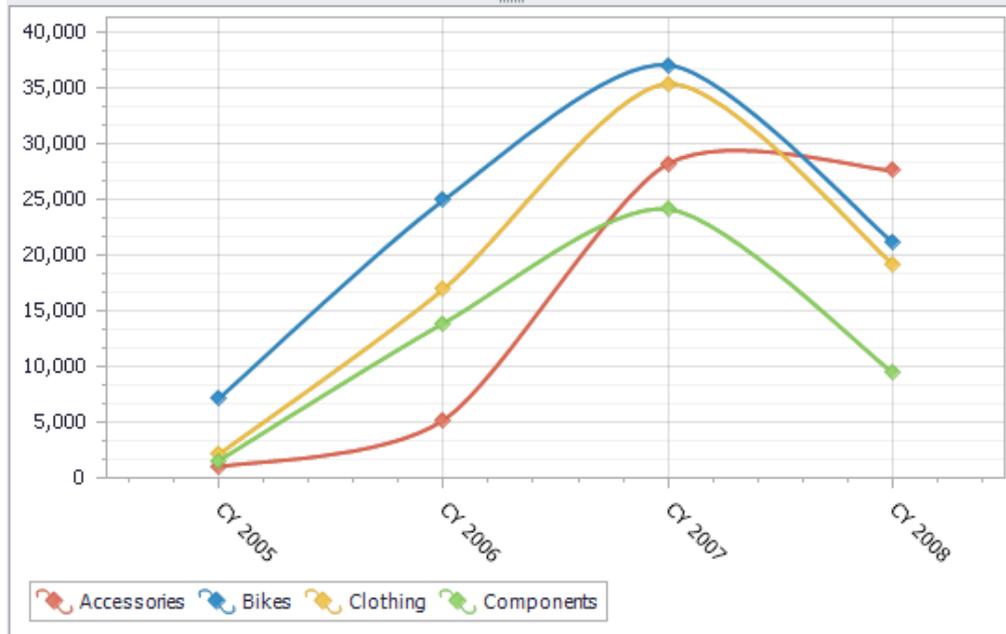
- First Visible Level
- Last Visible Level
- All Levels
- By Default

Let us display just the years without half-years and quarters. To do this, select “First Visible Level” for the hierarchy “Date/Date.Calendar”:

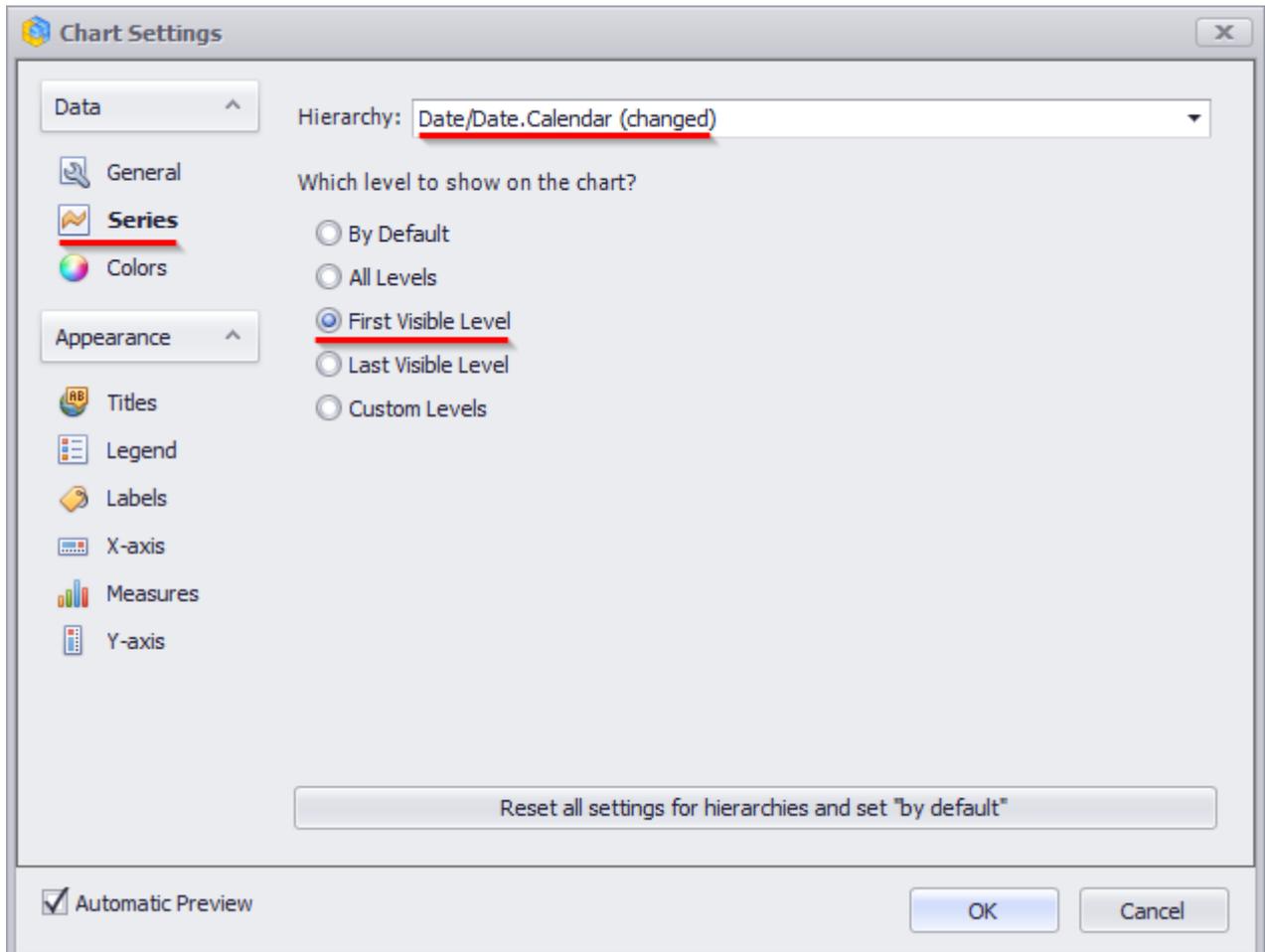
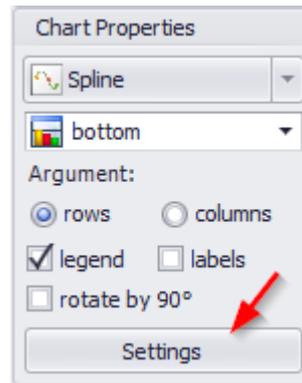


As a result we'll get the following visualization:

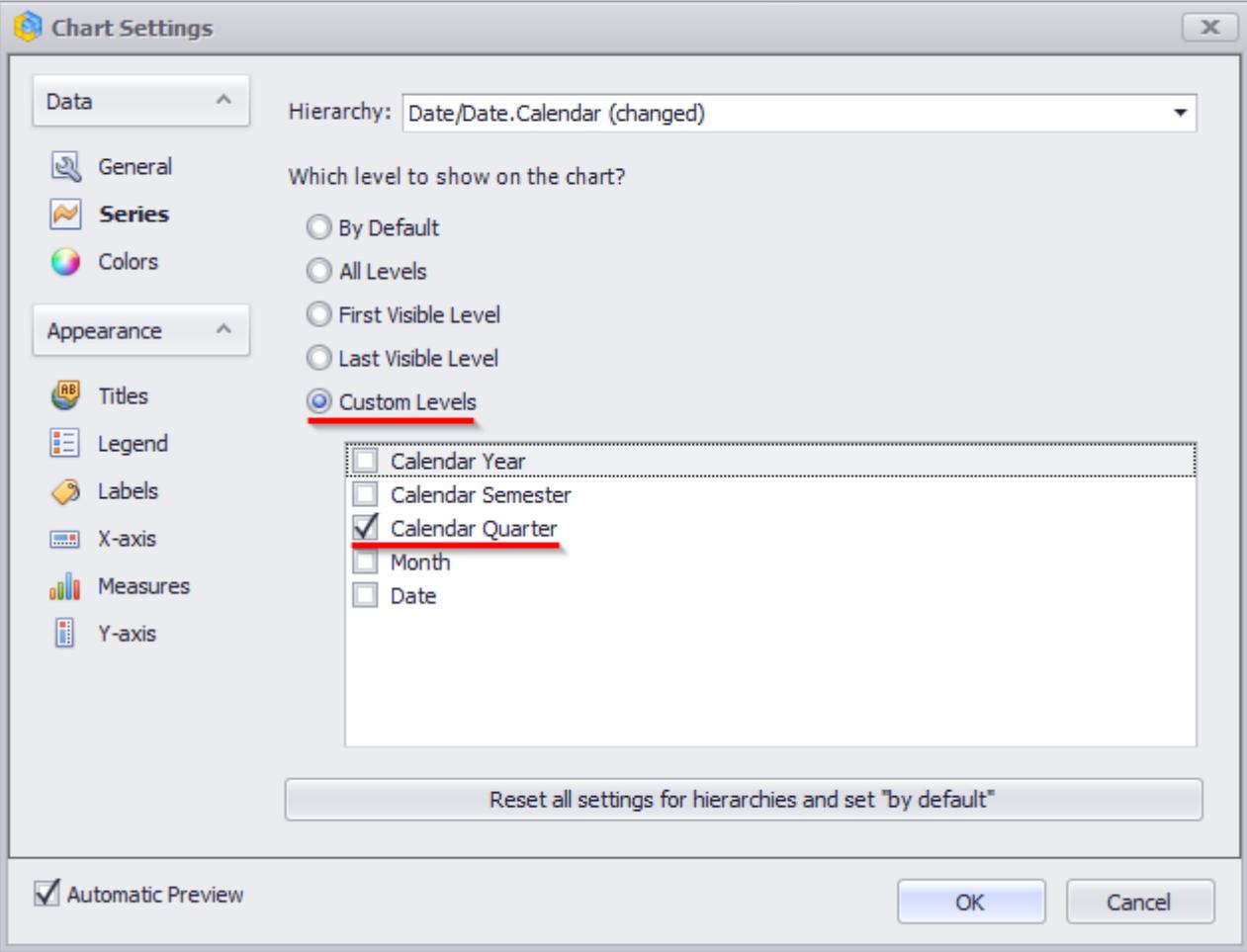
| Date/Date.Calendar | Accessories | Bikes | Clothing | Components |
|--------------------|-------------|--------|----------|------------|
| ▼ CY 2005 | 1,003 | 7,139 | 2,132 | 1,574 |
| ▼ H2 CY 2005 | 1,003 | 7,139 | 2,132 | 1,574 |
| ▶ Q3 CY 2005 | 423 | 2,842 | 931 | 637 |
| ▶ Q4 CY 2005 | 580 | 4,297 | 1,201 | 937 |
| ▼ CY 2006 | 5,207 | 24,908 | 16,927 | 13,876 |
| ▼ H1 CY 2006 | 822 | 8,143 | 1,952 | 1,331 |
| ▶ Q1 CY 2006 | 245 | 3,808 | 734 | 397 |
| ▶ Q2 CY 2006 | 577 | 4,335 | 1,218 | 934 |
| ▼ H2 CY 2006 | 4,385 | 16,765 | 14,975 | 12,545 |
| ▶ Q3 CY 2006 | 2,625 | 9,017 | 8,676 | 7,828 |
| ▶ Q4 CY 2006 | 1,760 | 7,748 | 6,299 | 4,717 |
| ▼ CY 2007 | 28,161 | 37,020 | 35,331 | 24,103 |
| ▼ H1 CY 2007 | 2,698 | 14,296 | 9,905 | 6,612 |
| ▶ Q1 CY 2007 | 872 | 6,638 | 3,545 | 2,040 |
| ▶ Q2 CY 2007 | 1,826 | 7,658 | 6,360 | 4,572 |



You can change the settings of the chart:



Here you can add the restrictions for specific hierarchies or to reset all the settings. Let us add the restriction and display only the quarters on the chart:



As a result, we'll get the following report:

| Date/Date.Calendar | Accessories | Bikes | Clothing | Components |
|--------------------|-------------|--------|----------|------------|
| ▼ CY 2005 | 1,003 | 7,139 | 2,132 | 1,574 |
| ▼ CY 2005 | 1,003 | 7,139 | 2,132 | 1,574 |
| ▼ H2... | 423 | 2,842 | 931 | 637 |
| ▶ Q3 CY 2005 | 580 | 4,297 | 1,201 | 937 |
| ▶ Q4 CY 2005 | | | | |
| ▼ CY 2006 | 5,207 | 24,908 | 16,927 | 13,876 |
| ▼ CY 2006 | 5,207 | 24,908 | 16,927 | 13,876 |
| ▼ H1... | 822 | 8,143 | 1,952 | 1,331 |
| ▶ Q1 CY 2006 | 245 | 3,808 | 734 | 397 |
| ▶ Q2 CY 2006 | 577 | 4,335 | 1,218 | 934 |
| ▼ H2... | 4,385 | 16,765 | 14,975 | 12,545 |
| ▶ Q3 CY 2006 | 2,625 | 9,017 | 8,676 | 7,828 |
| ▶ Q4 CY 2006 | 1,760 | 7,748 | 6,299 | 4,717 |
| ▼ CY 2007 | 28,161 | 37,020 | 35,331 | 24,103 |
| ▼ CY 2007 | 28,161 | 37,020 | 35,331 | 24,103 |
| ▼ H1... | 2,698 | 14,296 | 9,905 | 6,612 |
| ▶ Q1 CY 2007 | 872 | 6,638 | 3,545 | 2,040 |
| ▶ Q2 CY 2007 | 1,826 | 7,658 | 6,360 | 4,572 |

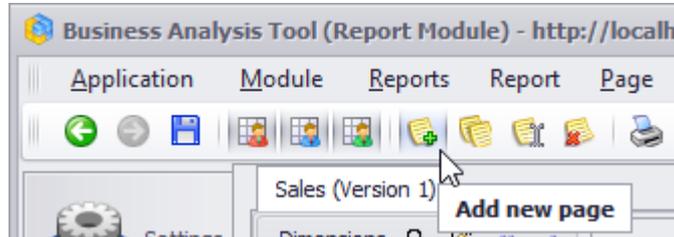


5 Creation, Saving and Restoring of Pages

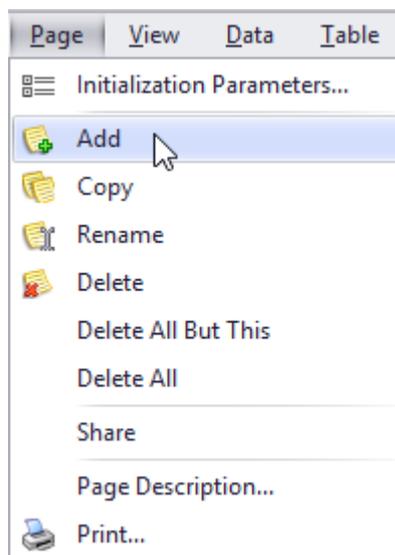
5.1 Creating a New Page

A report can have arbitrary number of pages. In order to add an empty page you have to do one of the following:

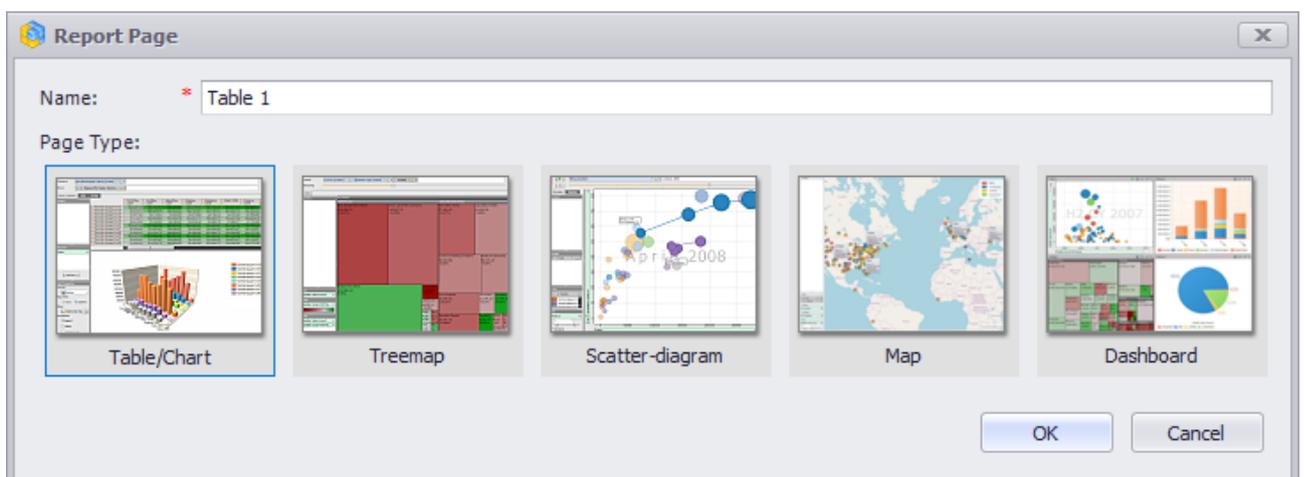
1. Press the button “Add New Page” in the toolbar:



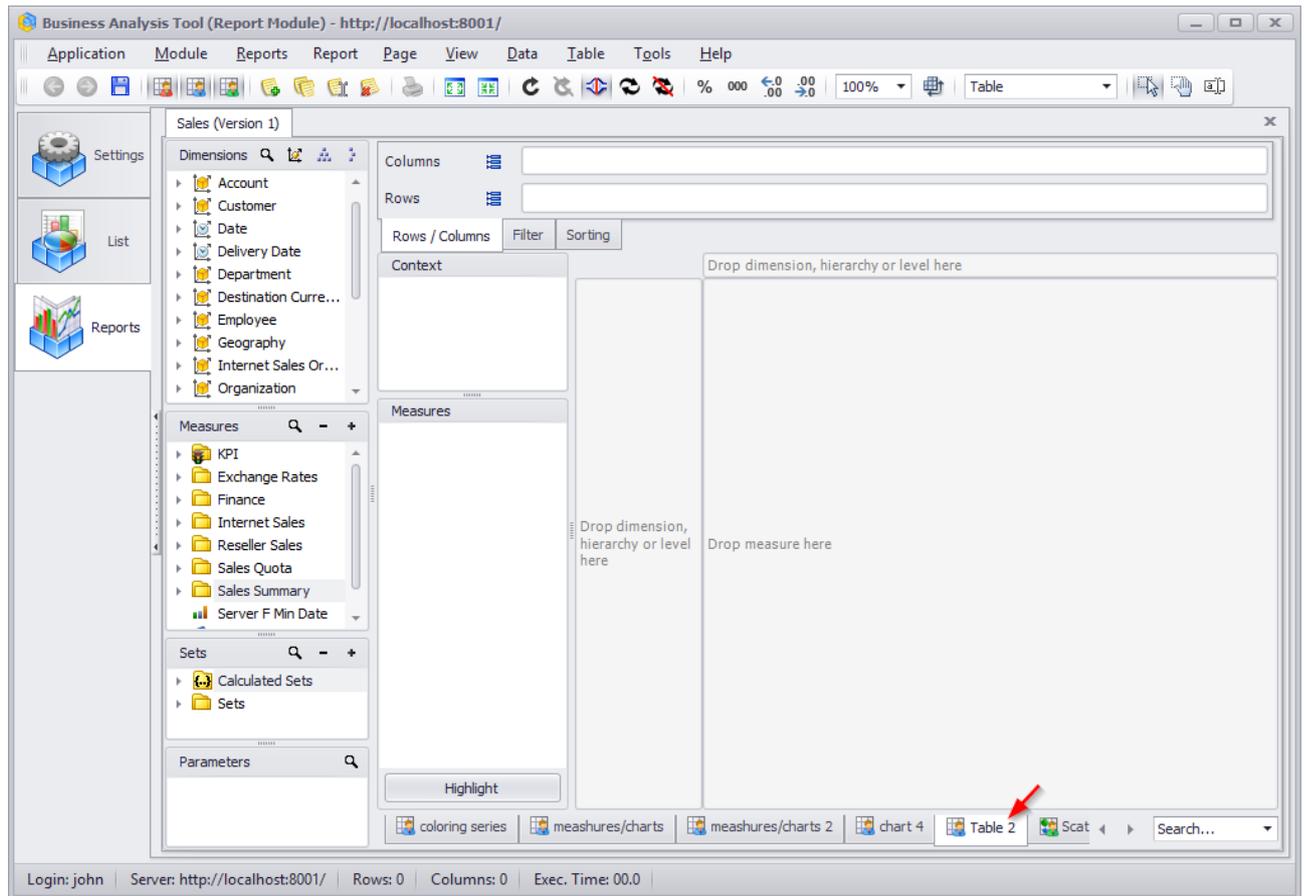
2. Or select the item “Add” in the “Page” menu:



After doing this you will get a dialog box which will let you input the name for a new page and select its type:

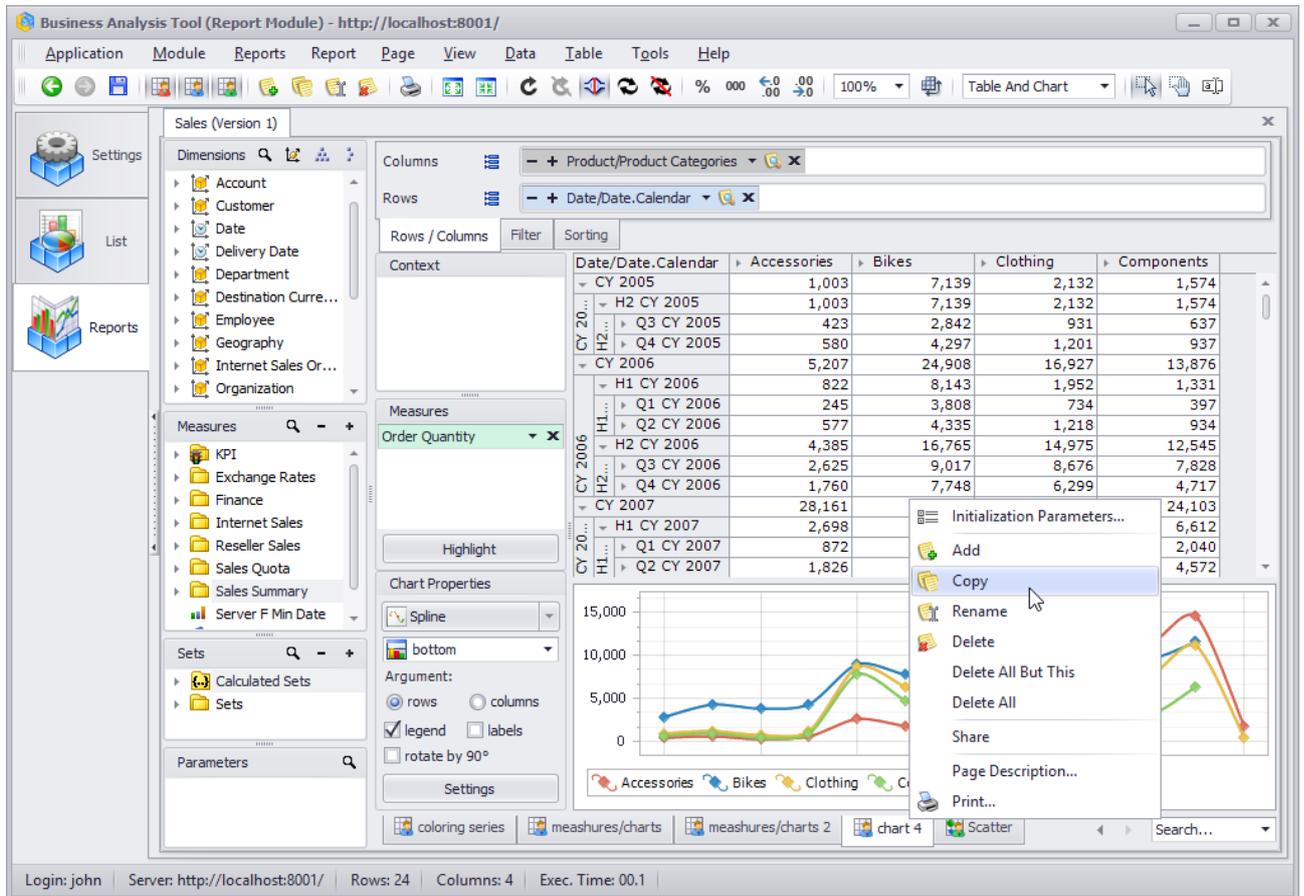


After pressing «OK» the new page will become available:

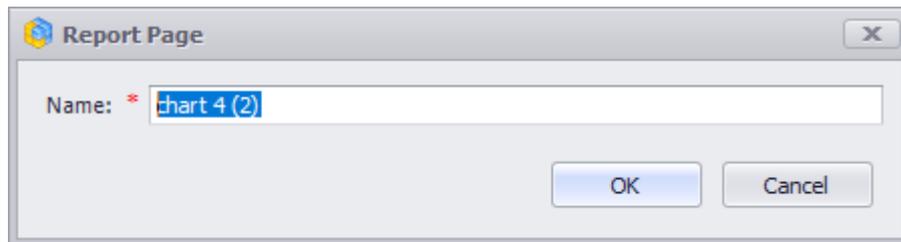


5.2 Copying the Existing Page

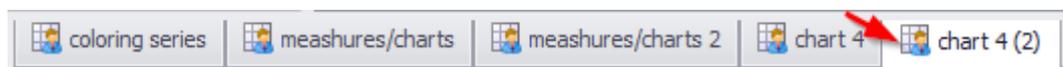
You can create an exact copy of any page. This can be done using context menu for the corresponding tab:



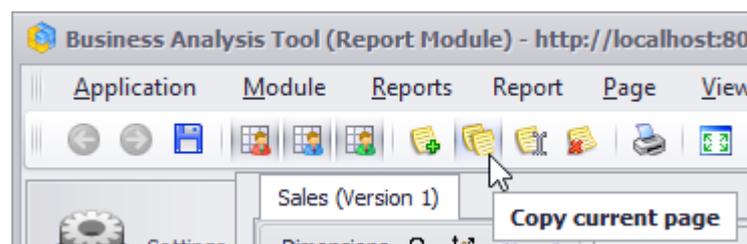
After that the application will ask you to enter the name of the new page:



After pressing «OK» the page will become available:



You can also copy a page using corresponding item of “Page/Copy” menu or by pressing a button on the toolbar:

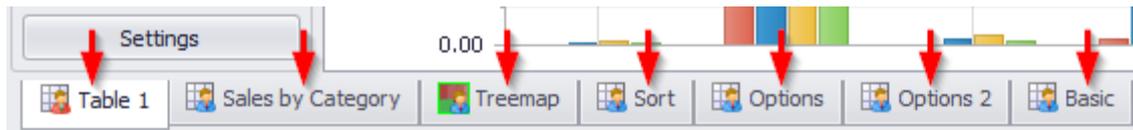


Attention!

All the changes you perform over the structure of your own pages are saved on the server. All the changes you make to the administrator's pages will be lost after you close the report. That's why you should use page copying as an efficient way to save the structure you need for further viewing.

5.3 Pages Saving

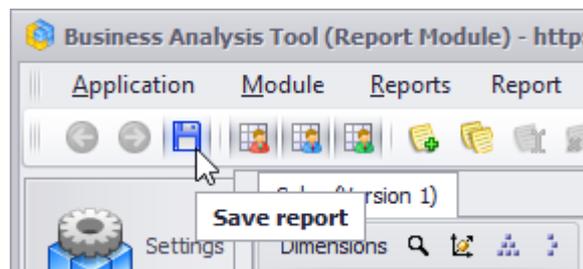
If you are the author of the page than that page is marked with a blue color and when you move the mouse pointer over it you will see a hint «Page created by ...»:



You can see four pages on the picture: first two are the administrator's pages and the last one is yours.

You can save the structure of your own pages using one of the approaches:

1. Press "Save Report" button on the toolbar:



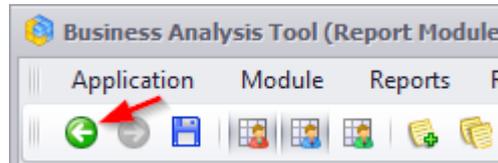
2. Use the "Page/Save" item from the main menu.

Attention!

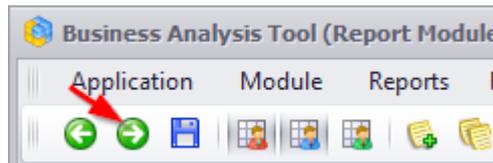
- 1) You can save only your own pages. If you perform any changes to the administrator's pages and save all pages of the report, you will lose all the changes you made to administrator's pages.
- 2) When you are saving a report, the structure of the report is saved (the information about what is placed on the rows and columns etc.), but not data. It is saved on the server, so if you will login to the Report Module on the other computer you will see all the pages you saved.

5.4 Undo Action

While working with a report sometimes you'll need to rollback one or more previous changes you made, i.e. return the report to the state it was in before you made those changes. To perform such rollback there is an "Undo" button on the toolbar:



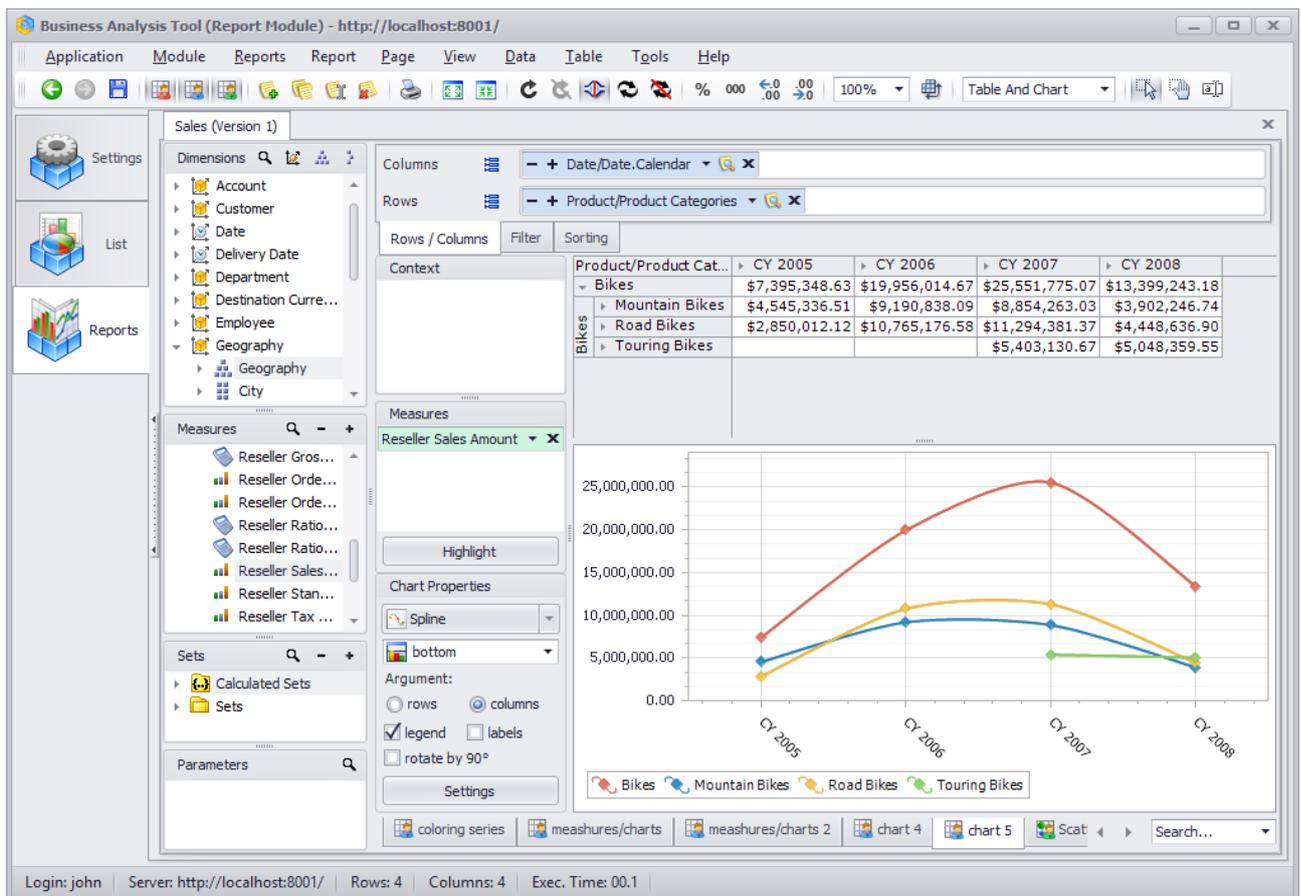
After undoing some changes you can return them back (i.e. perform the changes once again) using "Redo" button:



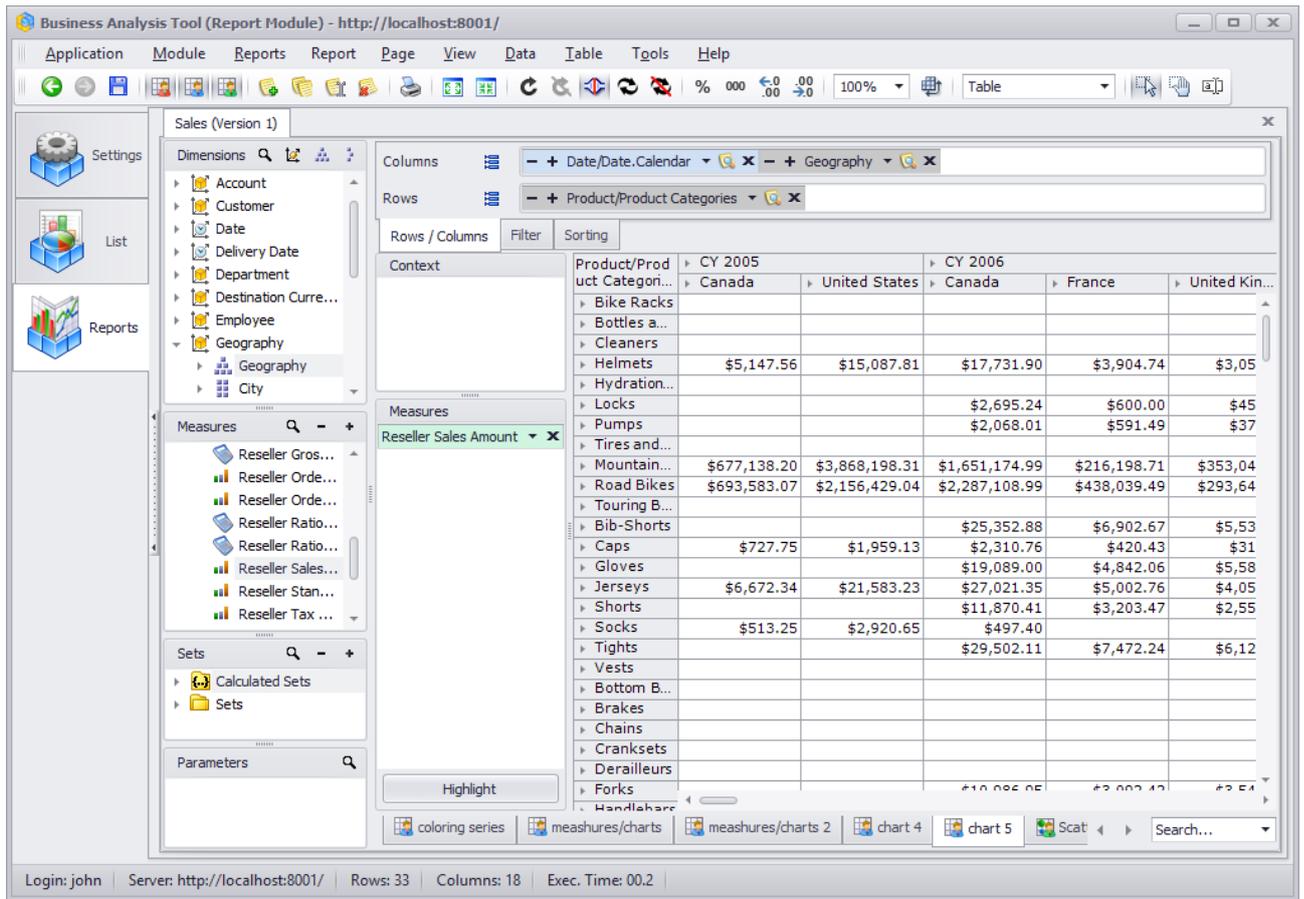
5.5 Report Restore

There is a way to restore a pages structure. It means that all your changes on the page will be lost and you will get the last saved (by you or administrator) version.

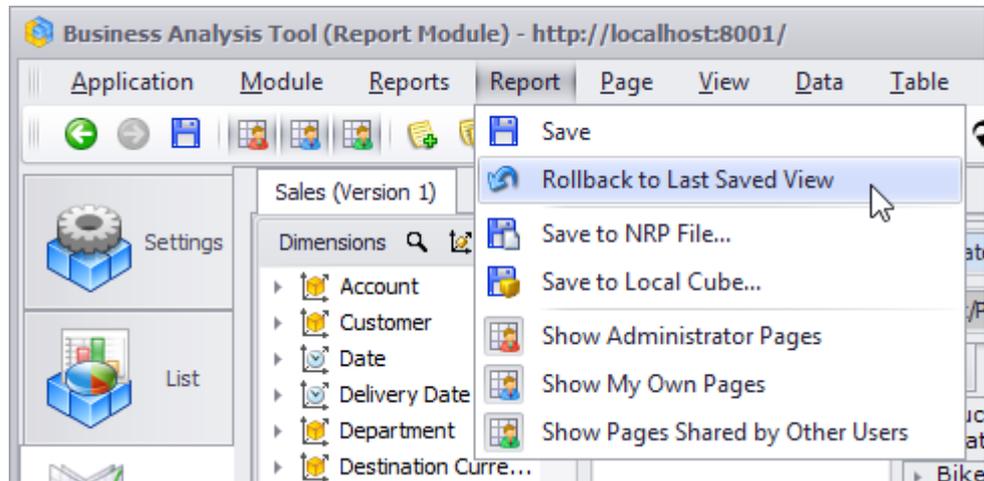
Here is an example. Suppose, the page was looking like this when you opened it:



You changed its structure – for example, altered the selection on rows and columns, so that the page now looks like this:



If you wish to undo all your changes and return to the version saved on the server select “Page / Rollback to last save view” from the main menu:

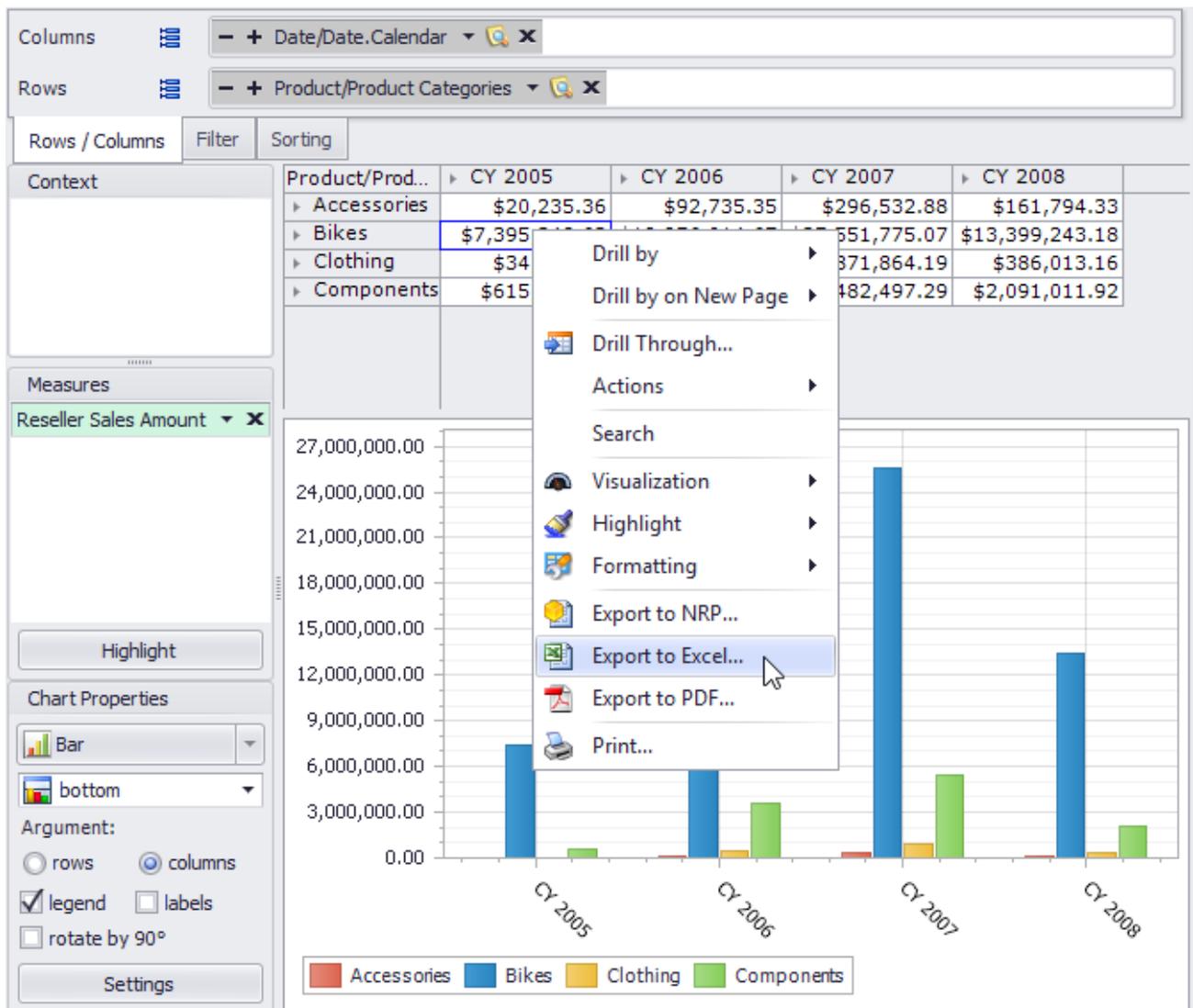


5.6 Export of Pages and Data

5.6.1 Data Export to Word, Excel, PDF.

To export pages data to the Word, Excel or PDF file, you'll need to perform one of the next actions:

1. Select "Table / Export to Excel" (Word or PDF) from the main menu;
2. Press the right mouse button inside the table to call the context menu and then select "Export to Excel" (Word or PDF):



When the export is completed you will be asked if you want to open the created file.

5.6.2 Saving the Pages to NRP file

NRP is a file format developed for compact and secure report saving. There is a special NRP files viewer available on the pages of Business Analysis Tool portal:



make your business more intelligent

DEU | ENG | FRA | NLD | RUS | UKR | LAT | ZHO
[Logout](#)

You are here: Business users



Report Module Installer

Important! After you download this archive, extract its content to a single folder on your local hard drive. Launch **BATReportInstall.exe** from this folder and follow the installation instructions.

[Download](#)



NRP Viewer

NRP is a file format of reports saved to the hard drive. If you would like to save reports to your local hard drive you will need this program to view these reports.

[Download](#)



Local Cube Viewer

Local cubes are files with data which can be generated in the report module or administrative module. The difference from NRP is the fact that you can analyse data without connection to the application server.

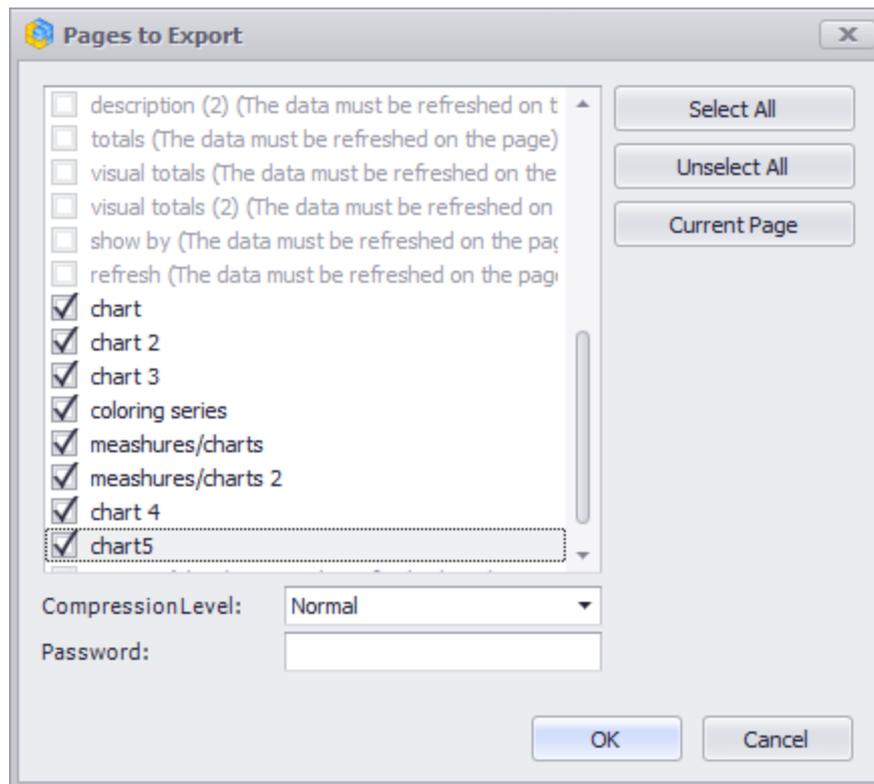
[Download](#)

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After downloading and installing this viewer you will be able to view NRP files, just the way you do it with PDF, DOC and other document files types.

To save your page to an NRP file you need to select “Report / Save to NRP File” from the main menu.

The window will appear where you'll be able to set some advanced saving settings:



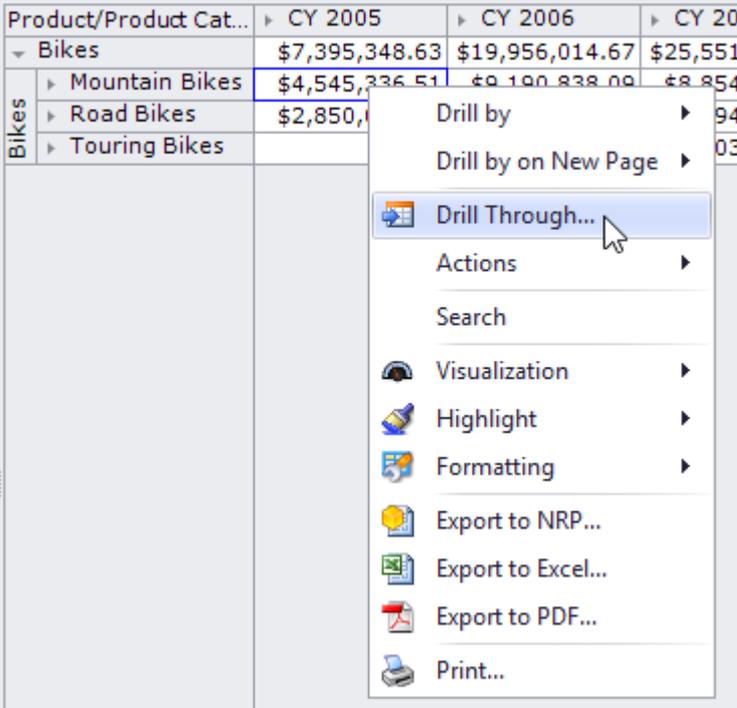
NRP file format supports the saving of multiple pages into one file. In the «Save to File» window you can select the page you want to save, set the compression level and set the password required to open a saved file. The compression level does not affect the data you are saving, it only affects the size of the resulting file (the bigger is compression level, the smaller will be the file size). If you'll set the password for the file no one will be able to open it without the password.

6 Advanced Report Designing Options

6.1 Detailed View (Drill Through operation)

Drill through (detailed view) enables you to view the piece of data from DB that some value from the table is based on.

Let's perform the drill through operation on our example report page. Select an arbitrary cell from the table on which you wish to perform a detailed view. Now press the right mouse button on that cell and select "Drill Through" from the context menu:



As a result you will see first 1000 rows from the data base table:

Drillthrough for Sales Amount, CY 2005, Mountain Bikes (first 1000 rows)

Table MDX

Drag a column header here to group by that column

| Sales Summary | | | | | | | |
|---------------|----------------|------------|-----------------|-----------------------|--------------------|--------------|----|
| # | Order Quantity | Unit Price | Extended Amount | Standard Product Cost | Total Product Cost | Sales Amount | Ta |
| 1 | 1 | 2024.994 | 2024.994 | 1898.0944 | 1898.0944 | 2024.994 | |
| 2 | 3 | 2024.994 | 6074.982 | 1898.0944 | 5694.2832 | 6074.982 | |
| 3 | 1 | 2024.994 | 2024.994 | 1898.0944 | 1898.0944 | 2024.994 | |
| 4 | 1 | 2039.994 | 2039.994 | 1912.1544 | 1912.1544 | 2039.994 | |
| 5 | 1 | 2039.994 | 2039.994 | 1912.1544 | 1912.1544 | 2039.994 | |
| 6 | 2 | 2039.994 | 4079.988 | 1912.1544 | 3824.3088 | 4079.988 | |
| 7 | 1 | 2039.994 | 2039.994 | 1912.1544 | 1912.1544 | 2039.994 | |
| 8 | 3 | 2024.994 | 6074.982 | 1898.0944 | 5694.2832 | 6074.982 | |
| 9 | 2 | 2024.994 | 4049.988 | 1898.0944 | 3796.1888 | 4049.988 | |
| 10 | 4 | 2024.994 | 8099.976 | 1898.0944 | 7592.3776 | 8099.976 | |
| 11 | 2 | 2039.994 | 4079.988 | 1912.1544 | 3824.3088 | 4079.988 | |
| 12 | 2 | 2024.994 | 4049.988 | 1898.0944 | 3796.1888 | 4049.988 | |
| 13 | 1 | 2039.994 | 2039.994 | 1912.1544 | 1912.1544 | 2039.994 | |
| 14 | 4 | 2024.994 | 8099.976 | 1898.0944 | 7592.3776 | 8099.976 | |
| 15 | 2 | 2024.994 | 4049.988 | 1898.0944 | 3796.1888 | 4049.988 | |
| 16 | 3 | 2039.994 | 6119.982 | 1912.1544 | 5736.4632 | 6119.982 | |
| 17 | 1 | 2039.994 | 2039.994 | 1912.1544 | 1912.1544 | 2039.994 | |
| 18 | 1 | 2024.994 | 2024.994 | 1898.0944 | 1898.0944 | 2024.994 | |
| 19 | 1 | 2039.994 | 2039.994 | 1912.1544 | 1912.1544 | 2039.994 | |
| 20 | 2 | 2024.994 | 4049.988 | 1898.0944 | 3796.1888 | 4049.988 | |
| 21 | 2 | 2024.994 | 4049.988 | 1898.0944 | 3796.1888 | 4049.988 | |

Export to Excel... Export to Open Office Calc... Close

You can export those results to an Excel file.

Attention!

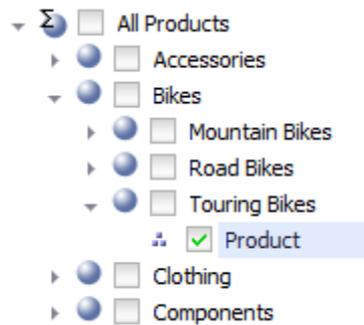
- 1) It is possible that you don't have enough rights to perform drillthrough (if an administrator didn't allow you to). In that case you won't be able to see the corresponding menu item.
- 2) The drill through operation may be not configured on the corresponding cube on the server. In this case trying to perform the operation you will get an appropriate message.

6.2 Data Highlighting

Highlighting helps you to better analyze data. Let's prepare the table of the next structure:

| Columns | - + Date/Date.Calendar ▾ 🔍 ✕ | | |
|---------------------------|------------------------------------|--------------|--------------|
| Rows | - Product/Product Categories ▾ 🔍 ✕ | | |
| Rows / Columns | Filter | Sorting | |
| Context | Product/Product Catego... | CY 2007 | CY 2008 |
| | Touring-1000 Blue, 46 | \$637,968.79 | \$527,004.40 |
| | Touring-1000 Blue, 50 | \$387,649.78 | \$326,140.78 |
| | Touring-1000 Blue, 54 | \$207,414.09 | \$154,487.74 |
| | Touring-1000 Blue, 60 | \$759,596.65 | \$611,187.58 |
| | Touring-1000 Yellow, 46 | \$483,060.26 | \$533,252.57 |
| | Touring-1000 Yellow, 50 | \$292,191.62 | \$329,001.66 |
| | Touring-1000 Yellow, 54 | \$135,987.35 | \$154,487.74 |
| | Touring-1000 Yellow, 60 | \$570,404.24 | \$613,959.06 |
| Measures | Touring-2000 Blue, 46 | \$175,973.94 | \$145,053.09 |
| Reseller Sales Amount ▾ ✕ | Touring-2000 Blue, 50 | \$78,722.28 | \$78,722.28 |
| | Touring-2000 Blue, 54 | \$364,777.66 | \$300,617.55 |
| | Touring-2000 Blue, 60 | \$293,136.02 | \$244,184.85 |
| | Touring-3000 Blue, 44 | \$45,916.20 | \$48,104.28 |
| | Touring-3000 Blue, 50 | \$156,394.59 | \$156,554.12 |
| | Touring-3000 Blue, 54 | \$125,421.89 | \$123,823.98 |
| | Touring-3000 Blue, 58 | \$83,113.51 | \$85,518.72 |
| | Touring-3000 Blue, 62 | \$39,669.33 | \$48,104.28 |
| | Touring-3000 Yellow, 44 | \$156,765.69 | \$157,557.55 |
| | Touring-3000 Yellow, 50 | \$124,570.04 | \$123,378.57 |
| | Touring-3000 Yellow, 54 | \$79,667.15 | \$81,510.03 |
| | Touring-3000 Yellow, 58 | \$47,903.85 | \$48,104.28 |
| | Touring-3000 Yellow, 62 | \$156,825.74 | \$157,604.47 |
| Highlight | | | |

On the rows – “Product Categories” dimension with a whole “Product” level selected under the “Touring Bikes” element:



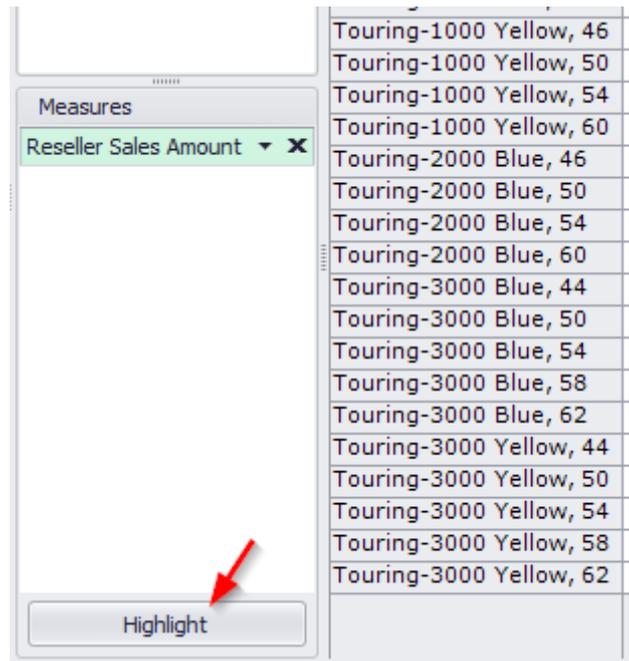
on columns – years 2007 and 2008. Inside the table – “Reseller Sales Amount” measure. Say, we need to emphasize somehow the sales amount larger than 500,000. To do that, perform one of the following actions:

1. Select “Table / Highlight” from main menu.
2. Select the corresponding item from the context menu of the table:

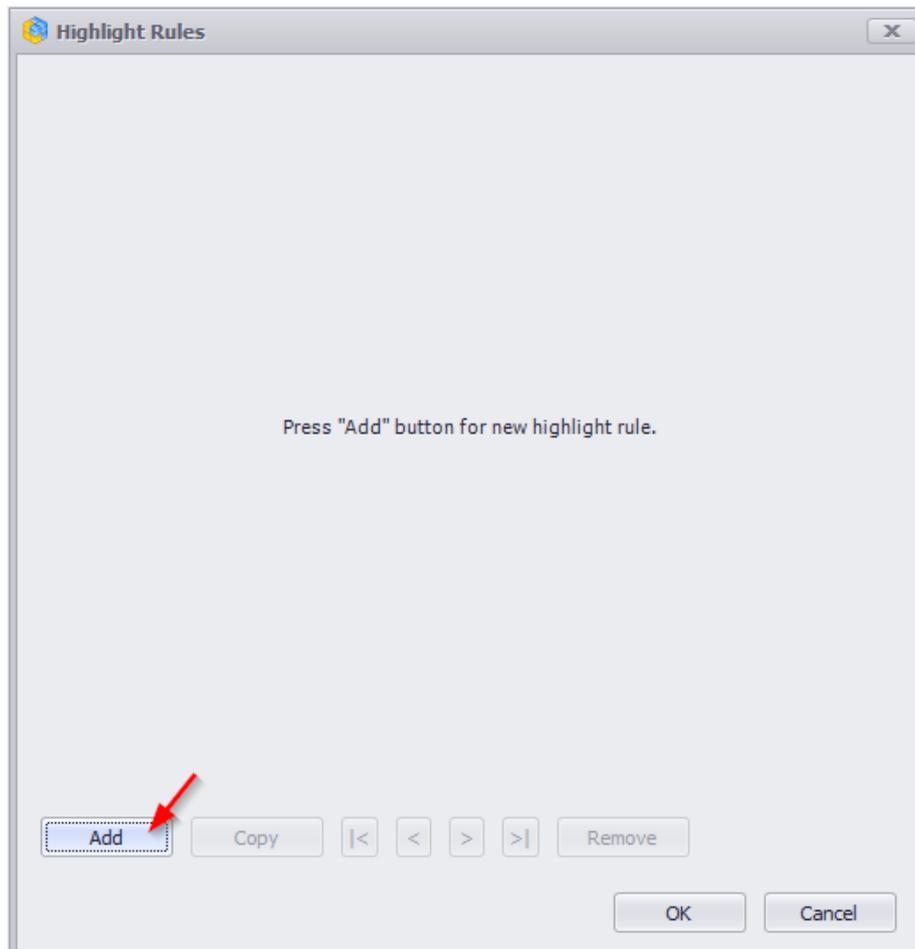
The screenshot shows a BI tool interface with a table of data. The table has columns for 'Product/Product Categories', 'CY 2007', and 'CY 2008'. The measure is 'Reseller Sales Amount'. A context menu is open over the table, and the 'Highlight' option is selected. A sub-menu is displayed with various color and gradient options. The 'Add Highlight Rule...' option is highlighted by the mouse.

| Product/Product Categories | CY 2007 | CY 2008 |
|----------------------------|--------------|--------------|
| Touring-1000 Blue, 46 | \$ | |
| Touring-1000 Blue, 50 | \$ | |
| Touring-1000 Blue, 54 | \$ | |
| Touring-1000 Blue, 60 | \$ | |
| Touring-1000 Yellow, 46 | \$ | |
| Touring-1000 Yellow, 50 | \$ | |
| Touring-1000 Yellow, 54 | \$ | |
| Touring-1000 Yellow, 60 | \$ | |
| Touring-2000 Blue, 46 | \$ | |
| Touring-2000 Blue, 50 | \$ | |
| Touring-2000 Blue, 54 | \$ | |
| Touring-2000 Blue, 60 | \$ | |
| Touring-3000 Blue, 44 | \$ | |
| Touring-3000 Blue, 50 | \$ | |
| Touring-3000 Blue, 54 | \$ | |
| Touring-3000 Blue, 58 | \$ | |
| Touring-3000 Blue, 62 | \$ | |
| Touring-3000 Yellow, 44 | \$ | |
| Touring-3000 Yellow, 50 | \$ | |
| Touring-3000 Yellow, 54 | \$79,807.15 | \$81,510.03 |
| Touring-3000 Yellow, 58 | \$47,903.85 | \$48,104.28 |
| Touring-3000 Yellow, 62 | \$156,825.74 | \$157,604.47 |

3. Press the Highlight button at the bottom of the editor:



The window will appear containing highlight rules (there are no rules at the moment):



Press the Add button and a new tab with a highlight rule will appear.

Let's name the rule "More than 500K" and fill in all the fields as it is shown on the picture below:

The screenshot shows the 'Highlight Rules' dialog box with the following configuration:

- Name:** More than 500 K
- Measure to analyse:** Reseller Sales Amount (Precision: 2)
- Type of analysis:** Exception (selected), Gradient
- Null values:** Ignore
- Value:** Greater (selected), 500,000.
- Preview:** AaBbCcYyZz (highlighted in green)
- Measure to paint:** The same as analysed (selected), All, Custom
- Measures list:** KPI, Exchange Rates, Finance, Internet Sales, Reseller Sales, Sales Quota, Sales Summary

Buttons at the bottom include: Add, Copy, navigation arrows, Remove, OK, and Cancel.

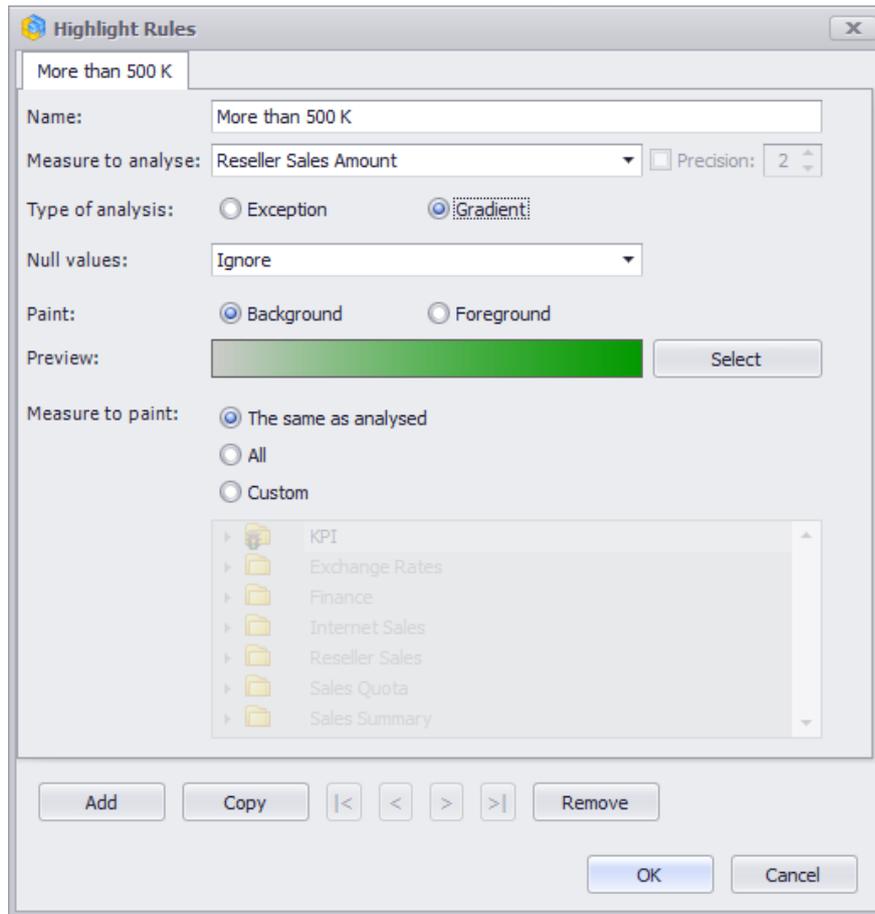
According to the configured rule, the "Reseller Sales Amount" measure will be analyzed. The type of analysis is Exception (exceptional situation), empty fields will be ignored and the values bigger than 500,000 will be colored green.

After pressing «OK» button you will see that all values bigger than 500,000 are highlighted with a green color:

| Product/Product Catego... | ▸ CY 2007 | ▸ CY 2008 |
|---------------------------|--------------|--------------|
| Touring-1000 Blue, 46 | \$637,968.79 | \$527,004.40 |
| Touring-1000 Blue, 50 | \$387,649.78 | \$326,140.78 |
| Touring-1000 Blue, 54 | \$207,414.09 | \$154,487.74 |
| Touring-1000 Blue, 60 | \$759,596.65 | \$611,187.58 |
| Touring-1000 Yellow, 46 | \$483,060.26 | \$533,252.57 |
| Touring-1000 Yellow, 50 | \$292,191.62 | \$329,001.66 |
| Touring-1000 Yellow, 54 | \$135,987.35 | \$154,487.74 |
| Touring-1000 Yellow, 60 | \$570,404.24 | \$613,959.06 |
| Touring-2000 Blue, 46 | \$175,973.94 | \$145,053.09 |
| Touring-2000 Blue, 50 | \$78,722.28 | \$78,722.28 |
| Touring-2000 Blue, 54 | \$364,777.66 | \$300,617.55 |
| Touring-2000 Blue, 60 | \$293,136.02 | \$244,184.85 |
| Touring-3000 Blue, 44 | \$45,916.20 | \$48,104.28 |
| Touring-3000 Blue, 50 | \$156,394.59 | \$156,554.12 |
| Touring-3000 Blue, 54 | \$125,421.89 | \$123,823.98 |
| Touring-3000 Blue, 58 | \$83,113.51 | \$85,518.72 |
| Touring-3000 Blue, 62 | \$39,669.33 | \$48,104.28 |
| Touring-3000 Yellow, 44 | \$156,765.69 | \$157,557.55 |
| Touring-3000 Yellow, 50 | \$124,570.04 | \$123,378.57 |
| Touring-3000 Yellow, 54 | \$79,667.15 | \$81,510.03 |
| Touring-3000 Yellow, 58 | \$47,903.85 | \$48,104.28 |
| Touring-3000 Yellow, 62 | \$156,825.74 | \$157,604.47 |

You can set multiple highlight rules.

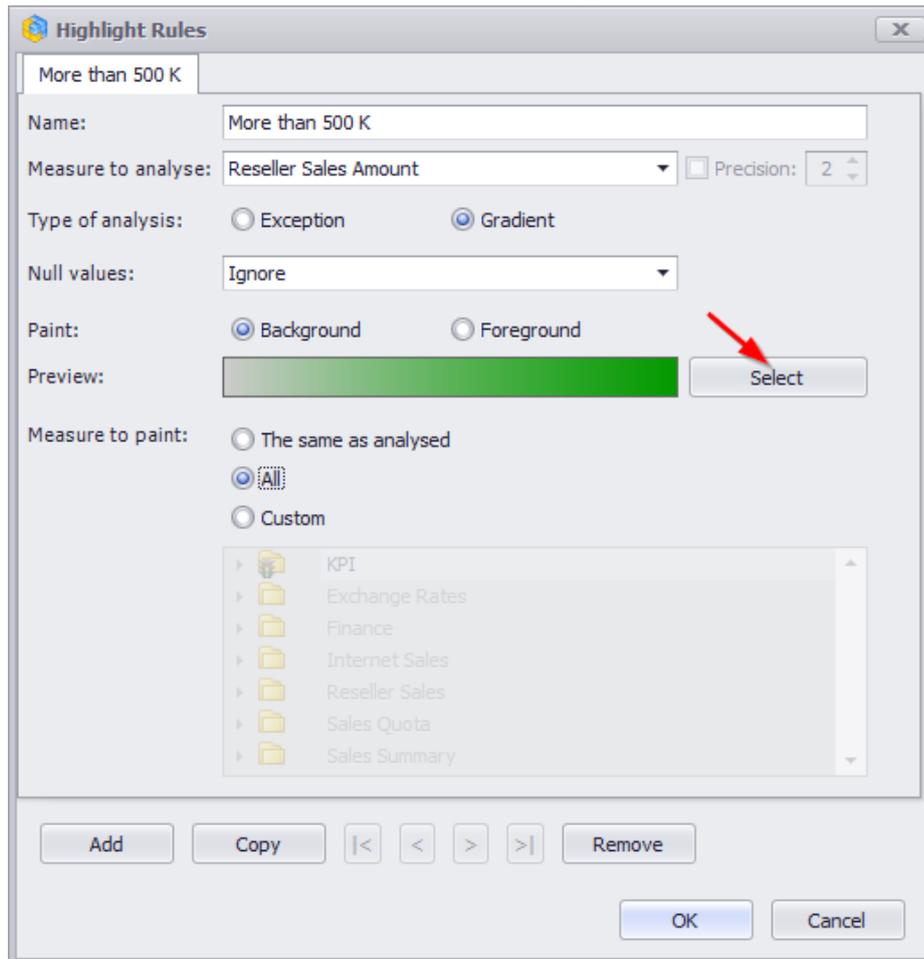
The highlight can also be of gradient type. Open the highlight rules window once again and change the highlight settings as it is shown on the picture:



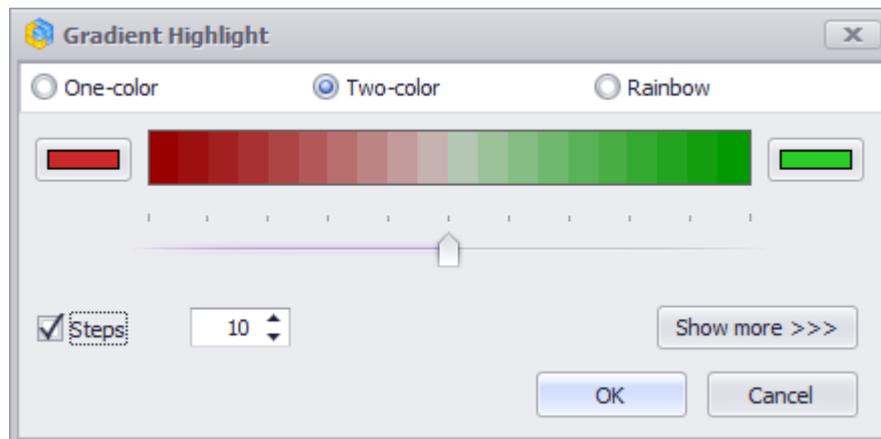
After that the table will look like this:

| Product/Product Catego... | CY 2007 | CY 2008 |
|---------------------------|--------------|--------------|
| Touring-1000 Blue, 46 | \$637,968.79 | \$527,004.40 |
| Touring-1000 Blue, 50 | \$387,649.78 | \$326,140.78 |
| Touring-1000 Blue, 54 | \$207,414.09 | \$154,487.74 |
| Touring-1000 Blue, 60 | \$759,596.65 | \$611,187.58 |
| Touring-1000 Yellow, 46 | \$483,060.26 | \$533,252.57 |
| Touring-1000 Yellow, 50 | \$292,191.62 | \$329,001.66 |
| Touring-1000 Yellow, 54 | \$135,987.35 | \$154,487.74 |
| Touring-1000 Yellow, 60 | \$570,404.24 | \$613,959.06 |
| Touring-2000 Blue, 46 | \$175,973.94 | \$145,053.09 |
| Touring-2000 Blue, 50 | \$78,722.28 | \$78,722.28 |
| Touring-2000 Blue, 54 | \$364,777.66 | \$300,617.55 |
| Touring-2000 Blue, 60 | \$293,136.02 | \$244,184.85 |
| Touring-3000 Blue, 44 | \$45,916.20 | \$48,104.28 |
| Touring-3000 Blue, 50 | \$156,394.59 | \$156,554.12 |
| Touring-3000 Blue, 54 | \$125,421.89 | \$123,823.98 |
| Touring-3000 Blue, 58 | \$83,113.51 | \$85,518.72 |
| Touring-3000 Blue, 62 | \$39,669.33 | \$48,104.28 |
| Touring-3000 Yellow, 44 | \$156,765.69 | \$157,557.55 |
| Touring-3000 Yellow, 50 | \$124,570.04 | \$123,378.57 |
| Touring-3000 Yellow, 54 | \$79,667.15 | \$81,510.03 |
| Touring-3000 Yellow, 58 | \$47,903.85 | \$48,104.28 |
| Touring-3000 Yellow, 62 | \$156,825.74 | \$157,604.47 |

You can easily notice that the bigger is value in the cell, the more saturated is its color. If you press the “Select” button in the highlight rule’s settings window,



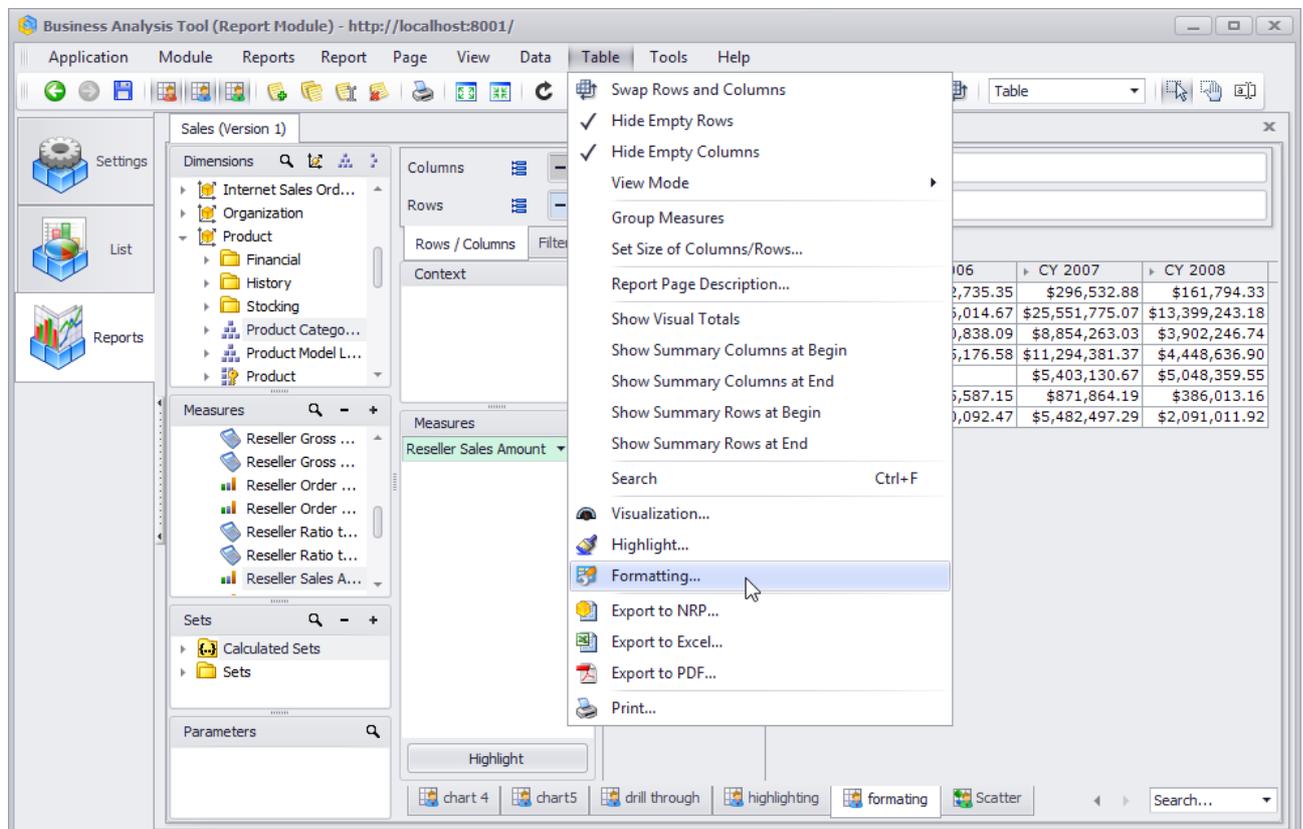
then the other window will appear where you can set the gradient settings:



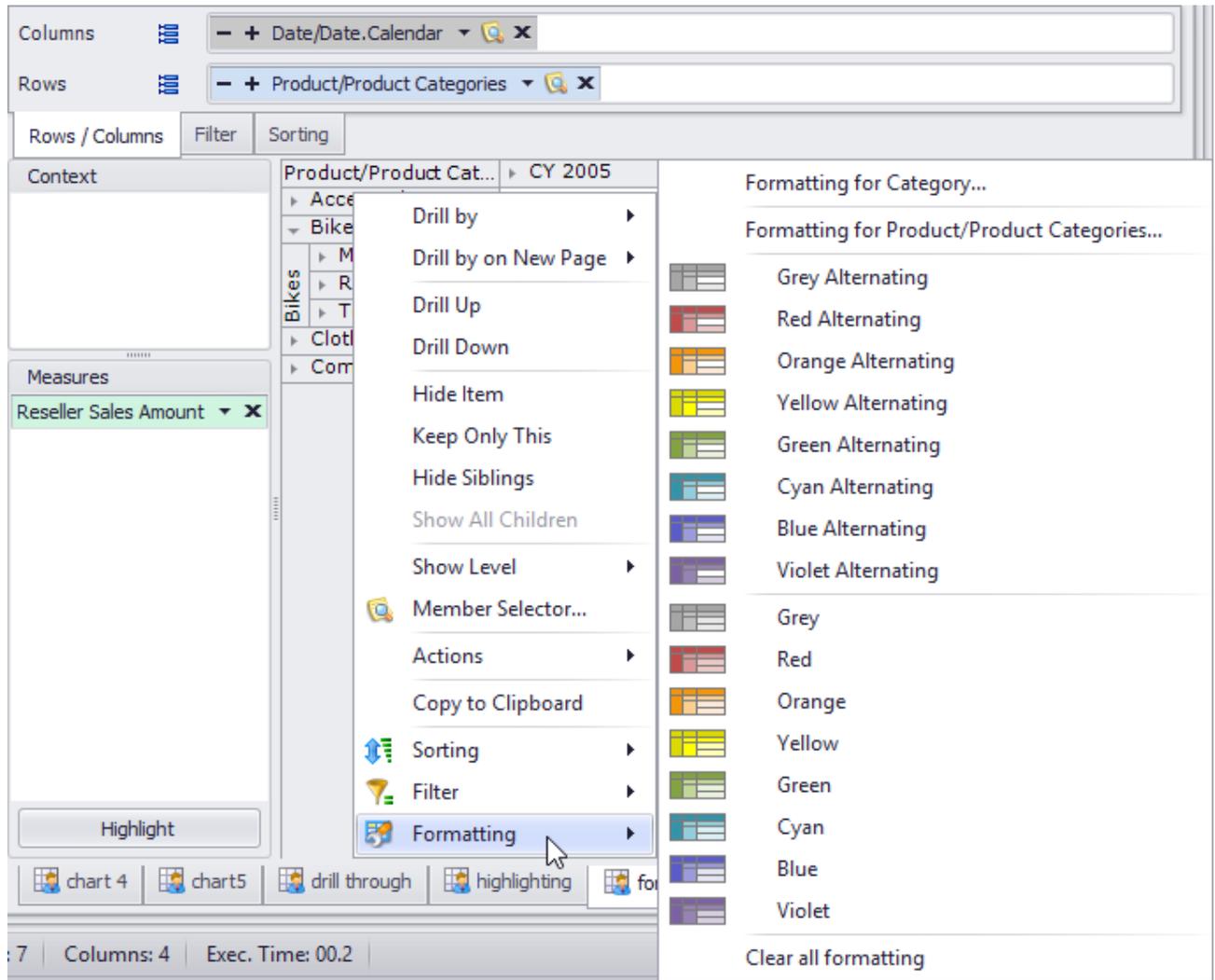
You can set one-color, two-color or rainbow highlight, set the number of steps, etc.

6.3 Text Formatting

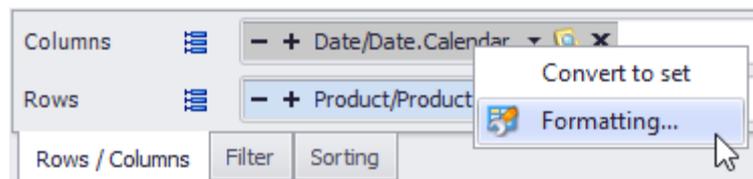
Apart from highlighting there exists a possibility to «paint» the text on rows, columns and inside the table. To do that select «Table / Formatting» in main menu or the similar item in the table's context menu. The following form will appear:



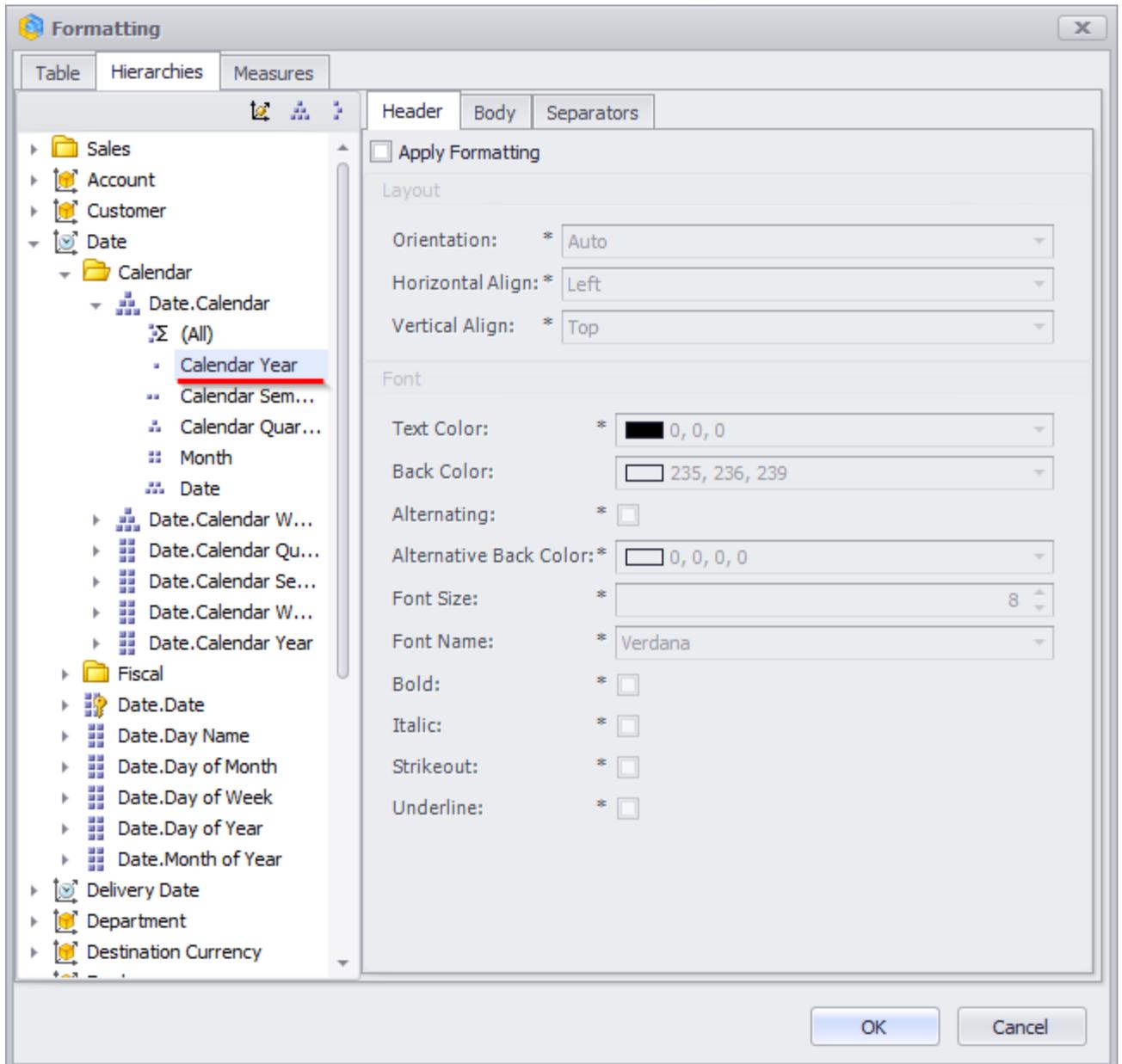
You can do the same thing from the context menu of the table:



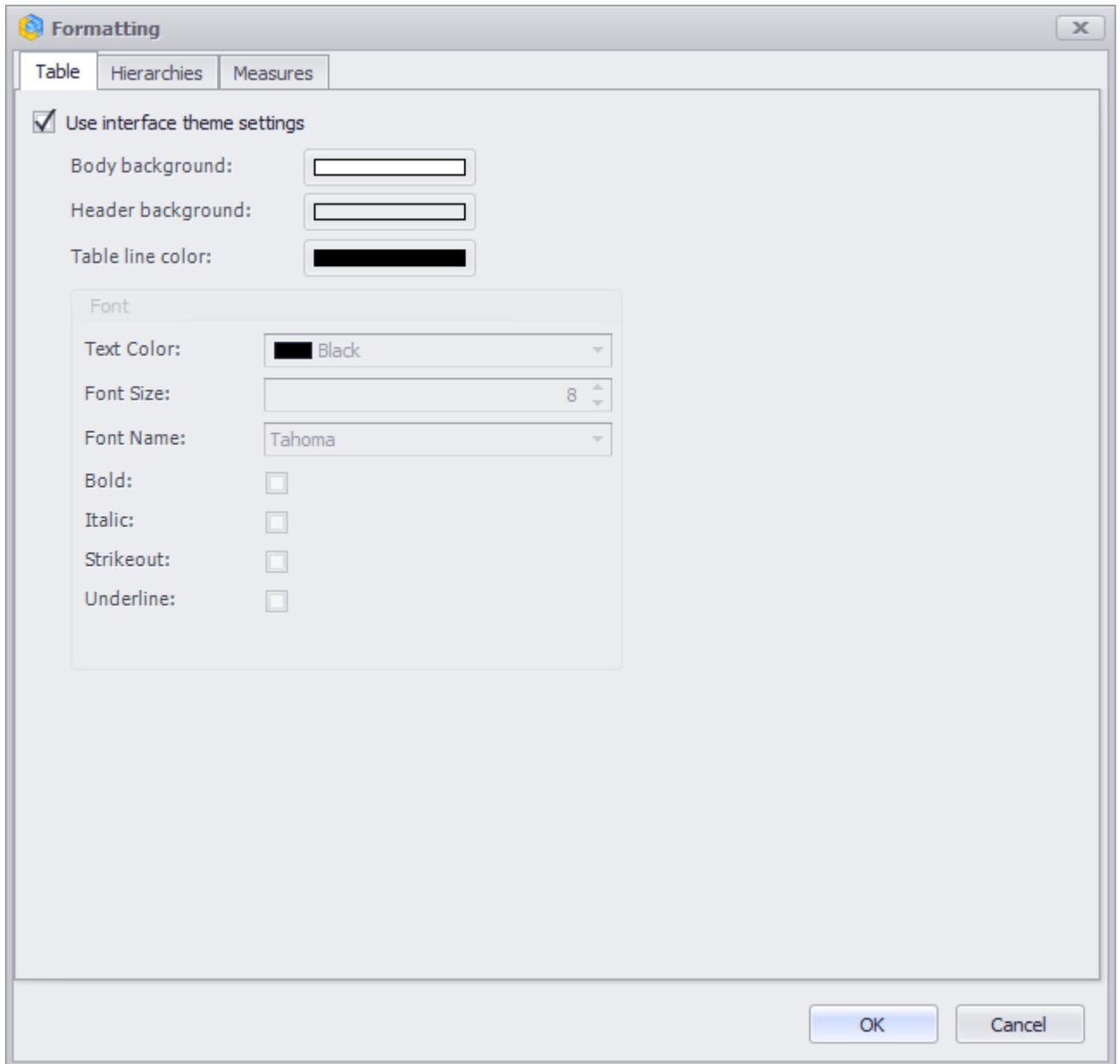
OR



When the user enters in menu “Formatting”, he will get a dialog box with the tree open at the left side. The tree will be open up to the level which was selected by the user:



If we use the main menu to get into this dialog box, we'll see the following:



The tab “Table” is used to set up the color of the lines. The rest two tabs are used to format hierarchies, levels and measures.

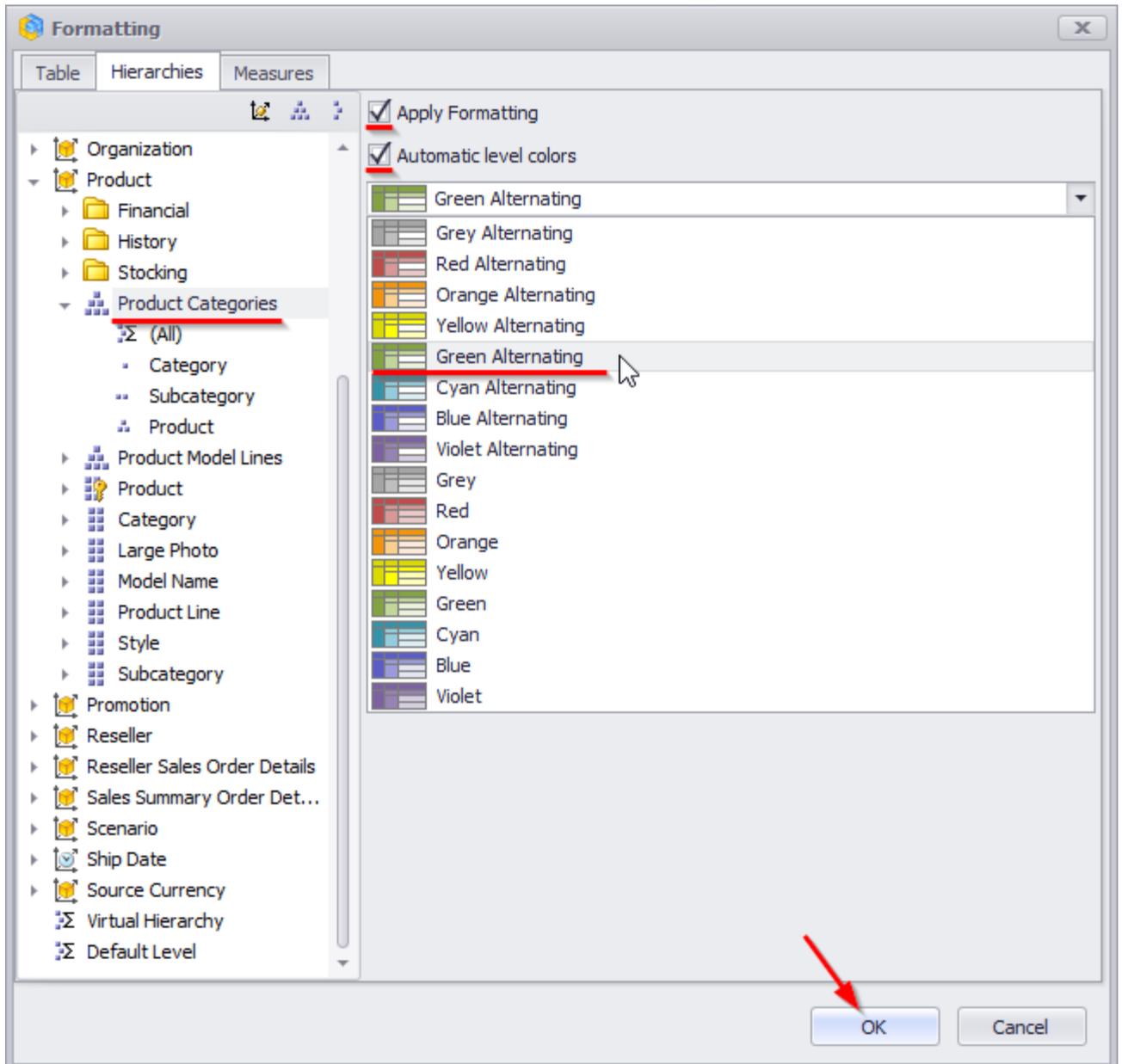
6.3.1 Hierarchy Formatting

Each hierarchy has a set of settings for automatic coloring of its levels. Let us look at the example. Click the right mouse button on the hierarchy “Product/Product Categories” and select “Formatting”:

The screenshot shows a BI tool interface with a hierarchy of Product/Product Categories. A context menu is open over the hierarchy, showing options like "Convert to set" and "Formatting...". The data table below shows sales amounts for various product categories across different years and regions.

| Product/Product Categories | CY 2007 | CY 2008 |
|----------------------------|----------------|----------------|
| Canada | | |
| Canada | | |
| Accessories | \$58,128.43 | \$32,356.20 |
| Bike Racks | \$21,405.68 | \$16,089.98 |
| Bottles a... | \$856.53 | \$502.16 |
| Cleaners | \$1,219.93 | \$887.97 |
| Helmets | \$23,984.40 | \$10,406.00 |
| Hydration... | \$7,964.01 | \$4,404.14 |
| Locks | \$1,515.00 | |
| Pumps | \$1,067.47 | |
| Tires and... | \$115.42 | \$65.95 |
| Bikes | \$4,417,665.71 | \$1,909,709.62 |
| Mountain... | \$1,666,549.71 | \$727,933.91 |
| Road Bikes | \$2,075,667.15 | \$657,851.93 |
| Touring B... | \$675,448.85 | \$523,923.79 |
| Clothing | \$177,893.39 | \$77,497.00 |
| Bib-Shorts | \$15,478.73 | |
| Caps | \$3,058.36 | \$1,054.30 |
| Gloves | \$21,443.10 | \$3,224.17 |
| Jerseys | \$57,156.67 | \$28,743.43 |
| Shorts | \$37,517.22 | \$24,549.83 |
| Socks | \$1,711.99 | \$1,024.21 |
| Tights | \$18,231.81 | |
| Vests | \$23,295.52 | \$18,901.08 |
| Components | \$997,617.89 | \$370,698.68 |

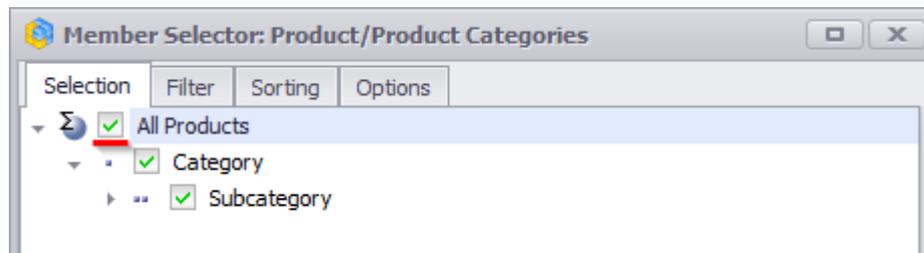
In the window below let us set up the following parameters for the level “Product Categories”:



The table will look like this:

| Product/Product Categories | CY 2007 | CY 2008 |
|----------------------------|----------------|----------------|
| | Canada | Canada |
| Accessories | \$58,128.43 | \$32,356.20 |
| Bike Racks | \$21,405.68 | \$16,089.98 |
| Bottles a... | \$856.53 | \$502.16 |
| Cleaners | \$1,219.93 | \$887.97 |
| Helmets | \$23,984.40 | \$10,406.00 |
| Hydration... | \$7,964.01 | \$4,404.14 |
| Locks | \$1,515.00 | |
| Pumps | \$1,067.47 | |
| Tires and... | \$115.42 | \$65.95 |
| Bikes | \$4,417,665.71 | \$1,909,709.62 |
| Mountain... | \$1,666,549.71 | \$727,933.91 |
| Road Bikes | \$2,075,667.15 | \$657,851.93 |
| Touring B... | \$675,448.85 | \$523,923.79 |
| Clothing | \$177,893.39 | \$77,497.00 |
| Bib-Shorts | \$15,478.73 | |
| Caps | \$3,058.36 | \$1,054.30 |
| Gloves | \$21,443.10 | \$3,224.17 |
| Jerseys | \$57,156.67 | \$28,743.43 |
| Shorts | \$37,517.22 | \$24,549.83 |
| Socks | \$1,711.99 | \$1,024.21 |
| Tights | \$18,231.81 | |
| Vests | \$23,295.52 | \$18,901.08 |
| Components | \$997,617.89 | \$370,698.68 |

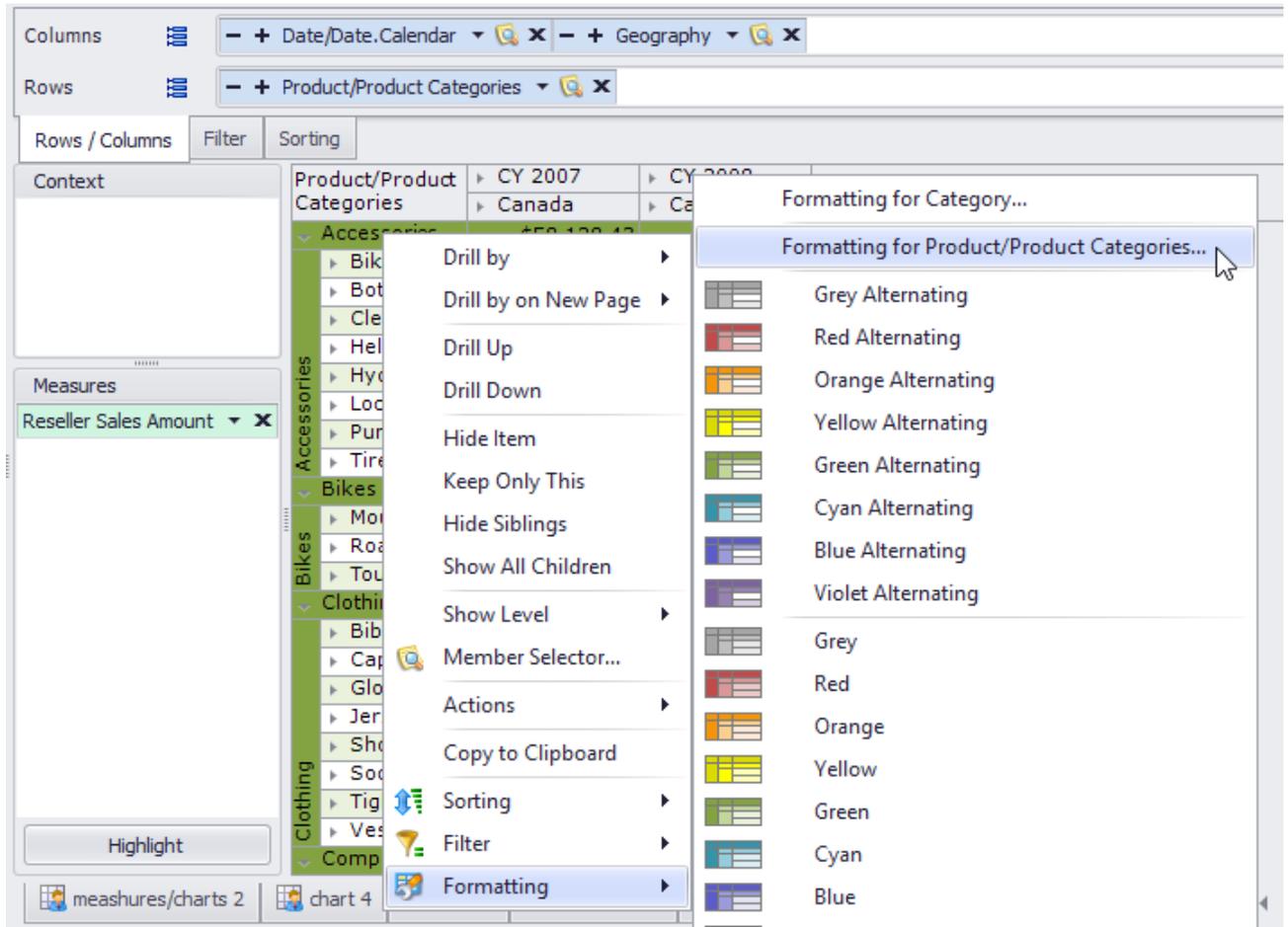
If we select the topmost level as well:



the table will look like this:

| Product/Product Categories | ▸ CY 2007 | ▸ CY 2008 |
|----------------------------|----------------|----------------|
| | ▸ Canada | ▸ Canada |
| ▾ All Products | \$5,651,305.43 | \$2,390,261.51 |
| ▾ Accessories | \$58,128.43 | \$32,356.20 |
| ▸ Bike Racks | \$21,405.68 | \$16,089.98 |
| ▸ Bottles a... | \$856.53 | \$502.16 |
| ▸ Cleaners | \$1,219.93 | \$887.97 |
| ▸ Helmets | \$23,984.40 | \$10,406.00 |
| ▸ Hydration... | \$7,964.01 | \$4,404.14 |
| ▸ Locks | \$1,515.00 | |
| ▸ Pumps | \$1,067.47 | |
| ▸ Tires and... | \$115.42 | \$65.95 |
| ▾ Bikes | \$4,417,665.71 | \$1,909,709.62 |
| ▸ Mountain... | \$1,666,549.71 | \$727,933.91 |
| ▸ Road Bikes | \$2,075,667.15 | \$657,851.93 |
| ▸ Touring B... | \$675,448.85 | \$523,923.79 |
| ▾ Clothing | \$177,893.39 | \$77,497.00 |
| ▸ Bib-Shorts | \$15,478.73 | |
| ▸ Caps | \$3,058.36 | \$1,054.30 |
| ▸ Gloves | \$21,443.10 | \$3,224.17 |
| ▸ Jerseys | \$57,156.67 | \$28,743.43 |
| ▸ Shorts | \$37,517.22 | \$24,549.83 |
| ▸ Socks | \$1,711.99 | \$1,024.21 |
| ▸ Tights | \$18,231.81 | |
| ▸ Vests | \$23,295.52 | \$18,901.08 |

Format dialog can also be called from the context menu:



Let us look at one more example. Let us put the “Geography” and “Date/Date.Calendar” hierarchies on rows and let us put the hierarchy “Product/Product Categories” in context. Select “Bikes” in context:

The screenshot shows a BI tool interface with a pivot table. The 'Context' pane on the left contains 'Product/Product Categories'. The 'Measures' pane contains 'Reseller Sales Amount'. The main table has 'Geography' and 'Date/Date.Calendar' on the rows. The data is as follows:

| Geography | Date/Date... | Reseller Sales Amount | |
|-----------------|-----------------|-----------------------|--------------|
| Australia | ‣ CY 2007 | \$680,645.96 | |
| | ‣ CY 2008 | \$643,174.77 | |
| New South Wales | ‣ CY 2007 | \$477,607.72 | |
| | ‣ CY 2008 | \$433,044.27 | |
| | ‣ Darlinghurst | ‣ CY 2007 | \$3,589.79 |
| | | ‣ CY 2008 | \$2,672.46 |
| | ‣ Lane Cove | ‣ CY 2007 | \$66,561.04 |
| | | ‣ CY 2008 | \$54,116.84 |
| | ‣ Lavender Bay | ‣ CY 2007 | \$131,703.05 |
| | | ‣ CY 2008 | \$84,059.47 |
| | ‣ Malabar | ‣ CY 2008 | \$2,860.88 |
| | ‣ Matraville | ‣ CY 2007 | \$2,195.37 |
| | | ‣ CY 2008 | \$3,085.74 |
| | ‣ Milsons Point | ‣ CY 2007 | \$68,693.28 |
| | | ‣ CY 2008 | \$41,417.71 |
| | ‣ Newcastle | ‣ CY 2007 | \$47,540.40 |
| ‣ CY 2008 | | \$41,933.18 | |
| ‣ North Ryde | ‣ CY 2007 | \$15,023.78 | |
| | ‣ CY 2008 | \$25,830.95 | |
| ‣ North Sydney | ‣ CY 2007 | \$2,105.90 | |
| | ‣ CY 2008 | \$7,775.79 | |
| ‣ Rhodes | ‣ CY 2007 | \$95,512.14 | |
| | ‣ CY 2008 | \$122,459.42 | |
| ‣ Silverwater | ‣ CY 2007 | \$3,179.53 | |

If the automatic level coloring is set for hierarchy “Geography”, but is not set for hierarchy “Date/Date.Calendar”, we will see the following table:

| Geography | Date/Date... | |
|-------------------|--------------|--------------|
| ▼ Australia | ▶ CY 2007 | \$680,645.96 |
| | ▶ CY 2008 | \$643,174.77 |
| ▼ New South Wales | ▶ CY 2007 | \$477,607.72 |
| | ▶ CY 2008 | \$433,044.27 |
| ▶ Darlinghurst | ▶ CY 2007 | \$3,589.79 |
| | ▶ CY 2008 | \$2,672.46 |
| ▶ Lane Cove | ▶ CY 2007 | \$66,561.04 |
| | ▶ CY 2008 | \$54,116.84 |
| ▶ Lavender Bay | ▶ CY 2007 | \$131,703.05 |
| | ▶ CY 2008 | \$84,059.47 |
| ▶ Malabar | ▶ CY 2008 | \$2,860.88 |
| ▶ Matraville | ▶ CY 2007 | \$2,195.37 |
| | ▶ CY 2008 | \$3,085.74 |
| ▶ Milsons Point | ▶ CY 2007 | \$68,693.28 |
| | ▶ CY 2008 | \$41,417.71 |
| ▶ Newcastle | ▶ CY 2007 | \$47,540.40 |
| | ▶ CY 2008 | \$41,933.18 |
| ▶ North Ryde | ▶ CY 2007 | \$15,023.78 |
| | ▶ CY 2008 | \$25,830.95 |
| ▶ North Sydney | ▶ CY 2007 | \$2,105.90 |
| | ▶ CY 2008 | \$7,775.79 |
| ▶ Rhodes | ▶ CY 2007 | \$95,512.14 |
| | ▶ CY 2008 | \$122,459.42 |
| ▶ Silverwater | ▶ CY 2007 | \$3,179.53 |

The format rules are going “through” another hierarchy for which they are not defined.

If we set up the format rules for “Date/Date.Calendar” which is placed to the right side of “Geography”, we will get this:

The screenshot shows a context menu for a hierarchy. The menu items are:

- Drill by
- Drill by on New Page
- Drill Up
- Drill Down
- Hide Item
- Keep Only This
- Hide Siblings
- Show All Children
- Show Level
- Member Selector...
- Actions
- Copy to Clipboard
- Sorting
- Filter
- Formatting

The 'Formatting' option is expanded, showing a list of color schemes:

- Grey Alternating
- Red Alternating
- Orange Alternating
- Yellow Alternating
- Green Alternating
- Cyan Alternating (highlighted)
- Blue Alternating
- Violet Alternating
- Grey

| Geography | Date/Date... | |
|------------------------------|-----------------|--------------|
| ▼ Australia | ▸ CY 2007 | \$680,645.96 |
| | ▸ CY 2008 | \$643,174.77 |
| ▼ New South Wales | ▸ CY 2007 | \$477,607.72 |
| | ▸ CY 2008 | \$433,044.27 |
| Australia New South Wales | ▸ Darlinghurst | \$3,589.79 |
| | | \$2,672.46 |
| | ▸ Lane Cove | \$66,561.04 |
| | | \$54,116.84 |
| | ▸ Lavender Bay | \$131,703.05 |
| | | \$84,059.47 |
| | ▸ Malabar | \$2,860.88 |
| | ▸ Matraville | \$2,195.37 |
| | | \$3,085.74 |
| | ▸ Milsons Point | \$68,693.28 |
| | | \$41,417.71 |
| | ▸ Newcastle | \$47,540.40 |
| | | \$41,933.18 |
| | ▸ North Ryde | \$15,023.78 |
| | | \$25,830.95 |
| | ▸ North Sydney | \$2,105.90 |
| | \$7,775.79 | |
| ▸ Rhodes | \$95,512.14 | |
| | \$122,459.42 | |
| ▸ Silverwater | \$3,179.53 | |

The right formatting rule has priority over the left formatting rule. If we have several levels displayed in the “Date/ Date.Calendar” hierarchy, it will look like this:

| Geography | Date/Date.Calendar | |
|------------------|--------------------|--------------|
| Australia | ▼ CY 2007 | \$680,645.96 |
| | ▼ Q3 CY 2007 | \$342,806.87 |
| | ▶ July 2007 | \$39,902.50 |
| | ▶ August 2007 | \$103,881.43 |
| | ▶ September 2007 | \$199,022.94 |
| | ▼ Q4 CY 2007 | \$337,839.09 |
| | ▶ October 2007 | \$51,635.39 |
| | ▶ November 2007 | \$106,464.38 |
| | ▶ December 2007 | \$179,739.31 |
| | ▼ CY 2008 | \$643,174.77 |
| | ▼ Q1 CY 2008 | \$307,762.01 |
| | ▶ January 2008 | \$61,364.99 |
| | ▶ February 2008 | \$63,843.85 |
| | ▶ March 2008 | \$182,553.17 |
| | ▼ Q2 CY 2008 | \$335,412.76 |
| | ▶ April 2008 | \$54,279.61 |
| | ▶ May 2008 | \$98,422.81 |
| | ▶ June 2008 | \$182,710.33 |
| | ▼ CY 2007 | \$477,607.72 |
| | ▼ Q3 CY 2007 | \$247,843.85 |
| ▶ July 2007 | \$33,055.83 | |
| ▶ August 2007 | \$74,779.73 | |
| ▶ September 2007 | \$140,008.29 | |
| ▼ Q4 CY 2007 | \$229,763.87 | |
| ▶ October 2007 | \$38,611.58 | |
| ▶ November 2007 | \$71,038.37 | |
| ▶ December 2007 | \$120,113.92 | |
| ▼ CY 2008 | \$433,044.27 | |
| ▼ Q1 CY 2008 | \$207,636.47 | |
| ▶ January 2008 | \$55,804.27 | |
| ▶ February 2008 | \$41,670.30 | |

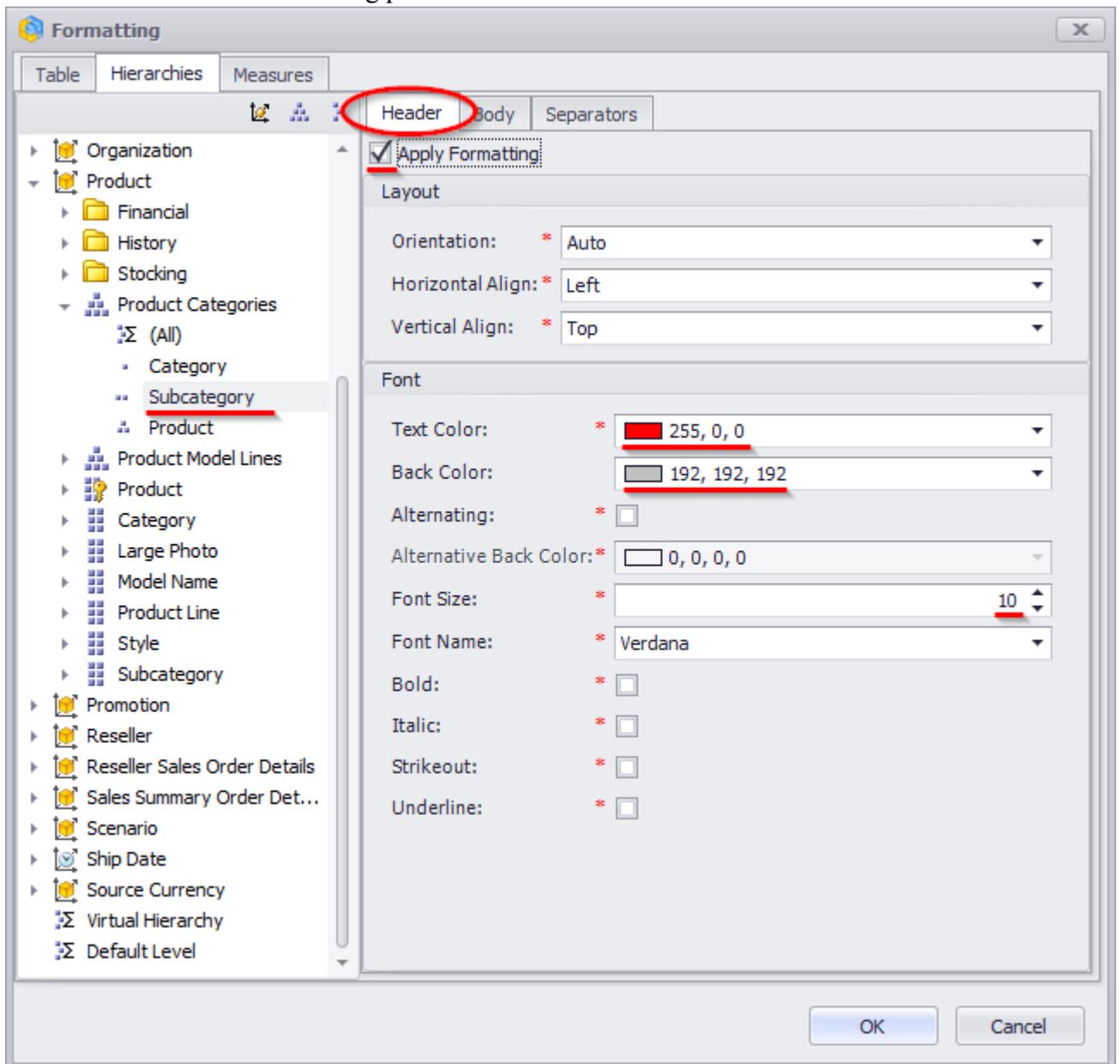
6.3.2 Formatting for Levels

For every level of the tab “Hierarchies” you can set up parameters of the body and the header. Let us look at the example:

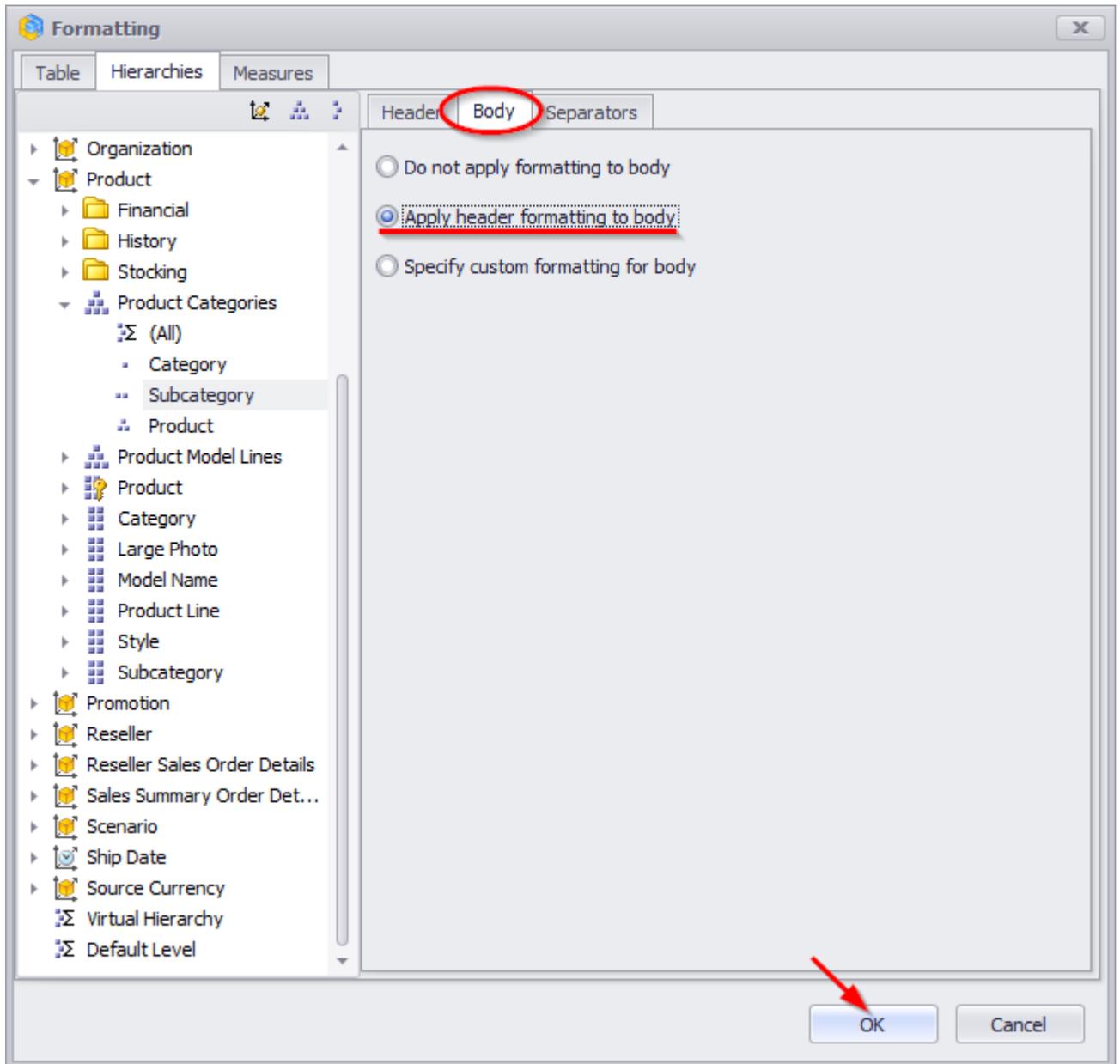
The screenshot displays a data visualization interface with a pivot table. The columns are 'Date/Date.Calendar' and 'Geography', and the rows are 'Product/Product Categories'. The pivot table shows sales data for 'Accessories' and 'Helmets' in 'Canada' for 'CY 2007' and 'CY 2008'. A context menu is open over the 'Accessories' row, showing options like 'Drill by', 'Drill Up', 'Drill Down', 'Hide Item', 'Keep Only This', 'Hide Siblings', 'Show All Children', 'Show Level', 'Member Selector...', 'Actions', 'Copy to Clipboard', 'Sorting', 'Filter', and 'Formatting'. The 'Formatting' option is expanded to show a list of color schemes for 'Subcategory...' and 'Product/Product Categories...'. The 'Subcategory...' list includes 'Grey Alternating', 'Red Alternating', 'Orange Alternating', 'Yellow Alternating', 'Green Alternating', 'Cyan Alternating', 'Blue Alternating', and 'Violet Alternating'. The 'Product/Product Categories...' list includes 'Grey' and 'Red'.

| Product/Product Categories | CY 2007 | CY 2008 |
|----------------------------|-------------|-------------|
| Accessories | \$58,128.43 | \$32,356.20 |
| Helmets | \$23,984.40 | \$10,406.00 |
| Local | | |
| Pur | | |
| Bikes | | 09,709.62 |
| Motor | | 27,933.91 |
| Road | | 57,851.93 |
| Clothing | | 77,497.00 |
| Bib | | |
| Cap | | \$1,054.30 |
| Glo | | \$3,224.17 |
| Jer | | 28,743.43 |
| Sho | | |
| Soc | | |
| Tig | | |
| Comp | | |
| For | | |
| Har | | |
| Hea | | |
| Mo | | |
| Ro | | |
| Wh | | |

Let us select the following parameters on the tab “Header”:



Set us “Apply header formatting to body”:



As a result, the table will look like this:

| Product/Product Categories | ▸ CY 2007 | ▸ CY 2008 |
|----------------------------|----------------|----------------|
| | ▸ Canada | ▸ Canada |
| ▾ Accessories | \$58,128.43 | \$32,356.20 |
| Accessories | ▸ Helmets | ##### |
| | ▸ Locks | ##### |
| | ▸ Pumps | ##### |
| ▾ Bikes | \$4,417,665.71 | \$1,909,709.62 |
| Bikes | ▸ | ##### |
| | ▸ | ##### |
| ▾ Clothing | \$177,893.39 | \$77,497.00 |
| Clothing | ▸ | ##### |
| | ▸ Caps | ##### |
| | ▸ Gloves | ##### |
| | ▸ Jerseys | ##### |
| | ▸ Shorts | ##### |
| | ▸ Socks | ##### |
| | ▸ Tights | ##### |
| ▾ Components | \$997,617.89 | \$370,698.68 |
| Components | ▸ Forks | ##### |
| | ▸ | ##### |
| | ▸ Headsets | ##### |
| | ▸ | ##### |
| | ▸ | ##### |
| | ▸ Wheels | ##### |

If we increase the height and width of cells, we'll get a readable version:

| Product/Product Categories | ▸ CY 2007 | ▸ CY 2008 |
|----------------------------|----------------|----------------|
| | ▸ Canada | ▸ Canada |
| ▾ Accessories | \$58,128.43 | \$32,356.20 |
| Accessories | ▸ Helmets | \$23,984.40 |
| | ▸ Locks | \$1,515.00 |
| | ▸ Pumps | \$1,067.47 |
| ▾ Bikes | \$4,417,665.71 | \$1,909,709.62 |
| Bikes | ▸ Mountai... | \$1,666,549.71 |
| | ▸ Road Bi... | \$2,075,667.15 |
| ▾ Clothing | \$177,893.39 | \$77,497.00 |
| Clothing | ▸ Bib-Sho ... | \$15,478.73 |
| | ▸ Caps | \$3,058.36 |
| | ▸ Gloves | \$21,443.10 |
| | ▸ Jerseys | \$57,156.67 |
| | ▸ Shorts | \$37,517.22 |
| | ▸ Socks | \$1,711.99 |
| | ▸ Tights | \$18,231.81 |
| ▾ Components | \$997,617.89 | \$370,698.68 |
| Components | ▸ Forks | \$5,424.63 |
| | ▸ Handleb ... | \$15,886.89 |
| | ▸ Headsets | \$5,443.00 |
| | ▸ Mountai... | \$384,818.02 |
| | ▸ Road Fr... | \$347,954.18 |
| | ▸ Wheels | \$41,116.51 |

The selection looks like this:

The screenshot shows a window titled "Member Selector: Product/Product Categories". It has a tree view on the left and a table on the right. In the tree view, "All Products" is selected, and its sub-items "Category", "Subcategory", and "Product" are also checked. The table displays data for "CY 2007" and "CY 2008", both filtered to "Canada".

| Product/Product Categories | CY 2007 | CY 2008 |
|----------------------------|----------------|----------------|
| | Canada | Canada |
| Accessories | \$58,128.43 | \$32,356.20 |
| Bike Racks | \$21,405.68 | \$16,089.98 |
| Hitch Rack - 4-Bike | \$21,405.68 | \$16,089.98 |
| Bottles and Cages | \$856.53 | \$502.16 |
| Water Bottle - 30 oz. | \$856.53 | \$502.16 |
| Cleaners | \$1,219.93 | \$887.97 |
| Bike Wash - Dissolver | \$1,219.93 | \$887.97 |
| Helmets | \$23,984.40 | \$10,406.00 |
| Sport-100 Helmet, Black | \$2,837.13 | |
| Sport-100 Helmet, Black | \$5,492.30 | \$3,843.78 |
| Sport-100 Helmet, Blue | \$3,561.51 | |
| Sport-100 Helmet, Blue | \$4,602.35 | \$3,224.20 |
| Sport-100 Helmet, Red | \$2,321.45 | |
| Sport-100 Helmet, Red | \$5,169.66 | \$3,338.02 |
| Hydration Packs | \$7,964.01 | \$4,404.14 |
| Hydration Pack - 70 oz. | \$7,964.01 | \$4,404.14 |
| Locks | \$1,515.00 | |
| Cable Lock | \$1,515.00 | |
| Pumps | \$1,067.47 | |
| Minipump | \$1,067.47 | |
| Tires and Tubes | \$115.42 | \$65.95 |
| Patch Kit/8 Patches | \$115.42 | \$65.95 |
| Bikes | \$4,417,665.71 | \$1,909,709.62 |
| Mountain Bikes | \$1,666,549.71 | \$727,933.91 |
| Mountain-200 Black, 38 | \$134,011.02 | |

So, the rule is next: the settings for body of the table have higher priority than setting for the hierarchy.

Let us add one more level:

The screenshot shows a window titled "Выборка элементов: Product/Product Categories". It has a tree view on the left. "All Products" is selected and highlighted with a red box. Its sub-items "Category", "Subcategory", and "Product" are also checked.

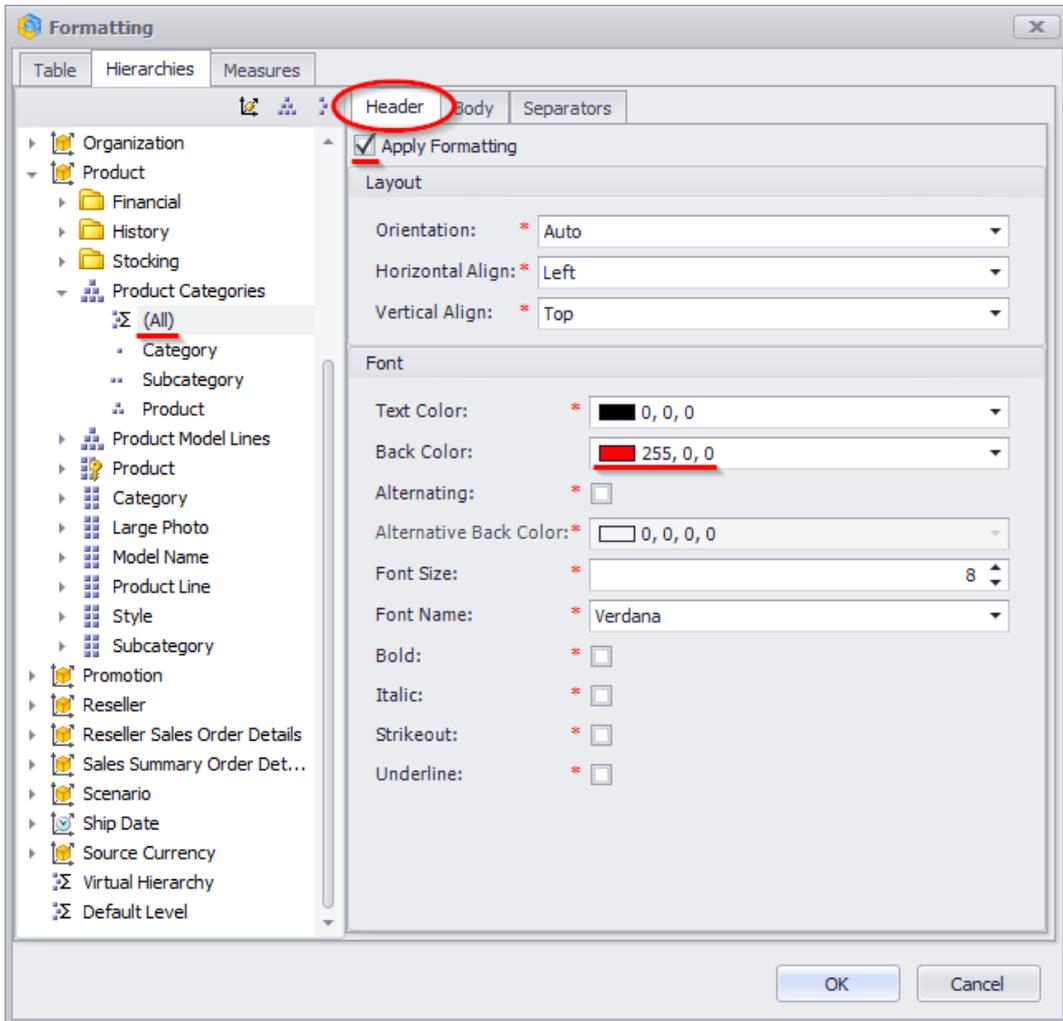
| Product/Product Categories | | CY 2007 | CY 2008 |
|----------------------------|--|------------|----------------|
| | | Canada | Canada |
| All Products | | | \$2,390,261.51 |
| Accessories | | | \$32,356.20 |
| Bike Racks | | | \$16,089.98 |
| Hitch Rack - 4-Bi | | | \$16,089.98 |
| Bottles and Ca | | | \$502.16 |
| Water Bottle - 30 | | | \$502.16 |
| Cleaners | | | \$887.97 |
| Bike Wash - Dissc | | | \$887.97 |
| Helmets | | | \$10,406.00 |
| Sport-100 Helme | | | |
| Hydration Pack | | | |
| Hydration Pack - | | | |
| Locks | | | |
| Cable Lock | | | |
| Pumps | | | |
| Minipump | | \$1,067.47 | |
| Tires and Tubes | | \$115.42 | |
| Patch Kit/8 Patches | | \$115.42 | |
| Bikes | | | \$4,417,665.71 |
| Mountain Bikes | | | \$1,666,549.71 |

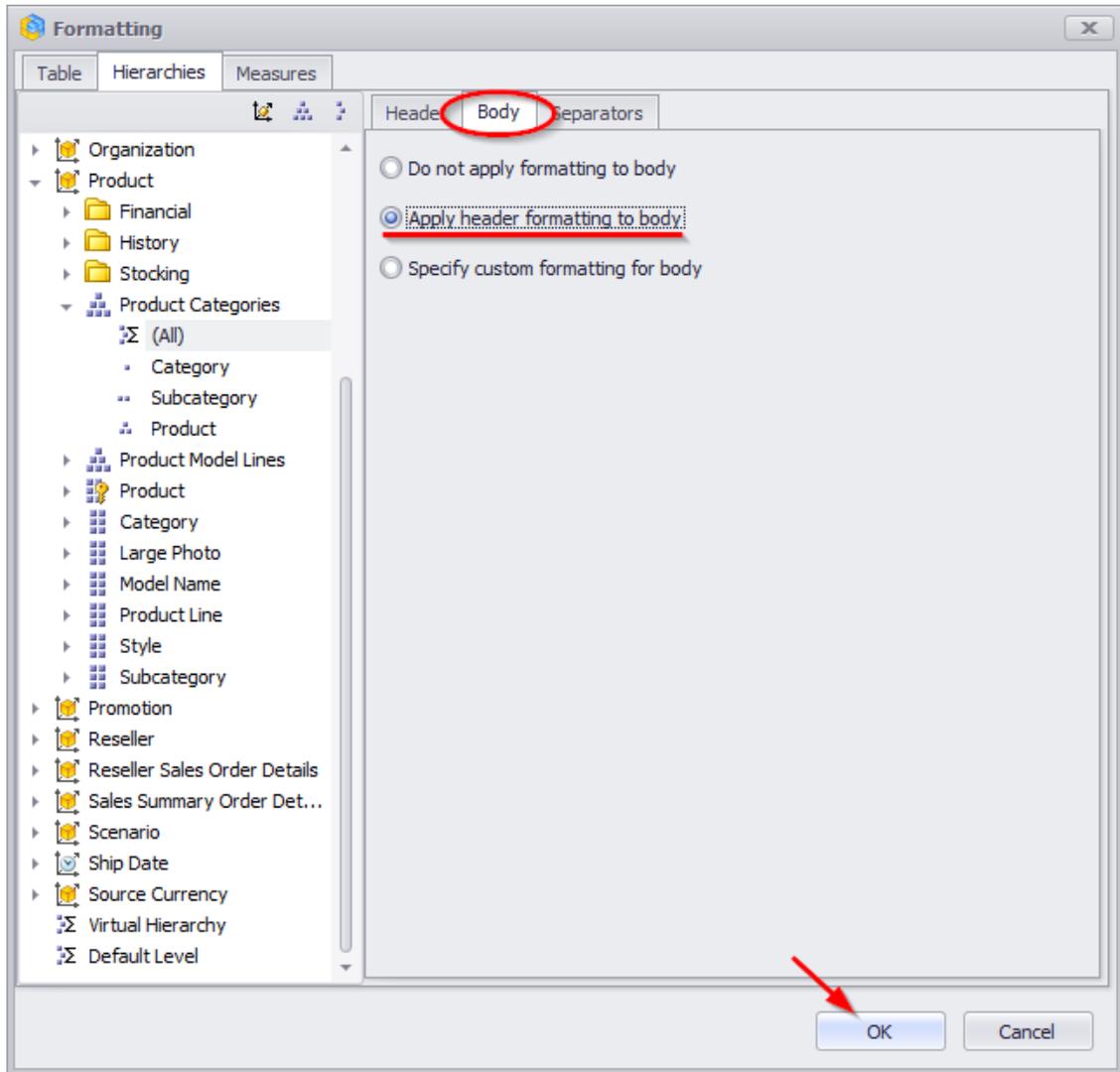
- Drill by ▶
- Drill by on New Page ▶
- Drill Up
- Drill Down
- Hide Item
- Keep Only This
- Hide Siblings
- Show All Children
- Show Level ▶
- Member Selector...
- Actions ▶
- Copy to Clipboard
- Sorting ▶
- Filter ▶
- Formatting ▶

Formatting for (All)...

Formatting for Product/Product Categories...

- Grey Alternating
- Red Alternating
- Orange Alternating
- Yellow Alternating
- Green Alternating
- Cyan Alternating
- Blue Alternating
- Violet Alternating
- Grey
- Red





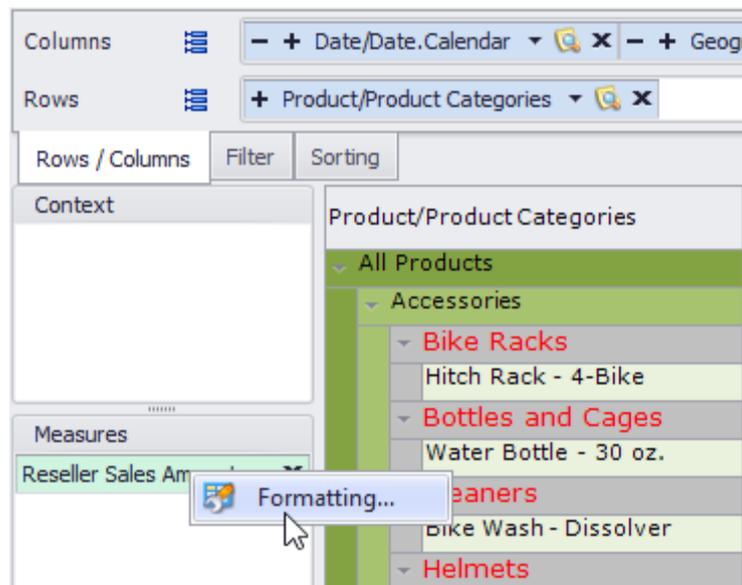
As a result, the table will look like this:

| Product/Product Categories | ▸ CY 2007 | ▸ CY 2008 |
|----------------------------|----------------|----------------|
| | ▸ Canada | ▸ Canada |
| ▼ All Products | \$5,651,305.43 | \$2,390,261.51 |
| ▼ Accessories | \$58,128.43 | \$32,356.20 |
| ▼ Bike Racks | \$21,405.68 | \$16,089.98 |
| Hitch Rack - 4-Bike | \$21,405.68 | \$16,089.98 |
| ▼ Bottles and Cages | \$856.53 | \$502.16 |
| Water Bottle - 30 oz. | \$856.53 | \$502.16 |
| ▼ Cleaners | \$1,219.93 | \$887.97 |
| Bike Wash - Dissolver | \$1,219.93 | \$887.97 |
| ▼ Helmets | \$23,984.40 | \$10,406.00 |
| Sport-100 Helmet, Black | \$2,837.13 | |
| Sport-100 Helmet, Black | \$5,492.30 | \$3,843.78 |
| Sport-100 Helmet, Blue | \$3,561.51 | |
| Sport-100 Helmet, Blue | \$4,602.35 | \$3,224.20 |
| Sport-100 Helmet, Red | \$2,321.45 | |
| Sport-100 Helmet, Red | \$5,169.66 | \$3,338.02 |
| ▼ Hydration Packs | \$7,964.01 | \$4,404.14 |
| Hydration Pack - 70 oz. | \$7,964.01 | \$4,404.14 |
| ▼ Locks | \$1,515.00 | |
| Cable Lock | \$1,515.00 | |
| ▼ Pumps | \$1,067.47 | |
| Minipump | \$1,067.47 | |
| ▼ Tires and Tubes | \$115.42 | \$65.95 |
| Patch Kit/8 Patches | \$115.42 | \$65.95 |
| ▼ Bikes | \$4,417,665.71 | \$1,909,709.62 |
| ▼ Mountain Bikes | \$1,666,549.71 | \$727,933.91 |

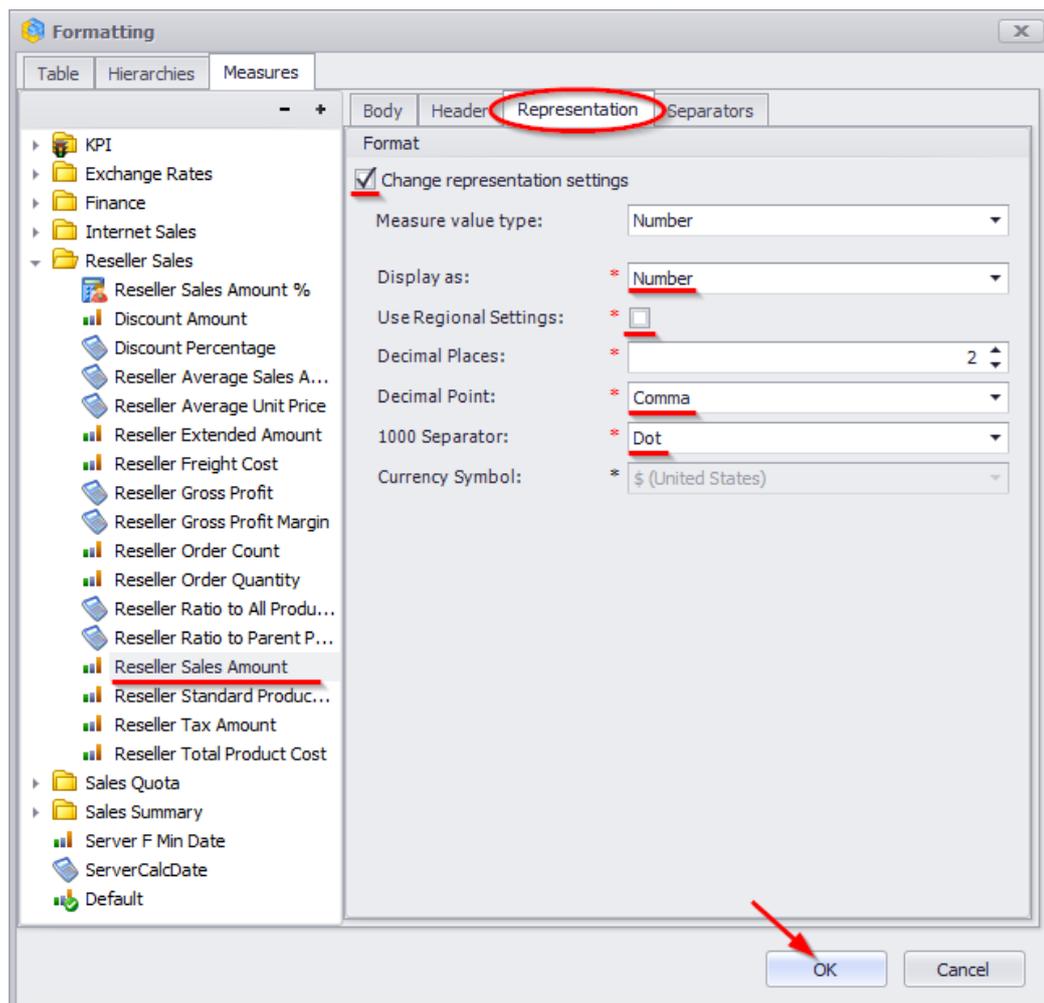
We can conclude that formatting for a specific level overrides the settings for the whole hierarchy.

6.3.3 Measures Formatting

Let us look at measure formatting:



There is one more tab “Representation” in the dialog where you can set the number of digits before the decimal point, the currency symbol, the color and the font parameters for the measure. Let us set up the following parameters for the “Reseller Sales Amount” measure:

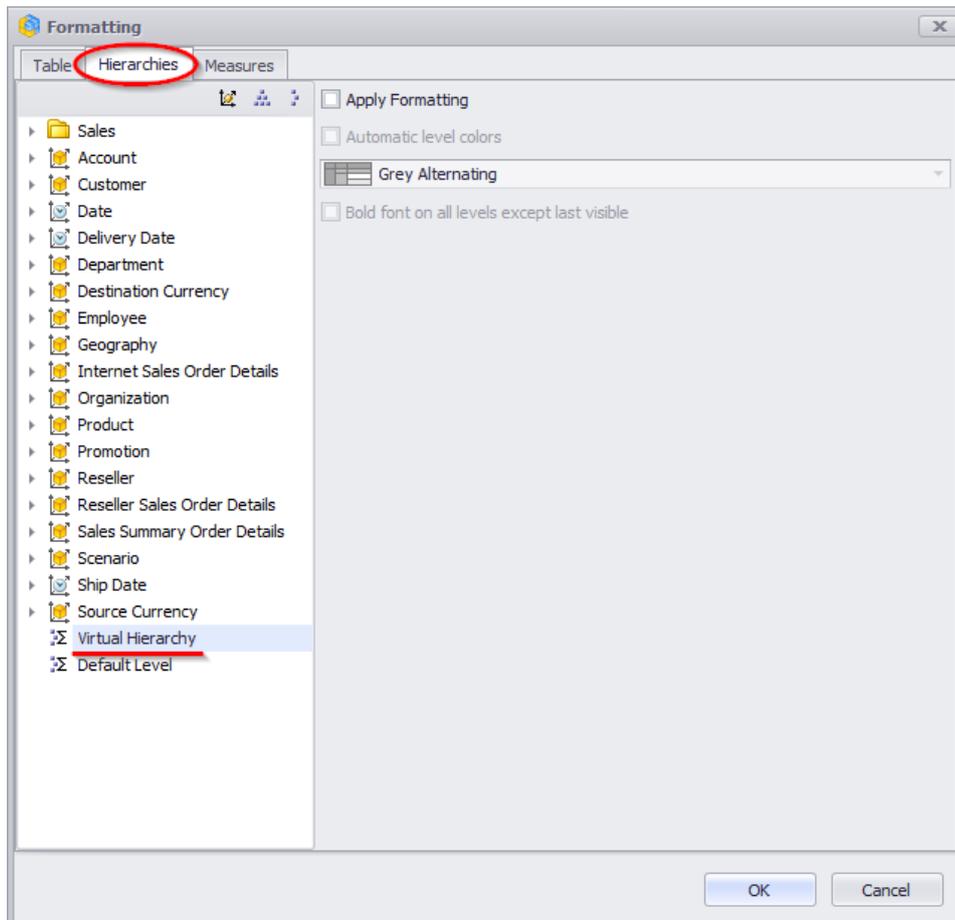


The table will look like this:

| Product/Product Categories | ▸ CY 2007 | ▸ CY 2008 |
|----------------------------|---------------------|-------------------|
| | ▸ Canada | ▸ Canada |
| ▾ All Products | 5.651.305,43 | 2.390.261,51 |
| ▾ Accessories | 58.128,43 | 32.356,20 |
| ▾ Bike Racks | 21.405,68 | 16.089,98 |
| Hitch Rack - 4-Bike | 21.405,68 | 16.089,98 |
| ▾ Bottles and Cages | 856,53 | 502,16 |
| Water Bottle - 30 oz. | 856,53 | 502,16 |
| ▾ Cleaners | 1.219,93 | 887,97 |
| Bike Wash - Dissolver | 1.219,93 | 887,97 |
| ▾ Helmets | 23.984,40 | 10.406,00 |
| Sport-100 Helmet, Black | 2.837,13 | |
| Sport-100 Helmet, Black | 5.492,30 | 3.843,78 |
| Sport-100 Helmet, Blue | 3.561,51 | |
| Sport-100 Helmet, Blue | 4.602,35 | 3.224,20 |
| Sport-100 Helmet, Red | 2.321,45 | |
| Sport-100 Helmet, Red | 5.169,66 | 3.338,02 |
| ▾ Hydration Packs | 7.964,01 | 4.404,14 |
| Hydration Pack - 70 oz. | 7.964,01 | 4.404,14 |
| ▾ Locks | 1.515,00 | |
| Cable Lock | 1.515,00 | |
| ▾ Pumps | 1.067,47 | |
| Minipump | 1.067,47 | |
| ▾ Tires and Tubes | 115,42 | 65,95 |
| Patch Kit/8 Patches | 115,42 | 65,95 |
| ▾ Bikes | 4.417.665,71 | 1.909.709,62 |
| Bi ▾ Mountain Bikes | 1.666.549,71 | 727.933,91 |

6.3.4 Formatting for Virtual Hierarchies

The virtual hierarchies are accessible on the tab “Hierarchies”:



Let us make an example using a virtual hierarchy with levels “Date/Date. Month” of “Year” and “Product/Color”:

Columns: **+ Date/Date.Calendar** **- Date/Date.Month of Year** **- Product/Color**

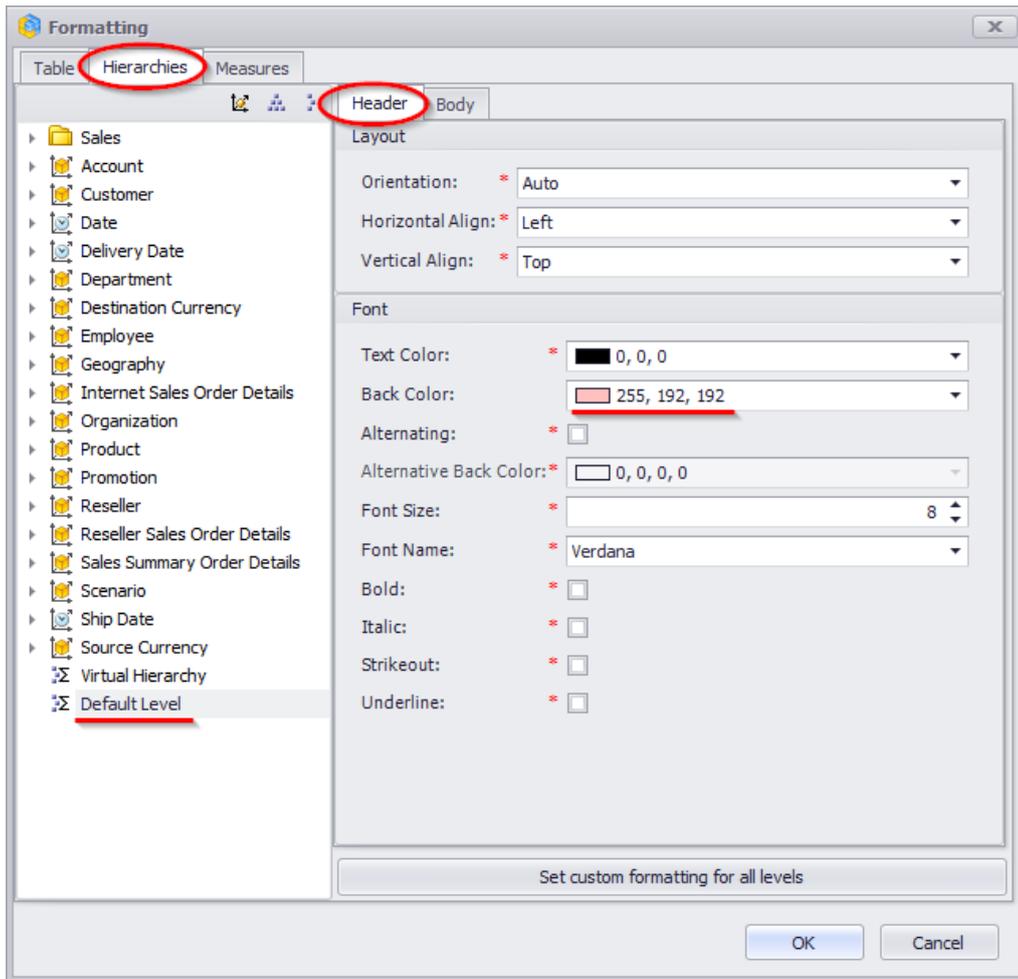
Rows: **+ Geography**

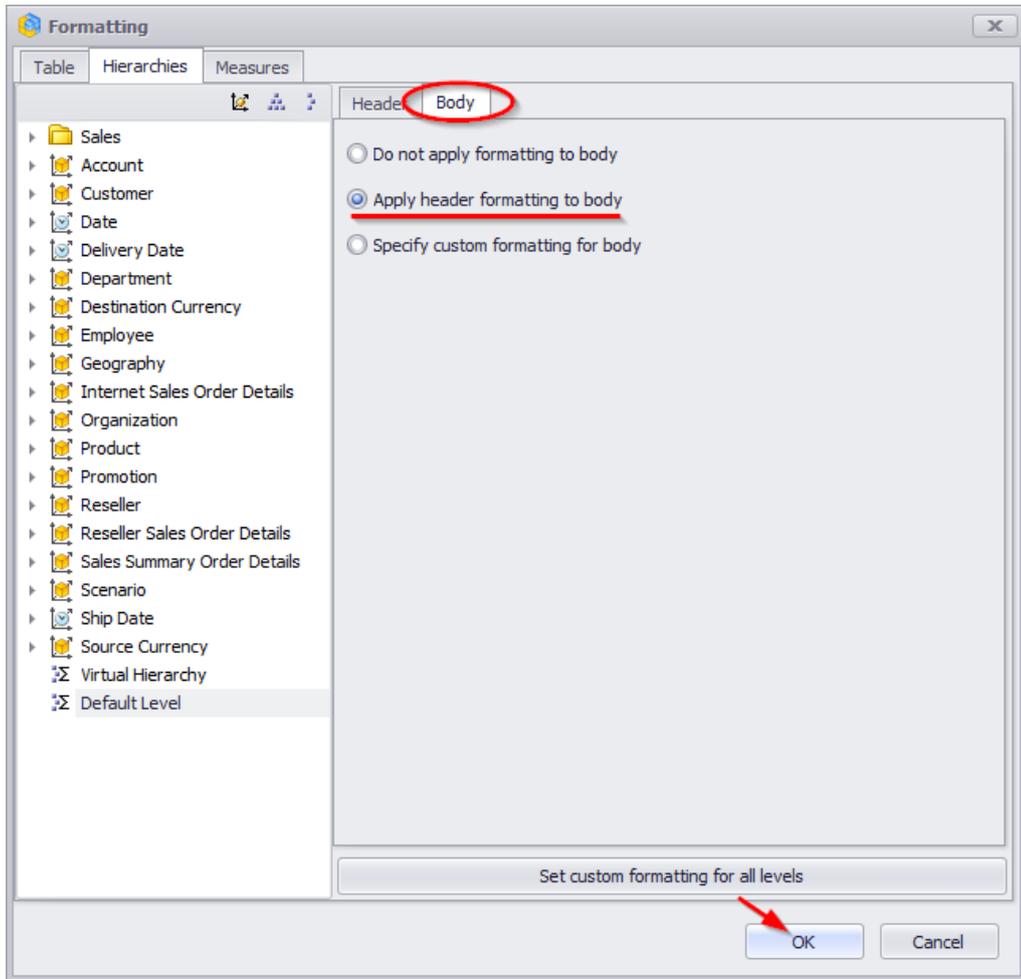
Rows / Columns | Filter | Sorting

| Context | CY 2007 | | | | |
|------------------|--------------|--------------|--------------|-------------|----|
| | January | | | | |
| | Black | Red | Silver | Yellow | Fe |
| Geography | | | | | Bl |
| ▶ Canada | \$94,420.46 | \$46,192.93 | \$41,014.11 | \$17,407.61 | |
| ▶ France | \$25,927.94 | \$1,879.18 | \$2,485.70 | | |
| ▶ United Kingdom | \$13,222.25 | \$13,210.86 | | \$5,402.36 | |
| ▶ United States | \$440,395.57 | \$253,942.45 | \$147,179.34 | \$69,030.19 | |

Measures: **Reseller Sales Amount**

Let us set the default settings for all levels:





The table will look like this:

Columns: - + Date/Date.Calendar X - Date/Date.Month of Year X - Product/Color X

Rows: - + Geography X

Rows / Columns | Filter | Sorting

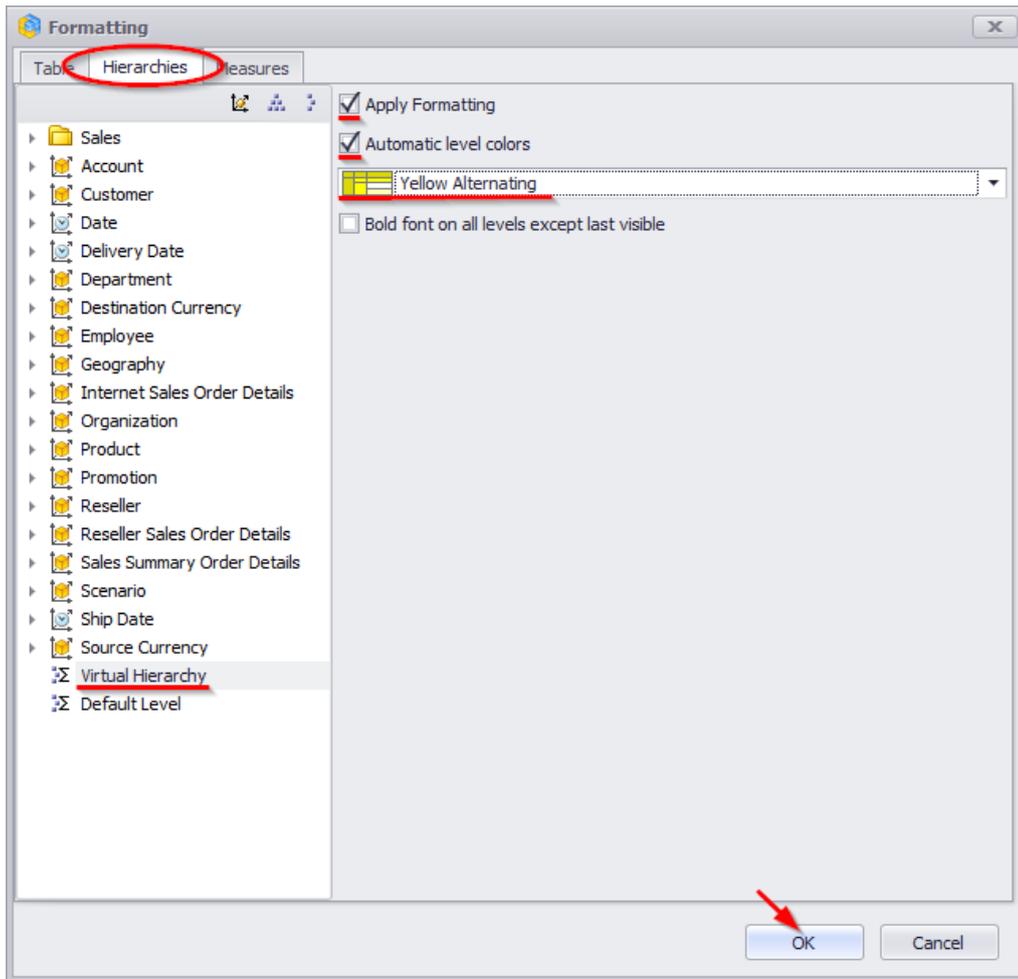
Context: Product/Product Categ... X

- [-] All Products
 - [-] Accessories
 - [x] Bikes
 - [-] Clothing
 - [-] Components

Measures: Reseller Sales Amount X

| Geography | CY 2007 | | | | |
|----------------|--------------|--------------|--------------|-------------|----|
| | January | | | | |
| | Black | Red | Silver | Yellow | Fe |
| Canada | \$94,420.46 | \$46,192.93 | \$41,014.11 | \$17,407.61 | |
| France | \$25,927.94 | \$1,879.18 | \$2,485.70 | | |
| United Kingdom | \$13,222.25 | \$13,210.86 | | \$5,402.36 | |
| United States | \$440,395.57 | \$253,942.45 | \$147,179.34 | \$69,030.19 | |

Let us set up formatting for virtual hierarchies:



At the first sight this action changes nothing. But as soon as we merge two hierarchies, the table will look like this:

The screenshot shows a BI tool interface with the following configuration:

- Columns:** Date/Date.Calendar, Date/Date.Month of Year, Color
- Rows:** Geography
- Measures:** Reseller Sales Amount

| Geography | CY 2007 | | | | |
|----------------|--------------|--------------|--------------|--------------|-------------|
| | January | | | | |
| | Black | Red | Silver | Yellow | Fe |
| Canada | \$199,035.11 | \$94,420.46 | \$46,192.93 | \$41,014.11 | \$17,407.61 |
| France | \$30,292.82 | \$25,927.94 | \$1,879.18 | \$2,485.70 | |
| United Kingdom | \$31,835.47 | \$13,222.25 | \$13,210.86 | | \$5,402.36 |
| United States | \$910,547.55 | \$440,395.57 | \$253,942.45 | \$147,179.34 | \$69,030.19 |

As our experience shows, there is only one virtual hierarchy in most of the cases. But if there are two or more of them, the settings will be applied just to the most right of them.

Example:

The screenshot shows a BI tool interface with the following configuration:

- Columns:** Product/Model Name, Style, Date/Date.Calendar, Product/Color, Month of Year
- Rows:** Geography
- Measures:** Reseller Sales Amount

| Product/Model Name, Produ... | Date/Date... | Product/Colo... | Canada | France | United King... | United States |
|------------------------------|--------------|-----------------|-------------|------------|----------------|---------------|
| Men's Bib-Shorts | CY 2006 | Multi | \$25,352.88 | \$6,902.67 | \$5,530.10 | \$64,077.06 |
| | | July | \$3,883.97 | \$1,781.80 | \$647.93 | \$10,926.66 |
| | | August | \$6,705.84 | \$2,259.18 | \$1,781.80 | \$15,433.72 |
| | | September | \$6,070.04 | \$377.96 | \$809.91 | \$15,886.09 |
| | | October | \$2,537.72 | \$1,079.88 | \$994.61 | \$6,047.33 |
| | | November | \$3,077.66 | \$1,403.84 | \$917.90 | \$5,939.34 |
| | CY 2007 | Multi | \$15,478.73 | \$3,856.29 | \$3,293.63 | \$42,248.34 |
| | | January | \$1,943.78 | \$593.93 | \$323.96 | \$3,671.59 |
| | | February | \$2,159.76 | \$971.89 | \$485.95 | \$4,859.46 |
| | | March | \$593.93 | \$107.99 | | \$5,831.35 |
| | | April | \$2,807.69 | \$886.62 | \$863.90 | \$6,803.24 |
| | | May | \$4,319.52 | \$1,295.86 | \$1,511.83 | \$10,011.60 |
| Mens | CY 2006 | Multi | \$25,352.88 | \$6,902.67 | \$5,530.10 | \$64,077.06 |
| | | July | \$3,883.97 | \$1,781.80 | \$647.93 | \$10,926.66 |
| | | August | \$6,705.84 | \$2,259.18 | \$1,781.80 | \$15,433.72 |
| | | September | \$6,070.04 | \$377.96 | \$809.91 | \$15,886.09 |
| | | October | \$2,537.72 | \$1,079.88 | \$994.61 | \$6,047.33 |
| | | November | \$3,077.66 | \$1,403.84 | \$917.90 | \$5,939.34 |
| | CY 2007 | Multi | \$15,478.73 | \$3,856.29 | \$3,293.63 | \$42,248.34 |
| | | January | \$1,943.78 | \$593.93 | \$323.96 | \$3,671.59 |
| | | February | \$2,159.76 | \$971.89 | \$485.95 | \$4,859.46 |
| | | March | \$593.93 | \$107.99 | | \$5,831.35 |

This version is more readable:

The screenshot shows a data visualization interface with a pivot table. The 'Rows' section at the top is highlighted with a red box and contains the following filters: Product/Model Name, Style, Color, and Month of Year. The pivot table displays sales data for 'Reseller Sales Amount' across four countries: Canada, France, United Kingdom, and United States. The data is organized into a hierarchy: Men's Bib-Shorts (Multi, then months), Men's Sports Shorts (Black, then months), and a final 'Black' category. A 'Highlight' button is visible at the bottom left of the table area.

| Context | Product/Model Name, Produ... | Canada | France | United King... | United States |
|---------------------|------------------------------|-------------|-------------|----------------|---------------|
| Men's Bib-Shorts | | \$40,831.61 | \$10,758.95 | \$8,823.74 | \$106,325.41 |
| Mens | | \$40,831.61 | \$10,758.95 | \$8,823.74 | \$106,325.41 |
| Multi | | \$40,831.61 | \$10,758.95 | \$8,823.74 | \$106,325.41 |
| January | | \$1,943.78 | \$593.93 | \$323.96 | \$3,671.59 |
| February | | \$2,159.76 | \$971.89 | \$485.95 | \$4,859.46 |
| March | | \$593.93 | \$107.99 | | \$5,831.35 |
| April | | \$2,807.69 | \$886.62 | \$863.90 | \$6,803.24 |
| May | | \$4,319.52 | \$1,295.86 | \$1,511.83 | \$10,011.60 |
| June | | \$3,654.04 | | \$107.99 | \$11,071.09 |
| July | | \$3,883.97 | \$1,781.80 | \$647.93 | \$10,926.66 |
| August | | \$6,705.84 | \$2,259.18 | \$1,781.80 | \$15,433.72 |
| September | | \$6,070.04 | \$377.96 | \$809.91 | \$15,886.09 |
| October | | \$2,537.72 | \$1,079.88 | \$994.61 | \$6,047.33 |
| November | | \$3,077.66 | \$1,403.84 | \$917.90 | \$5,939.34 |
| December | | \$3,077.66 | | \$377.96 | \$9,843.93 |
| Men's Sports Shorts | | \$20,319.50 | \$5,975.00 | \$3,887.35 | \$51,716.77 |
| Mens | | \$20,319.50 | \$5,975.00 | \$3,887.35 | \$51,716.77 |
| Black | | \$20,319.50 | \$5,975.00 | \$3,887.35 | \$51,716.77 |
| January | | \$863.86 | \$395.93 | \$287.95 | \$2,015.66 |
| February | | \$1,295.78 | \$611.90 | \$71.99 | \$1,943.68 |
| March | | \$719.88 | | \$107.98 | \$2,915.51 |
| April | | \$1,898.18 | \$467.92 | \$359.94 | \$3,527.41 |
| May | | \$2,123.65 | \$1,259.79 | \$431.93 | \$4,535.24 |
| June | | \$1,547.74 | \$35.99 | \$71.99 | \$5,147.14 |
| July | | \$2,332.00 | \$1,007.83 | \$539.91 | \$4,457.55 |

6.3.5 Formatting priorities

There are several rules:

- Highlight rules have the biggest priority;
- The measure body formatting have the middle priority;
- Level formatting rules have the lowest priority.

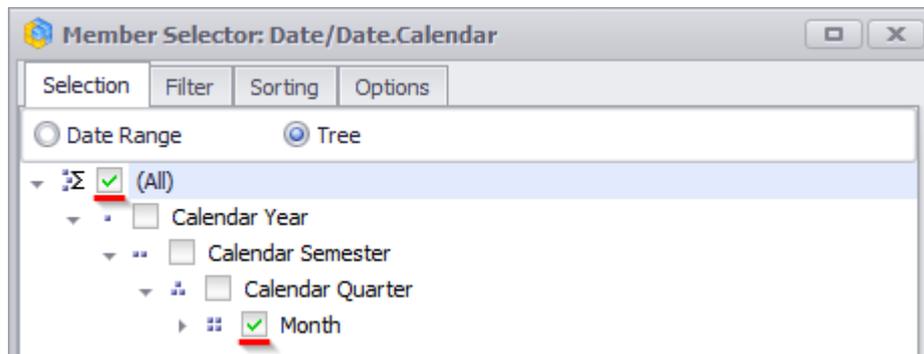
If there are several format rules and some of them are in rows, then the priority belongs to the object which is at the right side.

If there are two hierarchies – one of them is on rows, the other one is on columns, the higher priority will belong to the one which is on rows.

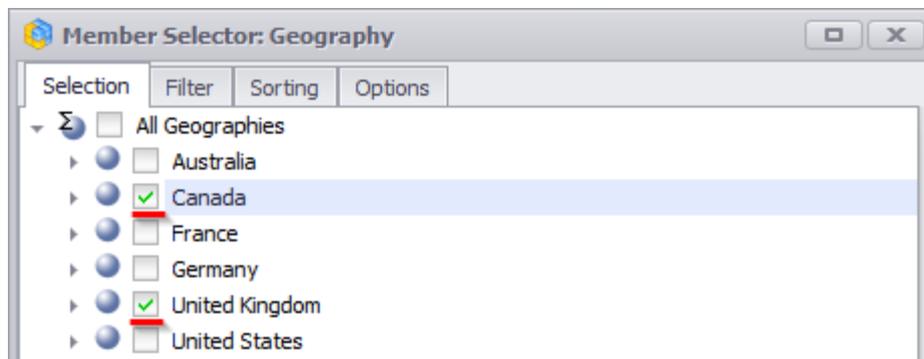
6.3.6 Table Separators

There is one more tab for levels, measures and measure headers: the “Separators” tab. The tab allows to set the thickness and color for the lines and separators.

Let us look at the example with the following selection on rows and columns:



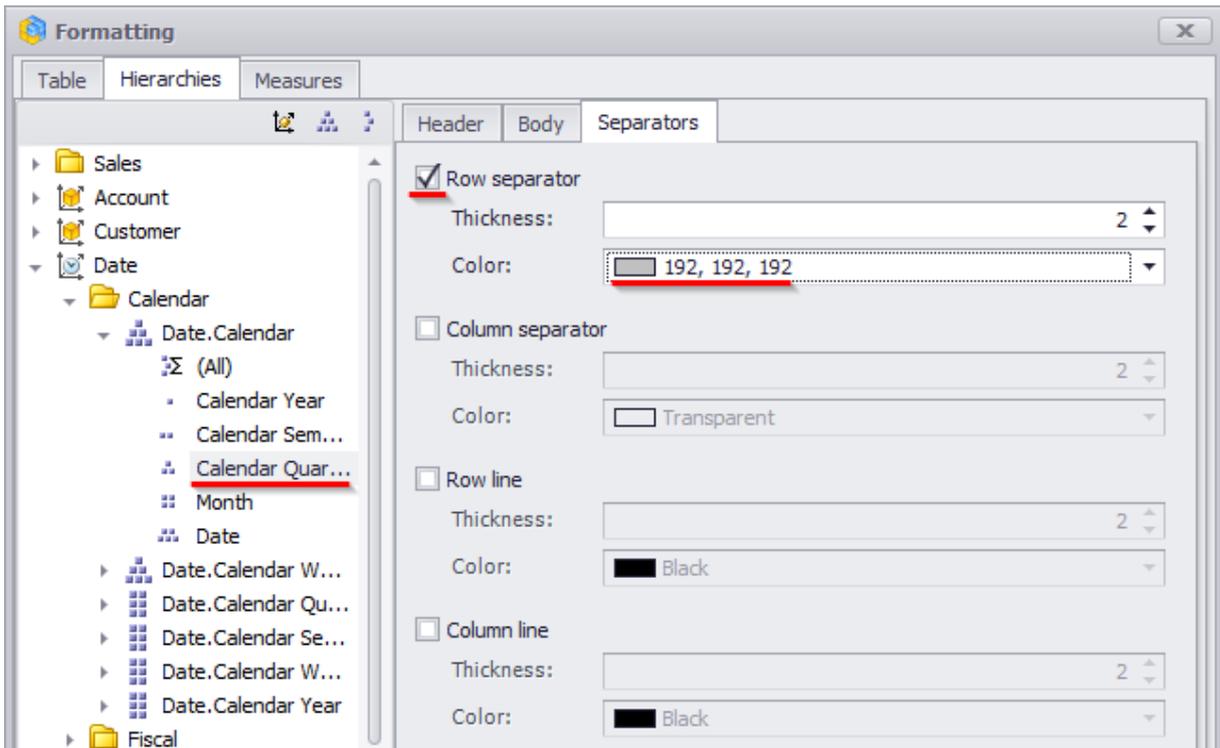
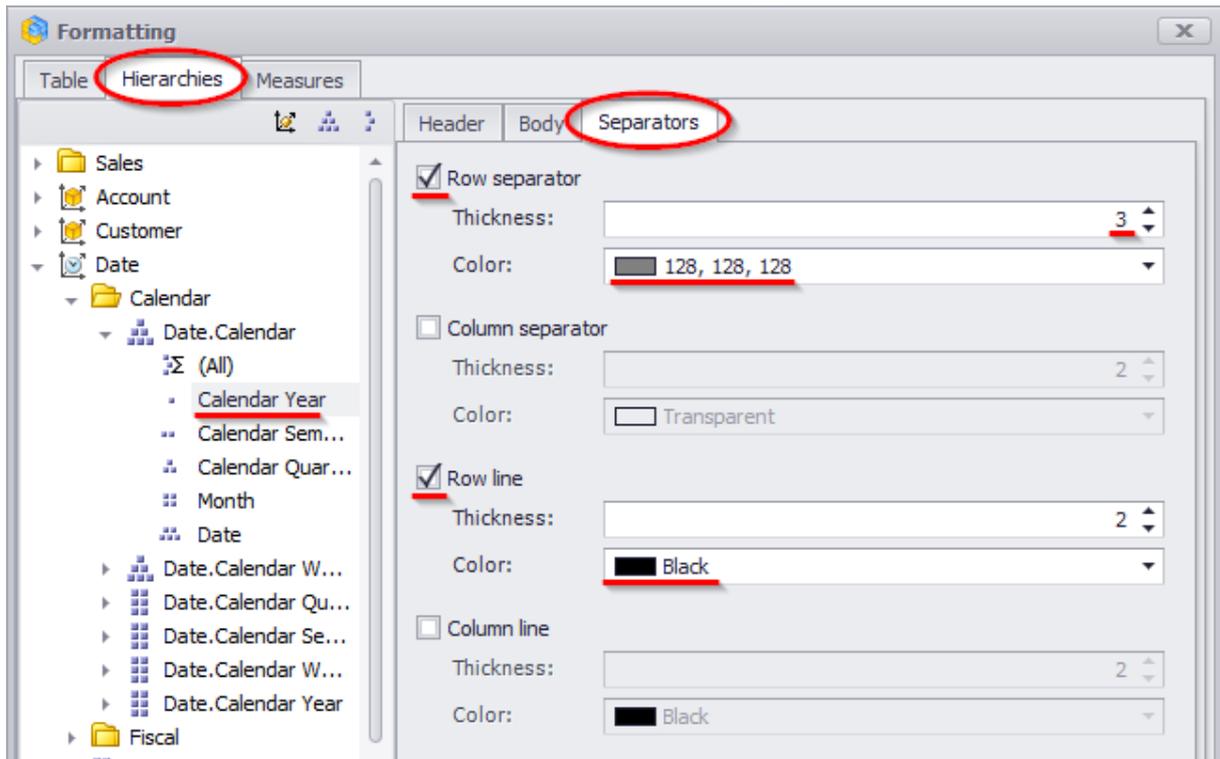
The columns have this:

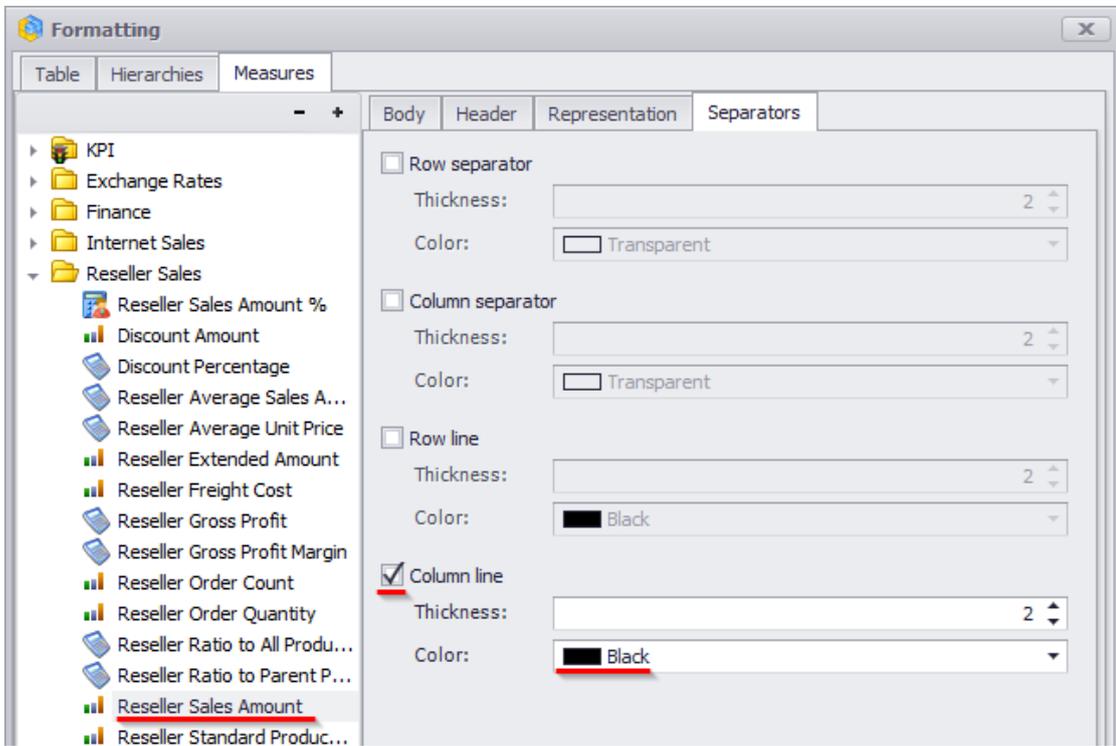
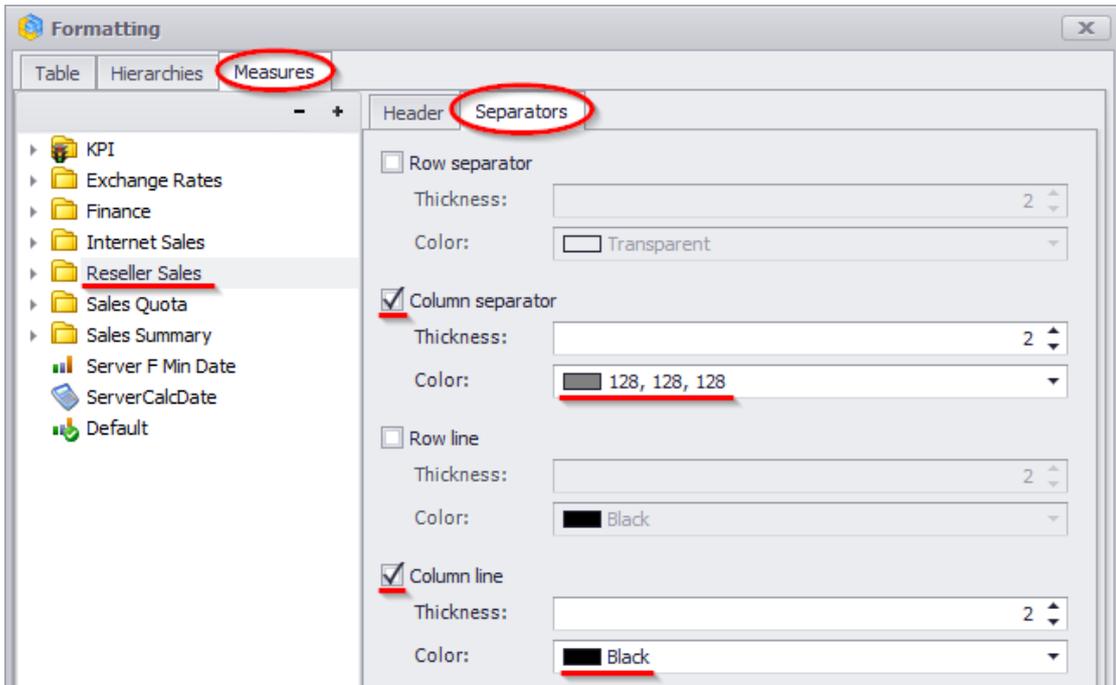


The context contains “Bike” category, measures “Reseller Sales Amount” and “Reseller Gross Profit Margin” are grouped on columns. There are some formatting rules in this report:

| Columns | | - + Geography X Reseller Sales Amount X Reseller Gross Profit Margin X | | | |
|--|--------|---|------------------------------|-----------------------|------------------------------|
| Rows | | + Date/Date.Calendar X | | | |
| Rows / Columns | Filter | Sorting | | | |
| Context | | Canada | | United Kingdom | |
| Product/Product Categ... X | | Reseller | | Reseller | |
| <input type="checkbox"/> All Products <input type="checkbox"/> Accessories <input checked="" type="checkbox"/> Bikes <input type="checkbox"/> Clothing <input type="checkbox"/> Components | | Reseller Sales Amount | Reseller Gross Profit Margin | Reseller Sales Amount | Reseller Gross Profit Margin |
| Measures | | | | | |
| Reseller Sales Amount X | | | | | |
| Reseller Gross Profi... X | | | | | |
| Highlight | | | | | |
| Date/Date.Calendar | | All Periods | | | |
| CY 2005 | | July 2005 | | | |
| H2 CY 2005 | | August 2005 | | | |
| Q3 CY ... | | September 2005 | | | |
| Q4 CY ... | | October 2005 | | | |
| CY 2006 | | November 2005 | | | |
| H1 CY 2006 | | December 2005 | | | |
| Q1 CY ... | | January 2006 | | | |
| Q2 CY ... | | February 2006 | | | |
| Q3 CY ... | | March 2006 | | | |
| Q4 CY ... | | April 2006 | | | |
| CY 2006 | | May 2006 | | | |
| H1 CY 2006 | | June 2006 | | | |
| Q2 CY ... | | July 2006 | | | |
| Q3 CY ... | | August 2006 | | | |
| Q4 CY ... | | September 2006 | | | |
| CY 2007 | | October 2006 | | | |
| H1 CY ... | | November 2006 | | | |
| Q1 CY ... | | December 2006 | | | |
| Q2 CY ... | | January 2007 | | | |
| Q3 CY ... | | February 2007 | | | |
| Q4 CY ... | | March 2007 | | | |

Let us set up the following parameters for separators and levels:





Our report will now look like this:

Columns: + Geography, Reseller Sales Amount, Reseller Gross Profit Margin

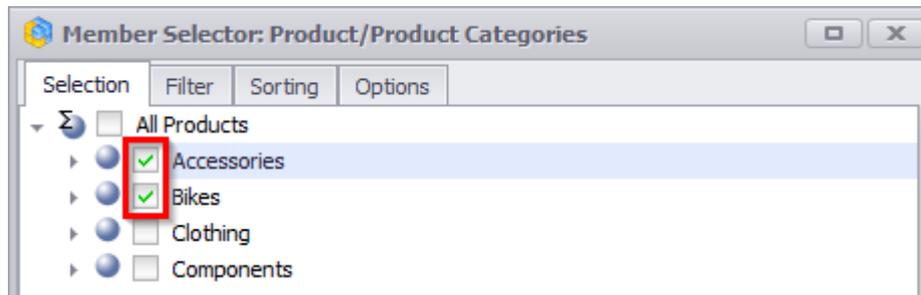
Rows: + Date/Date.Calendar

Context: Product/Product Category (All Products, Accessories, Bikes, Clothing, Components)

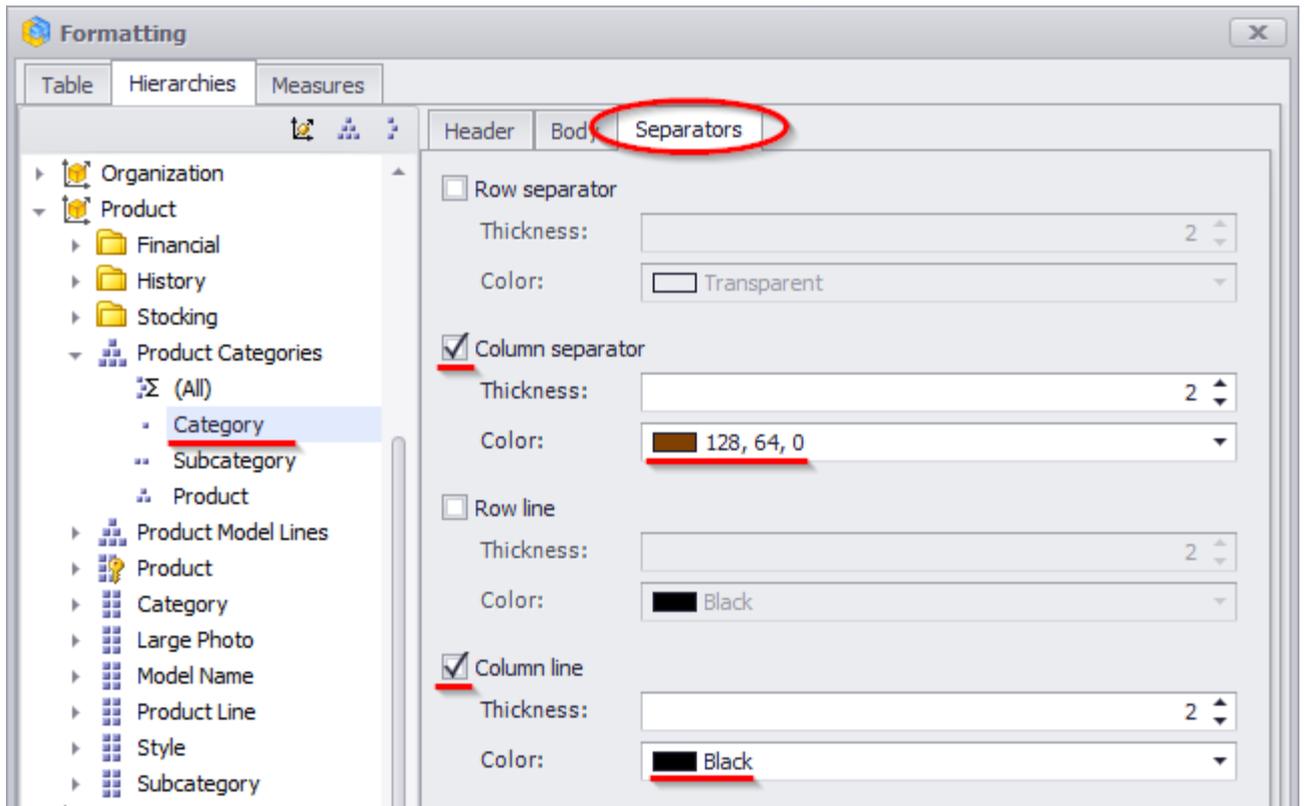
Measures: Reseller Sales Amount, Reseller Gross Profit Margin

| Date/Date.Calendar | Canada | | United Kingdom | |
|--------------------|-----------------------|------------------------------|-----------------------|------------------------------|
| | Reseller Sales Amount | Reseller Gross Profit Margin | Reseller Sales Amount | Reseller Gross Profit Margin |
| All Periods | \$11,636,380.59 | -0.96% | \$3,405,747.21 | -2.33% |
| CY 2005 | | | | |
| H2 CY 2005 | | | | |
| Q3 CY 2005 | | | | |
| July 2005 | \$99,240.99 | 2.06% | | |
| August 2005 | \$293,581.57 | 3.20% | | |
| September 2005 | \$182,503.16 | 4.86% | | |
| Q4 CY 2005 | | | | |
| October 2005 | \$210,463.22 | 2.63% | | |
| November 2005 | \$356,669.19 | 1.60% | | |
| December 2005 | \$228,263.14 | 3.24% | | |
| CY 2006 | | | | |
| H1 CY 2006 | | | | |
| Q1 CY 2006 | | | | |
| January 2006 | \$154,028.98 | 1.87% | | |
| February 2006 | \$257,729.62 | 2.13% | | |
| March 2006 | \$317,344.58 | 4.02% | | |
| Q2 CY 2006 | | | | |
| April 2006 | \$204,146.65 | 1.49% | | |
| May 2006 | \$351,100.57 | 2.16% | | |
| June 2006 | \$153,851.87 | -85.73% | | |
| Q3 CY 2006 | | | | |
| July 2006 | \$479,438.41 | -0.08% | \$51,957.40 | -14.07% |
| August 2006 | \$492,292.14 | -1.62% | \$129,609.83 | 4.68% |
| September 2006 | \$423,524.25 | 4.54% | \$163,802.95 | 5.53% |
| Q4 CY 2006 | | | | |
| October 2006 | \$279,912.93 | 2.87% | \$52,619.97 | -3.35% |
| November 2006 | \$418,694.64 | -0.11% | \$113,601.65 | 3.98% |
| December 2006 | \$406,219.35 | 4.22% | \$135,096.55 | 5.62% |
| CY 2007 | | | | |
| H1 CY 2007 | | | | |
| Q1 CY 2007 | | | | |
| January 2007 | \$199,035.11 | 2.84% | \$31,835.47 | -2.70% |
| February 2007 | \$317,133.88 | -0.31% | \$110,483.24 | 4.14% |
| March 2007 | \$364,260.16 | 3.74% | \$101,555.55 | 4.05% |

Let us move the dimension from context to columns and change the selection:



Then let us configure the following settings for separators:



The report will look like this:

| Columns | | Product/Product Categories | | Geography | | Reseller Sales Amount | | Reseller Gross Profit Margin | | | | |
|---------|----------------|----------------------------|---------|-----------------------|------------------------------|-----------------------|------------------------------|------------------------------|------------------------------|---------|----------------|---------|
| Rows | | Date/Date.Calendar | | | | | | | | | | |
| Context | Rows / Columns | Filter | Sorting | | | | | | | | | |
| | | | | Accessories | United Kingdom | Bikes | United Kingdom | | | | | |
| | | | | Canada | Reseller | Canada | Reseller | | | | | |
| | | | | Reseller Sales Amount | Reseller Gross Profit Margin | Reseller Sales Amount | Reseller Gross Profit Margin | Reseller Sales Amount | Reseller Gross Profit Margin | | | |
| | | | | All Periods | \$118,127.35 | 34.41% | \$42,593.03 | 34.10% | \$11,636,380.59 | -0.96% | \$3,405,747.21 | -2.33% |
| | | | | July 2005 | \$302.80 | 40.42% | | | \$99,240.99 | 2.06% | | |
| | | | | August 2005 | \$847.83 | 40.42% | | | \$293,581.57 | 3.20% | | |
| | | | | September 2005 | \$908.39 | 40.42% | | | \$182,503.16 | 4.86% | | |
| | | | | October 2005 | \$524.85 | 40.42% | | | \$210,463.22 | 2.63% | | |
| | | | | November 2005 | \$1,413.06 | 40.42% | | | \$356,669.19 | 1.60% | | |
| | | | | December 2005 | \$1,150.63 | 40.42% | | | \$228,263.14 | 3.24% | | |
| | | | | January 2006 | \$201.87 | 40.42% | | | \$154,028.98 | 1.87% | | |
| | | | | February 2006 | \$645.97 | 40.42% | | | \$257,729.62 | 2.13% | | |
| | | | | March 2006 | \$403.73 | 40.42% | | | \$317,344.58 | 4.02% | | |
| | | | | April 2006 | \$363.36 | 40.42% | | | \$204,146.65 | 1.49% | | |
| | | | | May 2006 | \$1,056.06 | 39.64% | | | \$351,100.57 | 2.16% | | |
| | | | | June 2006 | \$1,069.88 | 40.42% | | | \$153,851.87 | -85.73% | | |
| | | | | July 2006 | \$2,502.00 | 15.19% | \$444.06 | 14.06% | \$479,438.41 | -0.08% | \$51,957.40 | -14.07% |
| | | | | August 2006 | \$4,598.73 | 30.52% | \$1,259.11 | 31.25% | \$492,292.14 | -1.62% | \$129,609.83 | 4.68% |
| | | | | September 2006 | \$4,296.20 | 30.69% | \$345.82 | 31.25% | \$423,524.25 | 4.54% | \$163,802.95 | 5.53% |
| | | | | October 2006 | \$1,809.04 | 30.81% | \$502.69 | 31.25% | \$279,912.93 | 2.87% | \$52,619.97 | -3.35% |
| | | | | November 2006 | \$2,876.77 | 31.25% | \$1,146.71 | 31.25% | \$418,694.64 | -0.11% | \$113,601.65 | 3.98% |
| | | | | December 2006 | \$2,671.55 | 30.59% | \$181.68 | 31.25% | \$406,219.35 | 4.22% | \$135,096.55 | 5.62% |
| | | | | January 2007 | \$1,412.26 | 31.25% | \$340.64 | 31.25% | \$199,035.11 | 2.84% | \$31,835.47 | -2.70% |
| | | | | February 2007 | \$1,560.52 | 31.25% | \$316.41 | 31.25% | \$317,133.88 | -0.31% | \$110,483.24 | 4.14% |
| | | | | March 2007 | \$899.29 | 31.25% | | | \$364,260.16 | 3.74% | \$101,555.55 | 4.05% |
| | | | | April 2007 | \$2,192.81 | 28.47% | \$449.01 | 24.86% | \$331,660.60 | 2.67% | \$36,593.19 | -3.78% |
| | | | | May 2007 | \$2,692.74 | 30.92% | \$1,318.05 | 30.58% | \$383,633.35 | -1.14% | \$88,345.06 | 3.55% |

Separator Priority Rules

- 1) Separators of the higher level have priority over separators on the lower level. By “higher” we mean the “higher visible level that is at the left on rows/columns”.
- 2) At the same level the separator has higher priority over the line

6.4 Using Advanced Designers

In the chapter “Change of the Page Structure” we have already reviewed the definition of a designer and the ways of using basic designers. Now let’s review the advanced designers: “Filter” and “Sorting”. Those two designers are situated near the “Rows / Columns” designer:

The screenshot displays a BI tool interface with the following components:

- Columns:** Date/Date.Calendar
- Rows:** Product/Product Categories
- Advanced Designers:** Filter and Sorting (highlighted in a red box)
- Measures:** Reseller Sales Amount
- Data Table:**

| Product/Pro... | CY 2006 | CY 2007 | CY 2008 |
|----------------|-----------------|-----------------|----------------|
| ▶ Bike Racks | | \$118,428.47 | \$79,307.69 |
| ▶ Bottles a... | | \$4,481.33 | \$2,995.27 |
| ▶ Cleaners | | \$6,733.09 | \$4,455.28 |
| ▶ Helmets | \$74,281.39 | \$113,443.66 | \$50,752.52 |
| ▶ Hydration... | | \$41,531.96 | \$23,986.79 |
| ▶ Locks | \$10,084.70 | \$6,140.52 | |
| ▶ Pumps | \$8,369.26 | \$5,145.43 | |
| ▶ Tires and... | | \$628.42 | \$296.78 |
| ▶ Mountain... | \$9,190,838.09 | \$8,854,263.03 | \$3,902,246.74 |
| ▶ Road Bikes | \$10,765,176.58 | \$11,294,381.37 | \$4,448,636.90 |
| ▶ Touring B... | | \$5,403,130.67 | \$5,048,359.55 |
| ▶ Bib-Shorts | \$101,862.71 | \$64,876.99 | |
| ▶ Caps | \$9,387.61 | \$13,800.95 | \$5,665.91 |
| ▶ Gloves | \$88,796.06 | \$102,156.07 | \$16,823.04 |
| ▶ Jerseys | \$110,243.77 | \$290,004.73 | \$150,804.63 |
| ▶ Shorts | \$49,261.57 | \$179,301.33 | \$113,639.82 |
| ▶ Socks | \$3,139.50 | \$10,793.76 | \$7,271.66 |
| ▶ Tights | \$122,895.93 | \$78,937.08 | |
| ▶ Vests | | \$131,993.28 | \$91,808.09 |
| ▶ Bottom B... | | \$30,792.82 | \$21,033.55 |
| ▶ Brakes | | \$45,187.31 | \$20,831.40 |
| ▶ Chains | | \$5,685.93 | \$3,691.78 |
| ▶ Cranksets | | \$124,249.27 | \$79,693.34 |
| ▶ Derailleurs | | \$44,321.13 | \$25,888.36 |
| ▶ Forks | \$49,672.62 | \$28,259.07 | |
| ▶ Handlebars | \$53,642.70 | \$88,710.99 | \$28,237.63 |
| ▶ Headsets | \$35,931.84 | \$25,010.36 | |
| ▶ Mountain... | \$1,400,331.68 | \$2,067,908.64 | \$873,844.03 |
| ▶ Pedals | | \$94,060.53 | \$53,423.38 |
| ▶ | \$1,618,301.51 | \$1,631,377.27 | \$356,107.37 |

6.4.1 Filter

“Filter” can be invoked both from the context menu of the header:

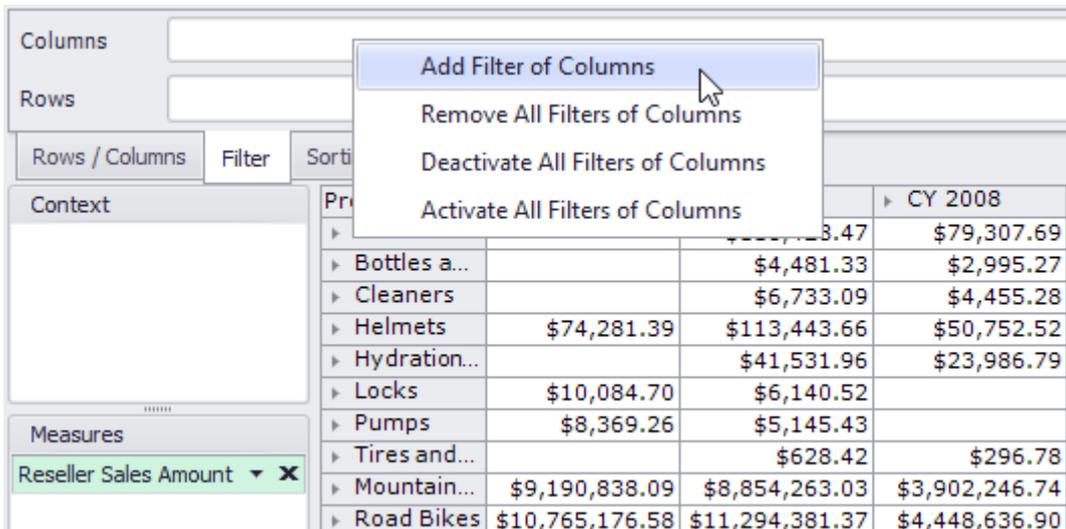
The screenshot shows a data grid with columns for 'Product/Pro...', 'CY 2006', 'CY 2007', and 'CY 2008'. The 'Filter' context menu is open, displaying various filtering options. The 'Filter' option is highlighted, and its sub-menu is visible, showing options like 'Top 10', 'Top 50', 'Top 100', 'Top X', 'Top 80%', 'Top X%', 'Bottom X', 'Bottom 20%', 'Bottom X%', 'Non-empty values', 'Empty values or 0', '= X', '<> X', '> X', '>= X', '< X', '<= X', 'X <= Value <= Y', 'Custom Condition...', 'Add Filter of Rows (Expert Mode)...', 'Remove All Filters of Rows', 'Deactivate All Filters of Rows', and 'Activate All Filters of Rows'.

| Product/Pro... | CY 2006 | CY 2007 | CY 2008 |
|----------------|-----------------|----------------|--------------|
| ▶ Bike Racks | | | |
| ▶ Bottles a... | | | |
| ▶ Cleaners | | | |
| ▶ Helmets | \$74,281.39 | | |
| ▶ Hydration... | | | |
| ▶ Locks | \$10,084.70 | | |
| ▶ Pumps | \$8,369.26 | | |
| ▶ Tires and... | | | |
| ▶ Mountain... | \$9,190,838.09 | | |
| ▶ Road Bikes | \$10,765,176.58 | | |
| ▶ Touring B... | | | |
| ▶ Bib-Shorts | \$101,862.71 | | |
| ▶ Caps | \$9,387.61 | | |
| ▶ Gloves | \$88,796.06 | | |
| ▶ Jerseys | \$110,243.77 | | |
| ▶ Shorts | \$49,261.57 | | |
| ▶ Socks | \$3,139.50 | | |
| ▶ Tights | \$122,895.93 | | |
| ▶ Vests | | | |
| ▶ Bottom B... | | | |
| ▶ Brakes | | | |
| ▶ Chains | | | |
| ▶ Cranksets | | | |
| ▶ Derailleurs | | | |
| ▶ Forks | \$49,672.62 | \$28,259.07 | |
| ▶ Handlebars | \$53,642.70 | \$88,710.99 | \$28,237.63 |
| ▶ Headsets | \$35,931.84 | \$25,010.36 | |
| ▶ Mountain... | \$1,400,331.68 | \$2,067,908.64 | \$873,844.03 |
| ▶ Pedals | | \$94,060.53 | \$53,423.36 |
| ▶ | \$1,618,301.51 | \$1,631,377.27 | \$356,107.37 |

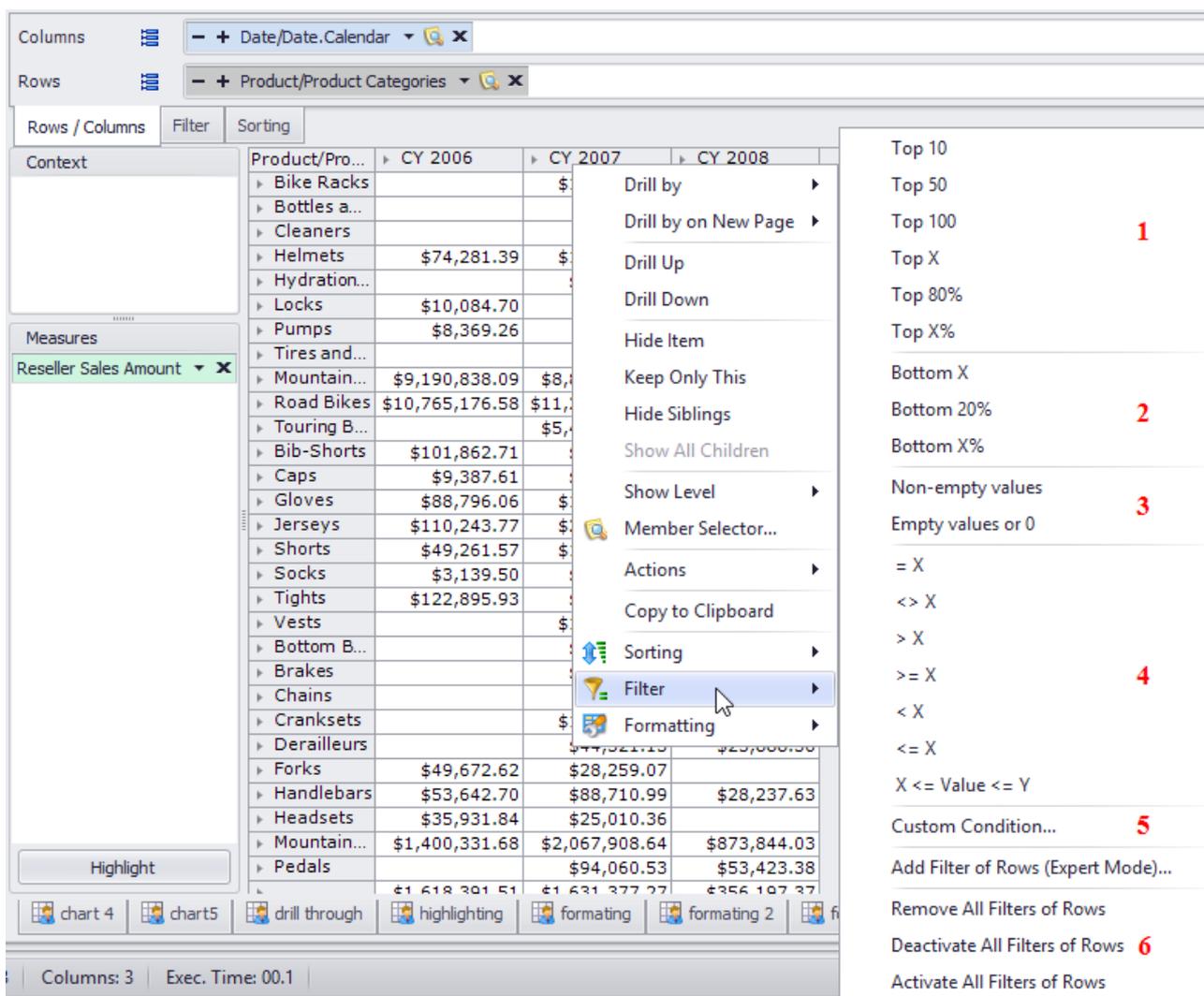
and from the context menu of the tab “Filter”:

The screenshot shows the 'Filter' tab context menu open over the data grid. The menu options are: 'Add Filter of Rows', 'Remove All Filters of Rows', 'Deactivate All Filters of Rows', and 'Activate All Filters of Rows'. The 'Add Filter of Rows' option is highlighted by the mouse cursor.

| | 2007 | CY 2008 |
|----------------|-----------------|-----------------|
| ▶ Cleaners | \$6,733.09 | \$4,455.28 |
| ▶ Helmets | \$74,281.39 | \$113,443.66 |
| ▶ Hydration... | \$41,531.96 | \$23,986.79 |
| ▶ Locks | \$10,084.70 | \$6,140.52 |
| ▶ Pumps | \$8,369.26 | \$5,145.43 |
| ▶ Tires and... | \$628.42 | \$296.78 |
| ▶ Mountain... | \$9,190,838.09 | \$8,854,263.03 |
| ▶ Road Bikes | \$10,765,176.58 | \$11,294,381.37 |
| ▶ | \$4,448,636.90 | |



There are several filtering options here:

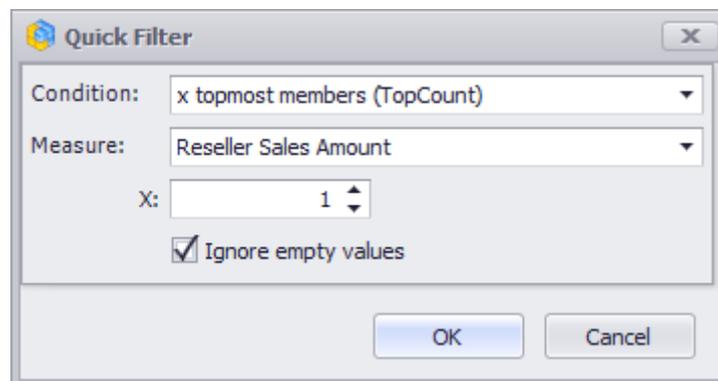


In the sections 1 – 4 there are quick filters:

- Top 10 – 10 biggest values;
- Top 50 – 50 biggest values;
- Top 100 – 100 biggest values;

- Top X – X biggest values;
- Top 80% - the biggest values whose sum is not less than 80% of the total sum;
- Top X% - the biggest values whose sum is not less than X% of the total sum;
- Bottom X – X bottom values;
- Bottom 20% - the lowest elements whose sum is 20% of the values;
- Bottom X% - the lowest elements whose sum is X% from the total sum;
- Non-empty values – show all elements except those which have empty values;
- Empty values or 0 – show all elements which are either empty or 0;
- =X – values equal to X;
- <> X – values not equal to X;
- > X – values more than X;
- >= X – values more or equal to X;
- < X – values less than X;
- <= X – values less or equal to X;
- X <= value <=Y – values in the range from X to Y.

If you select “Custom Condition...” you will get a window which allows to select the filtering condition and the arguments:



The context menu in section 6 allows to switch on/off all filtering at once.

It is worth to look at item “Add Filter of Rows (Expert Mode)...”:

The screenshot shows a data analysis tool interface with a pivot table. The columns are labeled 'Date/Date.Calendar' and the rows are labeled 'Product/Product Categories'. The pivot table displays sales data for various bicycle components across three years (CY 2006, CY 2007, CY 2008). A context menu is open over the 'Filter' option, listing various actions such as 'Drill by', 'Hide Item', 'Copy to Clipboard', and 'Add Filter of Rows (Expert Mode)...'. The 'Add Filter of Rows (Expert Mode)...' option is highlighted with a mouse cursor.

| Product/Pro... | CY 2006 | CY 2007 | CY 2008 |
|----------------|-----------------|----------------|--------------|
| ▶ Bike Racks | | \$1 | |
| ▶ Bottles a... | | | |
| ▶ Cleaners | | | |
| ▶ Helmets | \$74,281.39 | \$1 | |
| ▶ Hydration... | | \$ | |
| ▶ Locks | \$10,084.70 | | |
| ▶ Pumps | \$8,369.26 | | |
| ▶ Tires and... | | | |
| ▶ Mountain... | \$9,190,838.09 | \$8,8 | |
| ▶ Road Bikes | \$10,765,176.58 | \$11,2 | |
| ▶ Touring B... | | \$5,4 | |
| ▶ Bib-Shorts | \$101,862.71 | \$ | |
| ▶ Caps | \$9,387.61 | \$ | |
| ▶ Gloves | \$88,796.06 | \$1 | |
| ▶ Jerseys | \$110,243.77 | \$2 | |
| ▶ Shorts | \$49,261.57 | \$1 | |
| ▶ Socks | \$3,139.50 | \$ | |
| ▶ Tights | \$122,895.93 | \$ | |
| ▶ Vests | | \$1 | |
| ▶ Bottom B... | | \$ | |
| ▶ Brakes | | \$ | |
| ▶ Chains | | | |
| ▶ Cranksets | | \$1 | |
| ▶ Derailleurs | | \$44,321.13 | \$25,888.36 |
| ▶ Forks | \$49,672.62 | \$28,259.07 | |
| ▶ Handlebars | \$53,642.70 | \$88,710.99 | \$28,237.63 |
| ▶ Headsets | \$35,931.84 | \$25,010.36 | |
| ▶ Mountain... | \$1,400,331.68 | \$2,067,908.64 | \$873,844.03 |
| ▶ Pedals | | \$94,060.53 | \$53,423.38 |
| | \$1,618,301.51 | \$1,631,377.27 | \$356,107.37 |

There will be a form for setting up a filter:

The screenshot shows the 'Filter of Rows' dialog box. The 'Name' field is 'Filter 1' and the 'Active' checkbox is checked. The 'Show' radio button is selected. The 'Condition' dropdown is 'x topmost members (TopCount)'. The 'Measure' dropdown is 'The first measure among selected'. The 'X' spinner is set to 1. The 'Ignore empty values' checkbox is unchecked. Under 'Columns', the radio button 'For the sum of columns' is selected. Under 'Which columns consider:', the radio button 'Selected columns' is selected. The list box contains 'Date/Date.Calendar: All Periods.CY 2007'. The 'Override Context' section is empty. The 'Override Context for Hierarchy...' button is visible. The 'OK' and 'Cancel' buttons are at the bottom right.

This dialog allows not only to select the conditions for filtering and the argument, but also the set of columns to which it is applied:

- All visible columns
- Selected columns

Besides, the condition can be met for:

- For the sum of columns;
- For at least one of the columns which are considered (see below);
- For each column, of those which are considered (see below).

Let us look at several examples.

Let us assume we want to show only 5 subcategories of goods which were best sold in 2007.
 Let us compile the report as on the picture below:

| Columns | | - + Date/Date.Calendar | |
|----------------|----------------|--------------------------------|----------------|
| Rows | | - + Product/Product Categories | |
| Rows / Columns | Filter | Sorting | |
| Context | Product/Pro... | CY 2007 | CY 2008 |
| | ▶ Bike Racks | \$118,428.47 | \$79,307.69 |
| | ▶ Bottles a... | \$4,481.33 | \$2,995.27 |
| | ▶ Cleaners | \$6,733.09 | \$4,455.28 |
| | ▶ Helmets | \$113,443.66 | \$50,752.52 |
| | ▶ Hydration... | \$41,531.96 | \$23,986.79 |
| | ▶ Locks | \$6,140.52 | |
| | ▶ Pumps | \$5,145.43 | |
| | ▶ Tires and... | \$628.42 | \$296.78 |
| | ▶ Mountain... | \$8,854,263.03 | \$3,902,246.74 |
| | ▶ Road Bikes | \$11,294,381.37 | \$4,448,636.90 |
| | ▶ Touring B... | \$5,403,130.67 | \$5,048,359.55 |
| | ▶ Bib-Shorts | \$64,876.99 | |
| | ▶ Caps | \$13,800.95 | \$5,665.91 |
| | ▶ Gloves | \$102,156.07 | \$16,823.04 |
| | ▶ Jerseys | \$290,004.73 | \$150,804.63 |
| | ▶ Shorts | \$179,301.33 | \$113,639.82 |
| | ▶ Socks | \$10,793.76 | \$7,271.66 |
| | ▶ Tights | \$78,937.08 | |
| | ▶ Vests | \$131,993.28 | \$91,808.09 |
| | ▶ Bottom B... | \$30,792.82 | \$21,033.55 |
| | ▶ Brakes | \$45,187.31 | \$20,831.40 |
| | ▶ Chains | \$5,685.93 | \$3,691.78 |
| | ▶ Cranksets | \$124,249.27 | \$79,693.34 |
| | ▶ Derailleurs | \$44,321.13 | \$25,888.36 |
| | ▶ Forks | \$28,259.07 | |
| | ▶ Handlebars | \$88,710.99 | \$28,237.63 |
| | ▶ Headsets | \$25,010.36 | |
| | ▶ Mountain... | \$2,067,908.64 | \$873,844.03 |
| | ▶ Pedals | \$94,060.53 | \$53,423.38 |
| | ▶ Road Fra... | \$1,631,377.27 | \$356,197.37 |
| | ▶ Saddles | \$37,831.96 | \$17,997.43 |
| | ▶ Touring F... | \$1,032,154.04 | \$610,173.64 |
| | ▶ Wheels | \$226,947.94 | |

Let us invoke the context menu for the header CY 2007 and select the item “Filter / Add Filter of Rows (Expert Mode)...”:

The screenshot shows a data visualization interface with a context menu open over the 'CY 2007' header. The menu items are:

- Drill by
- Drill by on New Page
- Drill Up
- Drill Down
- Hide Item
- Keep Only This
- Hide Siblings
- Show All Children
- Show Level
- Member Selector...
- Actions
- Copy to Clipboard
- Sorting
- Filter
- Formatting
- Add Filter of Rows (Expert Mode)...
- Remove All Filters of Rows
- Deactivate All Filters of Rows
- Activate All Filters of Rows

The background table displays the following data:

| Product/Pro... | CY 2007 | CY 2008 |
|----------------|----------------|--------------|
| ▶ Bike Racks | \$11 | |
| ▶ Bottles a... | \$ | |
| ▶ Cleaners | \$ | |
| ▶ Helmets | \$11 | |
| ▶ Hydration... | \$4 | |
| ▶ Locks | \$ | |
| ▶ Pumps | \$ | |
| ▶ Tires and... | | |
| ▶ Mountain... | \$8,85 | |
| ▶ Road Bikes | \$11,29 | |
| ▶ Touring B... | \$5,40 | |
| ▶ Bib-Shorts | \$6 | |
| ▶ Caps | \$1 | |
| ▶ Gloves | \$10 | |
| ▶ Jerseys | \$29 | |
| ▶ Shorts | \$17 | |
| ▶ Socks | \$1 | |
| ▶ Tights | \$7 | |
| ▶ Vests | \$13 | |
| ▶ Bottom B... | \$3 | |
| ▶ Brakes | \$4 | |
| ▶ Chains | \$ | |
| ▶ Cranksets | \$12 | |
| ▶ Derailleurs | \$4 | |
| ▶ Forks | \$28,259.07 | \$28,237.63 |
| ▶ Handlebars | \$88,710.99 | \$28,237.63 |
| ▶ Headsets | \$25,010.36 | |
| ▶ Mountain... | \$2,067,908.64 | \$873,844.03 |
| ▶ Pedals | \$94,060.53 | \$53,423.38 |
| ▶ Road Fra... | \$1,631,377.27 | \$356,197.37 |
| ▶ Saddles | \$37,831.96 | \$17,997.43 |
| ▶ Touring F... | \$1,032,154.04 | \$610,173.64 |
| ▶ Wheels | \$226,947.94 | |

There will be a dialog for filter settings on the screen:

Filter of Rows [X]

Name: * Filter 1 Active

Show Hide

Condition: x topmost members (TopCount)

Measure: The first measure among selected

X: 5 Ignore empty values

Columns

The condition must be satisfied for:

- For the sum of columns
- For at least one of the columns which are considered (see below)
- For each column of those which are considered (see below)

Which columns consider:

- All visible columns
- Selected columns

Date/Date.Calendar: All Periods.CY 2007 [X]

Override Context

Override Context for Hierarchy...

OK Cancel

The selected function “X topmost members (TopCount)” is exactly what we need. In the Columns section it is said “For the sum of columns”, but we have just one column, so the filtering will be done for the year of 2007. Press «OK» and look at the report:

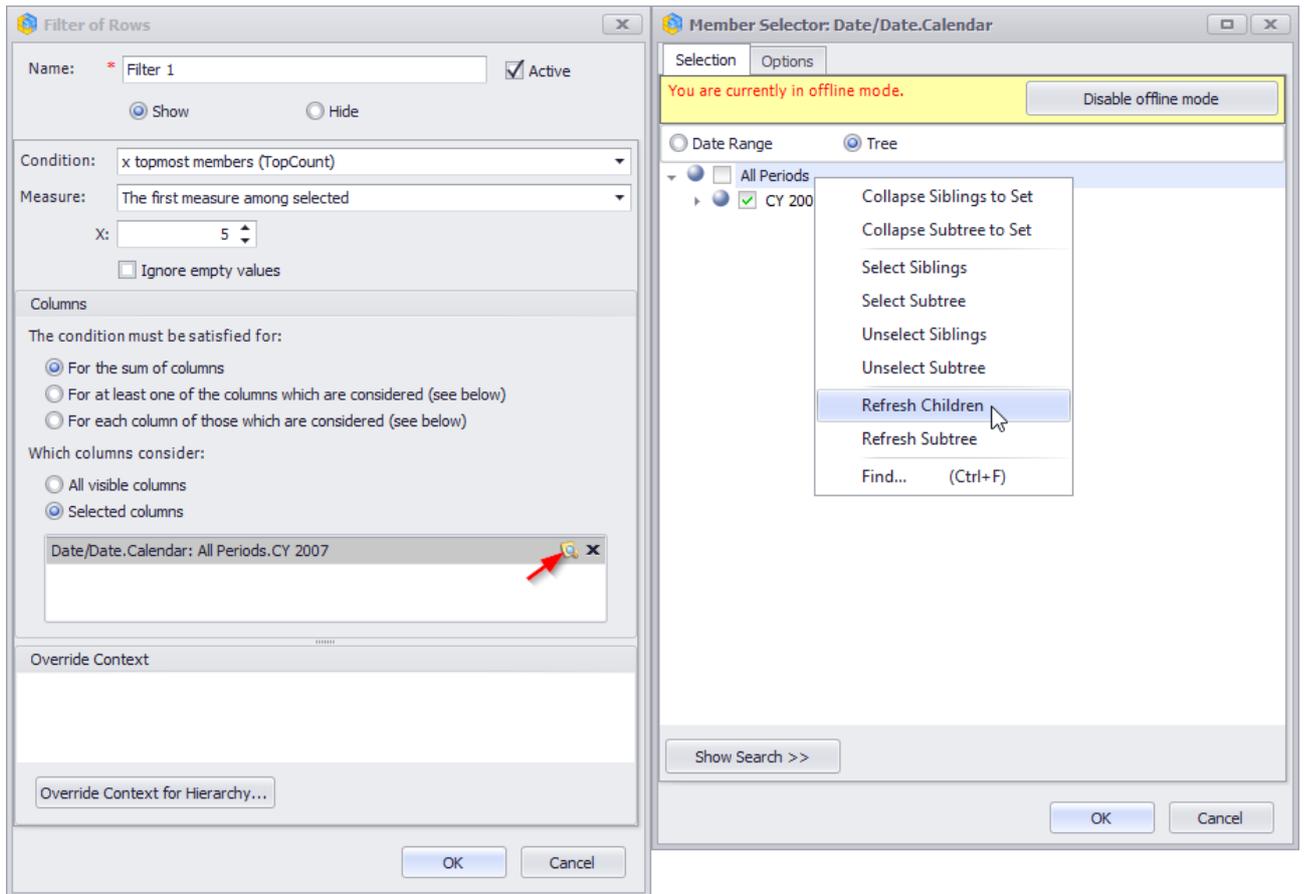
| Product/Product C... | CY 2007 | CY 2008 |
|----------------------|-----------------|----------------|
| ▶ Road Bikes | \$11,294,381.37 | \$4,448,636.90 |
| ▶ Mountain Bikes | \$8,854,263.03 | \$3,902,246.74 |
| ▶ Touring Bikes | \$5,403,130.67 | \$5,048,359.55 |
| ▶ Mountain Frames | \$2,067,908.64 | \$873,844.03 |
| ▶ Road Frames | \$1,631,377.27 | \$356,197.37 |

There is an icon on the tab Filter that shows us that there is a new filter there. If we look at this tab, there is a filter with a name “Filter 1”. The table contains exactly 5 categories that are sold best in the year 2007.

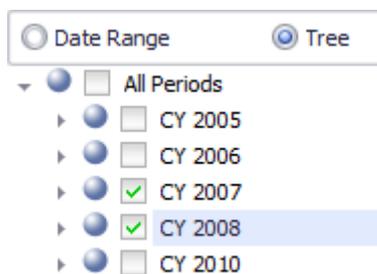
Let us make the task more complicated. Assume we want to see those 5 products which are best sold in the sum of years of 2007 and 2008. Click on this icon:

| Product/Product C... | CY 2007 | CY 2008 |
|----------------------|-----------------|----------------|
| ▶ Road Bikes | \$11,294,381.37 | \$4,448,636.90 |
| ▶ Mountain Bikes | \$8,854,263.03 | \$3,902,246.74 |
| ▶ Touring Bikes | \$5,403,130.67 | \$5,048,359.55 |
| ▶ Mountain Frames | \$2,067,908.64 | \$873,844.03 |
| ▶ Road Frames | \$1,631,377.27 | \$356,197.37 |

and do the following actions there:



In this window we have to select “For the sum of columns”, then click on the member selector for date dimension and select CY 2007 and CY 2008 by first pressing “Refresh Children”:



After pressing “OK” the filter for Date dimension will look like this:

The dialog box is titled 'Columns'. It contains the following text and options:

The condition must be satisfied for:

- For the sum of columns
- For at least one of the columns which are considered (see below)
- For each column of those which are considered (see below)

Which columns consider:

- All visible columns
- Selected columns

Below these options is a text box containing 'Date/Date.Calendar: (Multiple Selection)' with a red underline and a search icon and an 'X' icon.

This means that several members are selected. If you press “OK” the report will look like this:

The report configuration window shows the following settings:

- Columns: - + Date/Date.Calendar
- Rows: - + Product/Product Categories
- Measures: Reseller Sales Amount

The report table is as follows:

| Product/Product C... | CY 2007 | CY 2008 |
|----------------------|-----------------|----------------|
| ▶ Road Bikes | \$11,294,381.37 | \$4,448,636.90 |
| ▶ Mountain Bikes | \$8,854,263.03 | \$3,902,246.74 |
| ▶ Touring Bikes | \$5,403,130.67 | \$5,048,359.55 |
| ▶ Mountain Frames | \$2,067,908.64 | \$873,844.03 |
| ▶ Road Frames | \$1,631,377.27 | \$356,197.37 |

Only those product categories which are sold best by the sum of two columns will be displayed.

Filters can be switched on and off:

The report configuration window is identical to the previous one, but with a 'Filter 1' checkbox checked in the 'Rows' section. A red arrow points to the checked checkbox.

| Product/Product C... | CY 2007 | CY 2008 |
|----------------------|-----------------|----------------|
| ▶ Road Bikes | \$11,294,381.37 | \$4,448,636.90 |
| ▶ Mountain Bikes | \$8,854,263.03 | \$3,902,246.74 |
| ▶ Touring Bikes | \$5,403,130.67 | \$5,048,359.55 |
| ▶ Mountain Frames | \$2,067,908.64 | \$873,844.03 |
| ▶ Road Frames | \$1,631,377.27 | \$356,197.37 |

The selected check box means that the filter is switched on. If you switch it off, it will remain in the report configuration but the filter won't be active, so that the rows will not be filtered.

Using the previous example let us set up the following parameters:

The hierarchy “Date/Date.Calendar:(Multiple Selection)” contains 2007 and 2008 as before. We will get:

| Product/Product.. | CY 2007 | CY 2008 |
|-------------------|----------------------|----------------------|
| ▶ Road Bikes | \$11,294,381.37 | \$4,448,636.90 |
| ▶ Mountain Bikes | \$8,854,263.03 | \$3,902,246.74 |
| ▶ Touring Bikes | \$5,403,130.67 | \$5,048,359.55 |
| Total | 25,551,775.07 | 13,399,243.18 |

Here we see the OR-principle: the row will remain in table if one of the columns meets the condition.

If we filter using the parameters below:

We will get the following result:

| Product/Product.. | CY 2007 | CY 2008 | Total |
|-------------------|----------------------|---------------------|----------------------|
| ▶ Road Bikes | \$11,294,381.37 | \$4,448,636.90 | 15,743,018.26 |
| ▶ Mountain Bikes | \$8,854,263.03 | \$3,902,246.74 | 12,756,509.77 |
| Total | 20,148,644.40 | 8,350,883.64 | 28,499,528.04 |

It is obvious that the last element was removed since it did not meet the condition by two years simultaneously (the AND principle).

Attention!

Filters are the part of page structure. If you create filters on the administrator's page and close the report, all those filters will disappear. If you wish to keep your filters, make a copy of the page and save it.

6.4.2 Sorting

Let's show how to sort rows in the table on the following example report:

| Product/Pro... | CY 2007 | CY 2008 |
|----------------|-----------------|----------------|
| ▶ Bike Racks | \$118,428.47 | \$79,307.69 |
| ▶ Bottles a... | \$4,481.33 | \$2,995.27 |
| ▶ Cleaners | \$6,733.09 | \$4,455.28 |
| ▶ Helmets | \$113,443.66 | \$50,752.52 |
| ▶ Hydration... | \$41,531.96 | \$23,986.79 |
| ▶ Locks | \$6,140.52 | |
| ▶ Pumps | \$5,145.43 | |
| ▶ Tires and... | \$628.42 | \$296.78 |
| ▶ Mountain... | \$8,854,263.03 | \$3,902,246.74 |
| ▶ Road Bikes | \$11,294,381.37 | \$4,448,636.90 |
| ▶ Touring B... | \$5,403,130.67 | \$5,048,359.55 |
| ▶ Bib-Shorts | \$64,876.99 | |
| ▶ Caps | \$13,800.95 | \$5,665.91 |
| ▶ Gloves | \$102,156.07 | \$16,823.04 |
| ▶ Jerseys | \$290,004.73 | \$150,804.63 |
| ▶ Shorts | \$179,301.33 | \$113,639.82 |
| ▶ Socks | \$10,793.76 | \$7,271.66 |
| ▶ Tights | \$78,937.08 | |
| ▶ Vests | \$131,993.28 | \$91,808.09 |
| ▶ Bottom B... | \$30,792.82 | \$21,033.55 |
| ▶ Brakes | \$45,187.31 | \$20,831.40 |
| ▶ Chains | \$5,685.93 | \$3,691.78 |
| ▶ Cranksets | \$124,249.27 | \$79,693.34 |
| ▶ Derailleurs | \$44,321.13 | \$25,888.36 |
| ▶ Forks | \$28,259.07 | |
| ▶ Handlebars | \$88,710.99 | \$28,237.63 |
| ▶ Headsets | \$25,010.36 | |
| ▶ Mountain... | \$2,067,908.64 | \$873,844.03 |
| ▶ Pedals | \$94,060.53 | \$53,423.38 |
| ▶ Road Fra... | \$1,631,377.27 | \$356,197.37 |
| ▶ Saddles | \$37,831.96 | \$17,997.43 |
| ▶ Touring F... | \$1,032,154.04 | \$610,173.64 |
| ▶ Wheels | \$226,947.94 | |

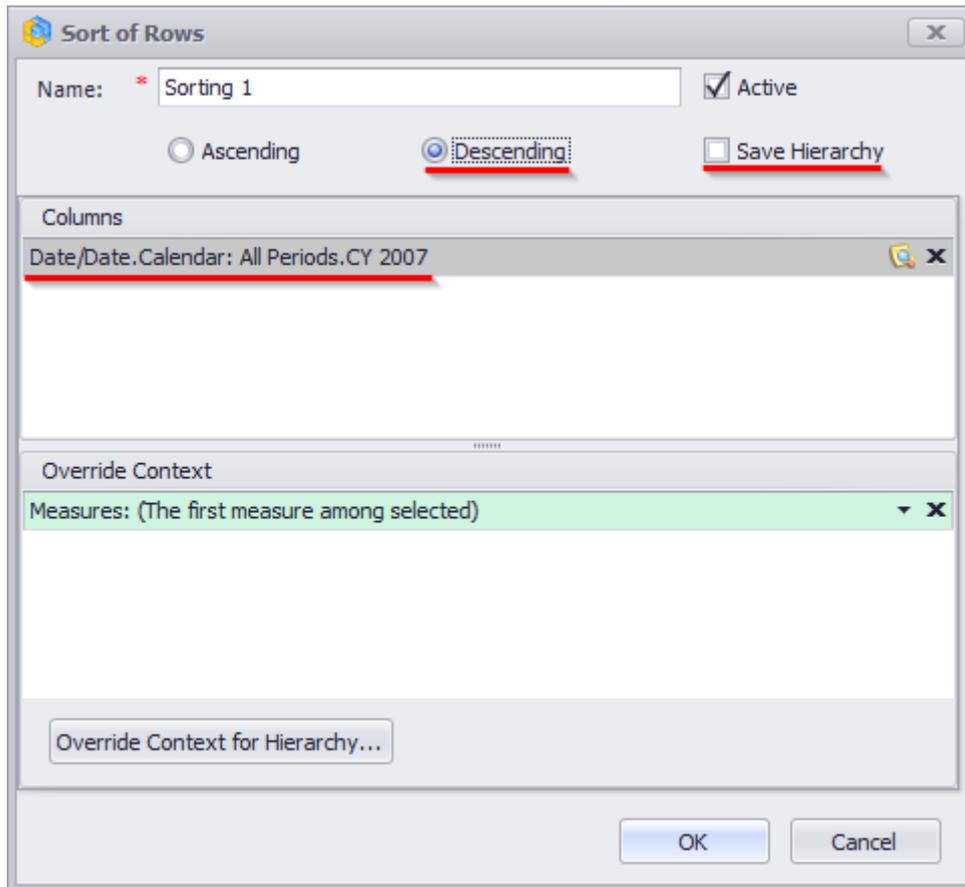
Filters are turned off. Product subcategories are on the rows, years – on the columns.

Using this example report let's sort the rows in the table in the descending order of sales in 2007. Press the right mouse button over the CY 2007 column header:

The screenshot shows a BI tool interface with a table of product sales data. The table has columns for 'Product/Pro...', 'CY 2007', and 'CY 2008'. A context menu is open over the 'CY 2007' column header, showing various actions. The 'Sorting' option is selected, and a sub-menu is open showing sorting options. The 'Add Sorting of Rows (Expert Mode)...' option is highlighted by the mouse cursor.

| Product/Pro... | CY 2007 | CY 2008 |
|----------------|----------------|--------------|
| ▶ Bike Racks | \$118,42 | |
| ▶ Bottles a... | \$4,48 | |
| ▶ Cleaners | \$6,73 | |
| ▶ Helmets | \$113,44 | |
| ▶ Hydration... | \$41,53 | |
| ▶ Locks | \$6,14 | |
| ▶ Pumps | \$5,14 | |
| ▶ Tires and... | \$62 | |
| ▶ Mountain... | \$8,854,26 | |
| ▶ Road Bikes | \$11,294,38 | |
| ▶ Touring B... | \$5,403,13 | |
| ▶ Bib-Shorts | \$64,87 | |
| ▶ Caps | \$13,80 | |
| ▶ Gloves | \$102,19 | |
| ▶ Jerseys | \$290,00 | |
| ▶ Shorts | \$179,30 | |
| ▶ Socks | \$10,79 | |
| ▶ Tights | \$78,93 | |
| ▶ Vests | \$131,99 | |
| ▶ Bottom B... | \$30,79 | |
| ▶ Brakes | \$45,18 | |
| ▶ Chains | \$5,68 | |
| ▶ Cranksets | \$124,24 | |
| ▶ Derailleurs | \$44,32 | |
| ▶ Forks | \$28,259.07 | |
| ▶ Handlebars | \$88,710.99 | \$28,237.63 |
| ▶ Headsets | \$25,010.36 | |
| ▶ Mountain... | \$2,067,908.64 | \$873,844.03 |
| ▶ Pedals | \$94,060.53 | \$53,423.38 |
| ▶ Road Fra... | \$1,631,377.27 | \$356,197.37 |
| ▶ Saddles | \$37,831.96 | \$17,997.43 |
| ▶ Touring F... | \$1,032,154.04 | \$610,173.64 |
| ▶ Wheels | \$226,947.94 | |

Select “Add Sorting of Rows (Expert Mode)” from the context menu as shown on the picture above. You will get a dialog that looks like the one you were using to create the filter:

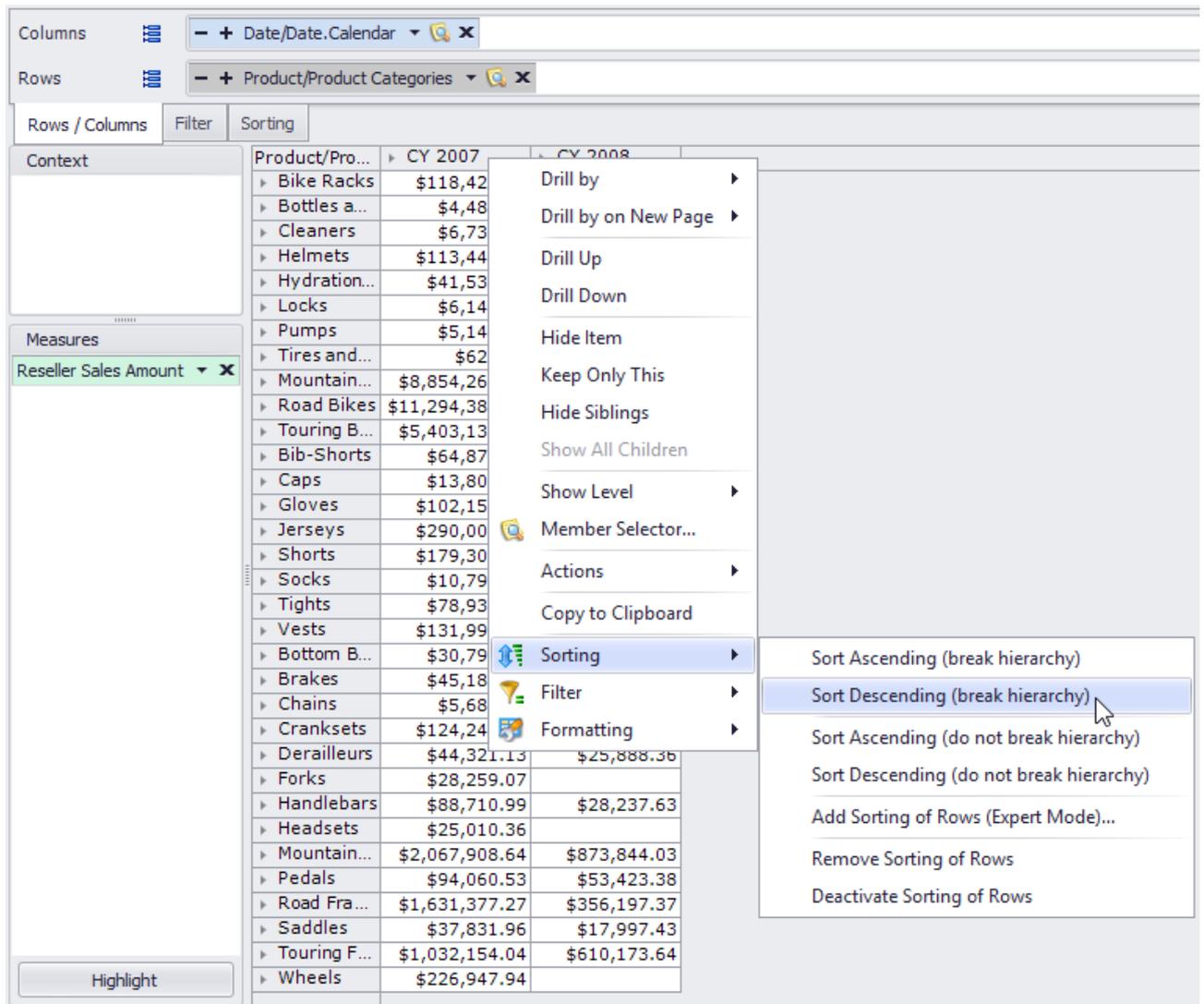


Note that the time is already selected correctly (that's because we called the context menu for the CY 2007 element). Let's change the sorting order to "Descending" (as in the picture) and leave the field "Save Hierarchy" unchecked. Press OK. You will get the table with the values in the CY 2007 column sorted descending:

| Product/Pro... | CY 2007 | CY 2008 |
|-----------------|-----------------|----------------|
| Road Bikes | \$11,294,381.37 | \$4,448,636.90 |
| Mountain Bi... | \$8,854,263.03 | \$3,902,246.74 |
| Touring Bikes | \$5,403,130.67 | \$5,048,359.55 |
| Mountain Fr... | \$2,067,908.64 | \$873,844.03 |
| Road Frames | \$1,631,377.27 | \$356,197.37 |
| Touring Fra... | \$1,032,154.04 | \$610,173.64 |
| Jerseys | \$290,004.73 | \$150,804.63 |
| Wheels | \$226,947.94 | |
| Shorts | \$179,301.33 | \$113,639.82 |
| Vests | \$131,993.28 | \$91,808.09 |
| Cranksets | \$124,249.27 | \$79,693.34 |
| Bike Racks | \$118,428.47 | \$79,307.69 |
| Helmets | \$113,443.66 | \$50,752.52 |
| Gloves | \$102,156.07 | \$16,823.04 |
| Pedals | \$94,060.53 | \$53,423.38 |
| Handlebars | \$88,710.99 | \$28,237.63 |
| Tights | \$78,937.08 | |
| Bib-Shorts | \$64,876.99 | |
| Brakes | \$45,187.31 | \$20,831.40 |
| Derailleurs | \$44,321.13 | \$25,888.36 |
| Hydration P... | \$41,531.96 | \$23,986.79 |
| Saddles | \$37,831.96 | \$17,997.43 |
| Bottom Brac... | \$30,792.82 | \$21,033.55 |
| Forks | \$28,259.07 | |
| Headsets | \$25,010.36 | |
| Caps | \$13,800.95 | \$5,665.91 |
| Socks | \$10,793.76 | \$7,271.66 |
| Cleaners | \$6,733.09 | \$4,455.28 |
| Locks | \$6,140.52 | |
| Chains | \$5,685.93 | \$3,691.78 |
| Pumps | \$5,145.43 | |
| Bottles and... | \$4,481.33 | \$2,995.27 |
| Tires and Tu... | \$628.42 | \$296.78 |

Note the "Sorting 1" sign that appeared in the "Sorting" designer on rows. You can perform the same actions with it as you did with the filters: activate, deactivate, edit and remove.

The same sorting can be created easier using one of the quick sorting options. To use it call the context menu for the CY 2007 element and select “Sort Descending (break hierarchy)” from it:



As you could notice, there are 4 options of quick sorting available:

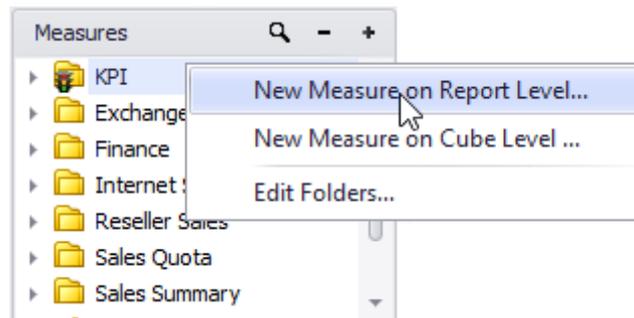
- Ascending, breaking hierarchy;
- Descending, breaking hierarchy;
- Ascending, preserving hierarchy;
- Descending, preserving hierarchy.

6.5 Calculated Members

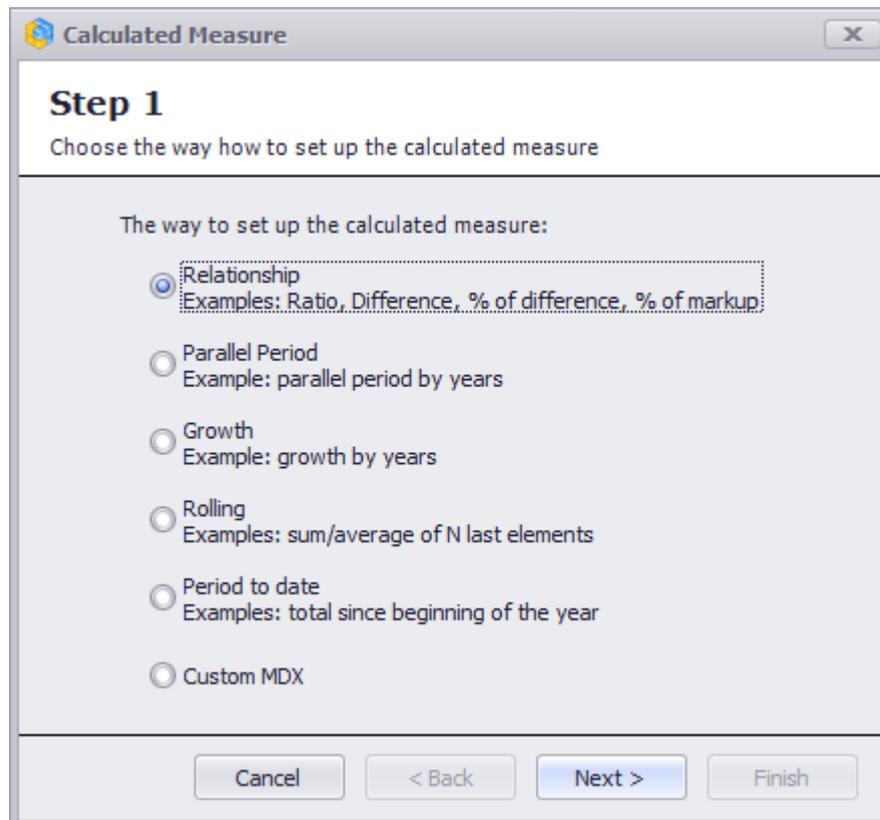
If you are granted with appropriate rights by an administrator then in report designer you will be able to create your own dimension members and measures based on the existing ones, both for usual reports and for “Interactive Dashboard” reports. Let’s take a deeper look at the process of creating calculated measures and dimension members.

6.5.1 Calculated Measures

You can create your own calculated measures and use them just the way you do it with ordinary measures. To create a new calculated measure press the right mouse button anywhere in the measures list. You will see the context menu, which will give you an ability to add calculated measures:



After pressing “New Measure on Report...” or “New Measure on Cube...” item you will see a wizard that will help you to create calculated measure:

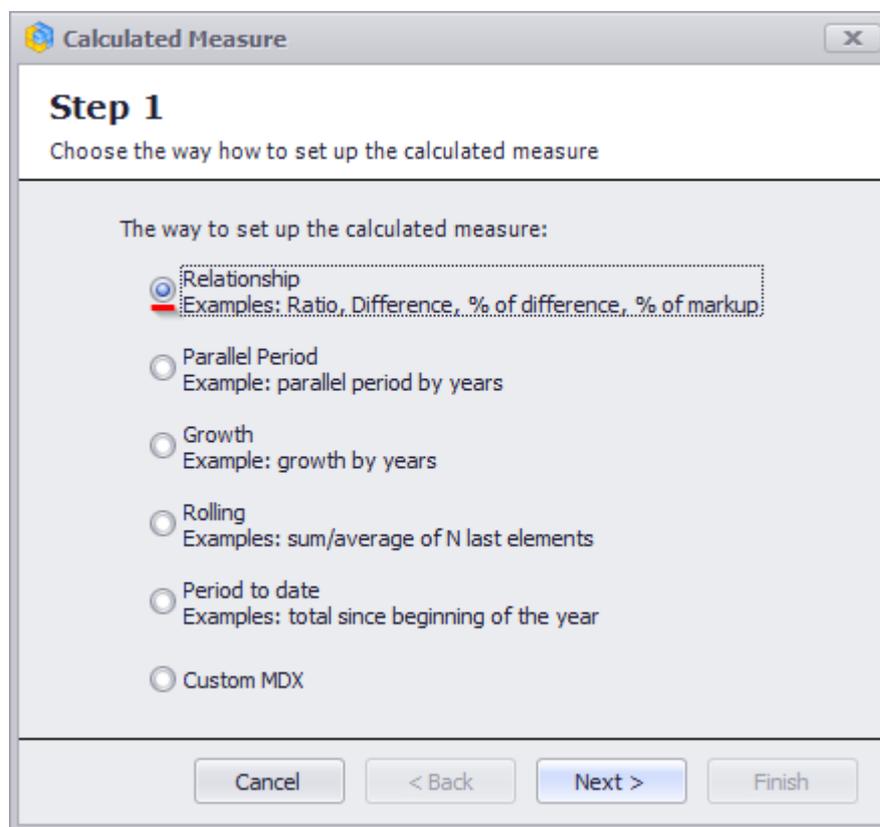


The wizard lets you choose the type of a new calculated measure from six different options:

- Relationship;
- Parallel Period;
- Growth;
- Rolling;
- Period to date;
- Custom MDX;

The last option is for experts that are familiar with MDX querying language. All other options will let you create new measures in an easy wizard mode.

For example, let's create a calculated measure of an average sales amount by orders – the ratio of sales amount to orders count. Select a “Relationship” measure type:



Press “Next” and fill in the fields in the next window as it is shown in the picture:

Calculated Measure - Relationship

Measure Name: * Average Sales Amount by Order

Non-empty Behavior: [] X

Folder: My Calculations [] X

Format String: Currency

Formula type

Ratio of other measure

Ratio of SUM over rows/columns

Ratio of parent member

Difference

Percent of difference

Percent markup

Ratio formula:

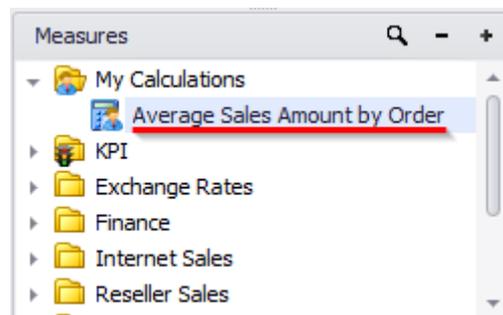
$\frac{X}{Y} =$ * Reseller Sales Amount

* Reseller Order Count

Example: Avg Price = Sales / Units

Cancel < Back Next > **Finish**

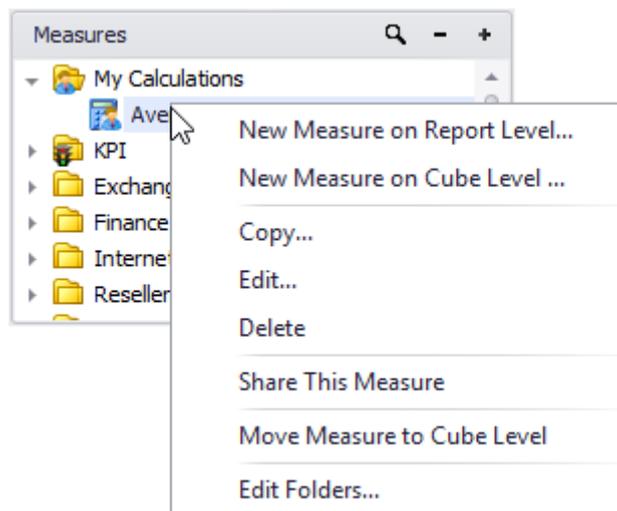
After pressing “Finish” you will see the folder for calculated measures in the measures list and it will contain a new measure:



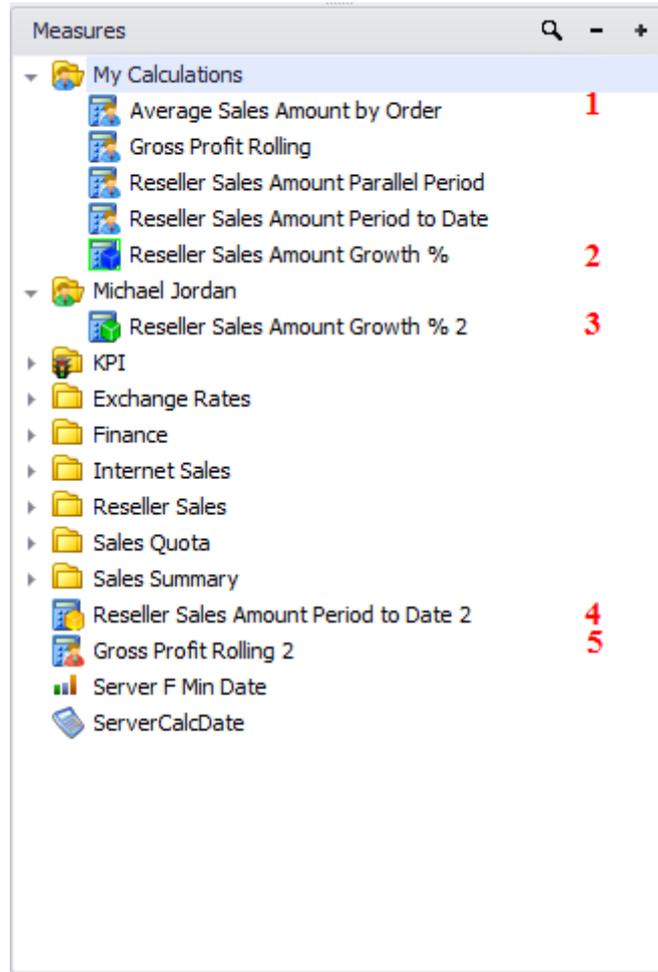
Now you can use that calculated measures the same way you use the other measures. Just drag the new measure into the “Measures” designer and you will get the expected result:

| Product/Product Categories | Reseller Sales Amount | Reseller Order Count | Average Sales Amount by Order |
|----------------------------|-----------------------|----------------------|-------------------------------|
| Accessories | \$571,297.93 | 1,315 | \$434.45 |
| Bikes | \$66,302,381.56 | 3,153 | \$21,028.35 |
| Clothing | \$1,777,840.84 | 2,410 | \$737.69 |
| Components | \$11,799,076.66 | 2,646 | \$4,459.21 |

To edit or delete calculated measure just click the right mouse button on the corresponding measure in the list and select “Edit” or “Delete”, respectively:



Besides, users can allow or forbid the shared access to the measures. Depending on who was the measure creator and if it was shared or not, it would be displayed using different icon:



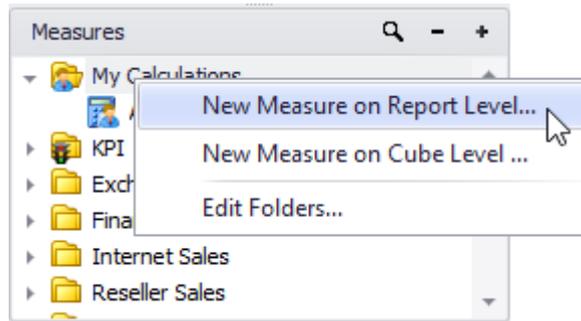
- 1 – a measure created by this user on a report level;
- 2 – a shared measure created by this user on a cube level;
- 3 – a measure created by a different user on a cube level and shared with this user;
- 4 – a measure created by administrator on a cube level;
- 5 – a measure created by administrator on the report level and available just for this report.

6.5.1.1 Parallel Period

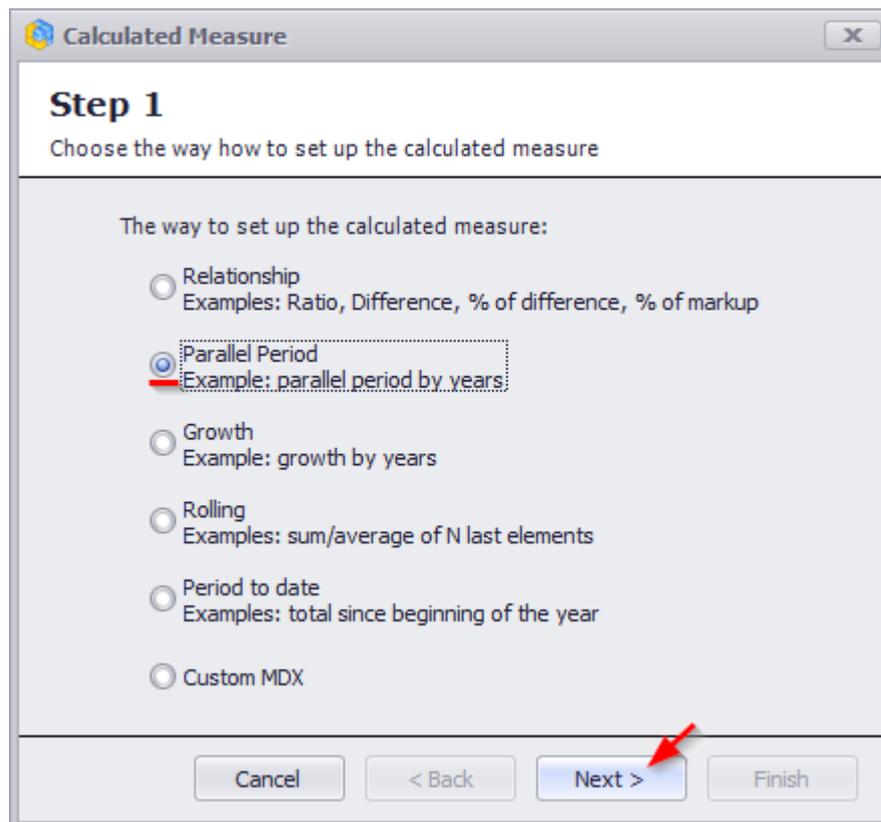
In the previous chapter you created a calculated measure of “Relationship” type. In this chapter you will see the example of measure of “Parallel Period” type.

For example, let’s create a measure showing the value of “Reseller Sales Amount” in the same month of the last year, and use this measure to compare the bikes sales in different months of this and previous year.

Add a new measure to the measures list using the corresponding context menu option:



When creating a new calculated measure select “Parallel Period” measure type and press Next:



In the next window fill in all fields as it is shown in the picture:

Calculated Measure - Parallel Period

Measure Name: * Reseller Sales Amount Parallel Period

Base Measure: * Reseller Sales Amount

Hierarchy: * Date/Date.Calendar

Level: * Month

Periods: * 12

Non-empty Behavior:

Folder: My Calculations

Format String: #,0.00

Parallel period type

Value from parallel period

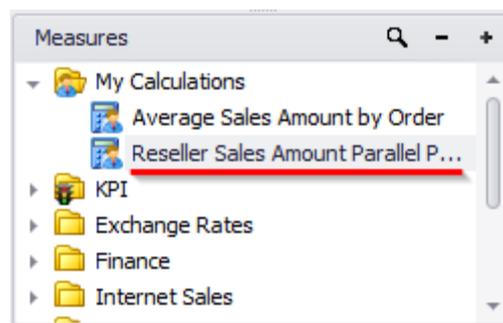
Growth

Growth %

Cancel < Back Next > Finish

The selected Parallel period type at the bottom (*Value from parallel period*) means that the value of the measure selected in the “Base Measure” field (“Reseller Sales Amount”) will be shown. The Time “Hierarchy” field points to the hierarchy that will be used to count the parallel period. And the values in the “Level” and “Periods” fields mean that the data for a time period, that was 12 month before the current period, will be shown.

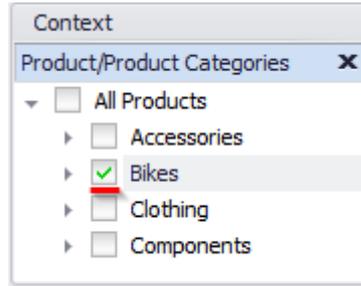
After filling in all fields press «OK» and you will see a newly created measure in the measures list:



Place the months of the year 2007 on the columns of your table:

- All Periods
- CY 2005
- CY 2006
- CY 2007
 - Calendar Semester
 - Calendar Quarter
 - Month
- CY 2008
- CY 2010

Place the “Bikes” category from “Product Categories” hierarchy into the context, thus you will see only the sales data for bikes:

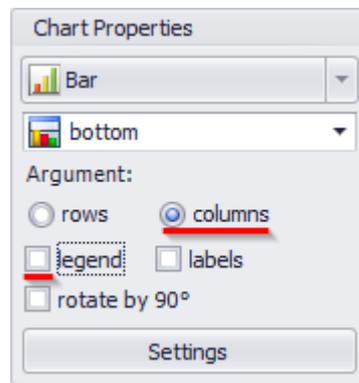


After that place two measures on rows: “Reseller Saves Amount” and newly created “Reseller Sales Amount Parallel Period”. You will get the following report:

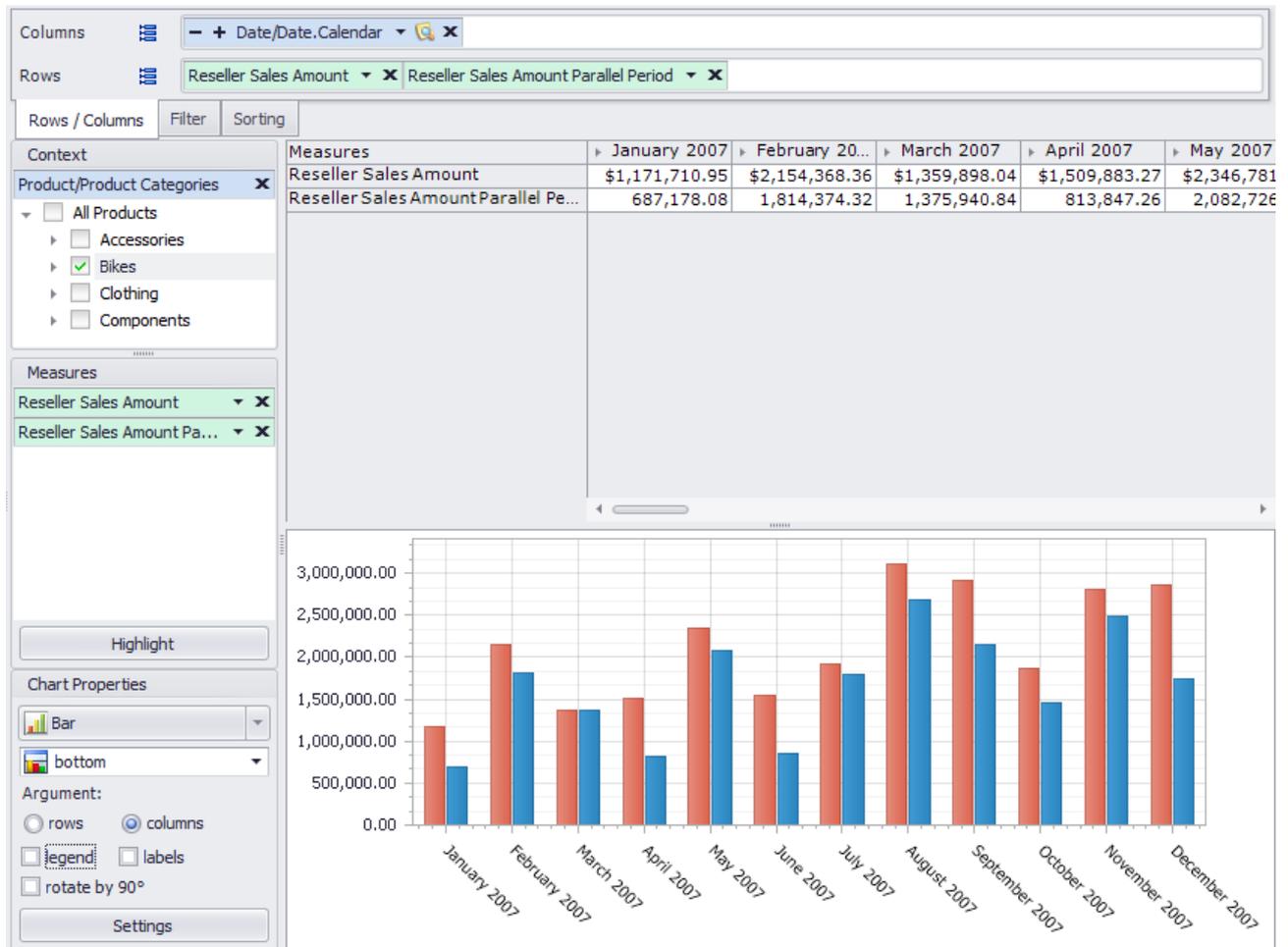
The screenshot shows a report grid with the following data:

| Context | Measures | January 2007 | February 20... | March 2007 | April 2007 |
|----------------------------|--------------------------------------|----------------|----------------|----------------|----------------|
| Product/Product Categories | Reseller Sales Amount | \$1,171,710.95 | \$2,154,368.36 | \$1,359,898.04 | \$1,509,883.27 |
| | Reseller Sales Amount Parallel Pe... | 687,178.08 | 1,814,374.32 | 1,375,940.84 | 813,847.26 |

Add a chart to your report. Set the argument to columns and remove the legend:



After that you will get the report like this:



In the chart you can see that two bars are corresponding to every month: red one stands for the current “Reseller Sales Amount” value and a blue one – for the value of that measure in the same month of a previous year.

6.5.1.2 Growth

Calculated measure type “Growth” lets you create a measure that will show an absolute or relative growth of another measure.

Let’s create a measure that will show a relative growth in percents of “Resellers Sales Amount” measure in this month comparing to the previous month, and use that measure to show the sales growth of bikes.

Add a new calculated measure of “Growth” type:

Calculated Measure

Step 1
Choose the way how to set up the calculated measure

The way to set up the calculated measure:

- Relationship
Examples: Ratio, Difference, % of difference, % of markup
- Parallel Period
Example: parallel period by years
- Growth
Example: growth by years
- Rolling
Examples: sum/average of N last elements
- Period to date
Examples: total since beginning of the year
- Custom MDX

Cancel < Back Next > Finish

In the next step fill in the fields as it is shown in the picture:

Calculated Measure - Growth

Measure Name: * Reseller Sales Amount Growth%

Base Measure: * Reseller Sales Amount

Hierarchy: * Date/Date.Calendar

Non-empty Behavior: X

Folder: My Calculations X

Format String: 0.00%

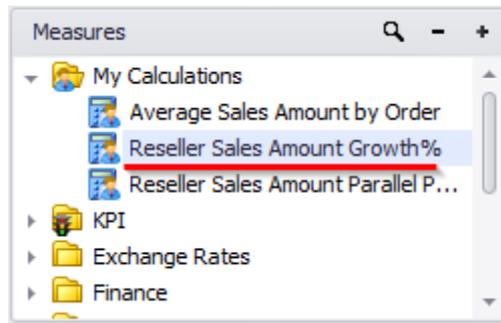
Growth type

- As percent change
- As absolute change

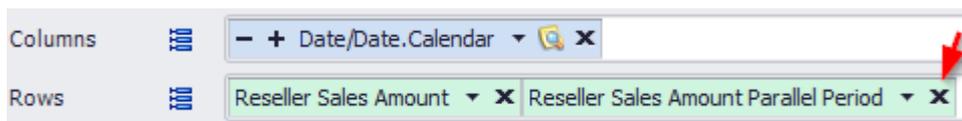
Cancel < Back Next > Finish

“Base Measure” field points to the measure the growth of which we are interested in. The Time Hierarchy field is for selecting the hierarchy that will be used to count growth, in most cases the time hierarchy (like “Date.Calendar”) should be selected here.

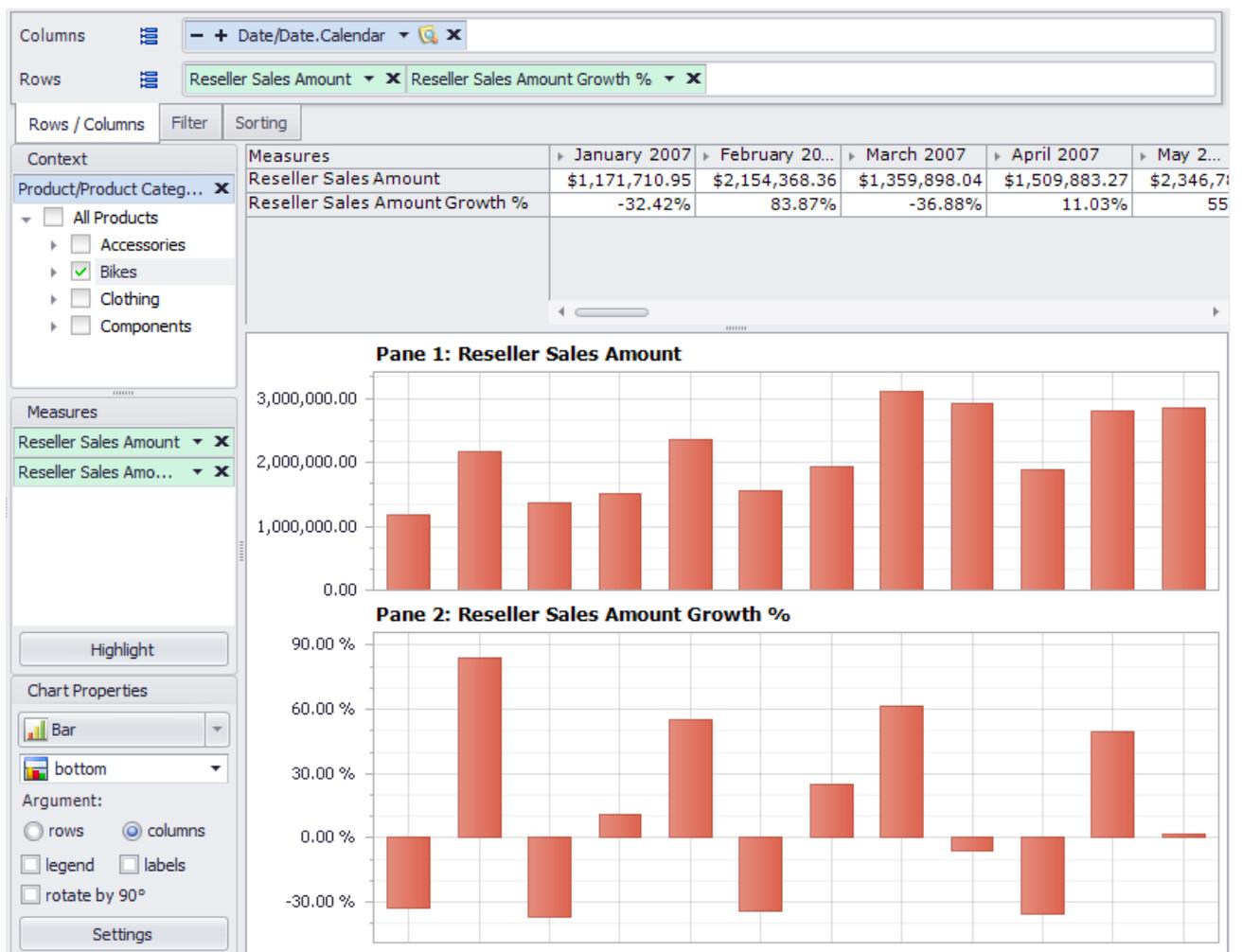
After filling in all fields press «OK» and you will see the new calculated measure in the list:



In the report from the previous chapter remove the “Reseller Sales Amount Parallel Period” measure from rows:



Place the newly created measure “Reseller Sales Amount Growth %” instead. You will get the following report:

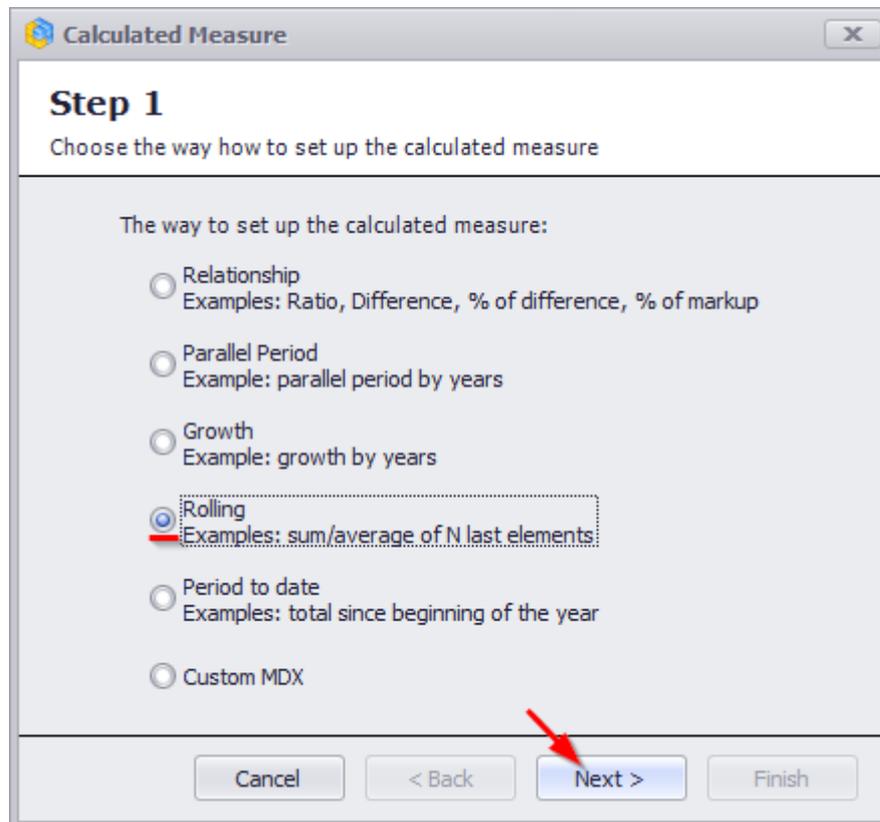


In the chart for every month you can clearly observe the sales amount and its growth in percent comparing to the previous month.

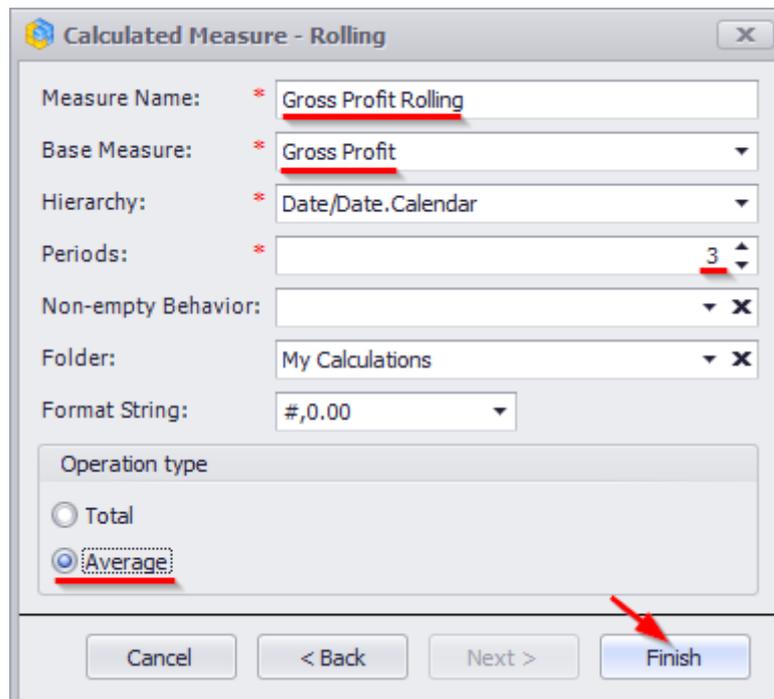
6.5.1.3 Rolling Measure

Rolling measure type is used to show an average or total value of some measure in a certain time period.

For example, you can create a measure that will show an average profit for the last three month. To do that, create a new calculated measure of “Rolling” type:

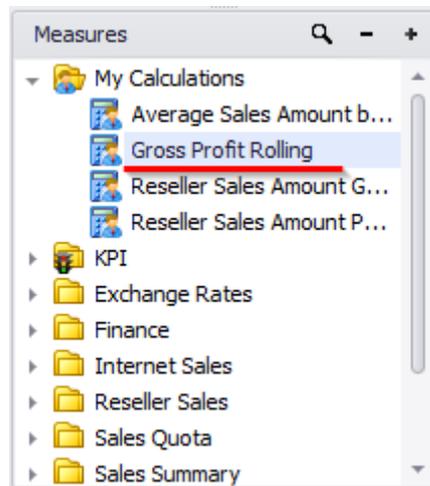


In the next window fill in the fields as it is shown in the picture:

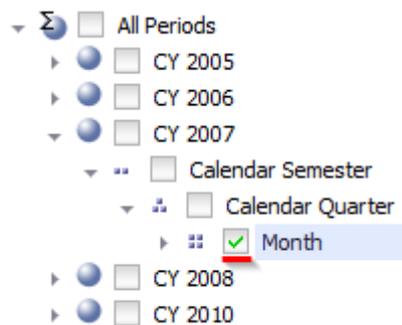


The Operation type selected at the bottom (Average) means that the average value of a measure, set in the “Base Measure” field, will be calculated, in our case – “Gross Profit”. Values in fields “Periods” and “Time Hierarchy” state that the average should be calculated over the last 3 month in the “Date.Calendar” hierarchy.

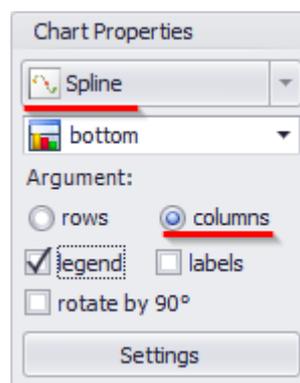
After filling in the fields press «OK» and you will see a new measure in a measures list:



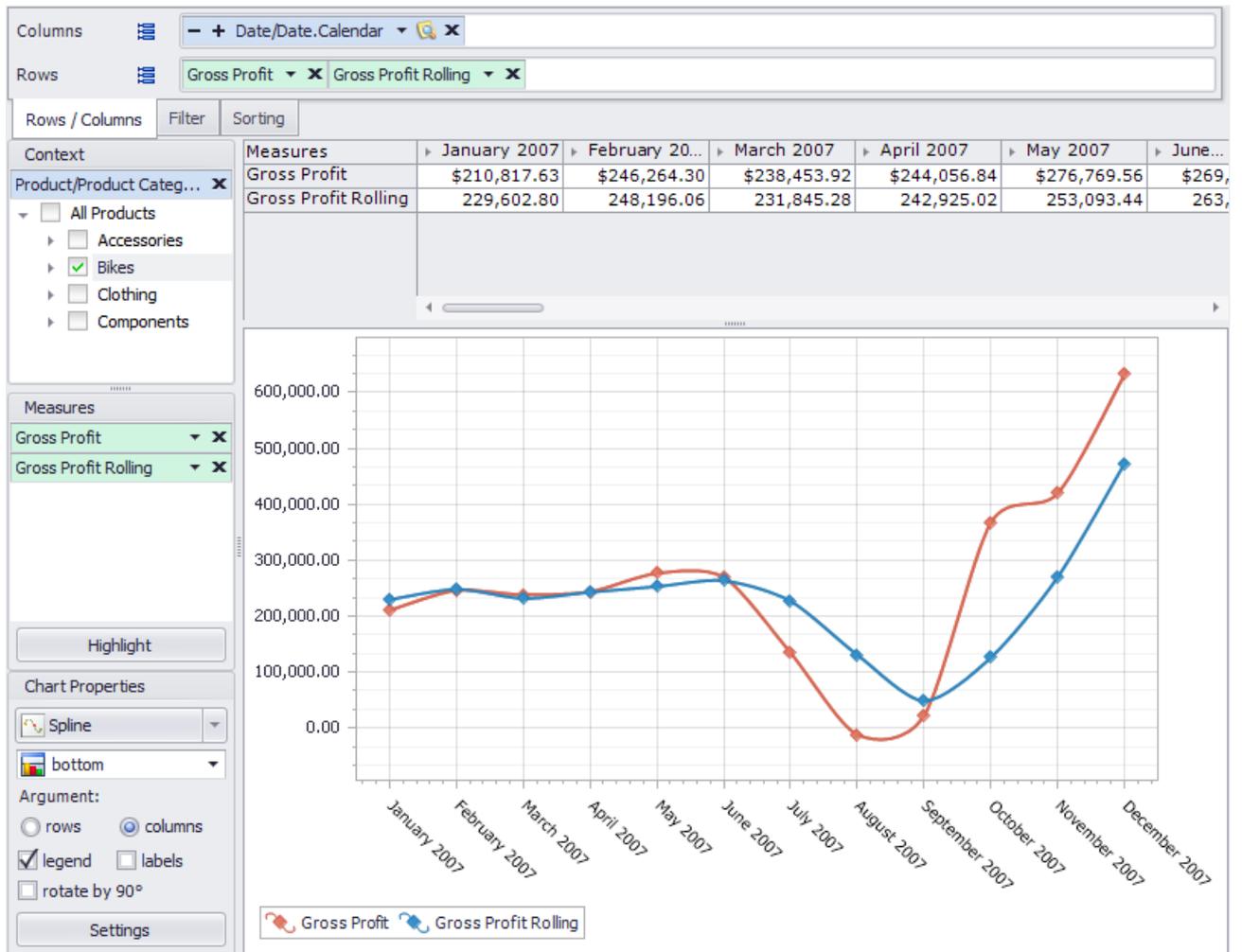
To try that new measure in practice, create a new page of the structure, described below. Put months of 2007 on columns:



Put two measures on rows: “Gross Profit” and “Gross Profit Rolling”. Next, add a chart to the page and change the chart properties like this:



You will get a page looking like this:

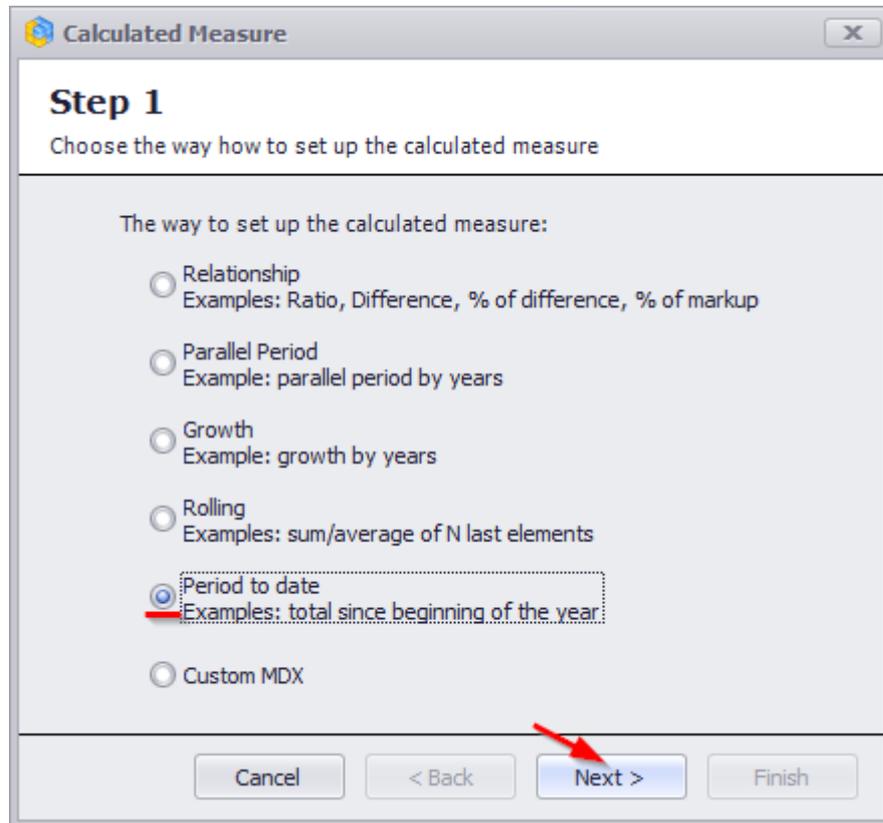


Profit for a current month is displayed with a red line, and the blue line shows the average profit for the last three consecutive months. As you can notice, the line corresponding to the calculated measure is more flat, it doesn't display the sharp rises and falls of profit. It looks more like a tendency, because the average value of profit in three months is taken into account.

6.5.1.4 Period to date

“Period to Date” calculated measure type is used to show a total or average value of some existing measure from the beginning of some period to the current date.

For example, if you need to draw a chart representing the growth of total sales amount during a year, you can create a calculated measure, showing the total amount of sales from the beginning of the year to a current date. Let’s create such a measure. While creating a new measure, select “Period to Date” measure type:



Press «Next» and fill in all fields in the next window as shown:

Calculated Measure - Period to Date

Measure Name: * Reseller Sales Amount Period to Date

Base Measure: * Reseller Sales Amount

Hierarchy: * Date/Date.Calendar

Level: * Calendar Year

Non-empty Behavior: []

Folder: My Calculations

Format String: #,0.00

Operation type

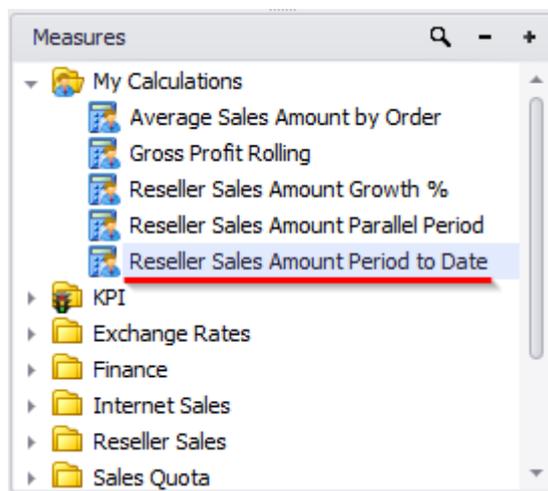
Total

Average

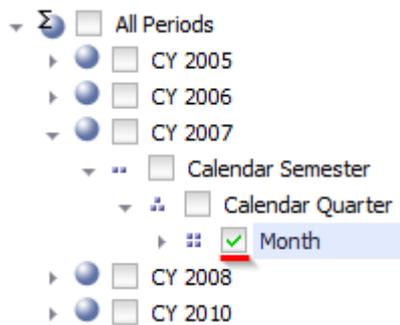
Cancel < Back Next > **Finish**

Operation type selected at the bottom defines that the total value of the measure selected in the “Base Measure” field (“Reseller Sales Amount” in our case) will be shown. In the “Time Hierarchy” field you have to select the time hierarchy. The total value will be calculated starting from the beginning of the corresponding period from the level set in the “Level” field. If you set the “Calendar Year” level, you will get the totals from the beginning of the year.

Press «OK» and the new calculated measure will be added to the measures list:



Let's create the charts of total sales growth during the year 2007 for every country outside the Americas. First drag the "Date.Calendar" hierarchy on columns and select all month of the year 2007:



Then drag the "Geography" hierarchy on rows and select all countries except "Canada" and "United States":

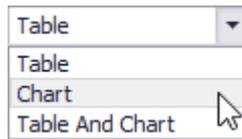


Drop a just created "Reseller Sales Amount Period to Date" measure inside the table. And put the hierarchy "Product Category" with only "Bikes" category selected into the context.

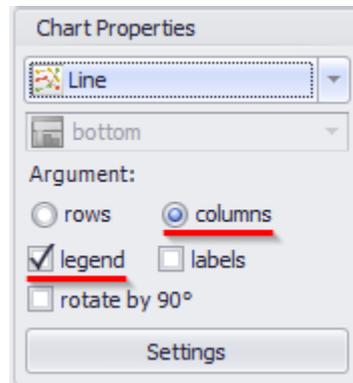
Your page should look like this:

| Geography | ▶ January 2007 | ▶ February 20... | ▶ March 2007 | ▶ April 2007 |
|------------------|----------------|------------------|--------------|--------------|
| ▶ Australia | | | | |
| ▶ France | 30,292.82 | 144,950.28 | 199,375.11 | 240,716.86 |
| ▶ Germany | | | | |
| ▶ United Kingdom | 31,835.47 | 142,318.71 | 243,874.25 | 280,467.44 |

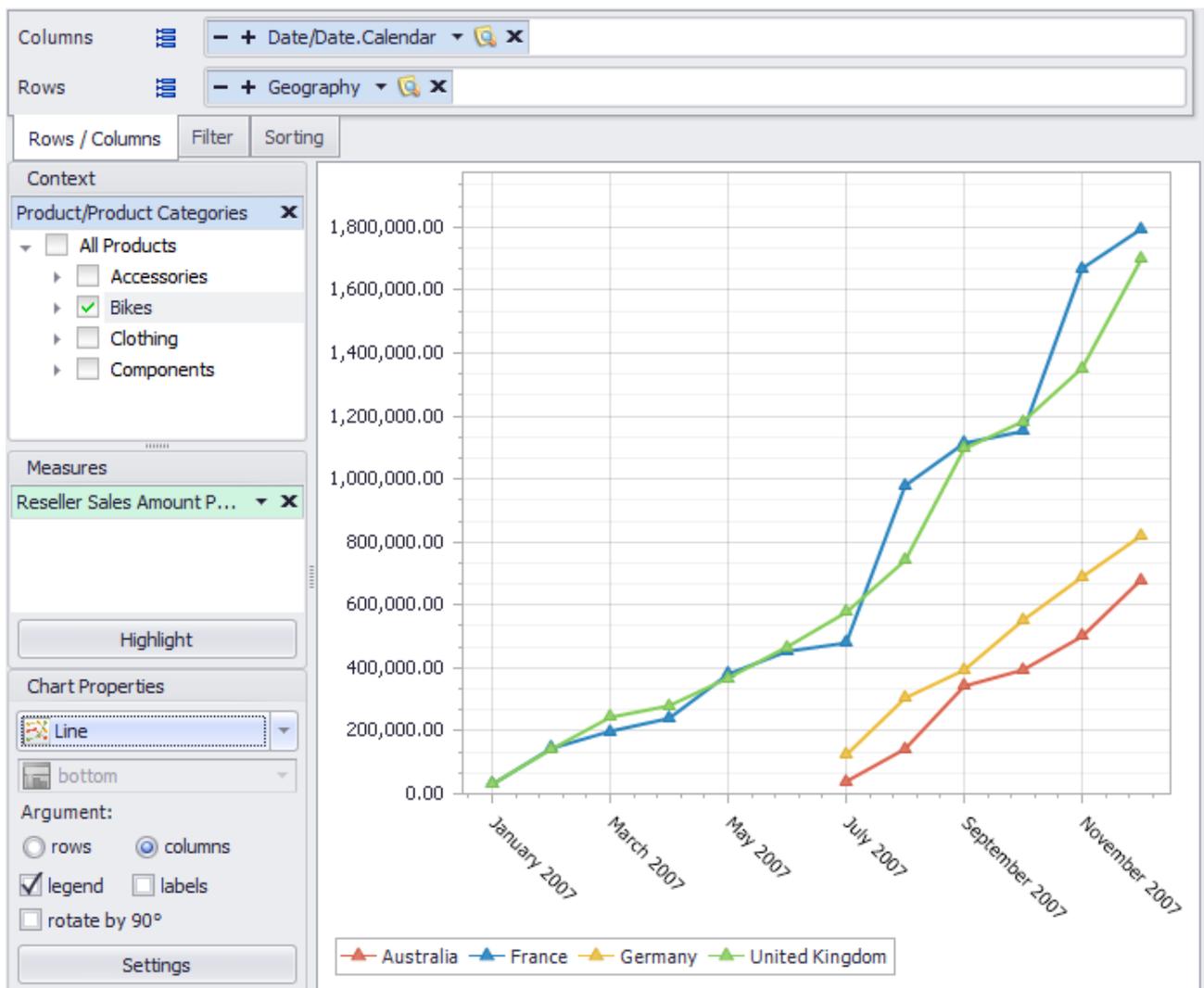
Change the view mode from table to chart, using the corresponding option from the toolbar:



In Chart Properties select the columns as an argument and change the type of the chart to Line:

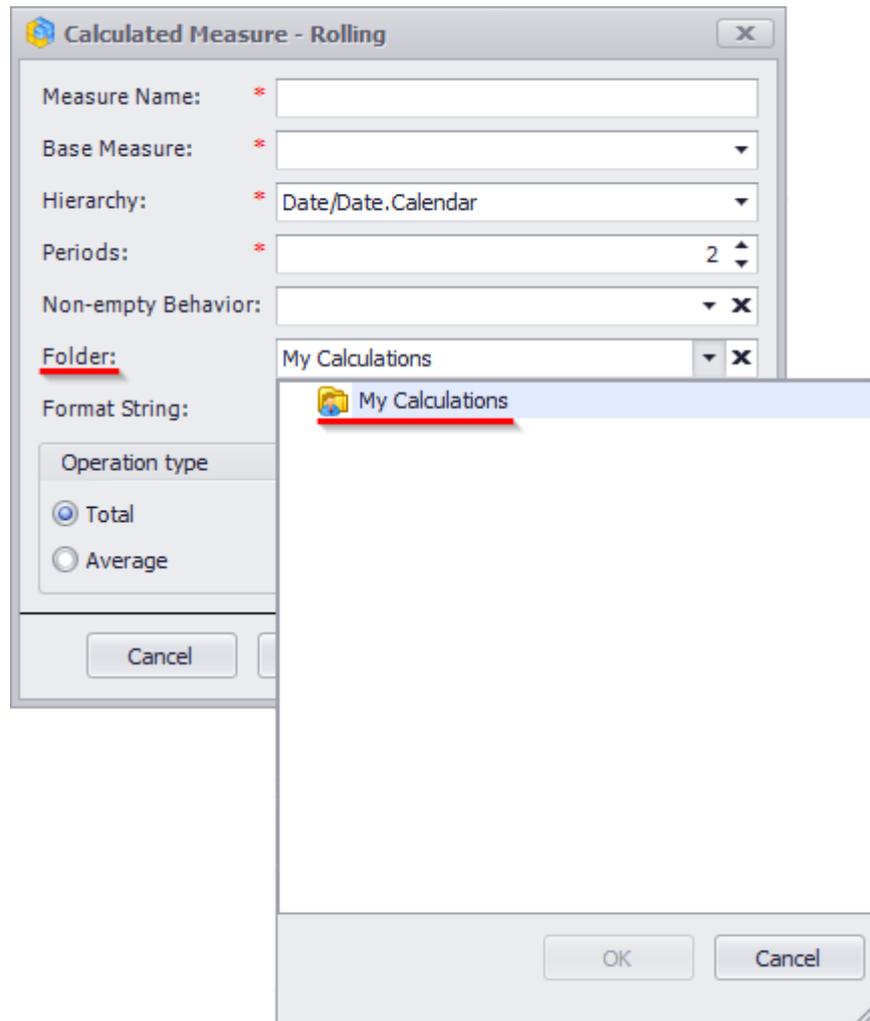


You will get this kind of report with the charts of total sales growth of bikes in different countries:

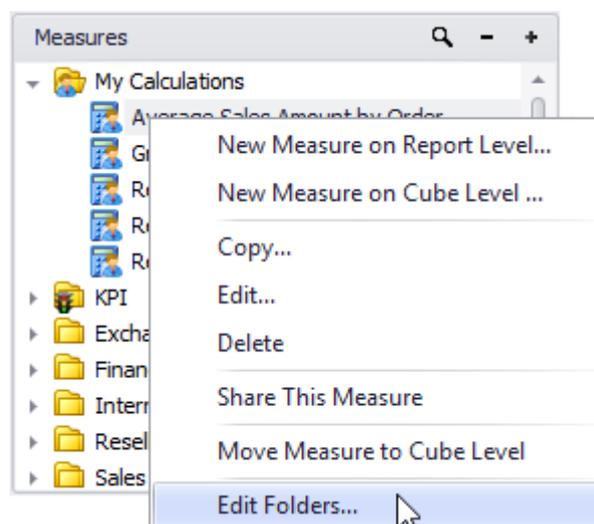


6.5.2 Measure Folders

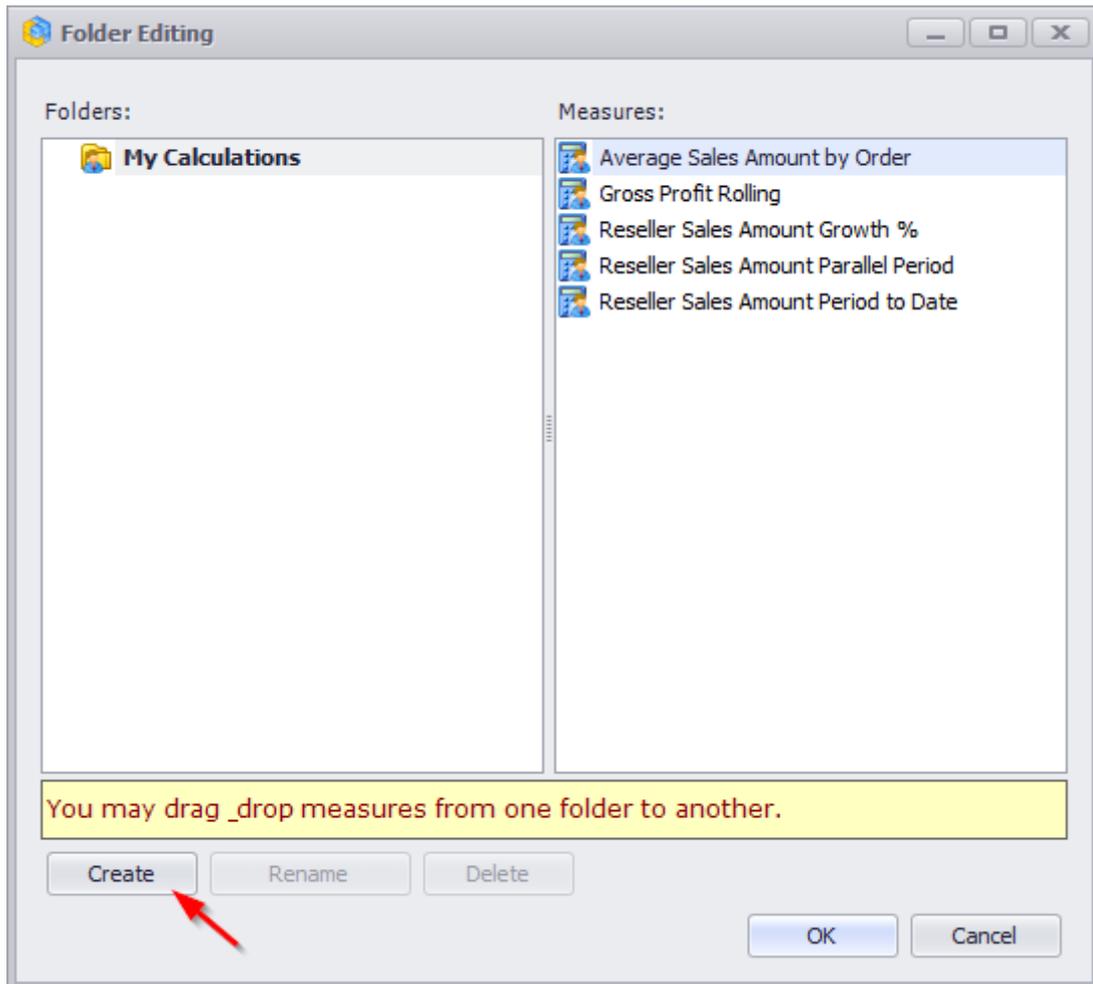
When users create their own measures, all of them are automatically placed to “My Calculations” folder:



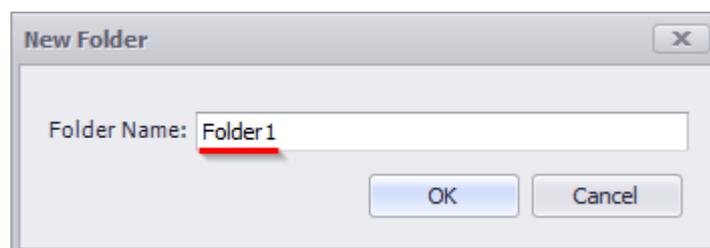
Users can create their own trees of folders, but all of them will be under “My Calculations”. Let us look at the example with measures that we’ve just created. In order to manage folders, click on any place in the list of folders and select “Edit Folders” from the context menu:



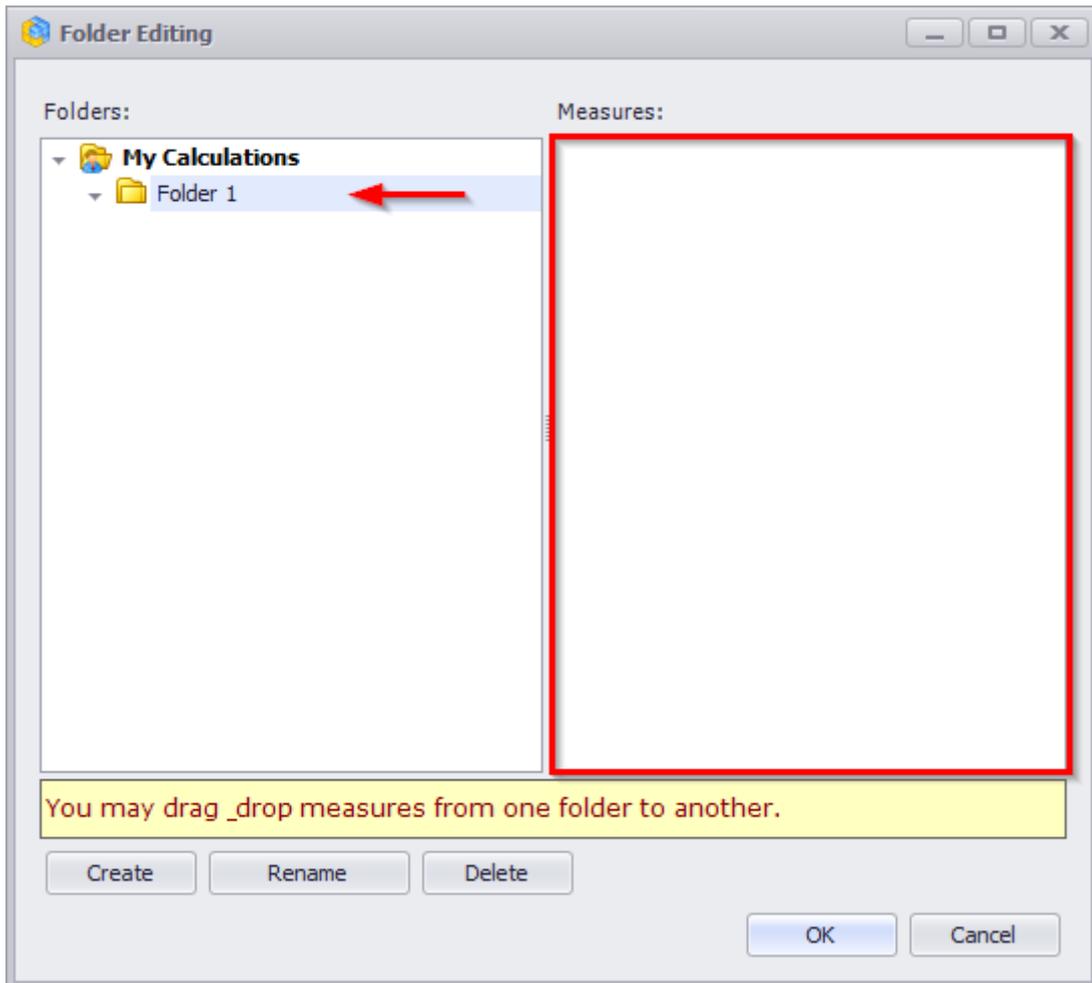
In the window below there is a list of previously created measures. Let us add a folder «*Folder 1*» by pressing “Create”:



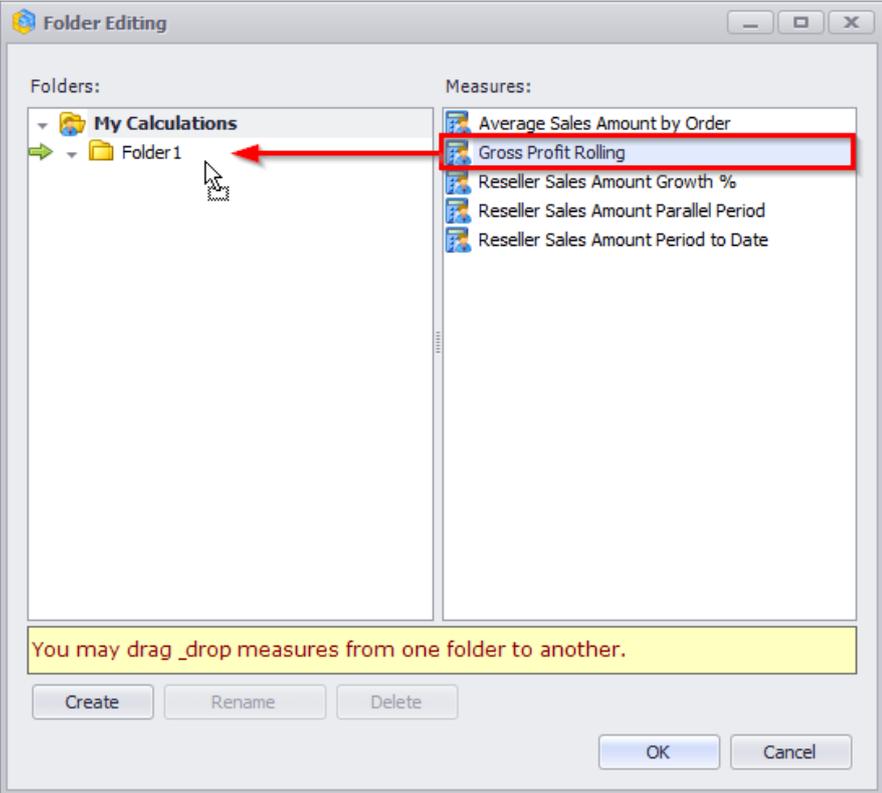
In the window that appears, enter the folder name:



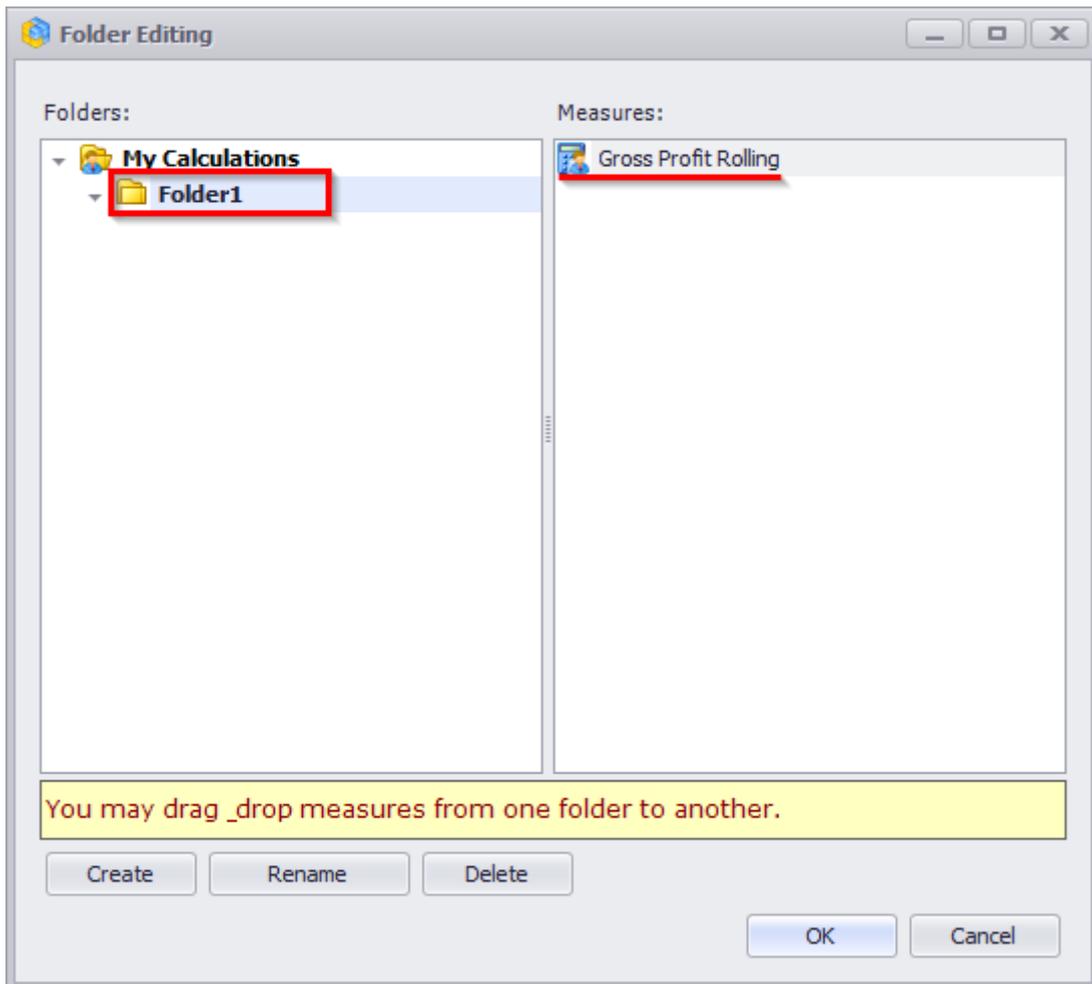
As a result we have a subfolder with the name «*Folder 1*» with no measures in it:



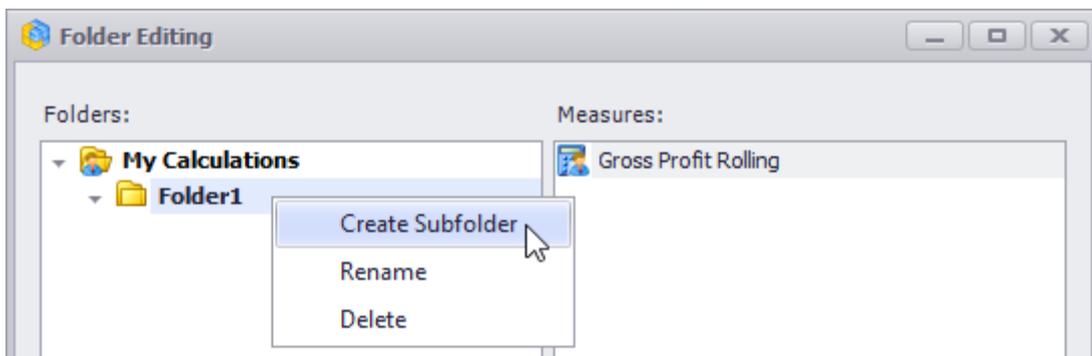
Let us move the measure “Gross Profit Rolling” in the new folder. It is necessary to capture the measure using the mouse and to move it to the desired folder:



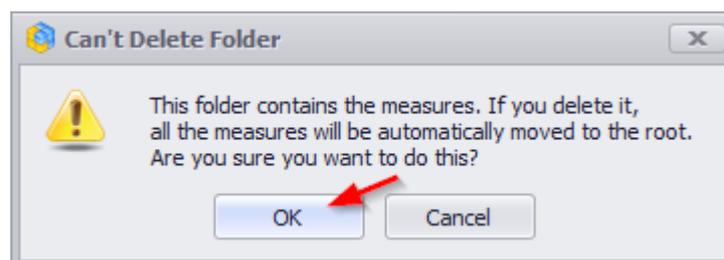
If we click on «*Folder 1*», we can see “Gross Profit Rolling” measure there:

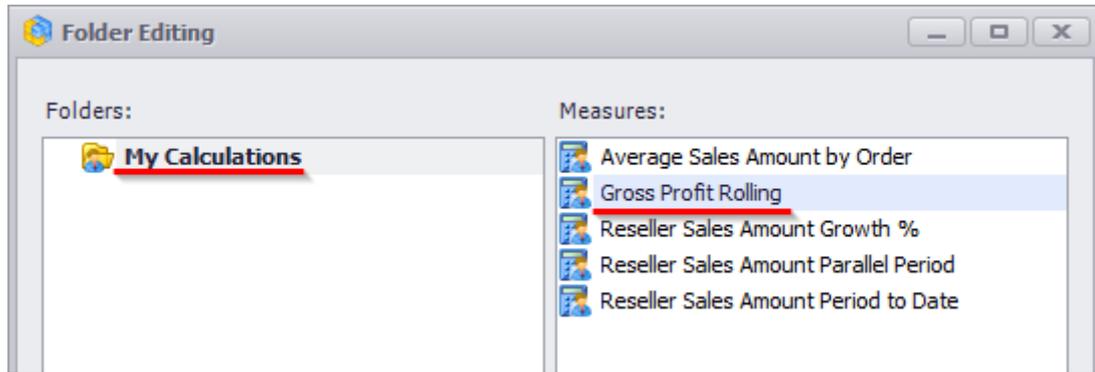


The folders can be renamed and deleted, and new subfolders can be created:



If a folder is deleted and in the same time there are any measures in it, they are moved to the root folder:

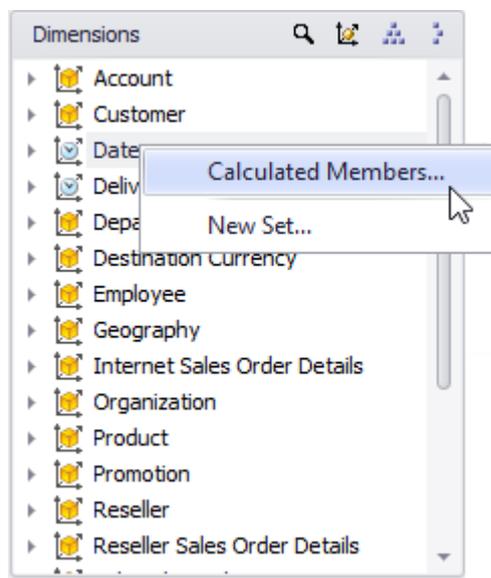




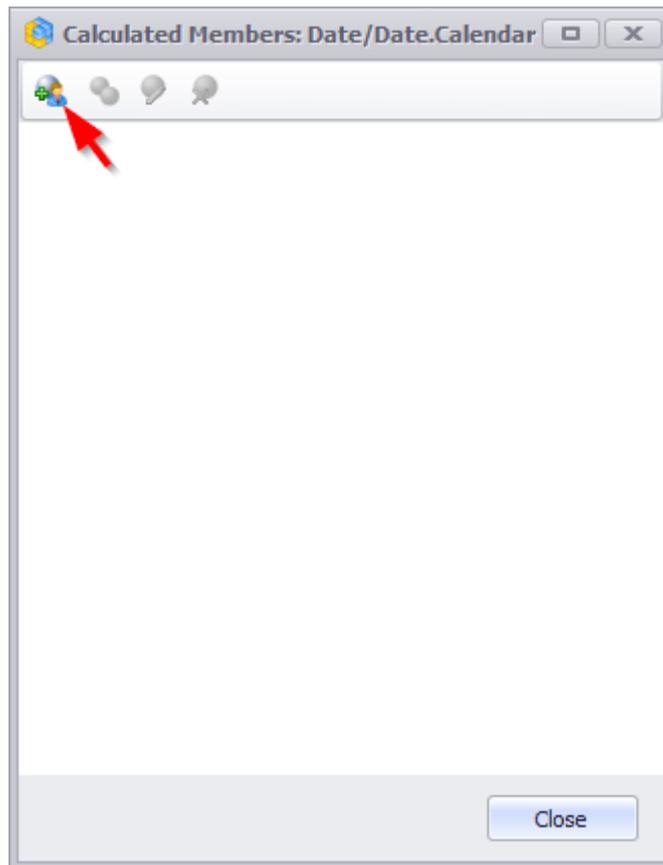
6.5.3 Calculated Members

You have the possibility to create your own dimension members, based on the existing ones.

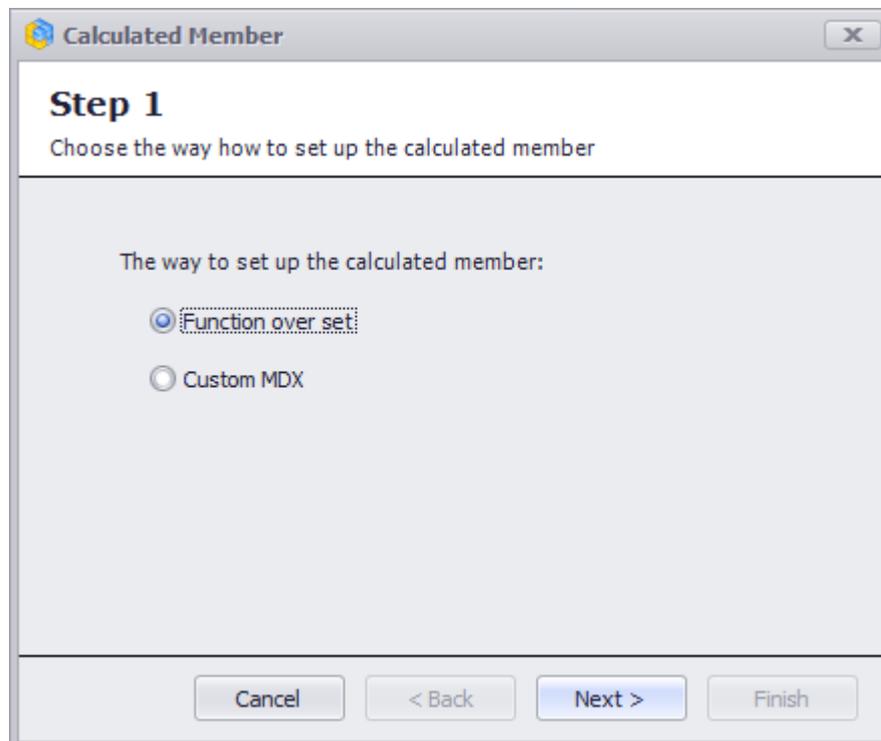
To add calculated members to some hierarchy you have to click with the right mouse button on that hierarchy in the hierarchies list. In the context menu select “Calculated Members...”:



After that a window will appear for managing the calculated members from the selected hierarchy:



To add a new calculated member, press the button as shown in the picture above. A wizard will appear that will help you to create a new member:



In the first step you have two options:

- Function over set;
- Custom MDX.

The second option is for experts familiar with MDX querying language and enables you to create a calculated member with a custom MDX query.

Let's consider the first option. If you select it and press Next you will see the following form:

Calculated Member - Function over Set

Member Name: * Sum of Current Measure over Date.Calenda

Parent Hierarchy: * Date/Date.Calendar

Parent Member: All Periods

Function: * Sum

Measure: * Current Measure

Format String: Standard

Solve Order: 0

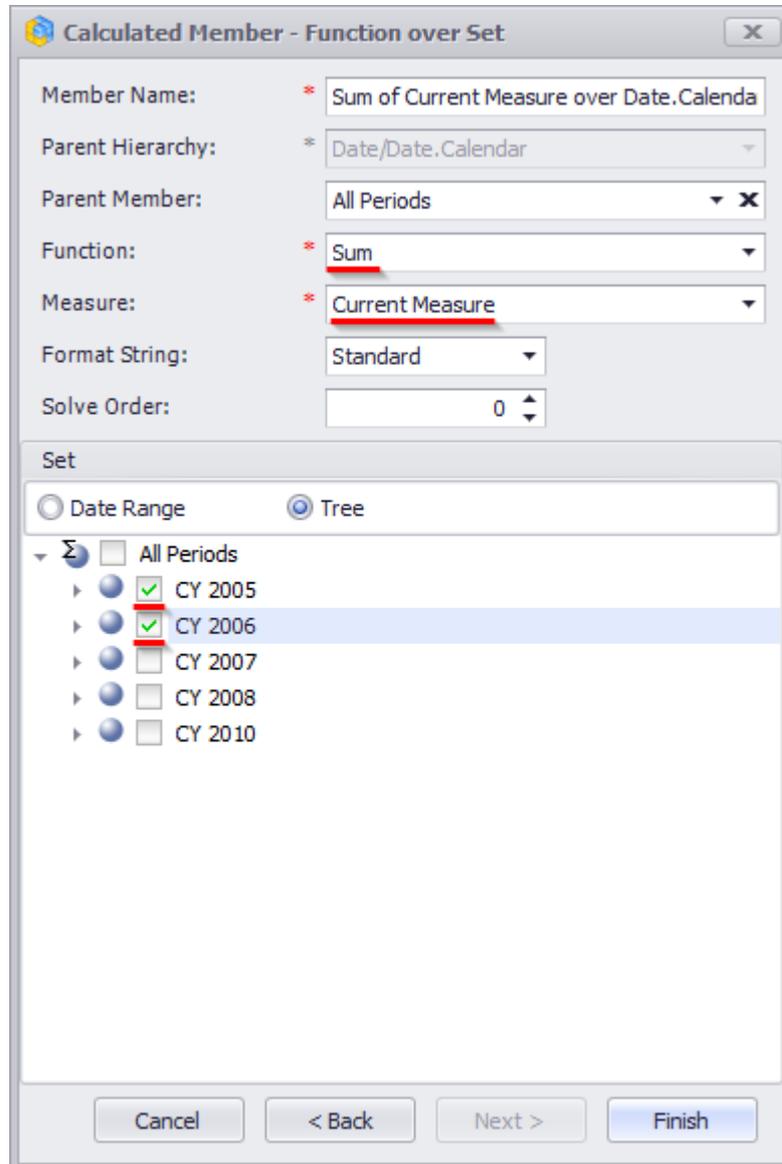
Set

Date Range Tree

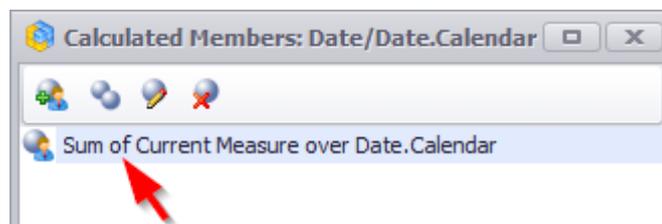
▸ Σ All Periods

Cancel < Back Next > Finish

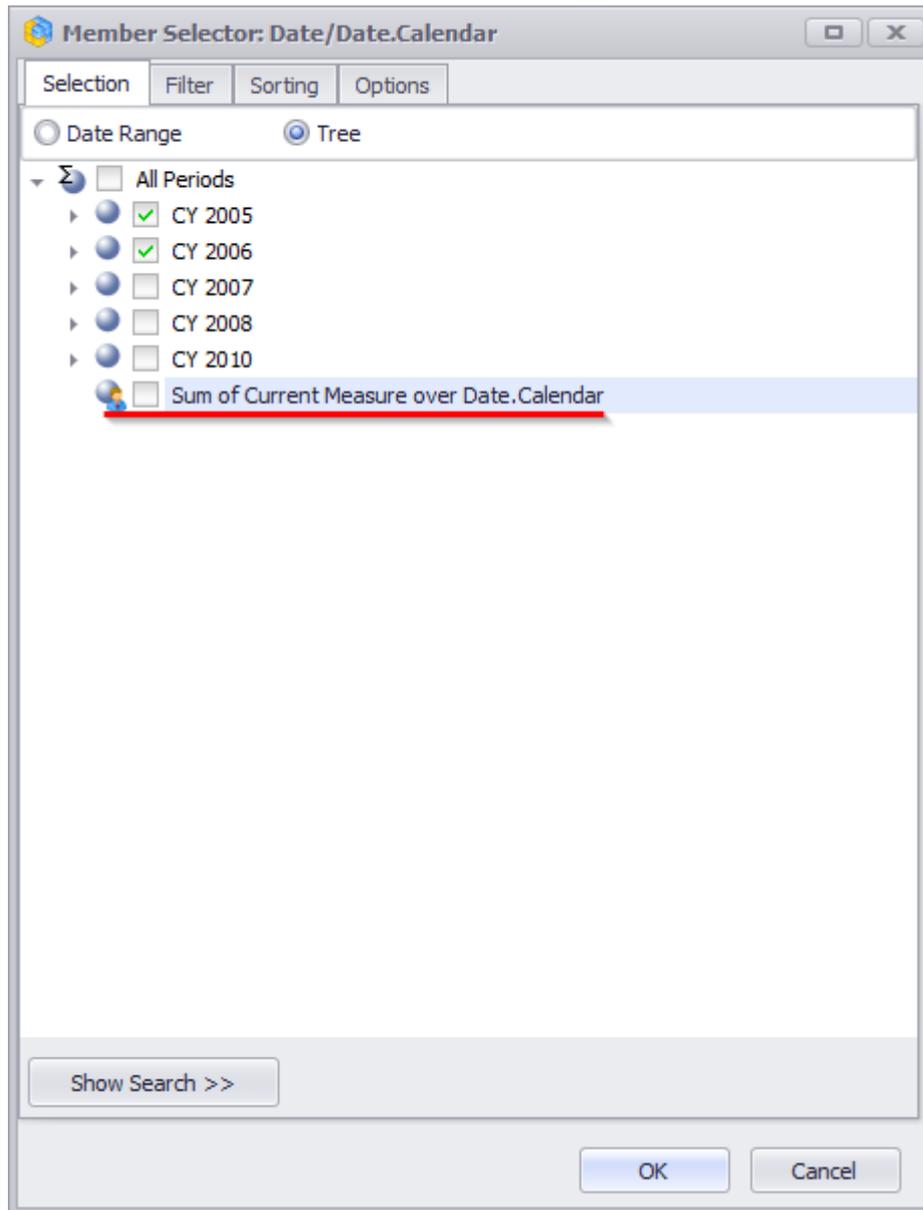
Let's build the calculated member that will show the total value of the measures for the years 2005 and 2006. To do that, select "Sum" in the "Function" field. In the "Measure" field leave the value "Current Measure" to make the summary value calculated over the currently selected measure. In the bottom part of the window you can see an elements tree where you can select the elements whose values will be counted in the sum. Select "CY 2005" and "CY 2006" as shown in the picture:



After pressing "Finish" the new calculated element will be created:



Now add the hierarchy with the new element (“Date.Calendar” in our case) to your report on rows or columns. Open the member selector and you will see a new calculated member there:



Add this element to the selection to see the result:

Columns: [- + Date/Date.Calendar ▾ 🔍 ✕]

Rows: [- + Product/Product Categories ▾ 🔍 ✕]

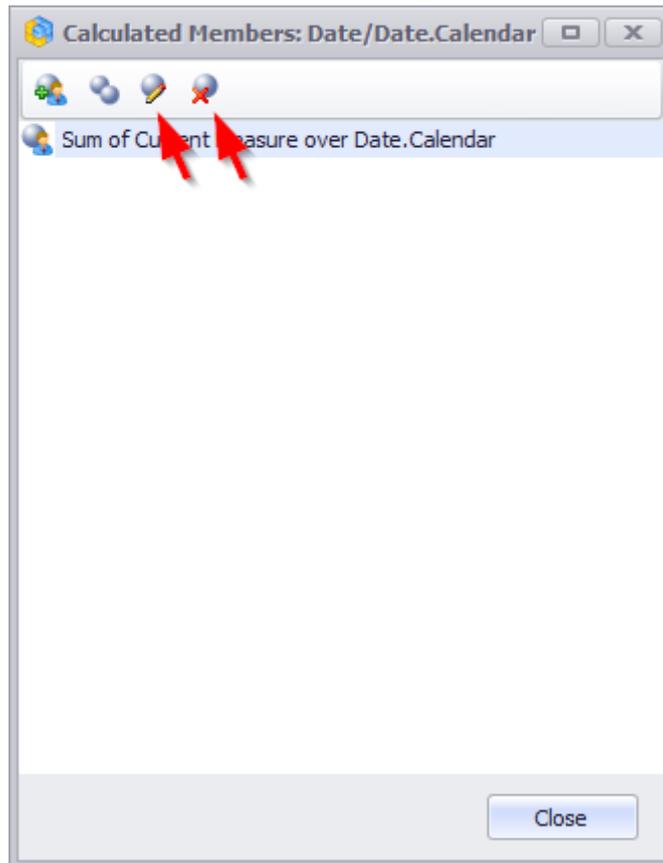
Rows / Columns | Filter | Sorting

| Context | Product/Prod... | CY 2005 | CY 2006 | Sum of Current Measu... |
|---------|-----------------|----------------|-----------------|-------------------------|
| | ▶ Accessories | \$20,235.36 | \$92,735.35 | \$112,970.72 |
| | ▶ Bikes | \$7,395,348.63 | \$19,956,014.67 | \$27,351,363.30 |
| | ▶ Clothing | \$34,376.34 | \$485,587.15 | \$519,963.49 |
| | ▶ Components | \$615,474.98 | \$3,610,092.47 | \$4,225,567.45 |

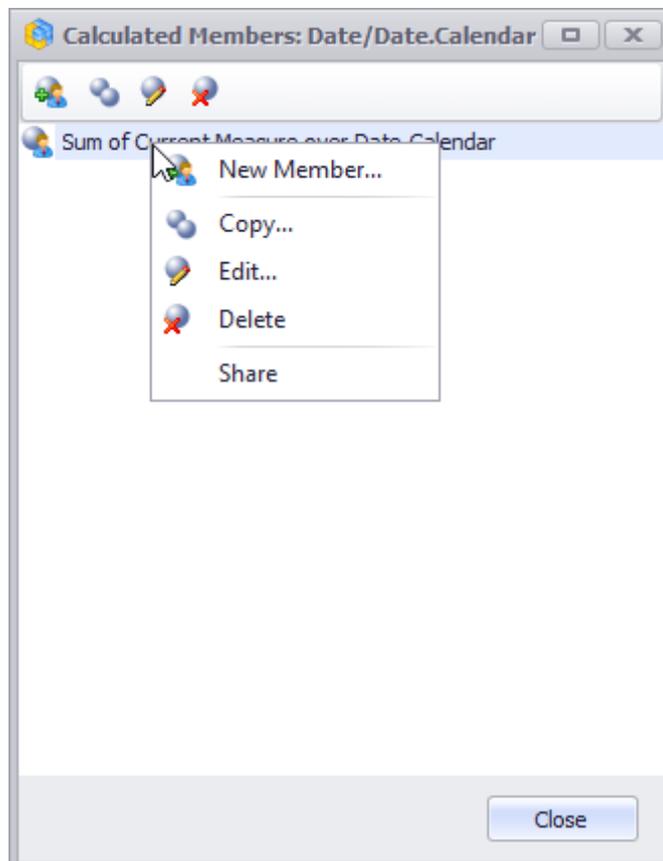
Measures: Reseller Sales Amount ▾ ✕

Note: Red arrows in the original image point from the CY 2005 and CY 2006 columns to the Sum of Current Measure column, with a '+' sign between the first two columns and an '=' sign between the second and third columns.

You can edit calculated members in the same management window that you used to add the member. There are buttons for editing and removing a member:



You can also edit the calculated members from the context menu:



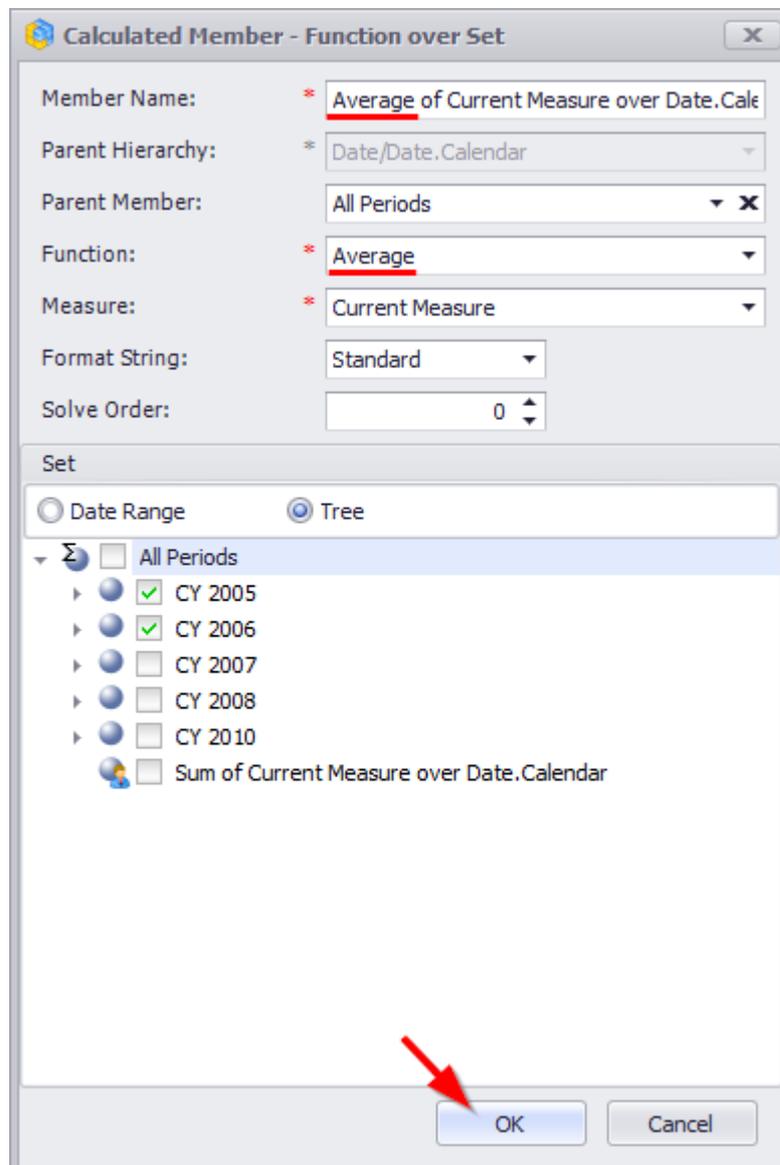
If you share the member with other people, it will be surrounded by green rectangle:



Pay attention, that in the calculated members' management window you can see only elements from the hierarchy for which you opened that window. To see the elements from the other hierarchy click the right mouse button on that hierarchy and select the item "Calculated Members".

Let's edit our calculated member, so that it will show not the sum but the average value. To do that, select the element in the calculated members' management window and press the Edit button.

In the "Function" field change the value from "Sum" to "Average" and press «OK»:



Now look at your report, it should show the average value for two selected years:

| Product/Prod... | CY 2005 | CY 2006 | Average of Current Me... |
|-----------------|----------------|-----------------|--------------------------|
| ▶ Accessories | \$20,235.36 | \$92,735.35 | \$56,485.36 |
| ▶ Bikes | \$7,395,348.63 | \$19,956,014.67 | \$13,675,681.65 |
| ▶ Clothing | \$34,376.34 | \$485,587.15 | \$259,981.74 |
| ▶ Components | \$615,474.98 | \$3,610,092.47 | \$2,112,783.73 |

This way you can create any number of calculated members in different hierarchies and use them in your reports.

6.5.4 Numeric parameters

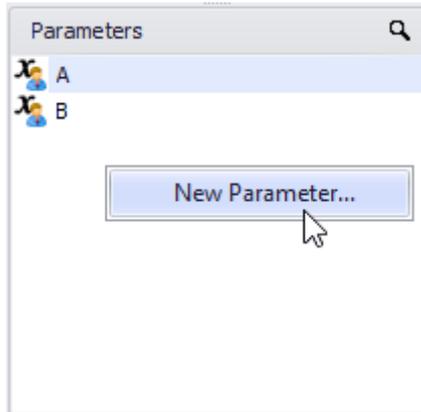
You can create numerical parameters that allow the user to affect calculated measures, sets and members dynamically:

The screenshot shows the Business Analysis Tool (Report Module) interface. The main report displays a table with columns for Product/Product Categories, Gross Profit Margin, and ABC. The report is filtered by Product/Product Categories. The table shows the following data:

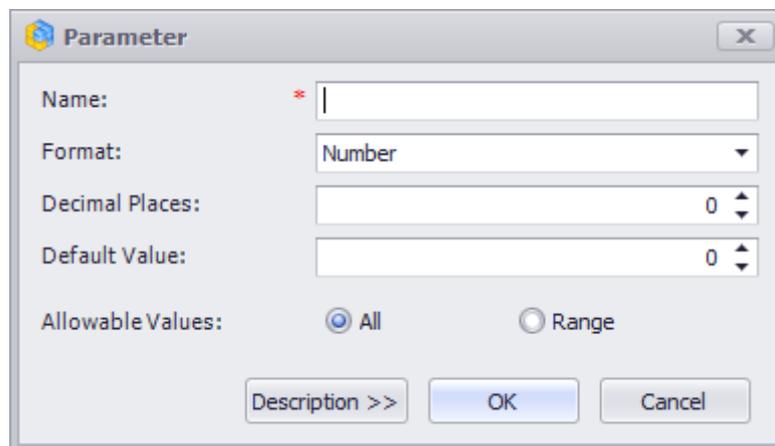
| Product/Product Categories | Gross Profit Margin | ABC |
|----------------------------|---------------------|----------|
| Accessories | 49.88% | C |
| ▶ Bike Racks | 40.07% | C |
| ▶ Bike Stan... | 62.60% | C |
| ▶ Bottles a... | 59.48% | C |
| ▶ Cleaners | 46.39% | C |
| ▶ Fenders | 62.60% | C |
| ▶ Helmets | 46.77% | C |
| ▶ Hydration... | 46.34% | C |
| ▶ Lights | | A |
| ▶ Locks | 30.98% | C |
| ▶ Panniers | | A |
| ▶ Pumps | 31.05% | C |
| ▶ Tires and... | 62.51% | C |
| Bikes | 11.11% | B |
| ▶ Mountain... | 16.28% | B |
| ▶ Road Bikes | 9.95% | A |
| ▶ Touring B... | 1.52% | A |
| Clothing | 17.42% | B |
| ▶ Bib-Shorts | 30.74% | C |
| ▶ Caps | -2.35% | A |
| ▶ Gloves | 34.36% | C |
| ▶ Jerseys | -12.35% | A |
| ▶ Shorts | 37.71% | C |
| ▶ Socks | 40.89% | C |
| ▶ Tights | 30.08% | C |
| ▶ Vests | 38.33% | C |
| Components | 8.75% | A |
| ▶ Bottom B... | 26.00% | C |
| ▶ Brakes | 25.87% | C |
| ▶ Chains | 25.83% | C |
| ▶ Cranksets | 25.88% | C |
| ▶ Derailleurs | 25.85% | C |

The Parameters window is open, showing two parameters: A (11%) and B (25%). The Parameters window is highlighted with a red box. The ABC column in the report is also highlighted with a red box.

To create a numeric parameter, right-click anywhere in the parameter list. A pop-up menu appears allowing you to add a parameter:



By clicking on the "New Parameter ..." menu item a wizard to create a numeric parameter appears:



In form that opened you should fill in the following fields:

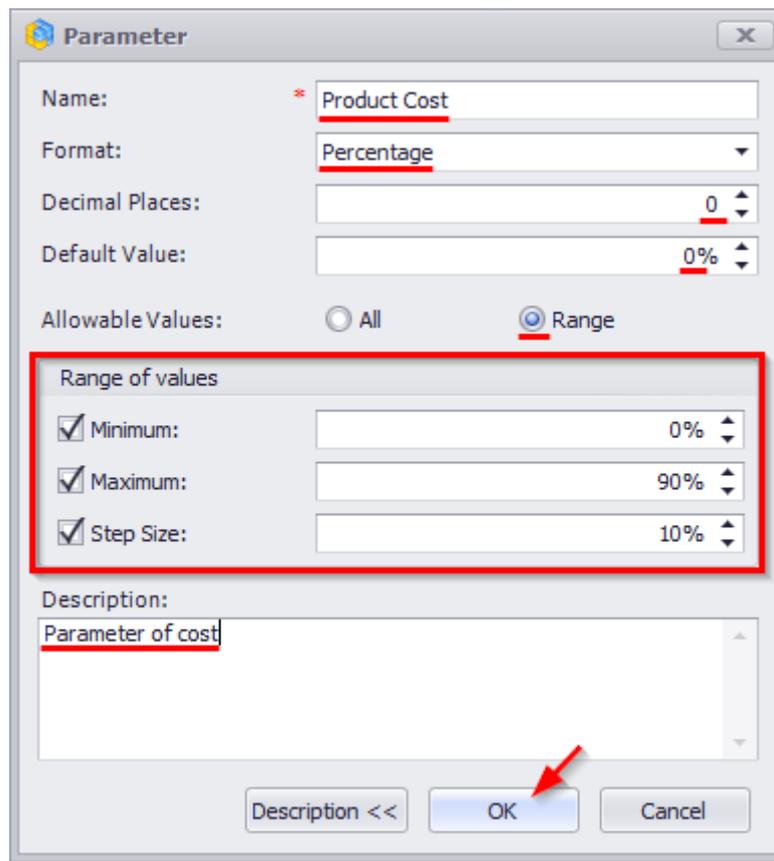
- Name – fill in the name of the parameter;
- Format – choose the parameter format: numeric or percentage;
- Decimal Places – select the number of decimal places;
- Default Value – specify the default setting;
- Allowable Values –select all values or the value of the selected range with the ability to specify the step

- Description - You can briefly describe the essence of the parameter, if it is necessary.

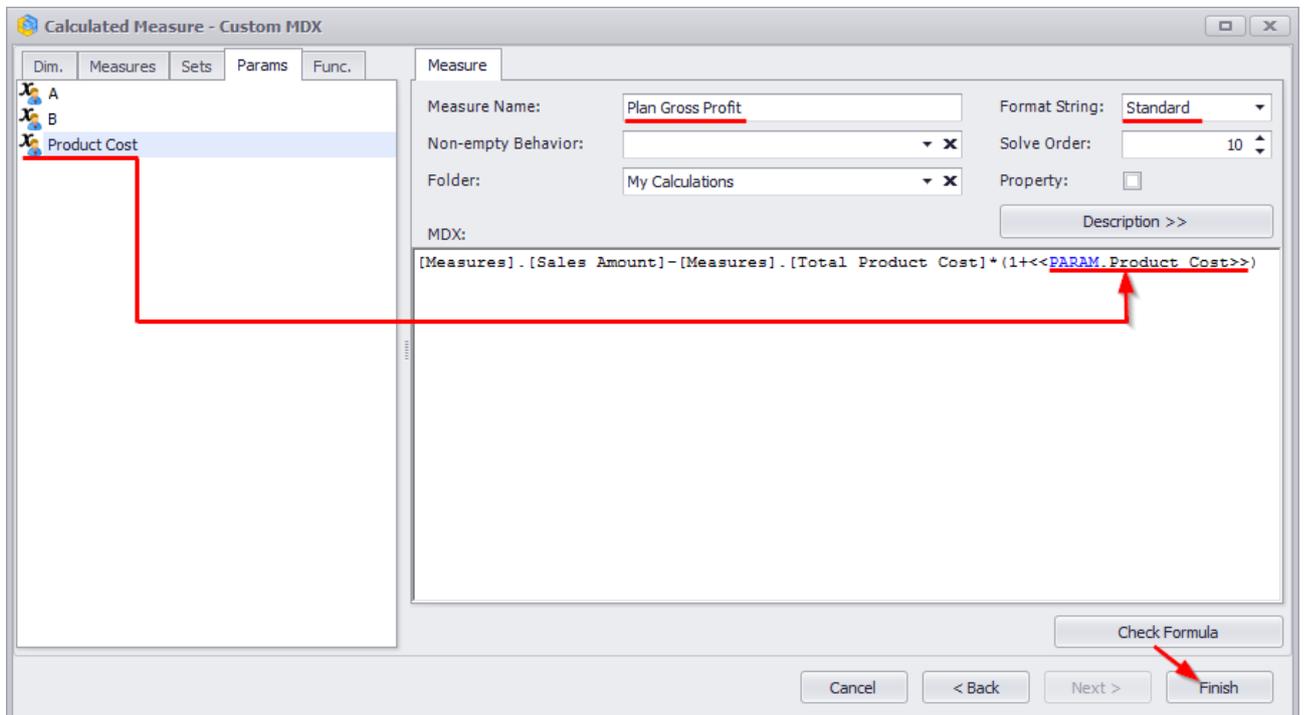
This parameter can be used in calculated measures, members and sets:

Let us look at the following example. For instance, we need to analyze how the margin for the “Bikes” subcategory changes provided that the prime cost of goods increases by 10%.

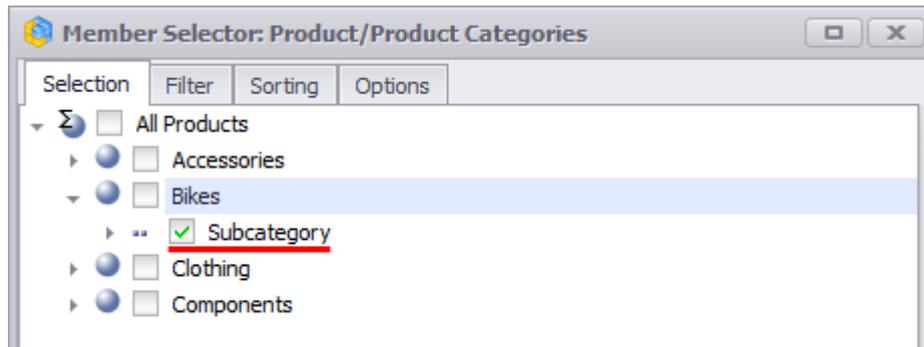
In order to do this, create a parameter “Product Cost”:



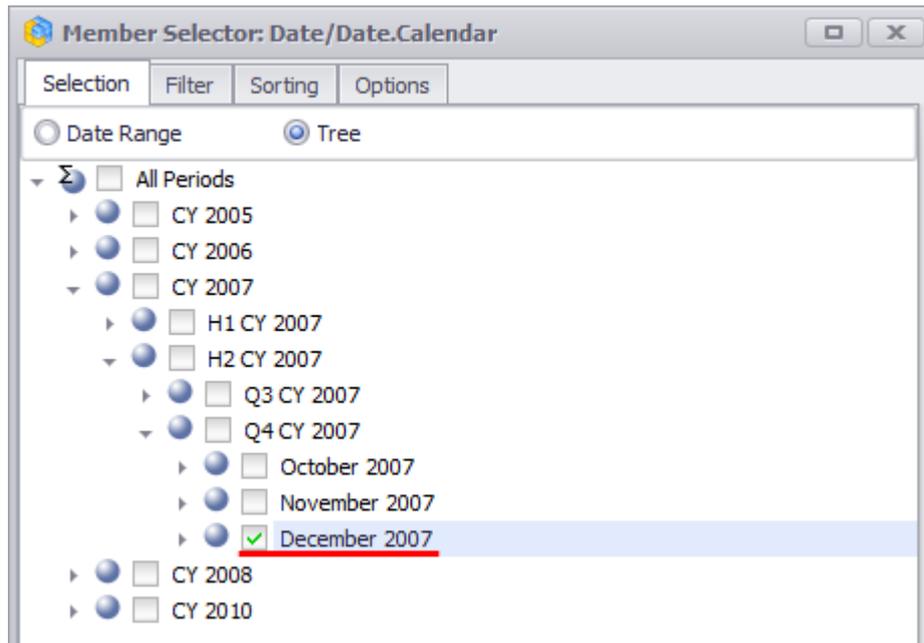
After that, we need to create a measure for “Plan Gross Profit”, which will calculate predictable margins using parameter “Product Cost”:



Now let us create a report with the “Bikes” subcategories on rows:



In columns it is December 2007:



Now let us add three measures to our row: “Sales Amount”, “Gross Profit”, “Plan Gross Profit”. As a result, you will get the following report with parameter “Product Cost”:

Columns: - + Date/Date.Calendar

Rows: - + Product/Product Categories | Sales Amount | Gross Profit | Plan Gross Profit

Rows / Columns | Filter | Sorting

Context

Measures

- Sales Amount
- Gross Profit
- Plan Gross Profit

Parameters

Product Cost: 0%

Highlight

| Product/Product.. | Measures | December 2... |
|-------------------|-------------------|----------------|
| ▶ Mountain Bikes | Sales Amount | \$1,490,950.16 |
| | Gross Profit | \$365,378.21 |
| | Plan Gross Profit | \$365,378.21 |
| ▶ Road Bikes | Sales Amount | \$1,357,042.74 |
| | Gross Profit | \$145,170.16 |
| | Plan Gross Profit | \$145,170.16 |
| ▶ Touring Bikes | Sales Amount | \$1,641,165.95 |
| | Gross Profit | \$121,509.33 |
| | Plan Gross Profit | \$121,509.33 |

Let us increase “Product Cost” by 10%:

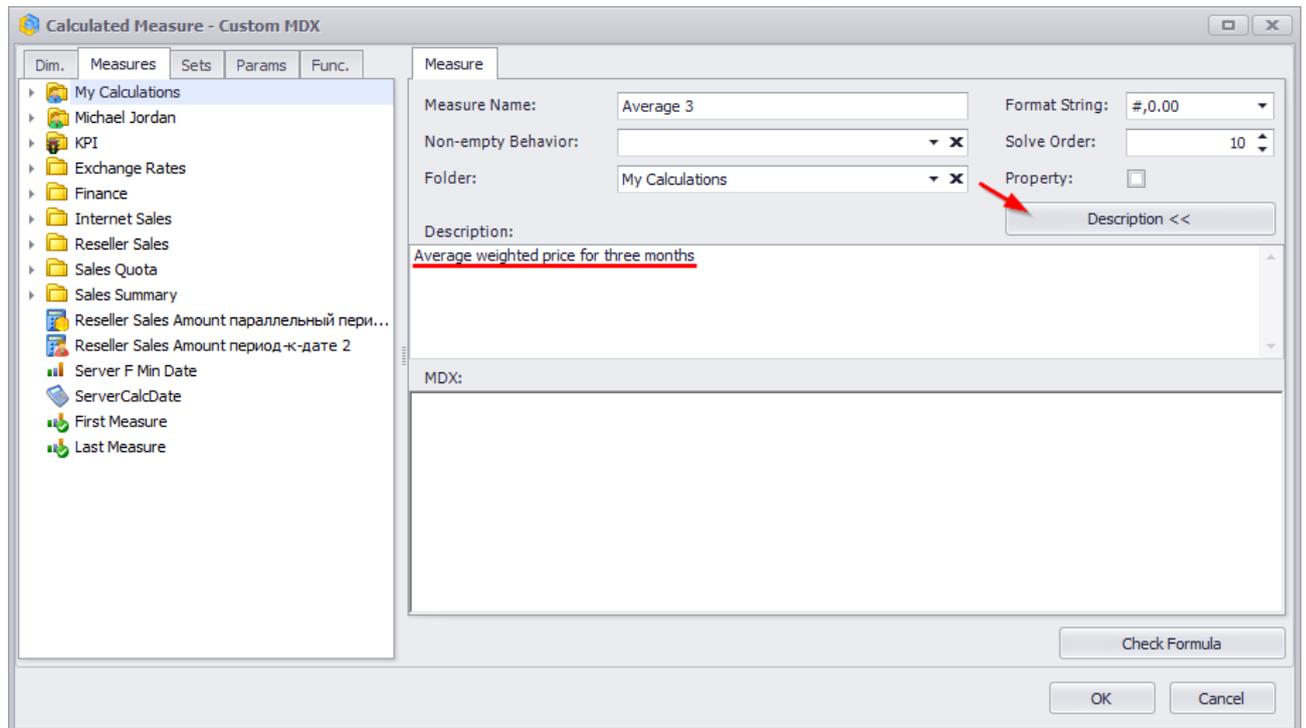
The screenshot shows a BI tool interface with a pivot table. The 'Columns' field contains 'Date/Date.Calendar' and the 'Rows' field contains 'Product/Product Categories', 'Sales Amount', 'Gross Profit', and 'Plan Gross Profit'. The pivot table displays data for Mountain Bikes, Road Bikes, and Touring Bikes. The 'Plan Gross Profit' for Touring Bikes is highlighted in red and is (\$30,456.33). A parameter slider for 'Product Cost' is set to 10%, and a 'Highlight' button is visible below it.

| Product/Product.. | Measures | December 2... |
|-------------------|-------------------|----------------|
| Mountain Bikes | Sales Amount | \$1,490,950.16 |
| | Gross Profit | \$365,378.21 |
| | Plan Gross Profit | \$252,821.02 |
| Road Bikes | Sales Amount | \$1,357,042.74 |
| | Gross Profit | \$145,170.16 |
| | Plan Gross Profit | \$23,982.90 |
| Touring Bikes | Sales Amount | \$1,641,165.95 |
| | Gross Profit | \$121,509.33 |
| | Plan Gross Profit | (\$30,456.33) |

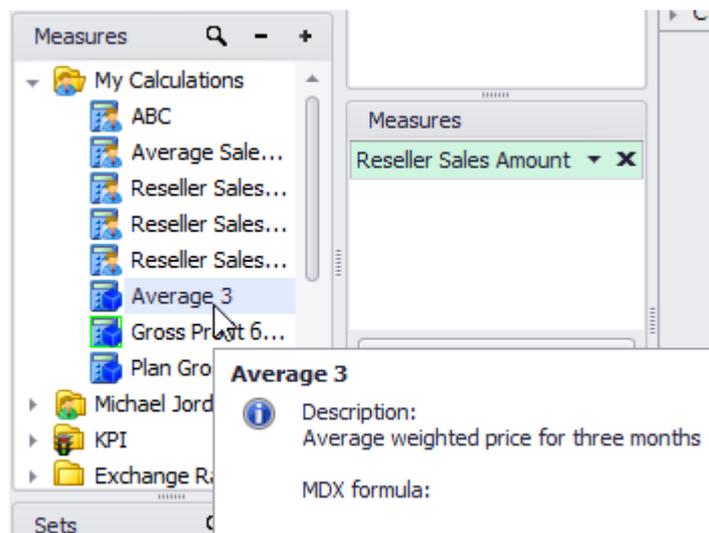
In this case the sales of Touring Bikes subcategory will go down.

6.5.5 Description of calculated measures, sets and parameters

Similarly to numeric parameters, it is possible to specify a description for the calculated measures and sets (of an arbitrary MDX type):



After that, when pointing at a measure, you will see the following message:



6.6 Gauges

6.6.1 Creating Gauges

In order to create a gauge, it is necessary to click on the desired measure and select the visualization type as a gauge:

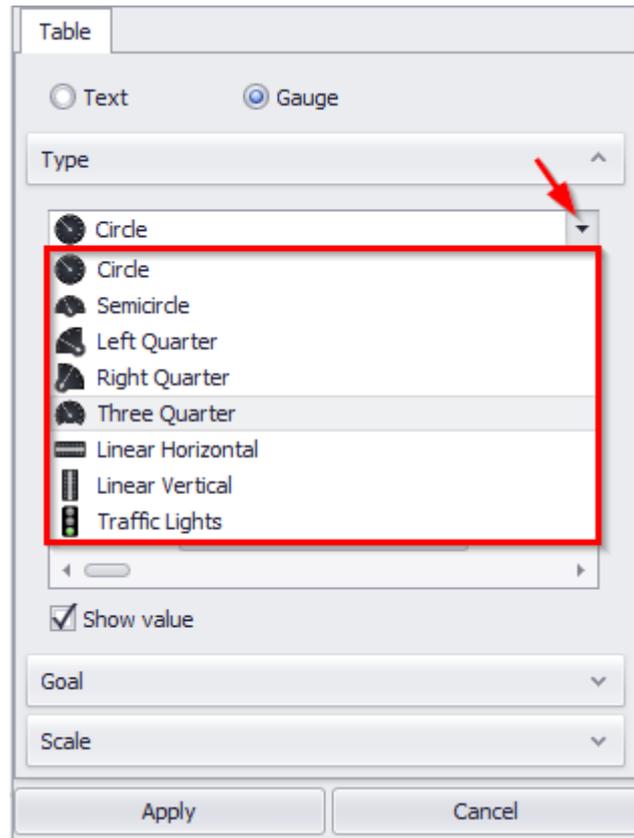
The screenshot displays a BI tool interface with a table of data and a configuration dialog for a gauge visualization. The table shows data for 'Date/Date.Calendar' and 'Internet Order Quantity' from 2005 to 2008. The configuration dialog is open, showing the 'Gauge' visualization type selected, with a 'Circle' gauge style chosen. The 'Show value' checkbox is checked, and there are dropdown menus for 'Goal' and 'Scale'. The 'Apply' and 'Cancel' buttons are at the bottom of the dialog.

| Date/Date.Calendar | Internet Order Quantity |
|--------------------|-------------------------|
| ▸ CY 2005 | 1,013 |
| ▸ CY 2006 | 2,677 |
| ▸ CY 2007 | 24,443 |
| ▸ CY 2008 | 32,265 |

Configuration Dialog:

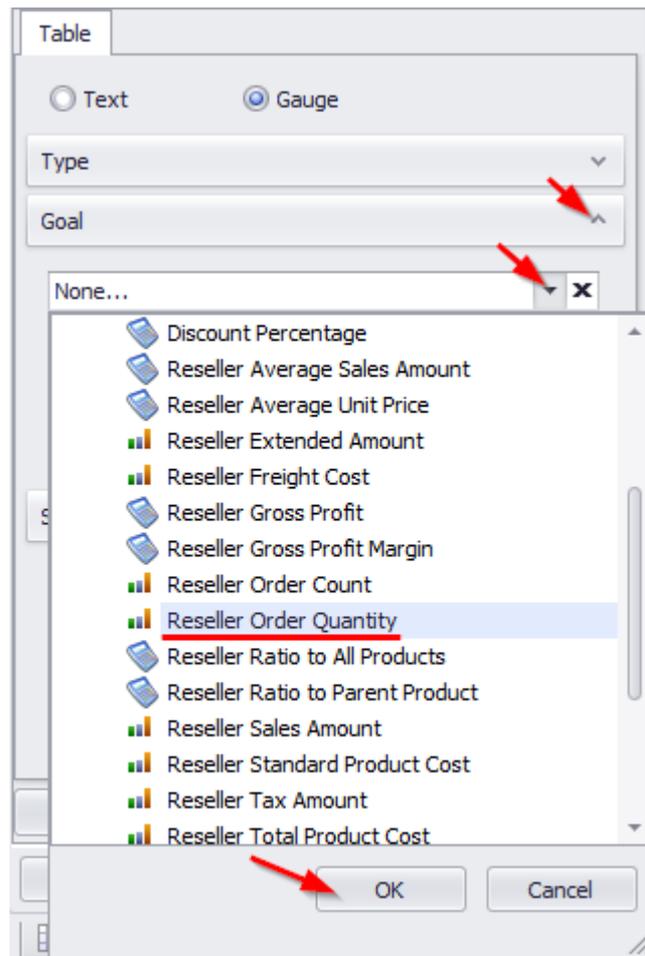
- Visualization Type: Gauge
- Gauge Style: Circle
- Show value:
- Goal: [Dropdown]
- Scale: [Dropdown]

There are the following types of gauges:



The field "Goal" defines the measure which will be used as a target in data analysis. By default it is empty. If we don't select a measure in the "Goal" field, the analysis is done relatively to the fact measure (in our case this is "Internet Order Quantity").

Let us select the measure “Reseller Order Quantity” in the field “Goal”:



The next step will be to select the “Goal”:

Table

Text Gauge

Type

Goal

Reseller Order Quantity

% of difference between fact and goal

% of difference between fact and goal

Difference between fact and goal

Fact

Goal

% of fact from goal

Apply Cancel

Then select the way how the label will be rendered:

Table

Text Gauge

Type

Goal

Reseller Order Quantity

Difference between fact and goal

▼▲ Less/more(more = good)

▼▲ Less/more(more = good)

▼▲ Less/more(more = bad)

▲ Lable "good" if more than X

▲ Lable "bad" if more than X

▼ Lable "good" if less than X

▼ Lable "bad" if less than X

None

Apply Cancel

And set the value of “X”:

Table

Text Gauge

Type

Goal

Reseller Order Quantity

Difference between fact and goal

Less/more (more = good)

X: 0

Scale

Apply Cancel

By default the application offers its own scale, but the user can override the value of the minimum and maximum:

Table

Text Gauge

Type

Goal

Scale

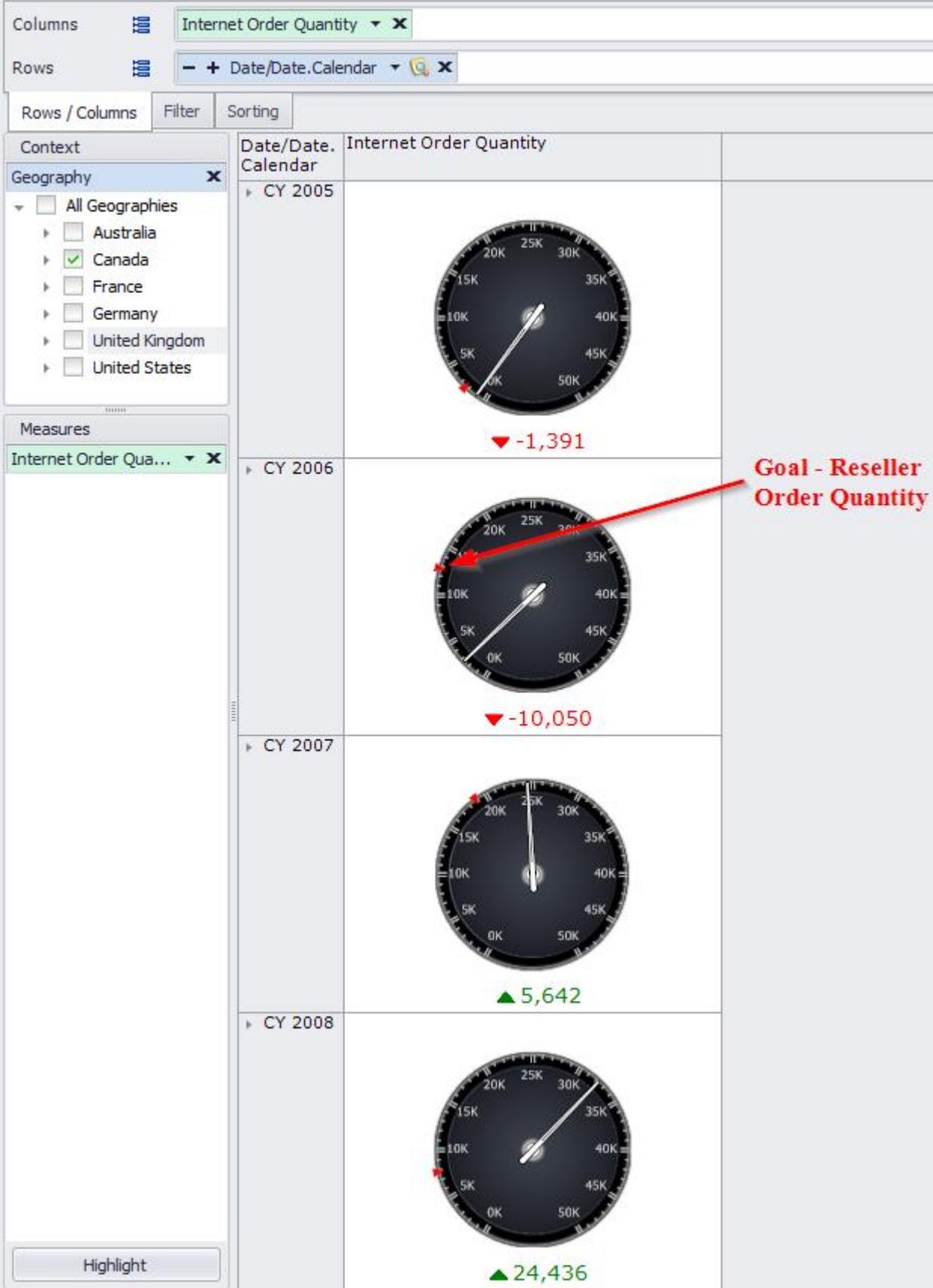
Autoscale for gauges

Minimum: 0 Auto

Maximum: 50000 Auto

Apply Cancel

As a result of the selected parameters we will get the visualization with the icon on a gauge meaning the fact (Internet Order Quantity). In the center of the gauge there is a label which displays the difference between fact and the goal:



As we can see on the pictures, the goal were not met in the years of 2005 and 2006.

There is one more type of the gauges called “Traffic lights”:

| Date/Date.Calendar | Internet Order Quantity |
|--------------------|-------------------------|
| ▶ CY 2005 | 1,013 |
| ▶ CY 2006 | 2,677 |
| ▶ CY 2007 | 24,443 |
| ▶ CY 2008 | 32,265 |

Select the traffic lights in the drop down:

Table

Text Gauge

Type

Traffic Lights

Show value

Goal

Apply Cancel

There are two kinds of visualizations for the traffic lights. In this type of the gauge the parameters are similar to the previous one: we can set the “Goal” if necessary. The difference is in the ranges which correspond to the color of the traffic lights.

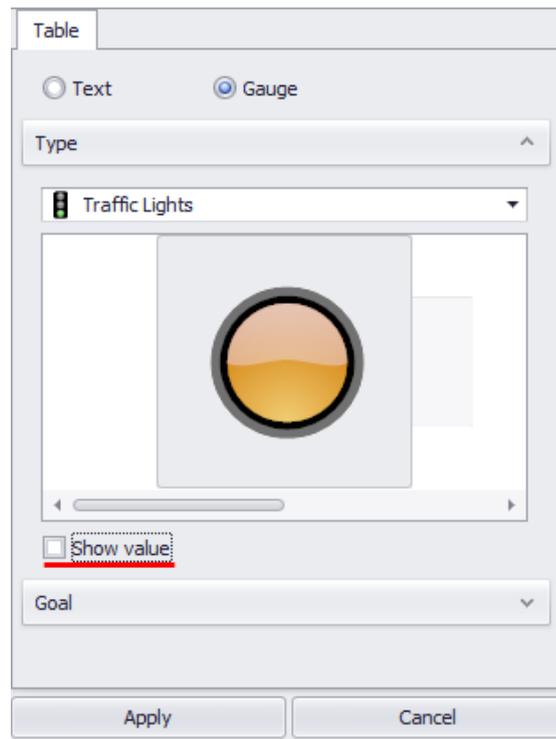
Let us show the difference between the fact (Internet Order Quantity) and the goal (Reseller Order Quantity). The negative value of % of the difference will be displayed using red color, the difference from 0% till 100% will be displayed using yellow color, values of more than 100% will be displayed with green. Let us set up the following parameters:

The image shows a configuration dialog for a gauge visualization. The 'Gauge' option is selected. The 'Goal' is set to 'Reseller Order Quantity'. The 'Value' is set to '% of difference between fact and goal'. The 'More is good' option is selected. The color scale is configured with a red square at 0%, a yellow square at 100%, and a green square at the end. The 'Apply' and 'Cancel' buttons are at the bottom.

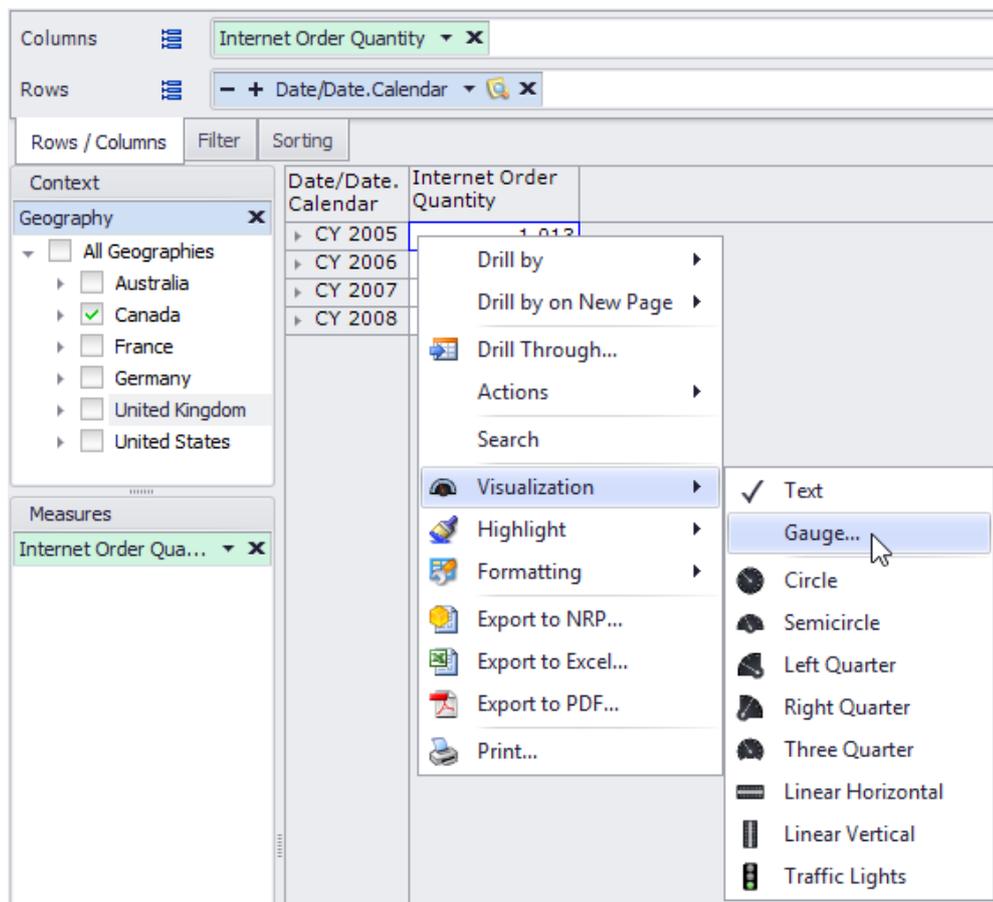
As a result, we will get the following report:



You can switch on or off displaying the values:

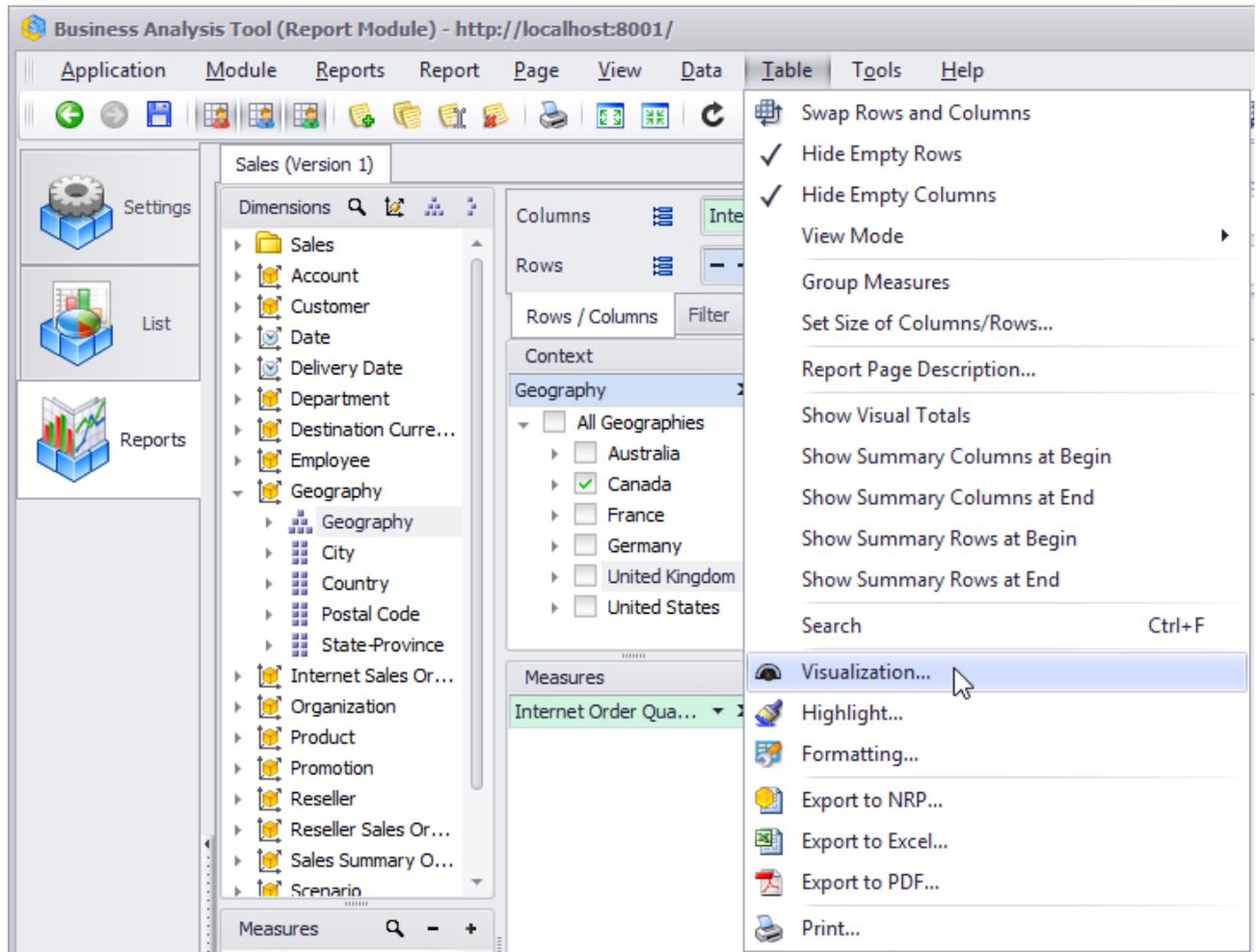


Gauges can be built using two more ways: using the context menu and the toolbar. When the context menu is used, you can select the way of visualization:

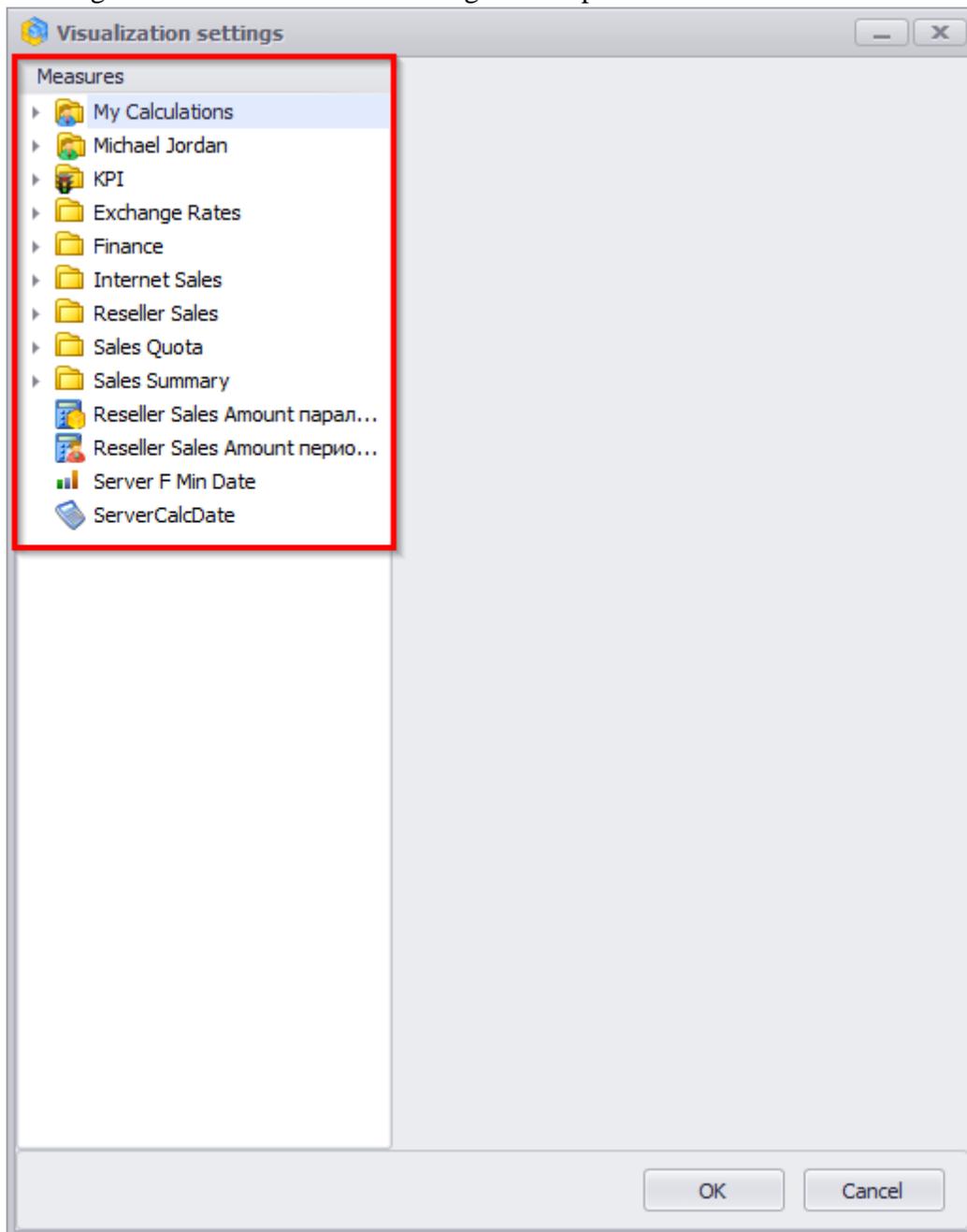


Here you can select the type of the gauge (circle, semicircle, etc.).

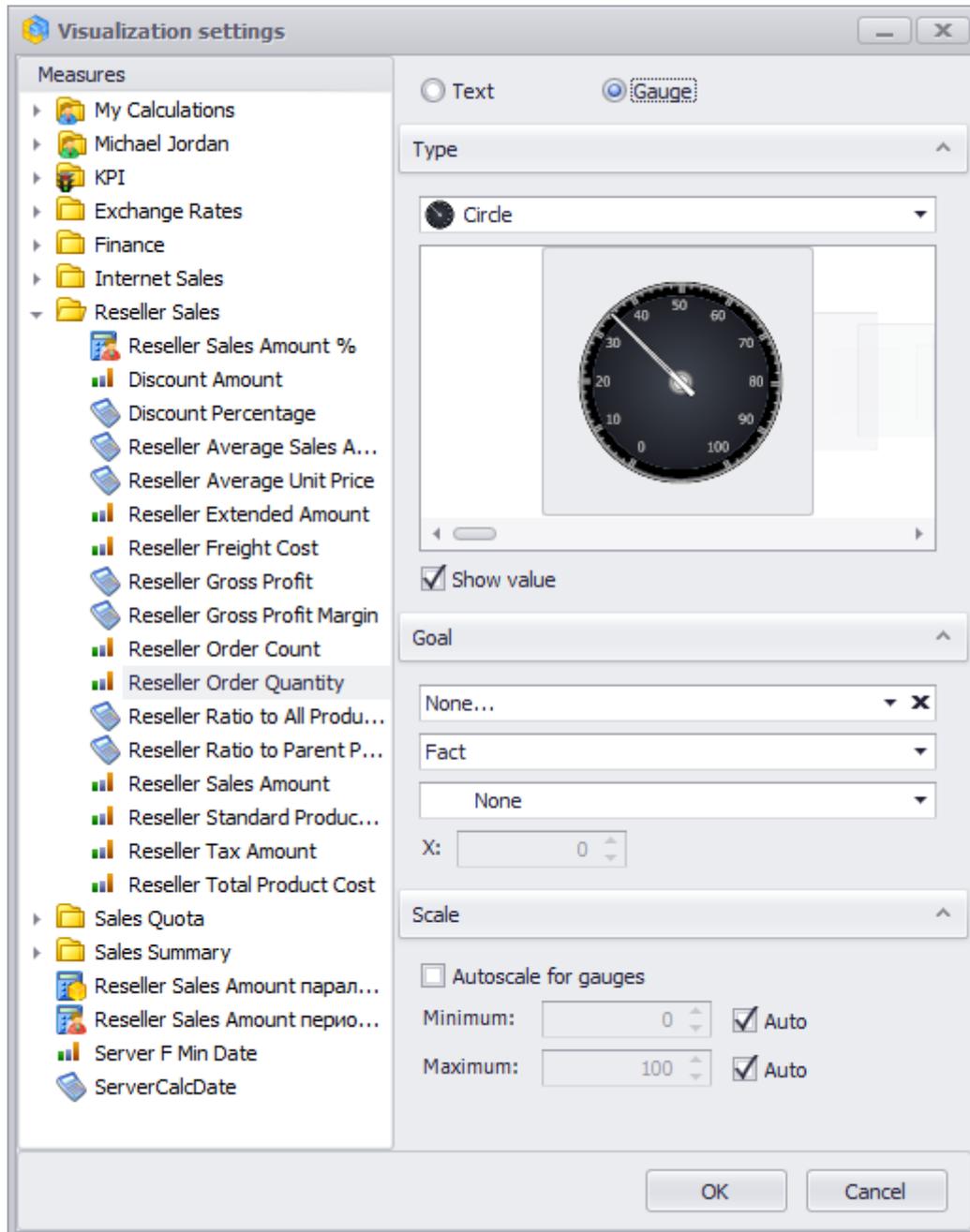
You can select the item “Visualization” from menu “Table”:



The dialog window “Visualization settings” will open:



In this window we have to select the fact measure, and then in the right part of the window select the type, goal and other parameters:



6.6.2 Export of Gauges

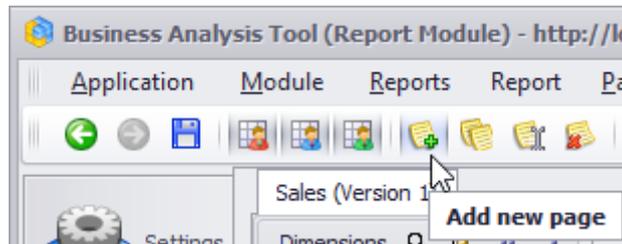
The gauges can be exported to NRP, PDF and Excel. While exporting to Excel the gauges are not exported: the cells of Excel table will contain the numbers instead of the gauges.

6.7 Other Report Page Types

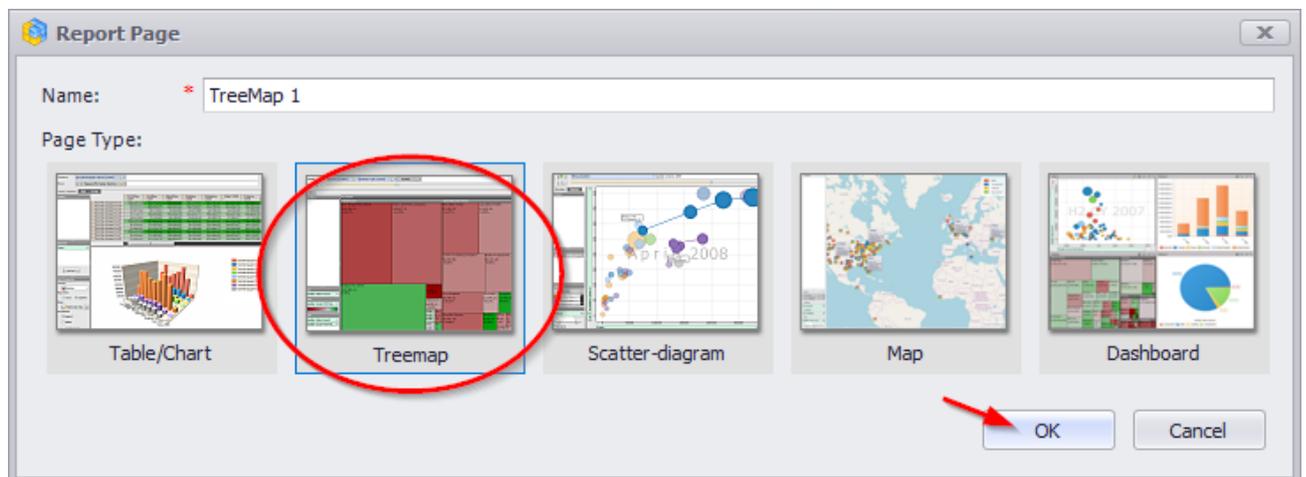
Apart from the pages of the table/chart form, you have the possibility to add to your report two more types of pages: Treemap, Scatter-diagram, Map and Dashboard. Those two types of pages allow you to perform advanced visual data analysis. Let's review those two types of pages in more details.

6.8 Treemap

To add a Treemap page to your report press the "Add new page" button on the toolbar:



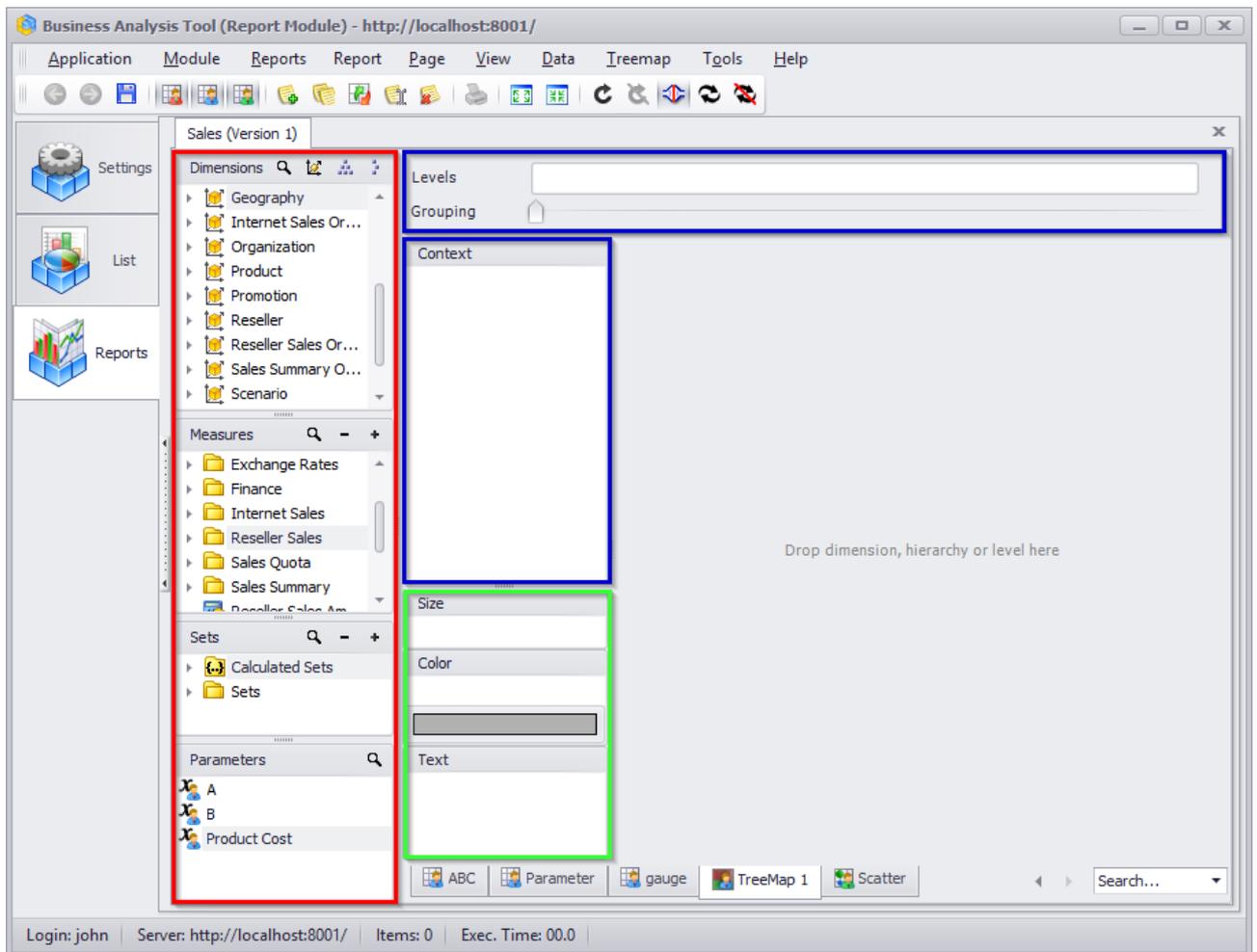
In the appeared dialog select the "Treemap" page type and fill in the name of a new page:



Press «OK» and an empty treemap-page will be created.

6.8.1 Designers

We can divide the treemap-page into a number of zones:



Dimensions and measures are marked in red; they can be dragged into designers that are marked in blue and green.

The designers marked in blue are those where you can drag dimension members. At the top you can see “Levels” designer, you can drag the levels there and select the elements you would like to see in the diagram. Below it at the left you can see the Context designer, it works just the same way it did in the table page – it bounds the data shown in the report. You can drag hierarchies there.

The designers where you can drag the measures are marked in green. There are three of them:

- Size – determines the measure from which the areas of rectangles on the diagram will depend;
- Color – determines the measure from which the colors of rectangles will depend;
- Text – determines the measures the values of which will be written inside the rectangles in the diagram.

6.8.2 Building a Report

To understand how the treemap page works and what it displays, let's build an example report.

Into the Levels designer drag the levels "Product.Category" and "Product.Subcategory". You will get a diagram constructed of the same number of rectangles as the number of elements in the "Subcategory" level:

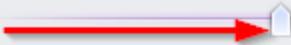
The screenshot shows a report designer interface with the following components:

- Dimensions:** A tree view on the left showing a hierarchy. 'Product.Category' and 'Product.Subcategory' are selected and highlighted with red boxes. Red arrows point from these boxes to the 'Category' and 'Subcategory' levels in the Levels pane.
- Levels:** A pane at the top showing two levels: 'Category' and 'Subcategory', each with a search icon and a close icon.
- Measures:** A list of measures including Exchange Rates, Finance, Internet Sales, Reseller Sales, Sales Quota, Sales Summary, and Reseller Sales Amount.
- Sets:** A list of sets including Calculated Sets and Sets.
- Parameters:** A list of parameters including A, B, and Product Cost.
- Treemap:** A central grid of rectangles representing the data. The grid is organized into rows and columns based on the selected levels. The categories and subcategories are listed in the cells of the grid.

| Category | Subcategory | Category | Subcategory | Category | Subcategory |
|-------------|---------------|-------------|---------------|-------------|---------------|
| Accessories | Cleaners | Accessories | Fenders | Clothing | Shorts |
| Accessories | Panniers | Bikes | Mountain... | Clothing | Socks |
| Accessories | Bike Racks | Bikes | Road Bikes | Accessories | Helmets |
| Accessories | Bike Stands | Components | Cranksets | Accessories | Bottles an... |
| Bikes | Touring Bi... | Components | Headsets | Clothing | Jerseys |
| Clothing | Gloves | Components | Mountain F... | Clothing | Tights |
| Components | Chains | Components | Derailleurs | Clothing | Vests |
| Components | Brakes | Components | Handlebars | Components | Mountain F... |
| Accessories | Hydratio... | Components | Wheels | Components | Mountain F... |
| Accessories | Saddles | Accessories | Lights | Components | Mountain F... |
| Components | Saddles | Accessories | Locks | Components | Mountain F... |
| Components | Saddles | Accessories | Locks | Components | Mountain F... |

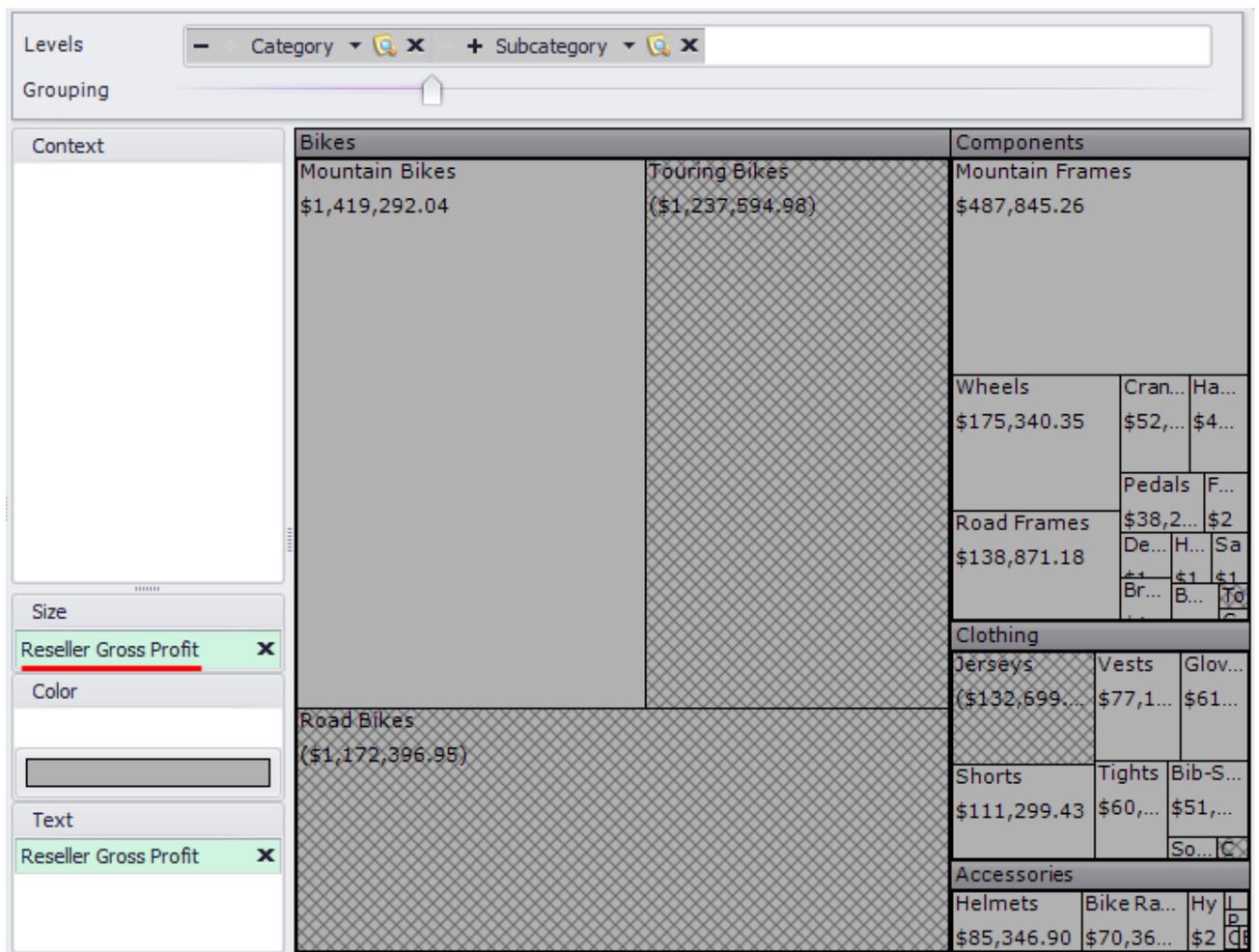
Move the grouping pointer to the right to group up the elements by product categories:

Levels: - + Category ▾ 🔍 ✕ + Subcategory ▾ 🔍 ✕

Grouping: 

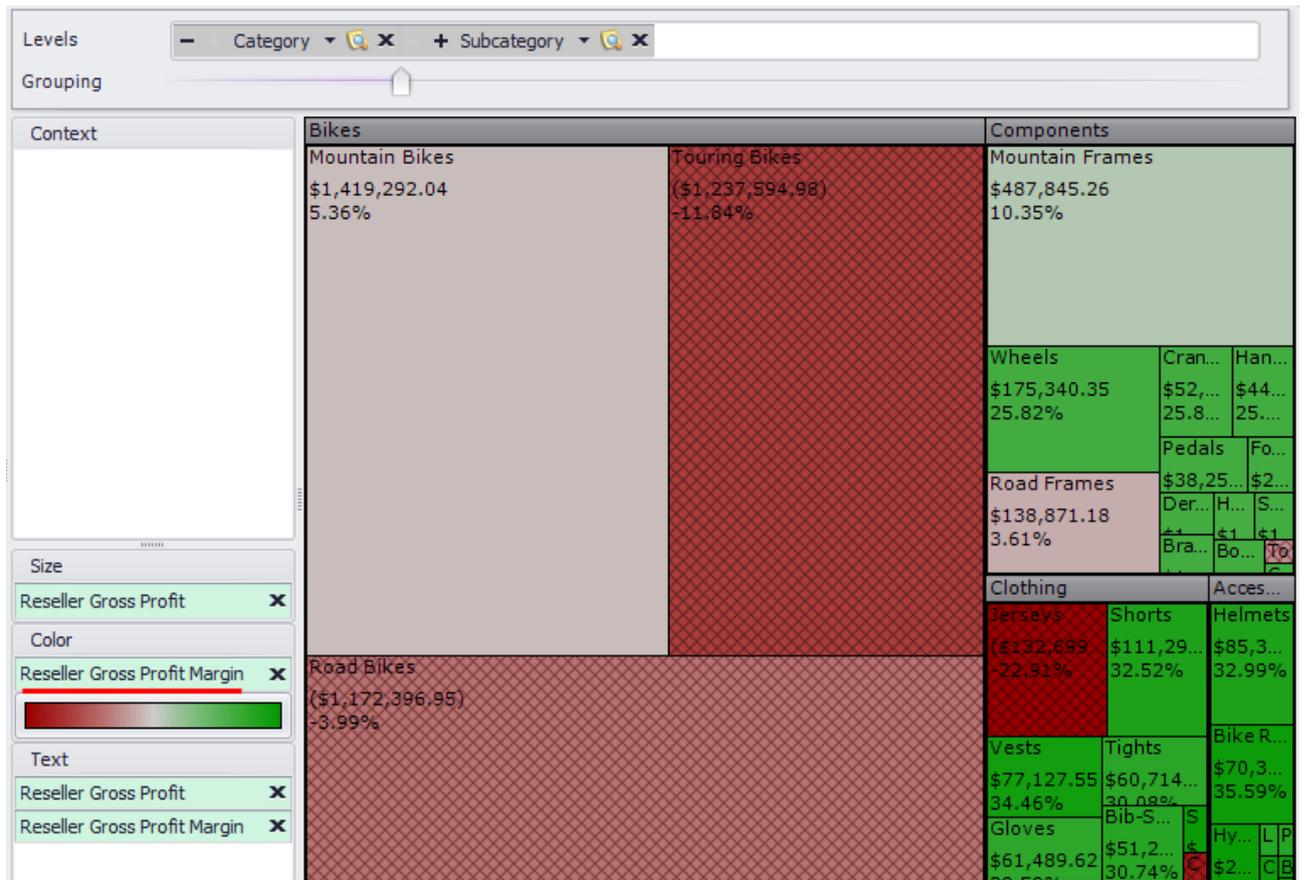
| Context | Components | | | Accessories | | |
|---------|-----------------|--------------|---------------|--------------|---------------|--------------|
| | Forks | Headsets | Mountain F... | Bike Racks | Bike Stan... | Bottles a... |
| | Pedals | Road Frames | Saddles | Cleaners | Fenders | Helmets |
| | Touring Fram... | Bottom Br... | Brakes | Hydration... | Locks | Panniers |
| | Wheels | Chains | Derail... | Lights | Pumps | Tires and... |
| | Handlebars | Cranksets | | | | |
| Size | Clothing | | | | Bikes | |
| | Bib-Shorts | Gloves | Shorts | Tights | Mountai... | Road Bi... |
| Color | Caps | Jerseys | Socks | Vests | Touring Bikes | |
| | | | | | | |
| Text | | | | | | |

As you can see all the rectangles are grouped by categories. But all the rectangles still have the same area because we did not set the measure determining the area of elements. Drag the “Reseller Gross Profit” measure into the “Size” designer:



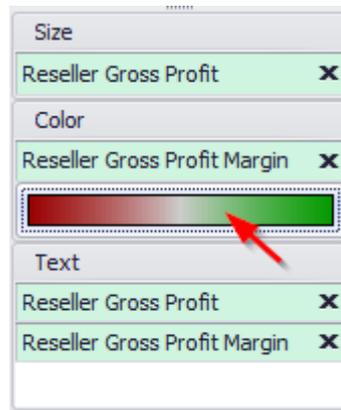
Now the area of each rectangle became proportional to the corresponding value of “Reseller Gross Profit” measure for the element. Negative values are hatched.

Drag the measure “Reseller Gross Profit Margin” into the “Color” designer:

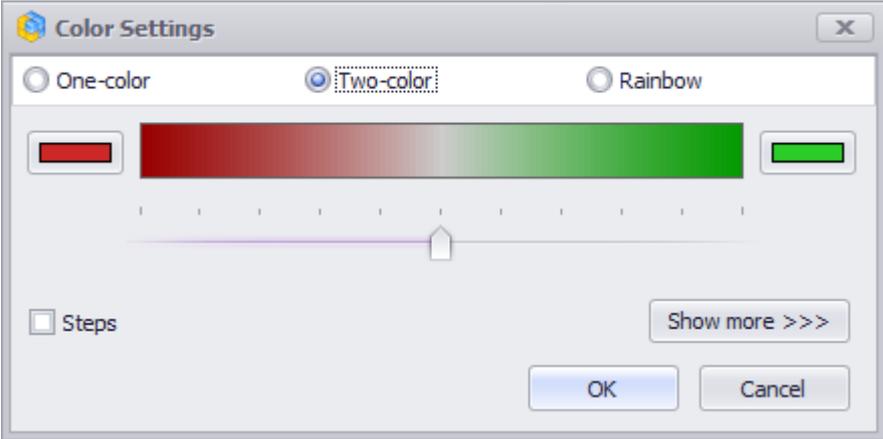


The two colored gradient highlighting will be added, that will show us how large (more green color) or small (closer to red) is the profit from selling the products of each category.

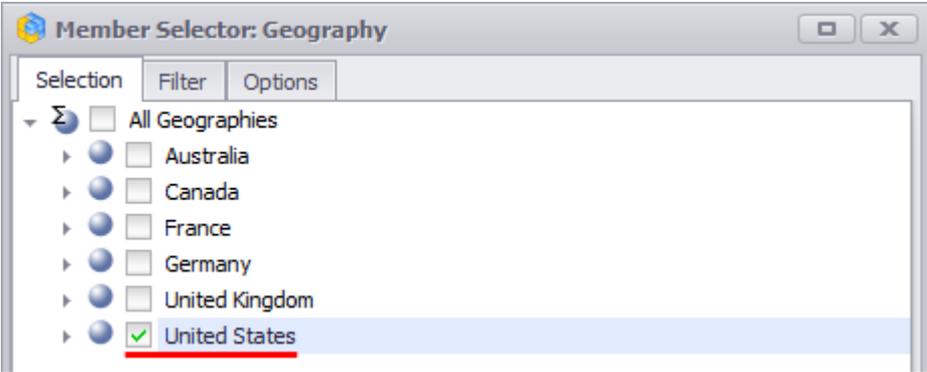
You can change the highlight rule by pressing the button that is showing the gradient:



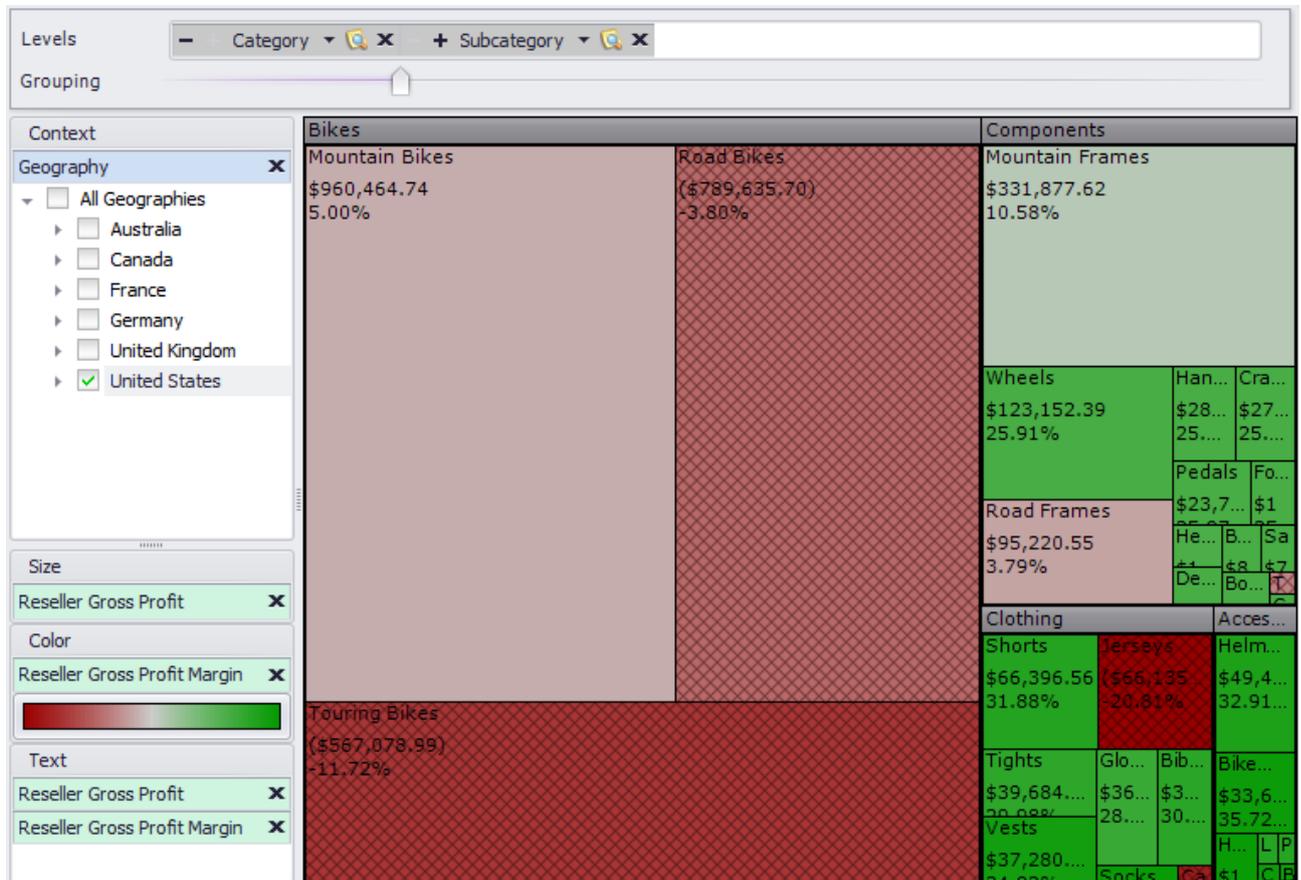
The window for setting up the gradient will appear, exactly the same as you could see when setting up the gradient for highlighting in the table:



And finally, using “Context” designer, let’s bound the data to show only the sales in the territory of “United States”. For that purpose, add the “Geography” hierarchy into the context and select only the element “United States” there:

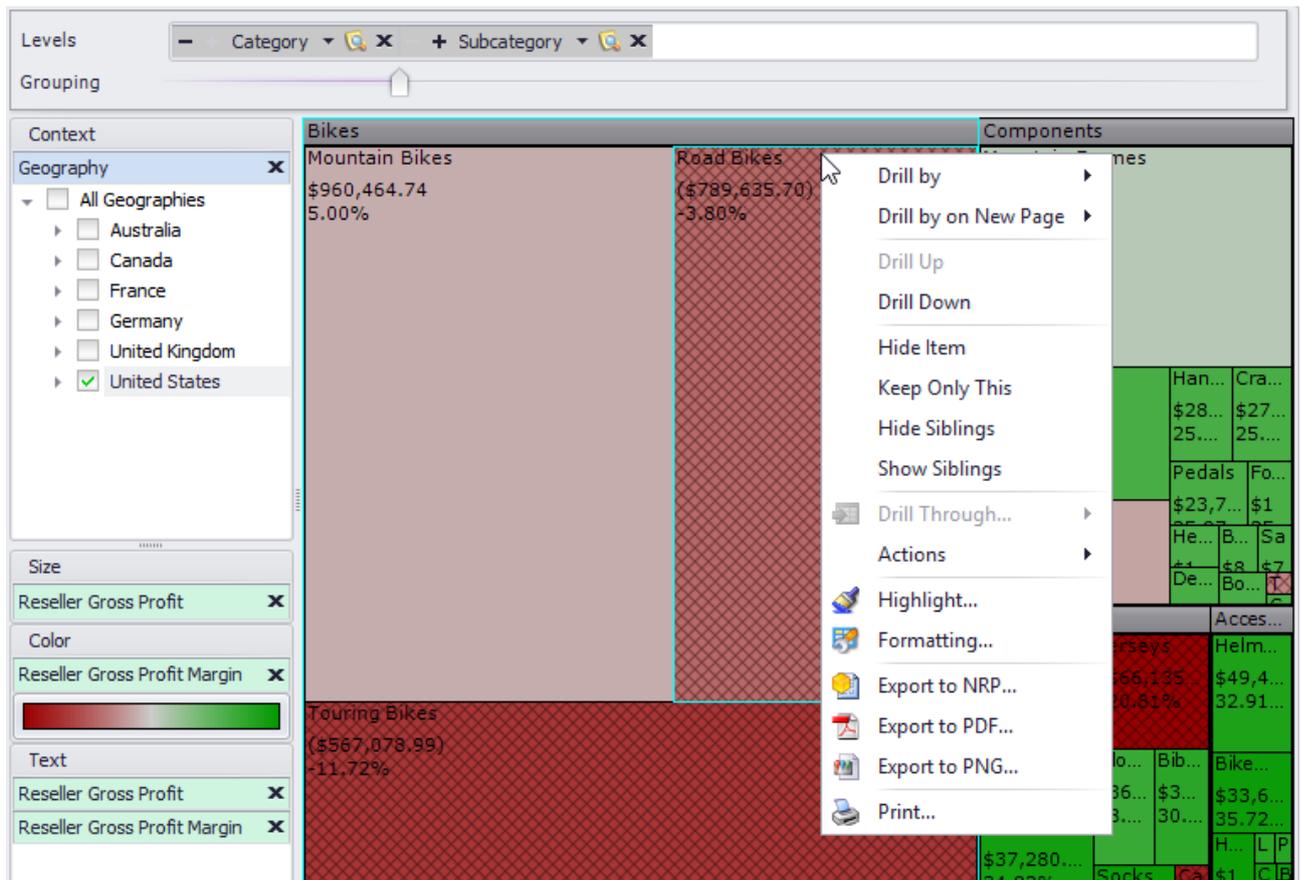


Thus we created the report, showing the profit from selling products of different categories in “United States”. Every product subcategory is shown with the rectangle on the diagram. The area of each rectangle is proportional to the value of gross profit from selling the products of corresponding subcategories. And the color of a rectangle depends on the value of that profit in percents. The closer color is to green the bigger is the value, while closer to red, means the value is smaller:



6.8.3 Navigation on the Page

You can perform the navigation on the treemap-page and change the page using the options from context menu:



You should be already familiar with all these options from the description of the page of Table/Chart type. They do exactly the same thing as the options of the context menu called for the rows or columns headers in the table.

For example let's use some of the available options for navigation. Let's hide all elements that are not contained in the "Bikes" product group. To do that click the right mouse button on the "Bikes" group header and select the option "Hide Siblings":

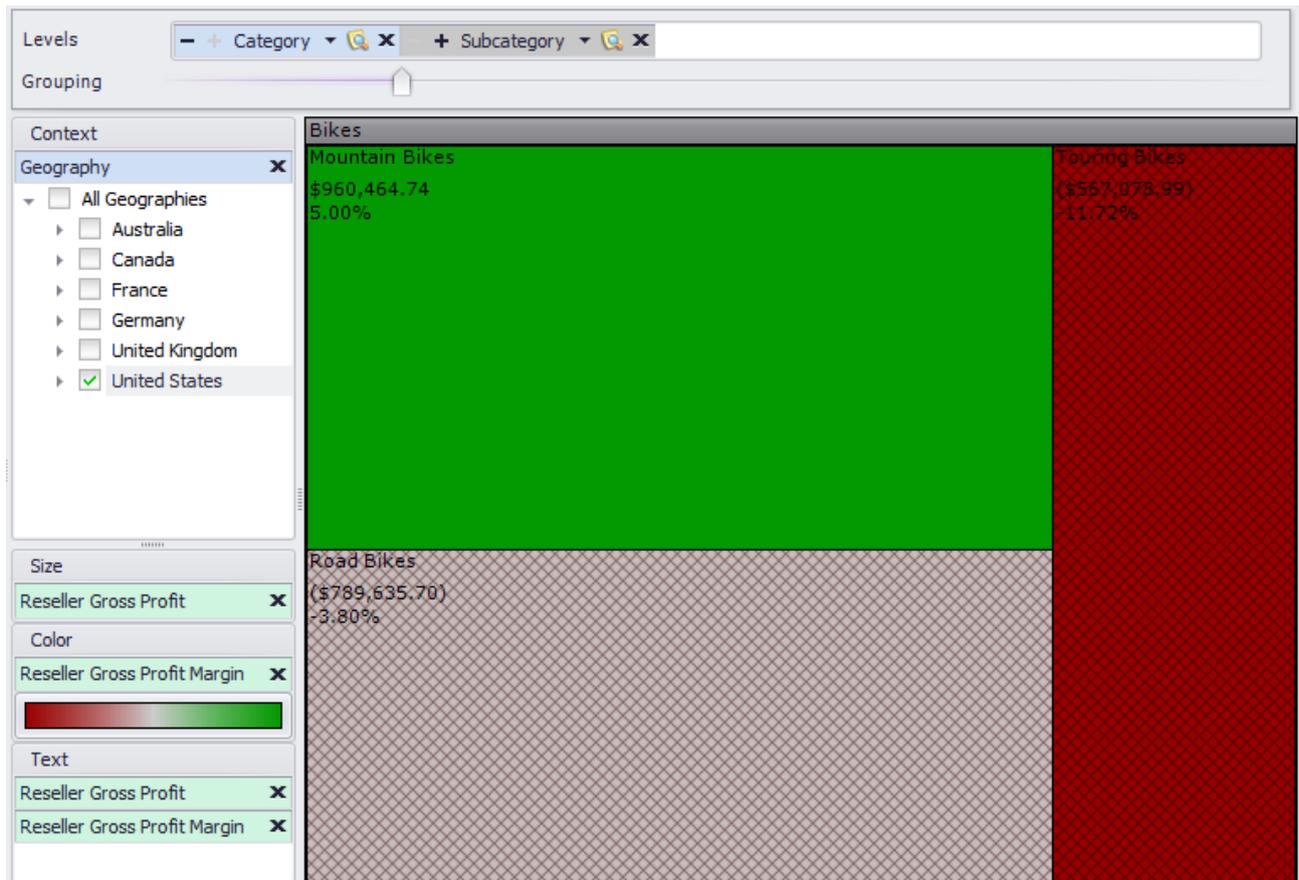
The screenshot shows a BI tool interface with a context menu open over the 'Bikes' group header. The menu options are:

- Drill by
- Drill by on New Page
- Drill Up
- Drill Down
- Hide Item
- Keep Only This
- Hide Siblings** (highlighted)
- Show Siblings
- Actions
- Highlight...
- Formatting...
- Export to NRP...
- Export to PDF...
- Export to PNG...
- Print...

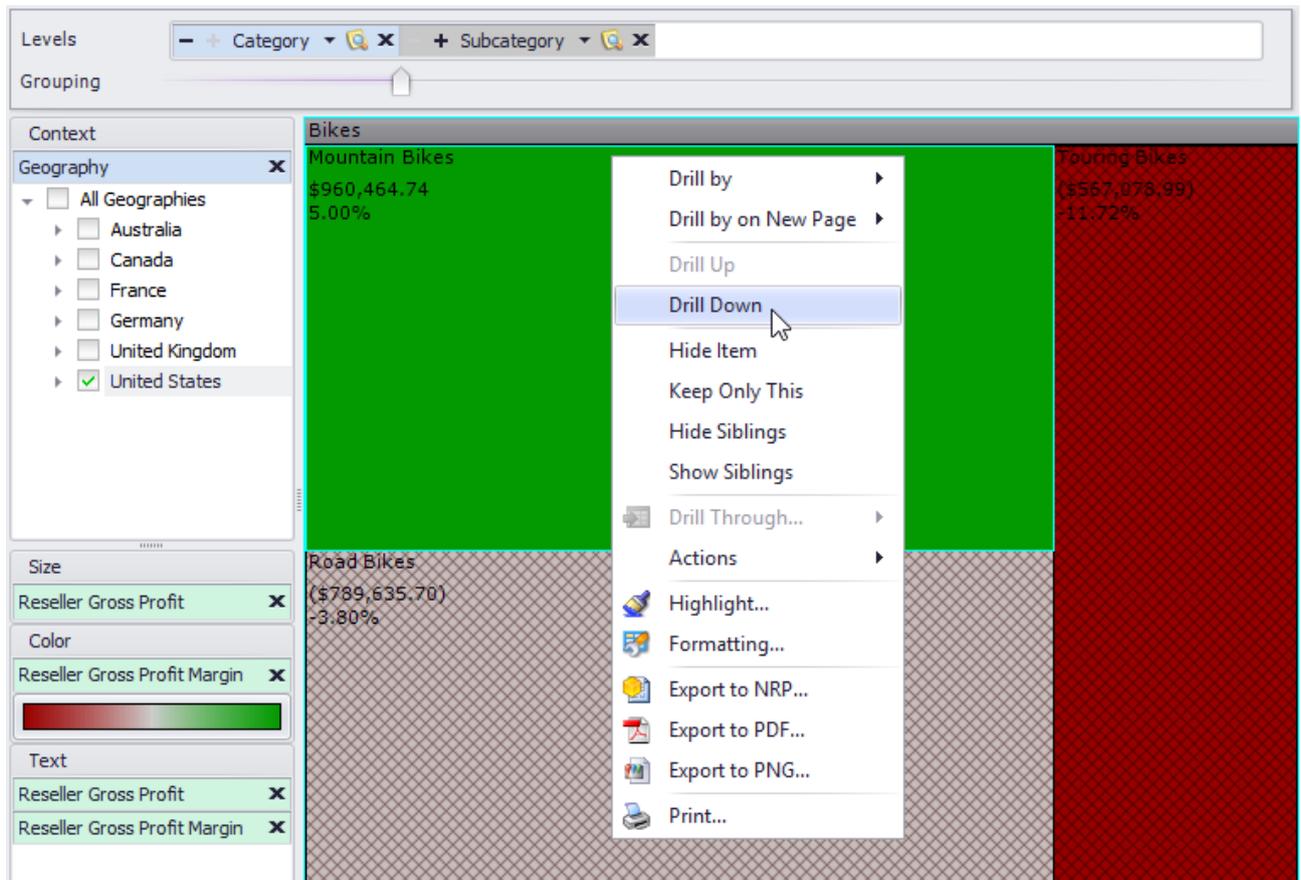
The background shows a treemap visualization with the following data:

| Category | Value | Profit Margin |
|-----------------|----------------|---------------|
| Bikes | \$960,464.74 | 5.00% |
| Mountain Bikes | \$960,464.74 | 5.00% |
| Touring Bikes | (\$567,078.99) | -11.72% |
| Components | \$331,877.62 | 10.58% |
| Mountain Frames | \$331,877.62 | 10.58% |
| Wheels | \$123,152.39 | 25.91% |
| Road Frames | \$95,220.55 | 3.79% |
| Clothing | \$66,396.56 | 31.88% |
| Shorts | \$66,396.56 | 31.88% |
| Tights | \$39,684.00 | 28.00% |
| Vests | \$37,280.00 | 31.88% |

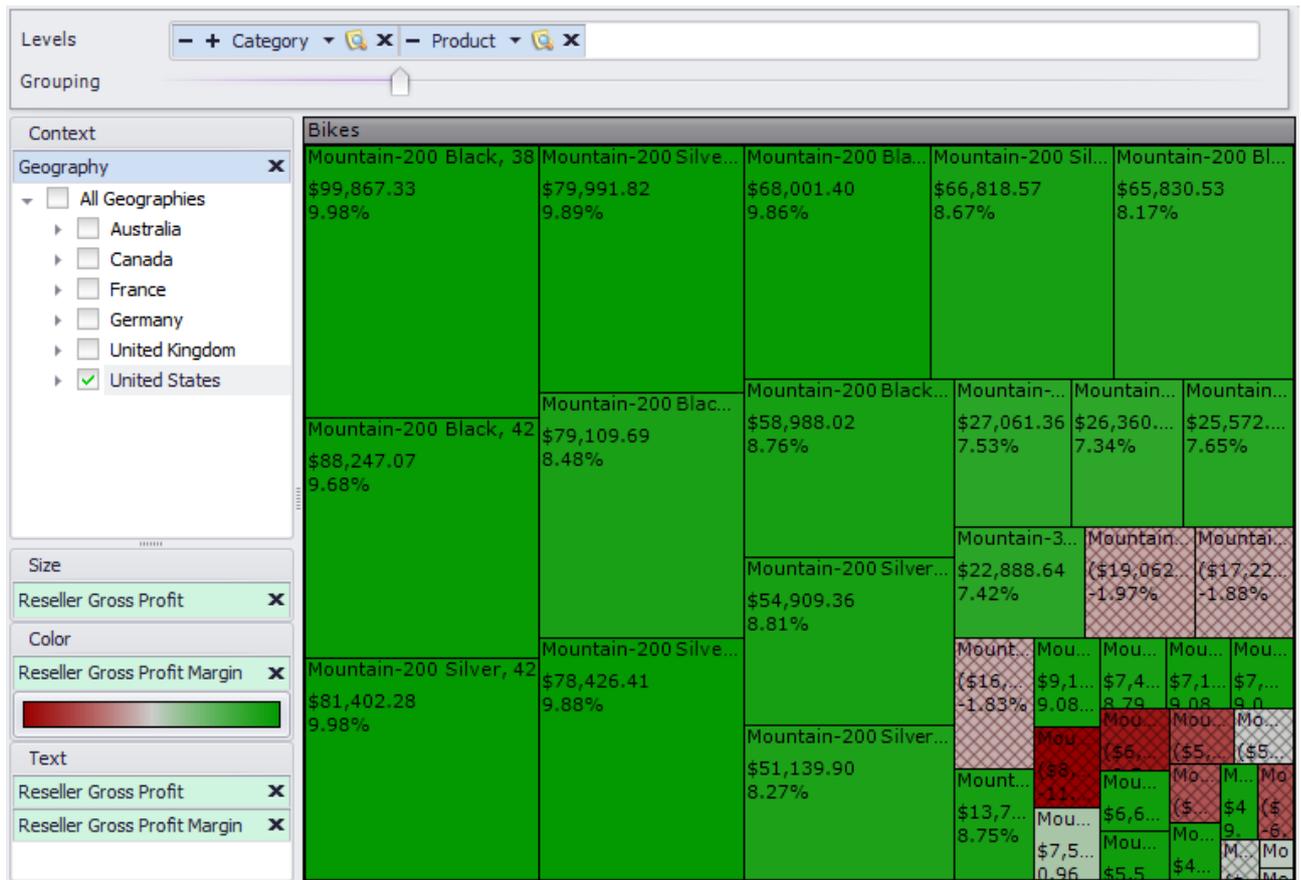
You will get the following report:



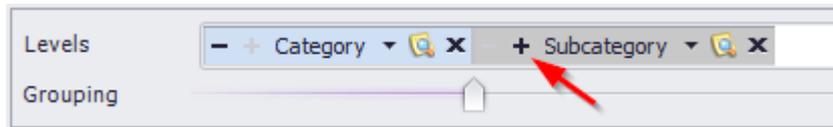
And now let's find out which bikes from the "Mountain Bikes" group bring more and which bring less profit. To do that, you have to select all elements from the lower level under the "Mountain Bikes" element. To do exactly that action "Drill Down" operation is available:



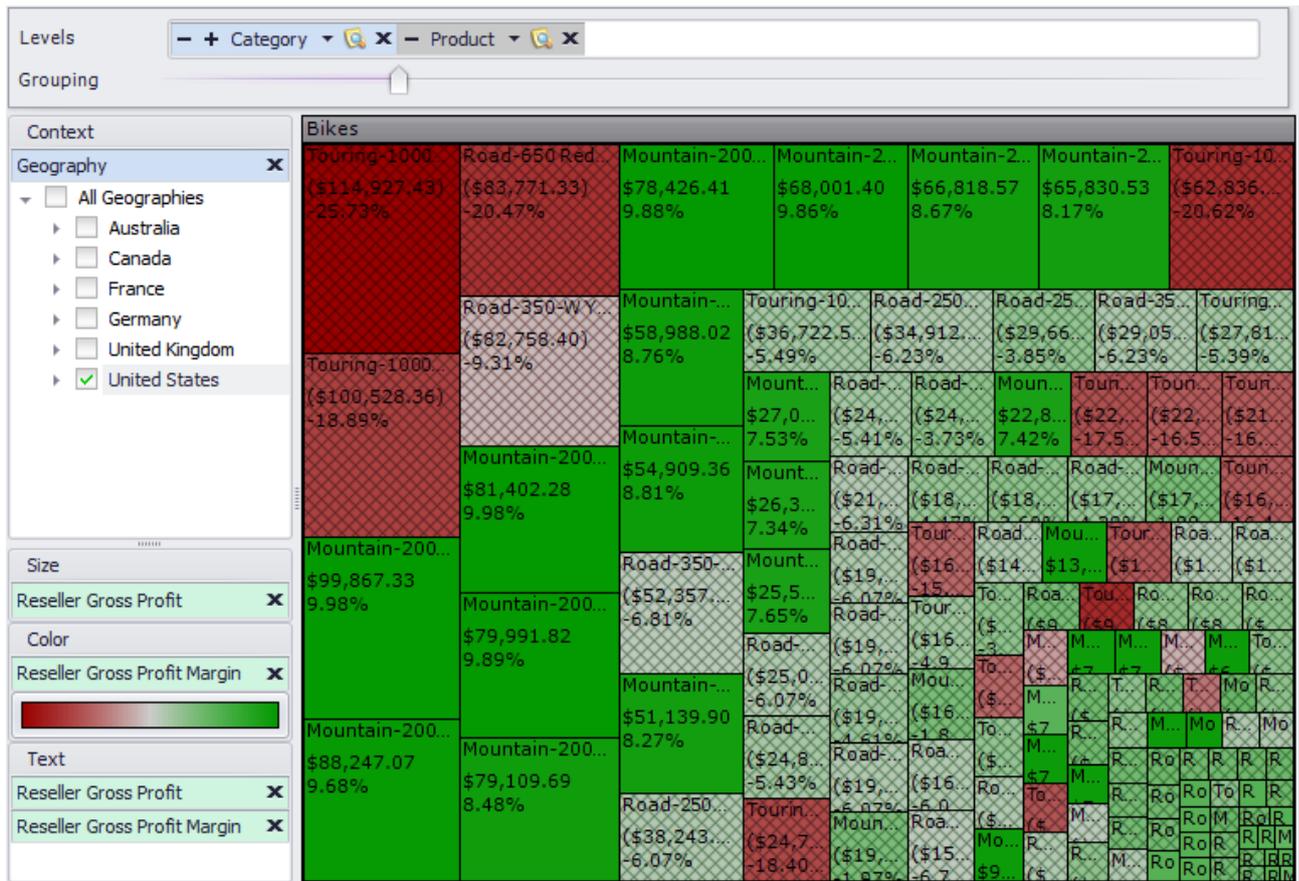
Here is the expected result:



We could also perform a “Drill Down” not only for the single element “Mountain Bikes”, but for all the selected elements together. To do that you have to press the plus button near the element corresponding to “Subcategory” level in the “Levels” designer:

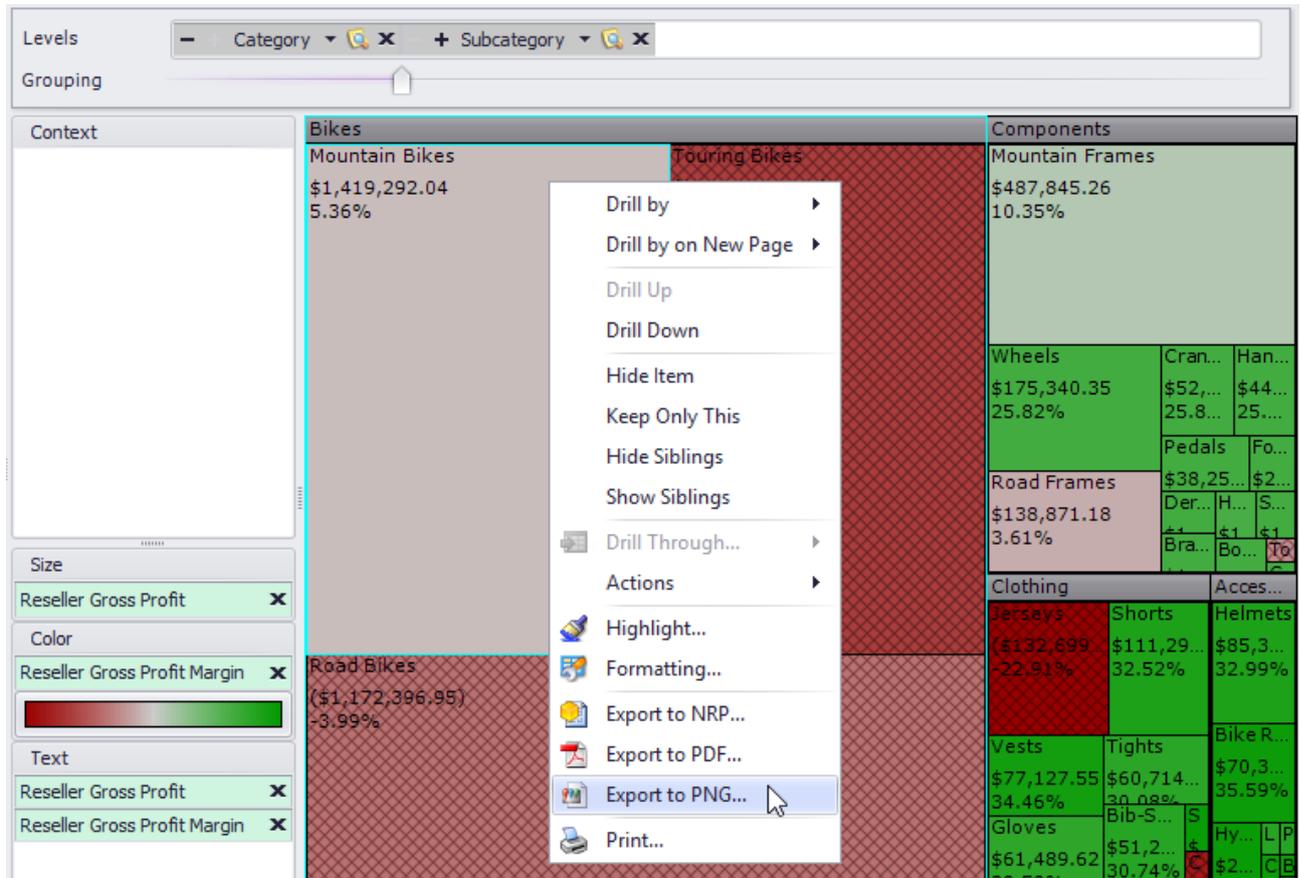


Then you would get the diagram, showing all the products under the selected subcategories, all bikes in our case:



6.8.4 Diagram Export

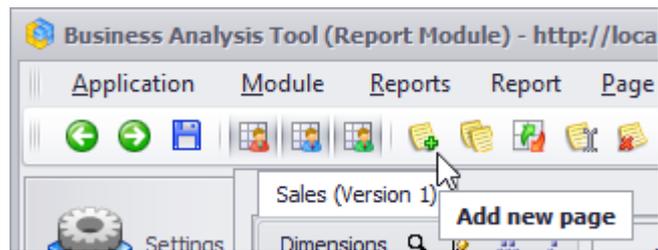
The treemap-diagram can be exported to NRP, PDF and PNG. To do that, select the required option from the context menu or from the Treemap main menu:



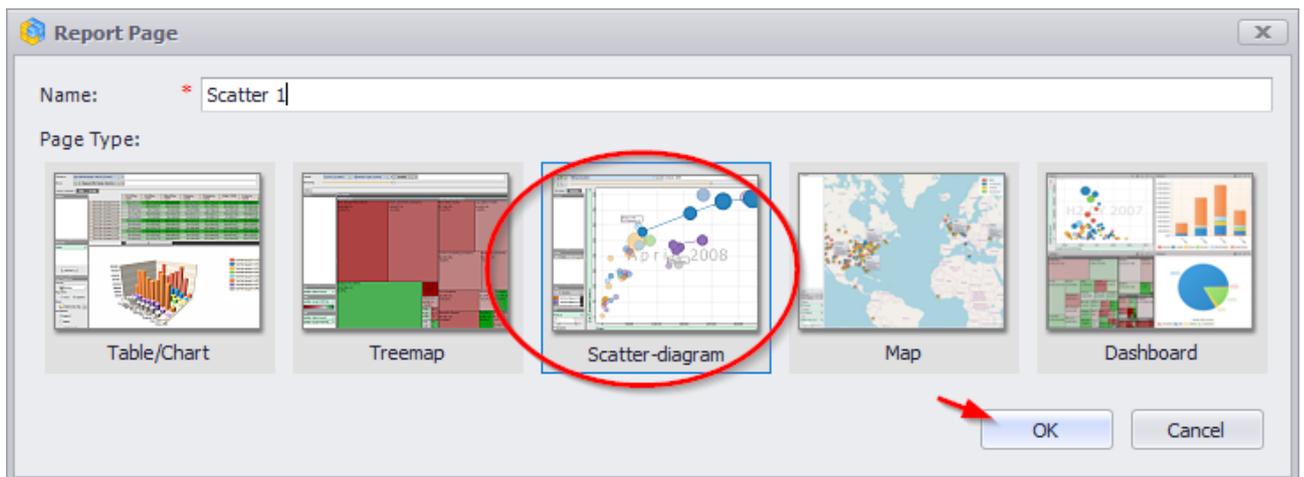
After that you have to select the place where to store the file and the name of that file.

6.9 Scatter-diagram

To add a scatter diagram to your report press the “Add new page” button on the toolbar:



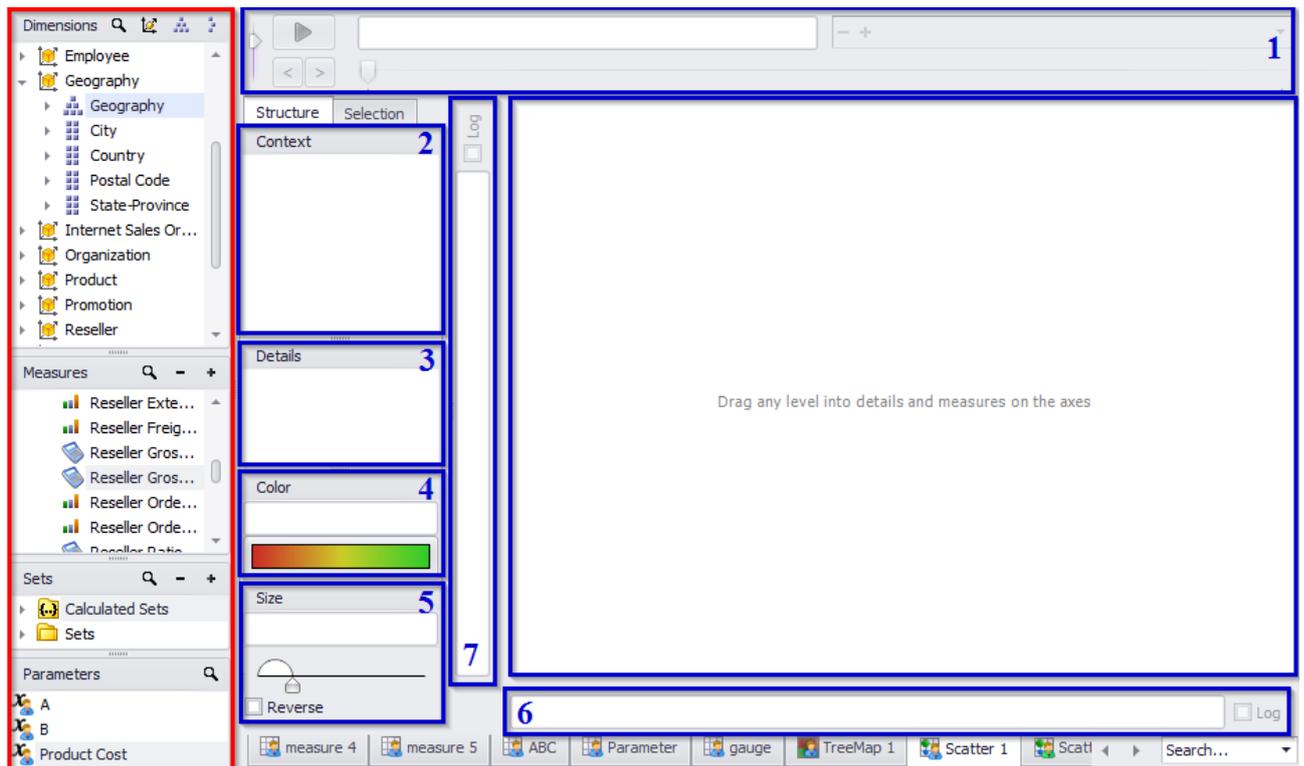
In the appeared dialog select the Scatter-diagram page type and fill in the name of a new page:



Press «OK» and an empty scatter-diagram will appear.

6.9.1 Designers

Scatter-diagram has the following structure:



At the left side dimensions and measures are marked in red. The designers are marked in blue.

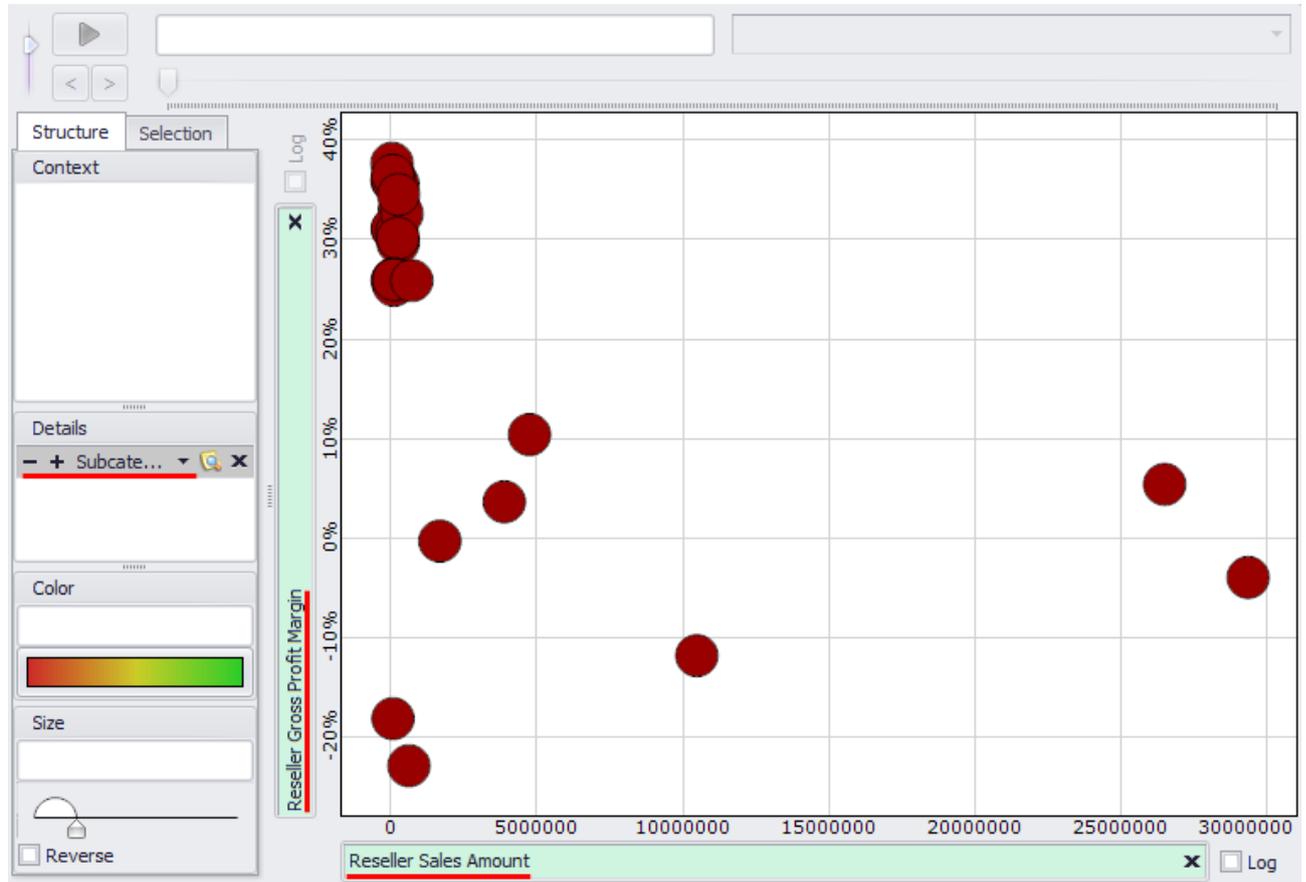
Here is the set of designers available in the scatter-diagram:

1. Pages designer. Here you can drop the selection of elements from one level. Every page of the diagram corresponds to one element.
2. Context designer. It does the same thing as the corresponding designer in the table and treemap pages, bounds the data shown in the report.
3. Details designer. Here you can drop the elements that will be shown as circles in the diagram.
4. Color designer. Determines the color of the circles in the diagram.
5. Size designer. Determines the sizes of the circles in the diagram.
6. X axis designer. Determines the measure, the values of which will be put on the X axis.
7. Y axis designer. Determines the measure, the values of which will be put on the Y axis.

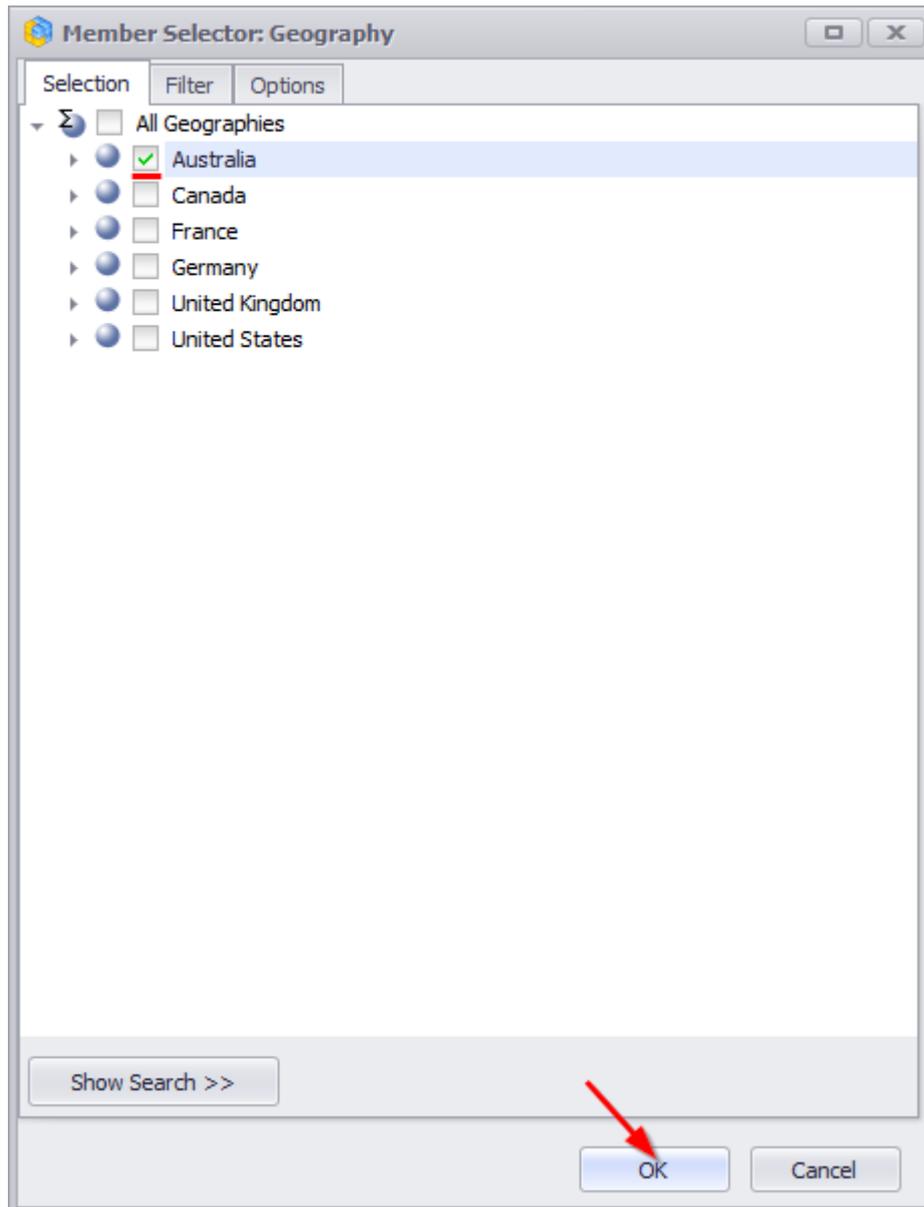
Thus on the scatter-diagram you can simultaneously track the changes of four measures: on both axes, by color and size.

6.9.2 Building the Report

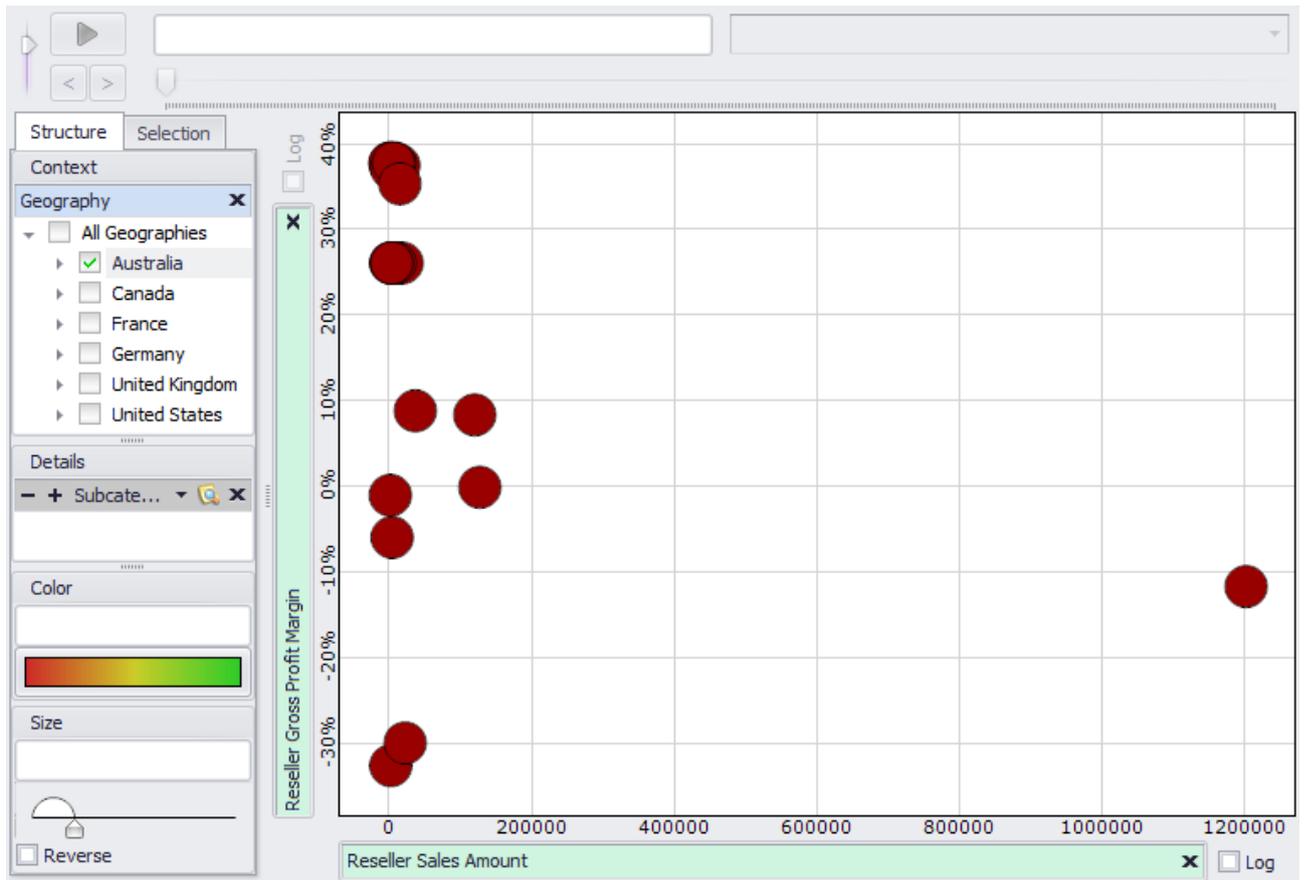
Let's build the report that will show the values of "Reseller Sales Amount" and "Reseller Gross Profit Margin" for product subcategories sold in Australia. To do that, drop the "Reseller Sales Amount" measure on X axis, and "Reseller Gross Profit Margin" – on Y axis. To the "Details" designer drag the "Subcategory" level from the "Product Categories" hierarchy:



Drop the “Geography” hierarchy into the context and select the element Australia there:



You will get the following report:

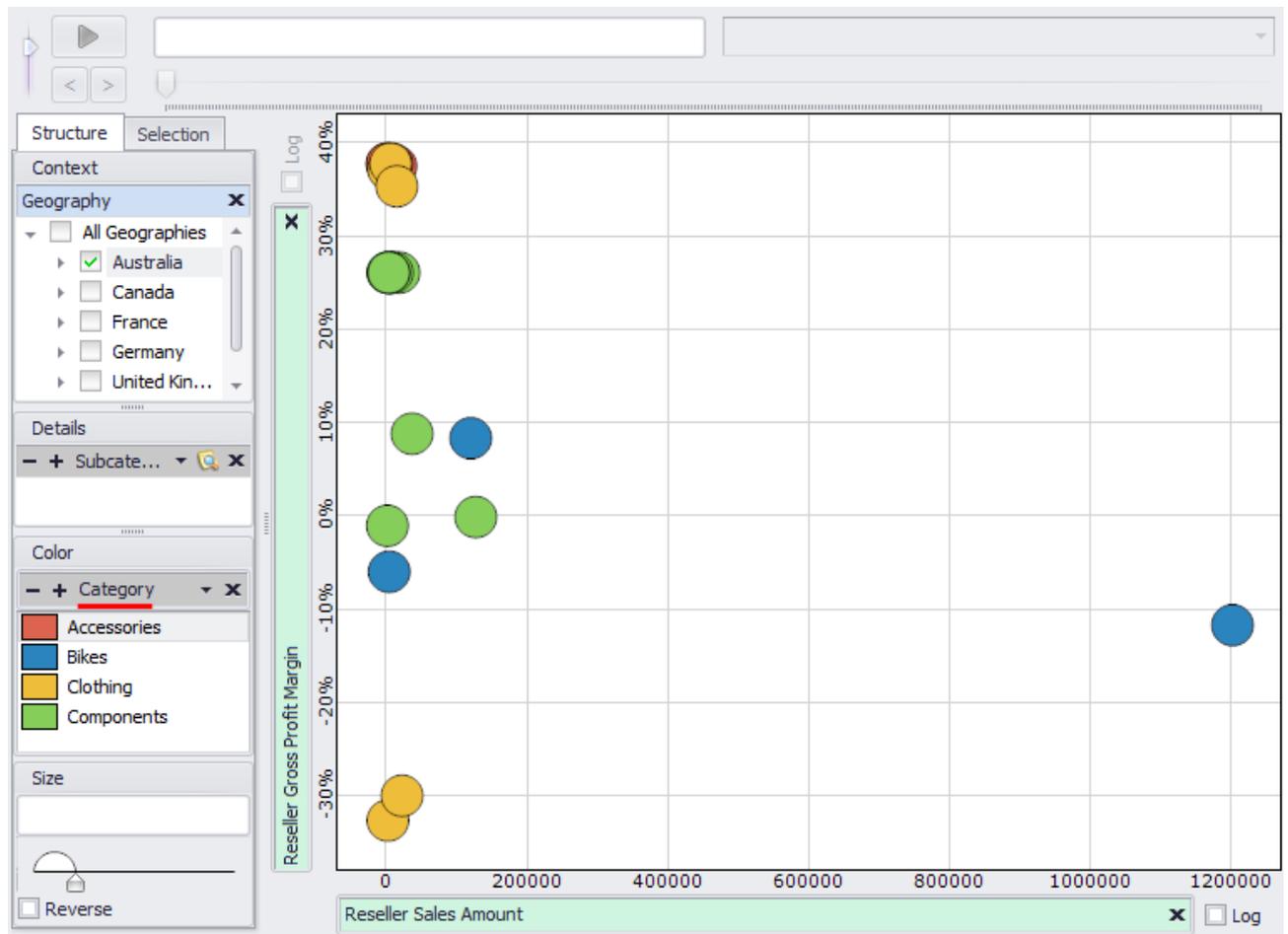


Every circle on the diagram corresponds to the element from the selection made in Details designer, in our case it corresponds to one product subcategory. If you drag the mouse over the circle, you'll see the hint, showing, which element this circle corresponds to. On the axes you can see the values corresponding to the selected element.

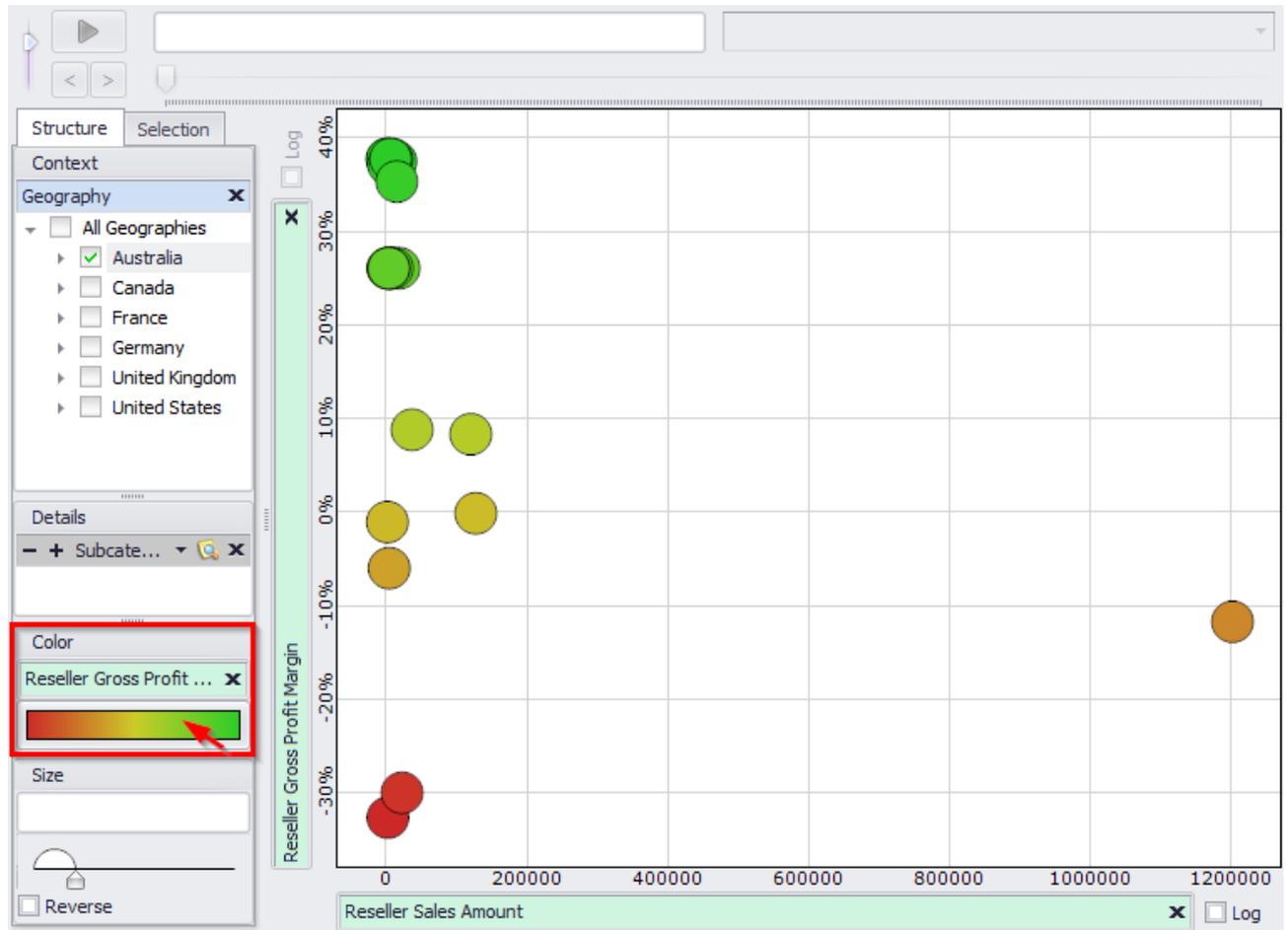
6.9.3 Color Designer

Using the Color designer you can determine on what colors of the circles on the diagram will be dependent.

You can drop into the Color designer the level, used in details or one of its parent levels. For example, drop the “Product. Category” level into the Color designer and the products from different categories will be colored with different colors:



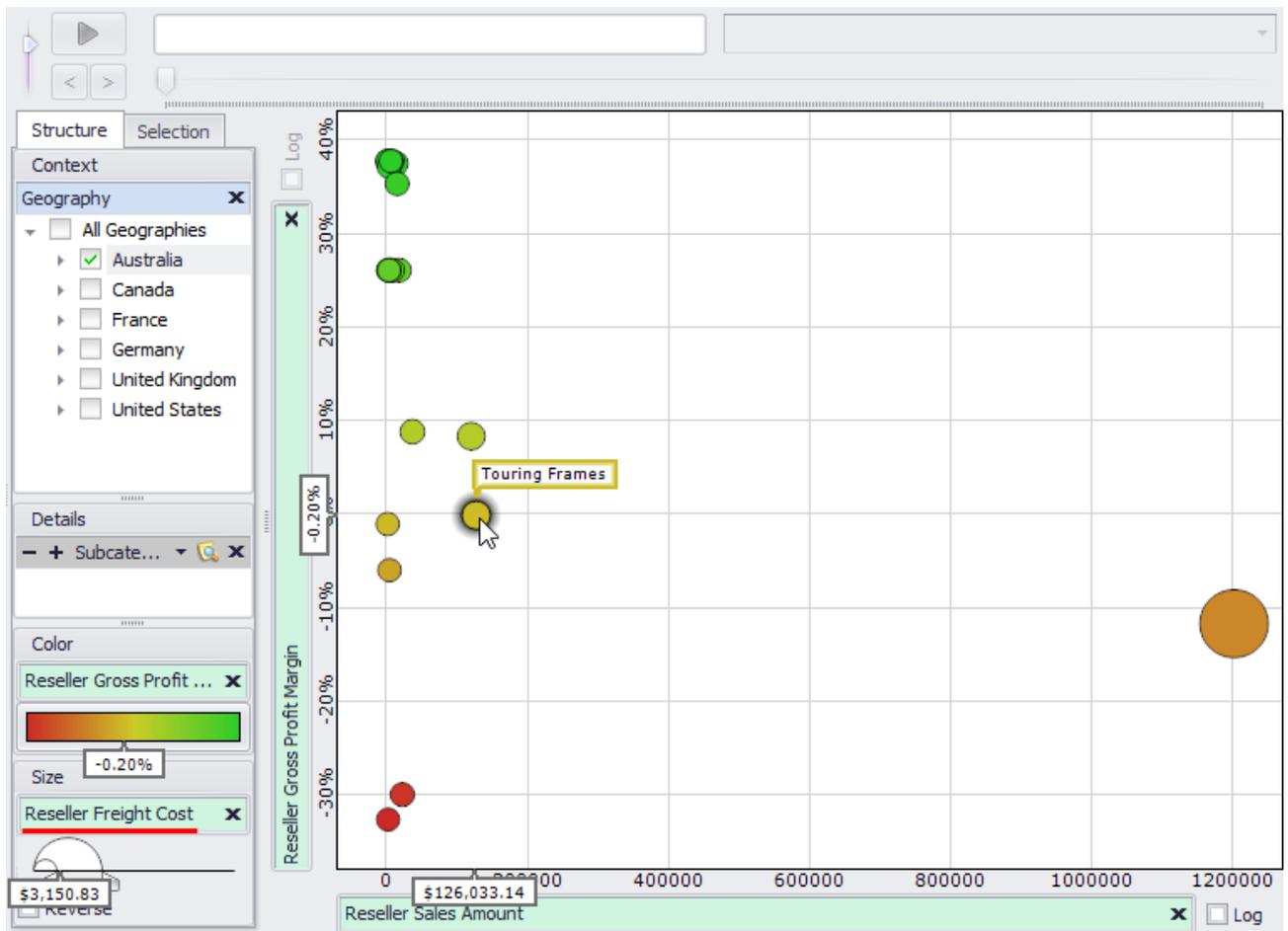
Also you can drop a measure into the Color designer, and then the color of the circle will be dependent on the value of that measure for the corresponding element. Remove the level “Product.Category” from “Color” designer and add the measure “Reseller Gross Profit Margin” there. You will see how the color of the circles changes from the bottom to the top corresponding to the colors of three-colored rainbow. You can change the gradient type by pressing the corresponding button, the same way you did it in the treemap-diagram or in the table:



6.9.4 Size Designer

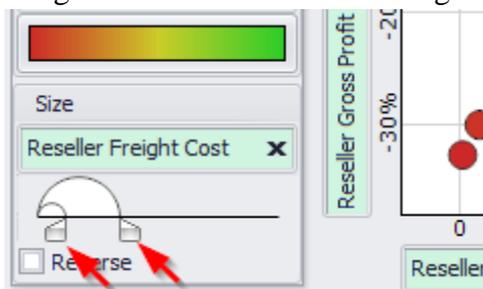
Using the “Size” designer you can set the measure, the values of which for every element will determine the size of the corresponding circle.

Drag the “Reseller Freight Cost” measure into the “Size” designer:

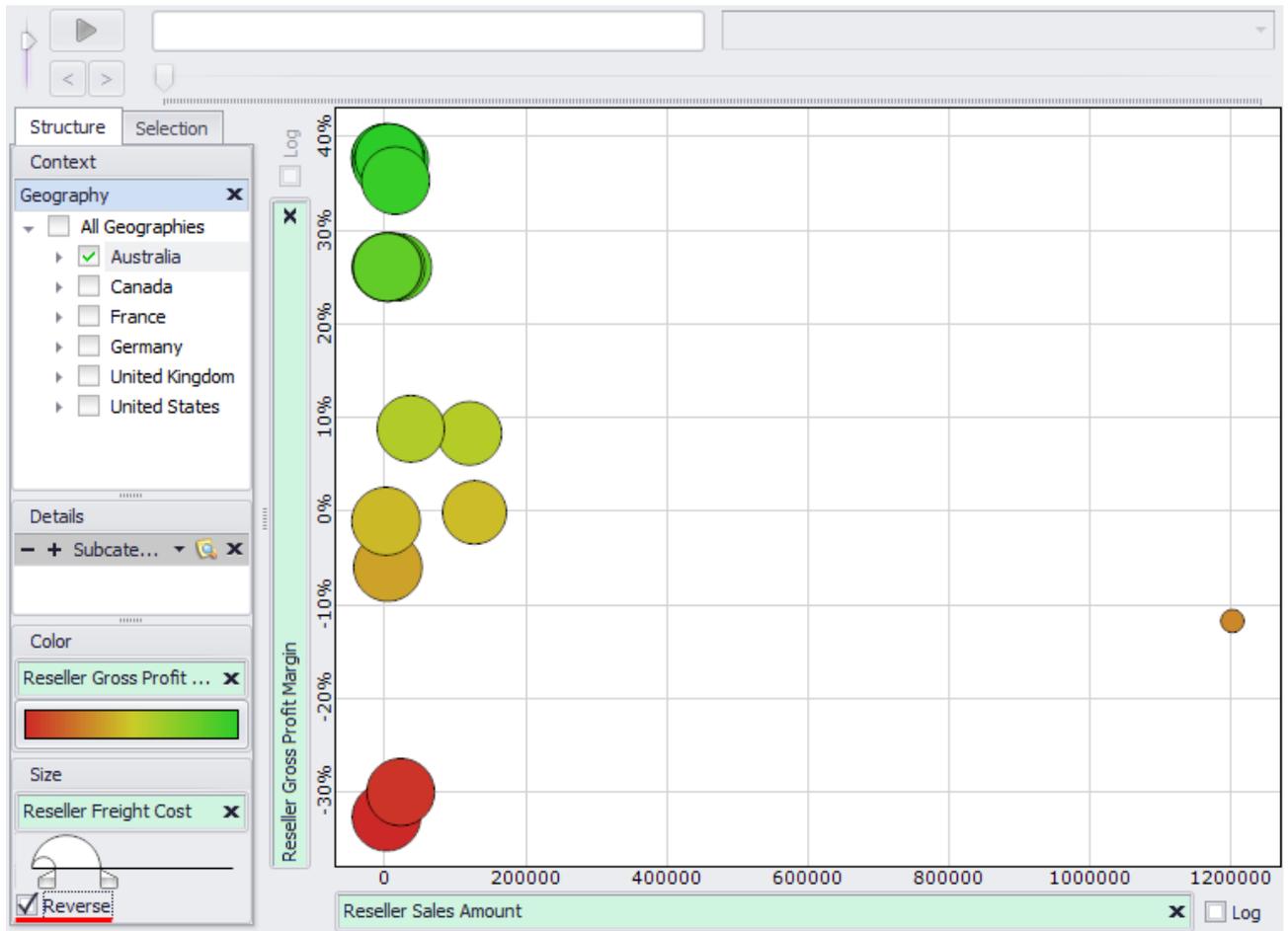


As you can see, the sizes of different circles became consistent with the values of freight cost.

You can adjust the sizes of the circles on the diagram by setting the range of sizes in the “Size” designer. The smallest and the largest circle sizes can be set using the special control:

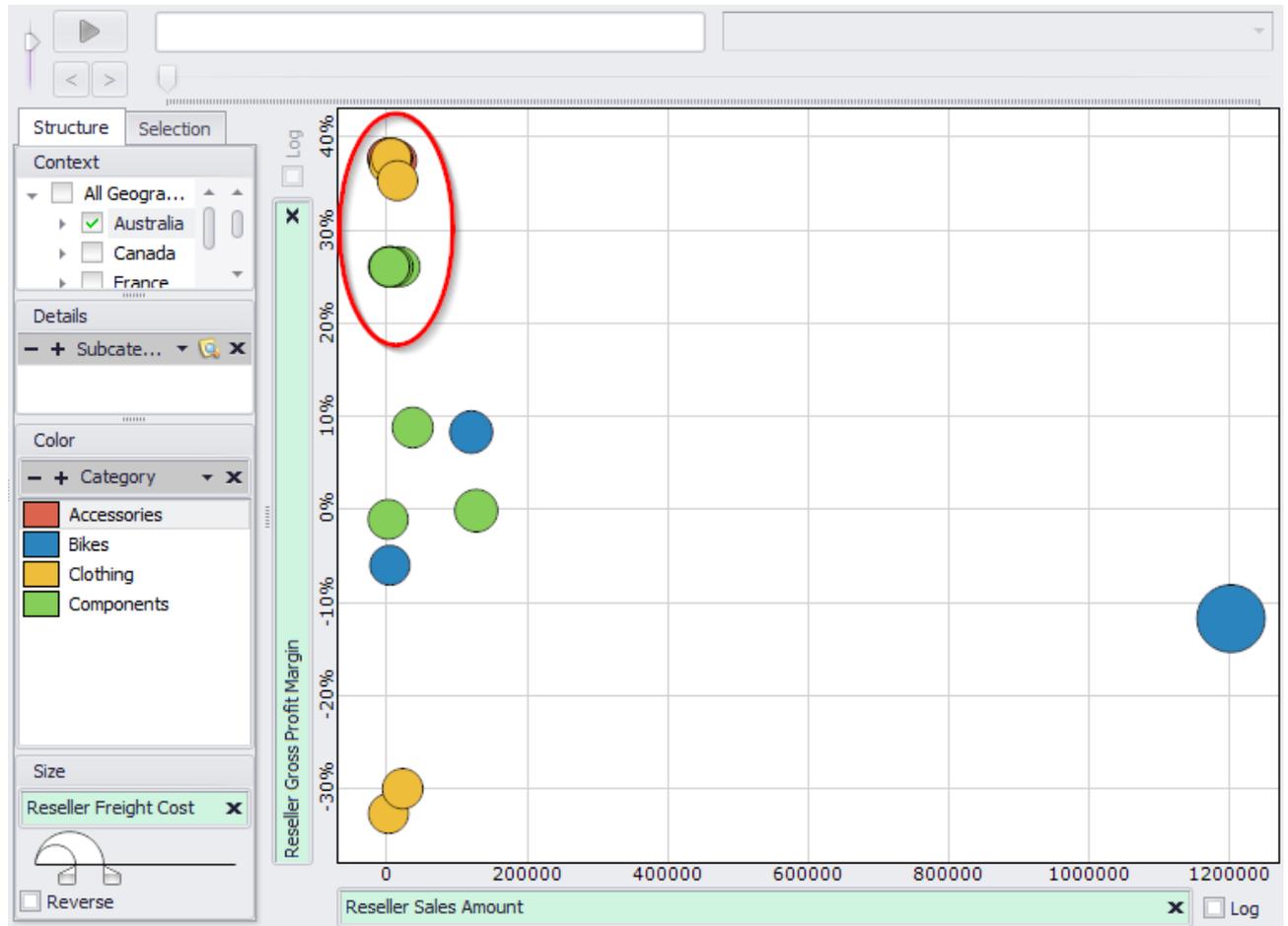


Also you can make the dependency of the size from the measure value reversed by checking the “Reverse” option:



6.9.5 Logarithmic Axes

Often you can end up with the case when there is a set of elements on the diagram with very small values on one of the axes in comparison with the values of other elements. In such case the circles corresponding to those elements are situated very closely to each other and drown one over another, and that fact makes the analysis of such diagram very complicated. Here is a great example of such case:



To be able to see the relative positions of circles situated closely to the minimal coordinate you can change the corresponding axis type to logarithmic. Then the coordinates on that axis will be changing not linearly but exponentially.

In the example report turn on the logarithmic mode on the “X” axis:

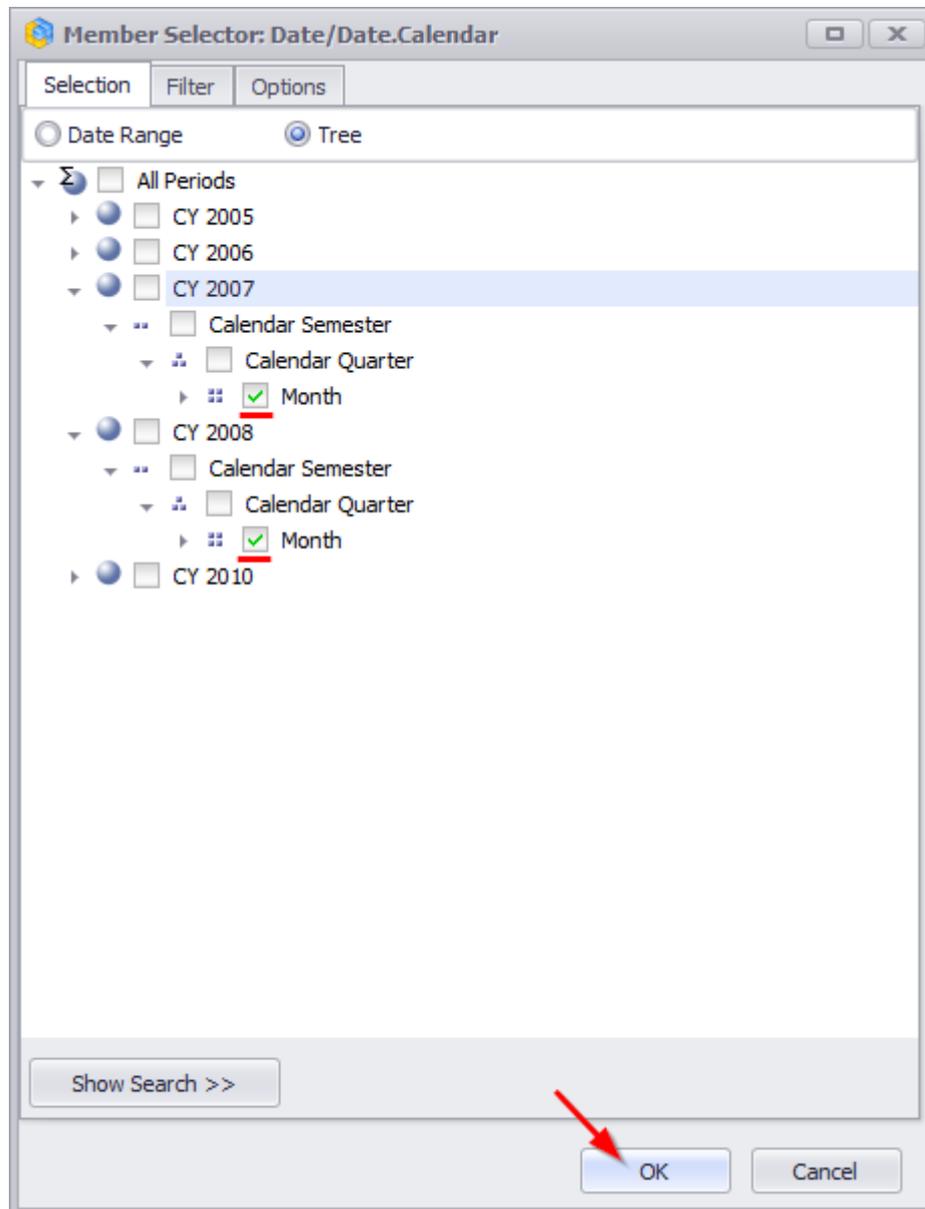


Now you can clearly see different elements. Pay attention to the scale on the “X” axis, the values are changing exponentially but not linearly, as they used to.

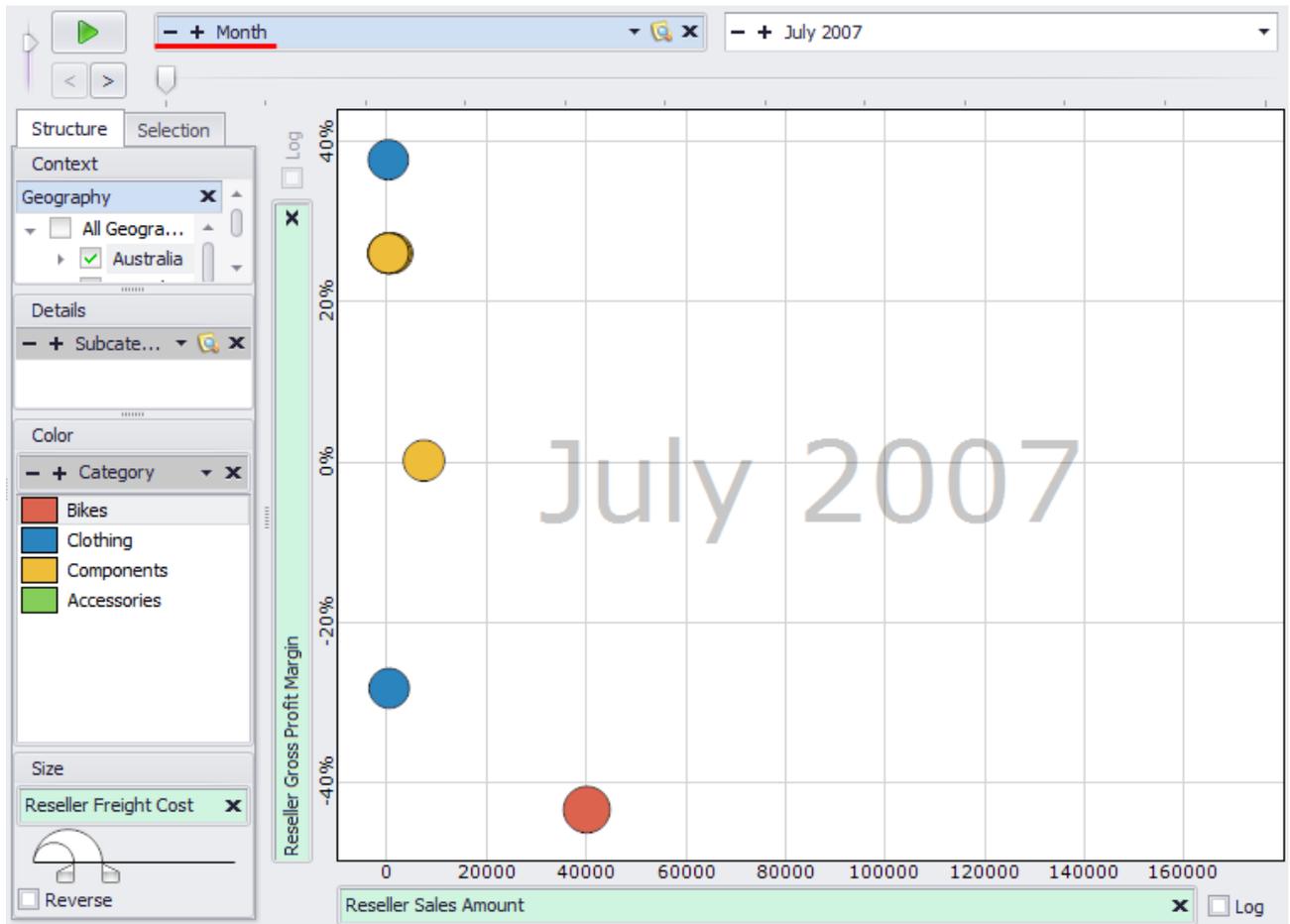
6.9.6 Pages Designer

In the upper part of the report page you can see the Pages designer. You can drop there the selection of elements from some level and analyze the data page by page. Every page corresponds to one element from the selection and shows the data bounded by that element.

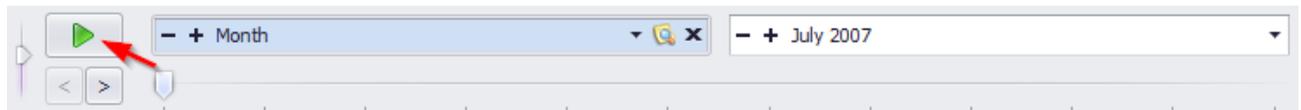
Add the “Month” level from “Date.Calendar” hierarchy to the “Pages” designer. Then open the member selector and select the following set of elements:



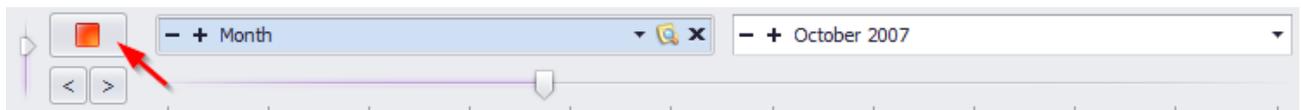
Press «OK» and you will see the following diagram:



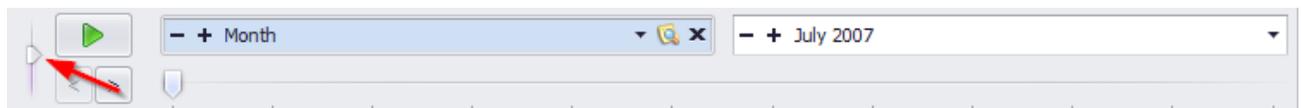
Now press “Play” button and you will see how the circles began to move and one page is changing another:



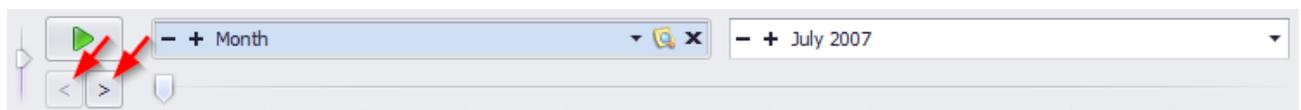
To stop the pages changing press the “Stop” button:



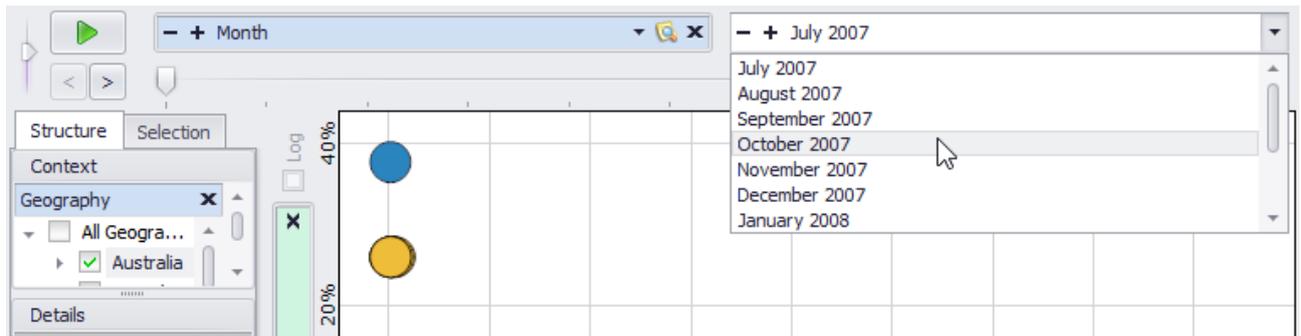
You can adjust the speed of changing the pages:



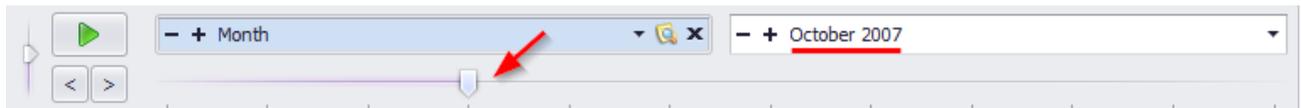
Also you can change the pages manually, using next/previous buttons:



or selecting the page from the list:

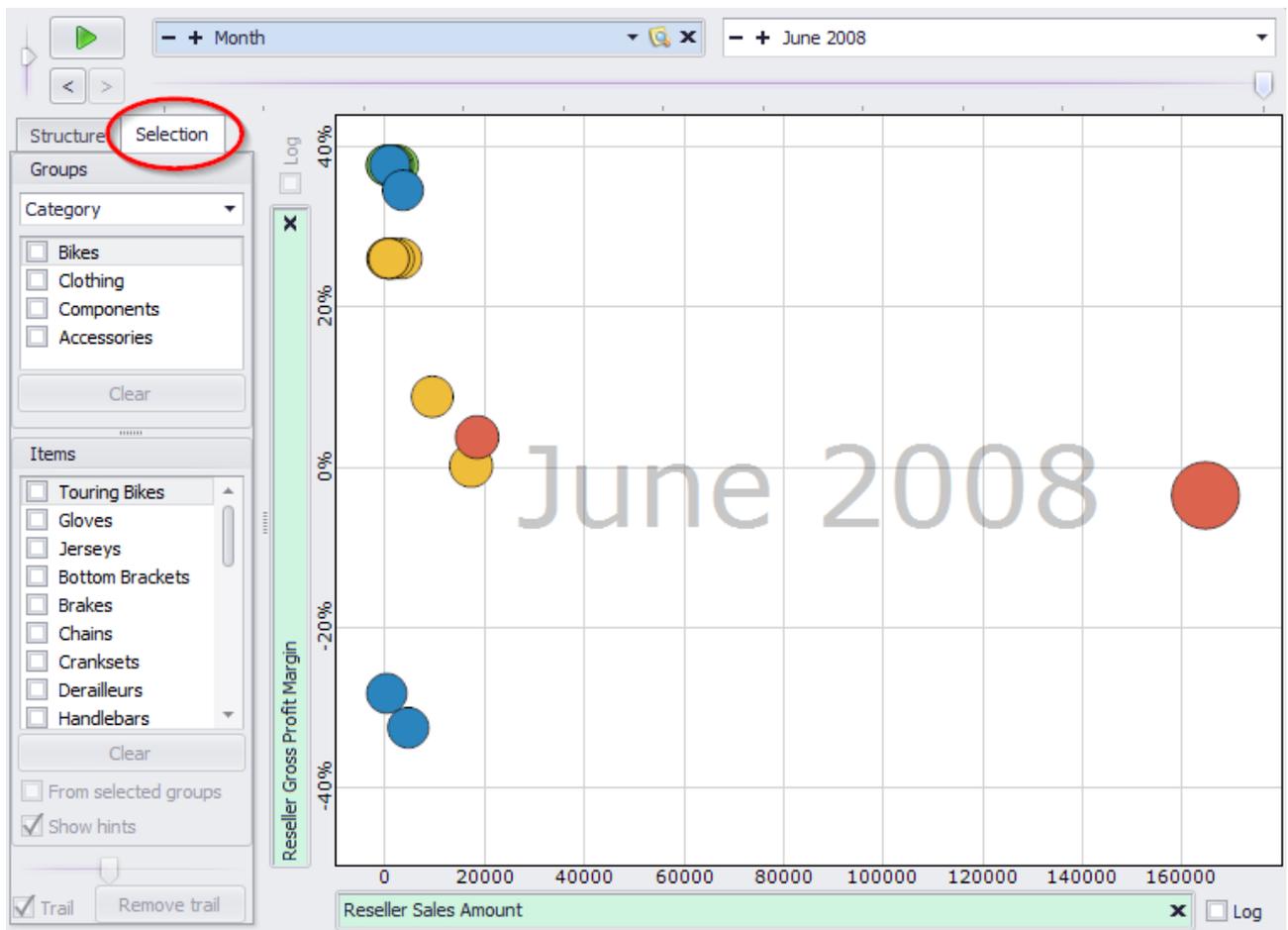


or using the scroll bar:

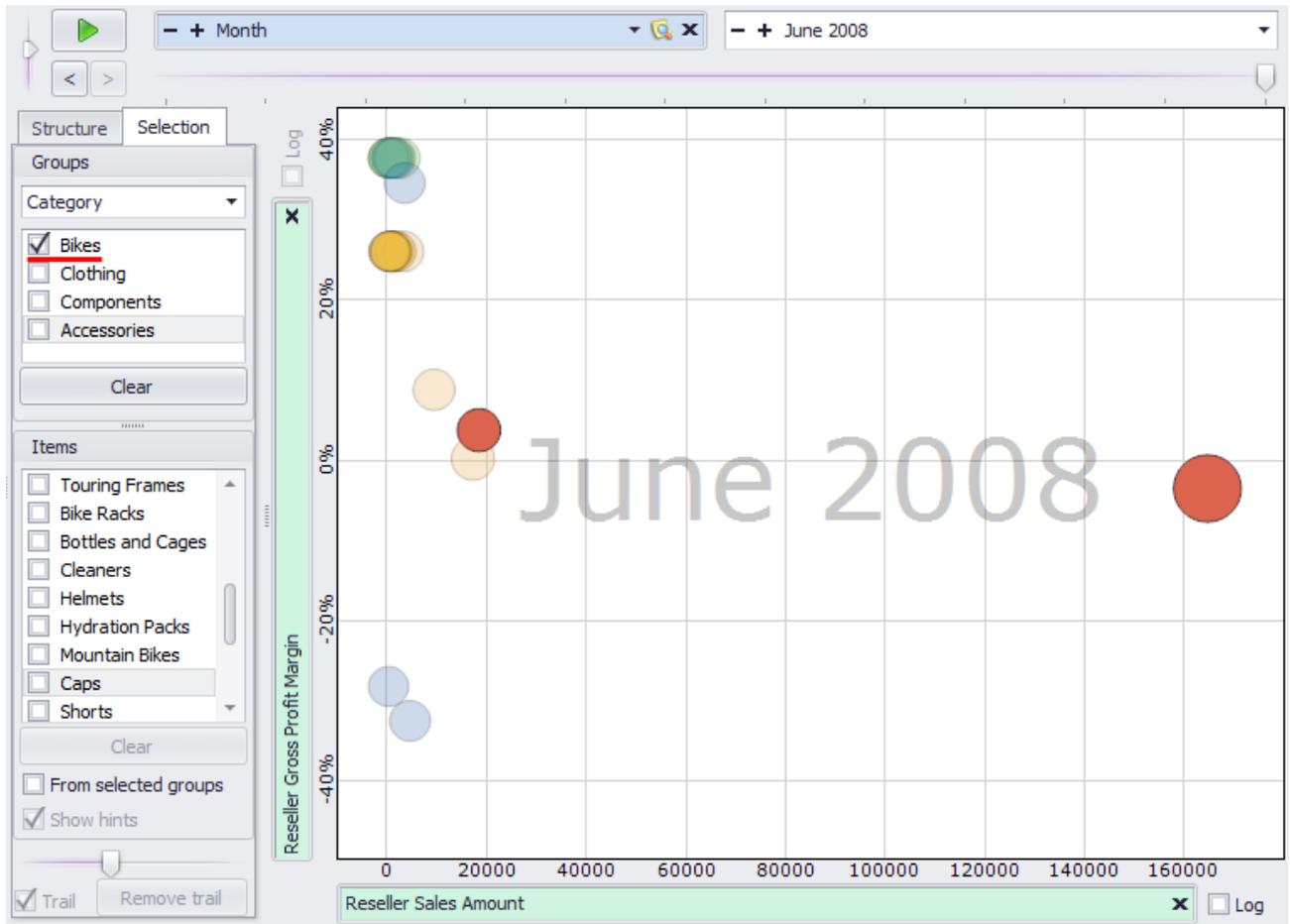


6.9.7 Selection on Scatter-diagram

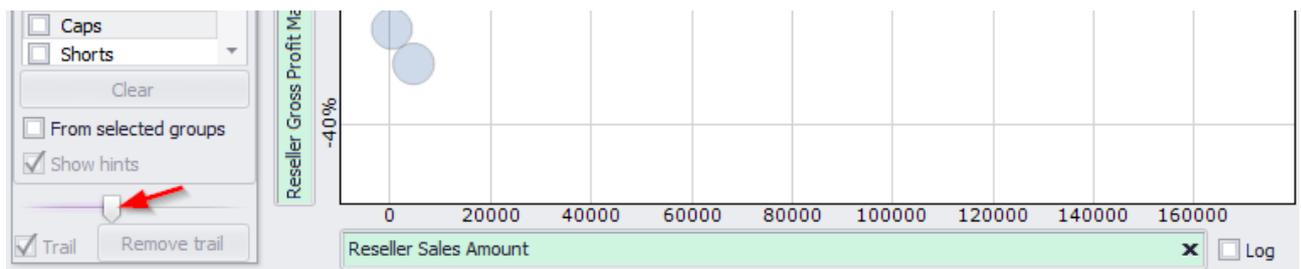
Next to the “Structure” tab, where the designers are, you can find the “Selection” tab:



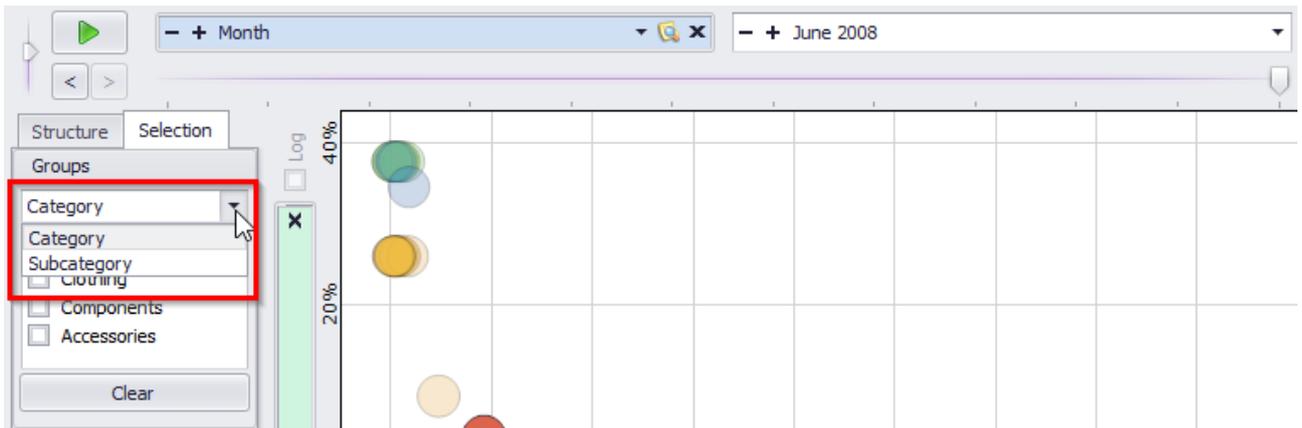
On this tab you can select some elements or groups of elements in the diagram. For example, select “Bikes” category:



As you can see, the circles from that category are drawn brightly. At the same time, the other elements are half transparent. The level of transparency of other elements can be adjusted using a special scroll bar:

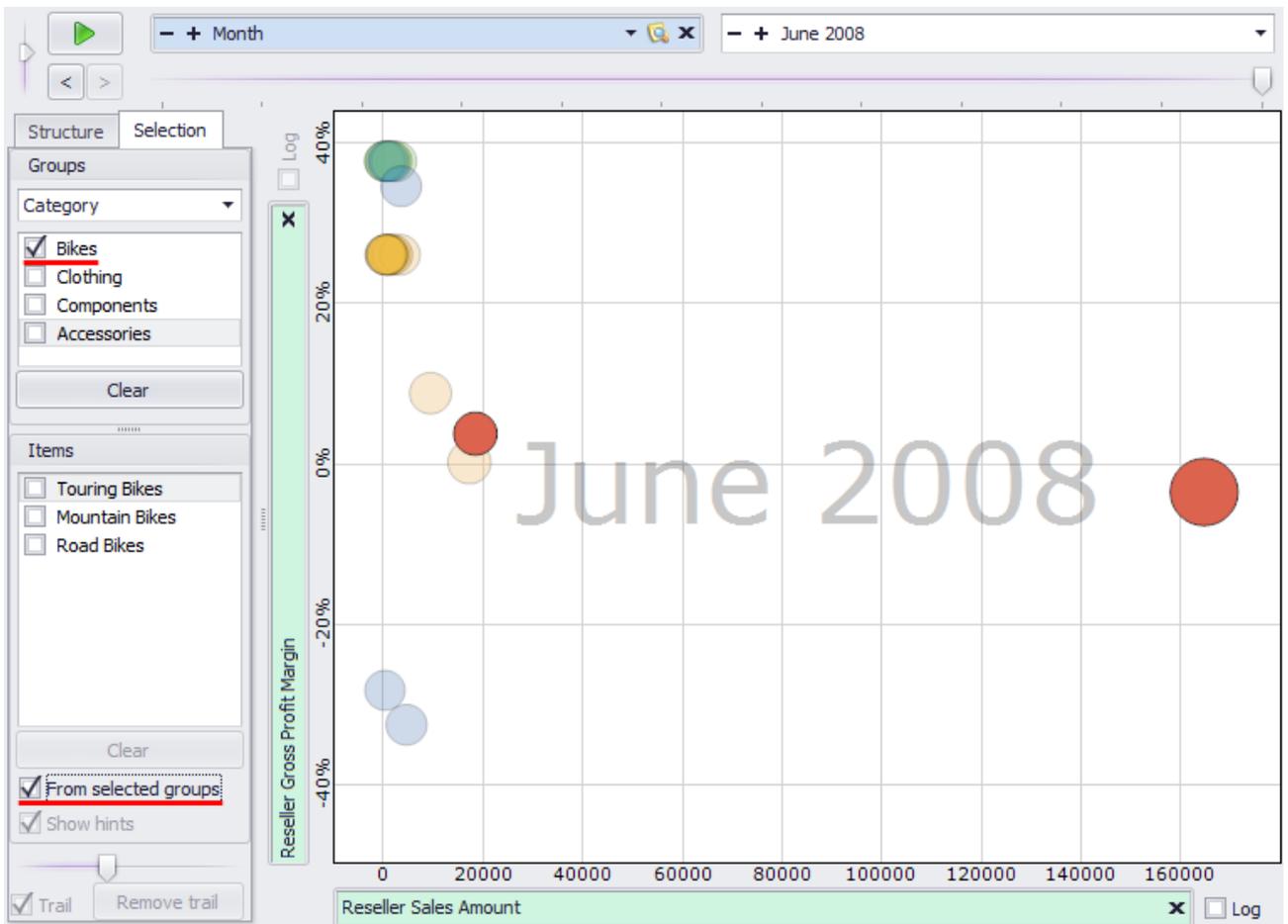


Before selecting the groups you can change the grouping level from the list:

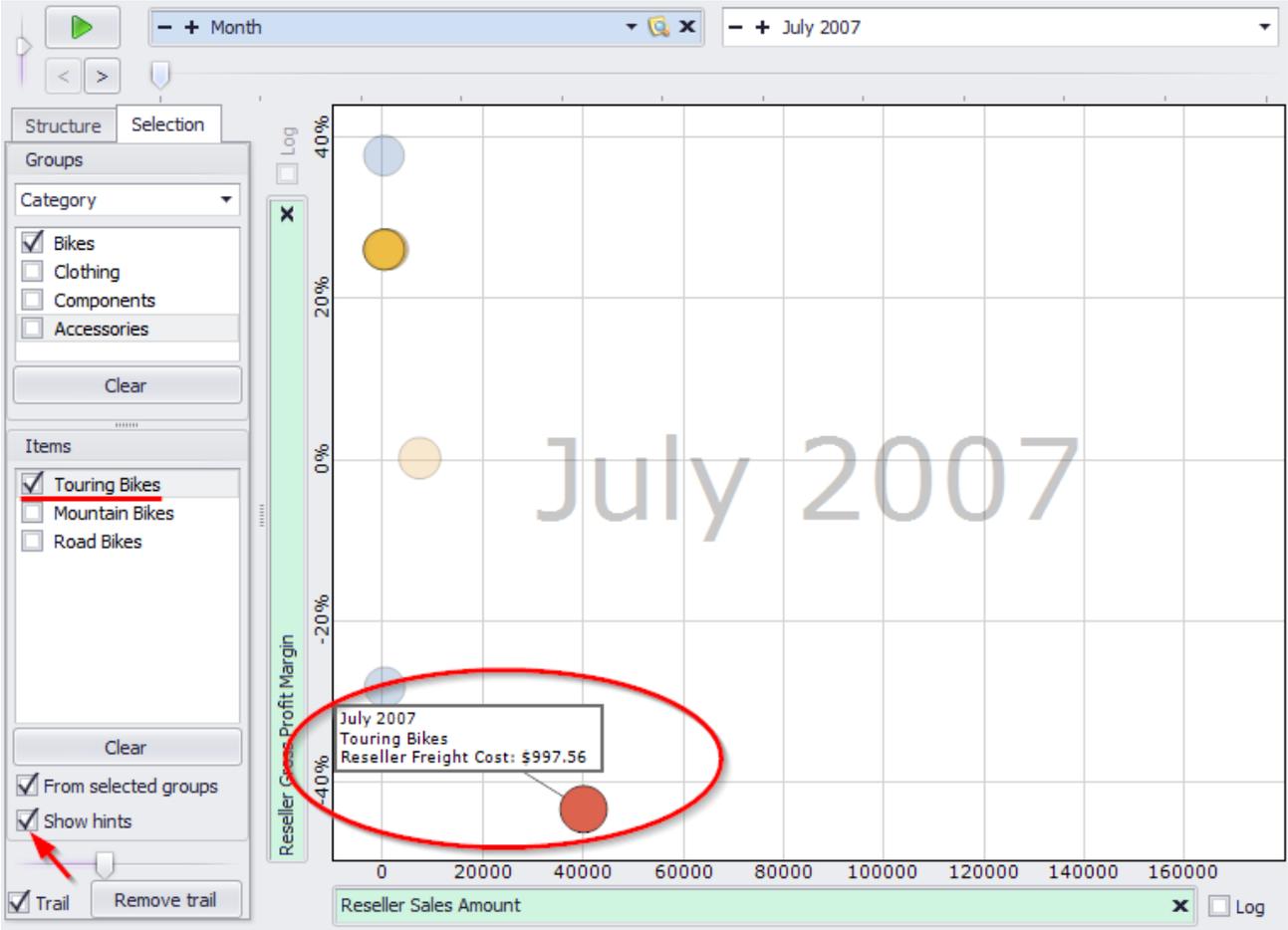


You also have the possibility to select separate elements (circles) at the diagram. You can do that by simply clicking your mouse on the circle. Also you can select the elements from the list.

Select the Bikes group and under the list of all elements check the “From selected groups” box, so you could see only the elements from selected groups (only bikes):

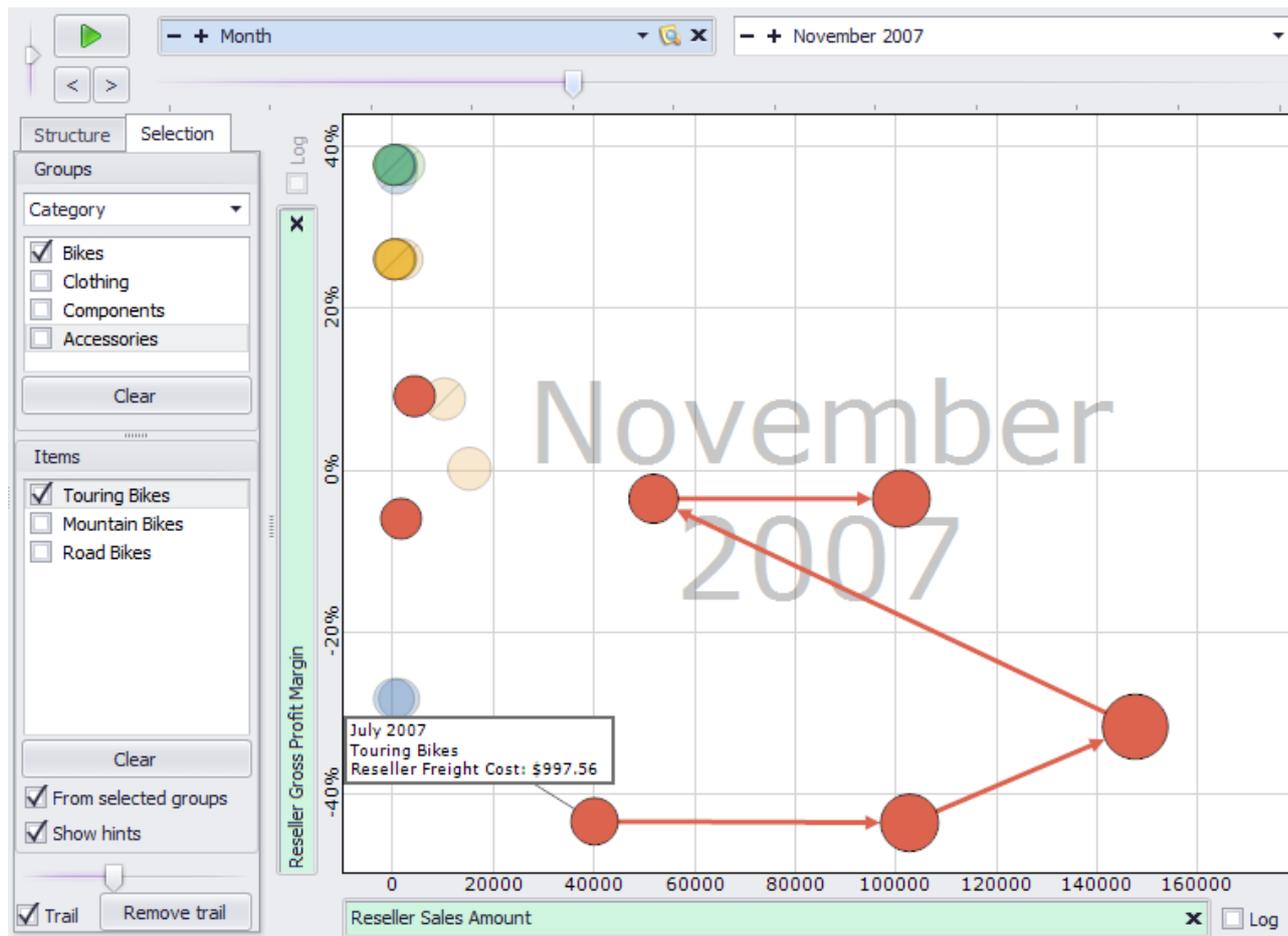


Now among the elements from the “Bikes” category select the element “Touring Bikes”. You will see the hint appearing over that element:

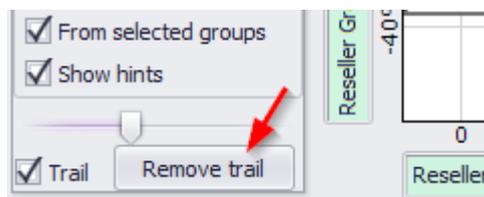


You can turn off the hints by unselecting the option “Show hints”.

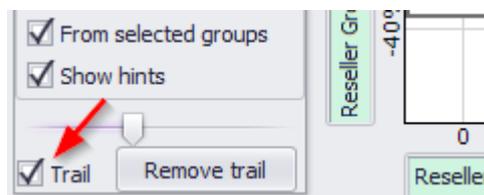
After you selected the element, press “Play” button. You will see the pages changing, but the trail is left after the selected element:



You can clear the trails using the “Remove” trail button:

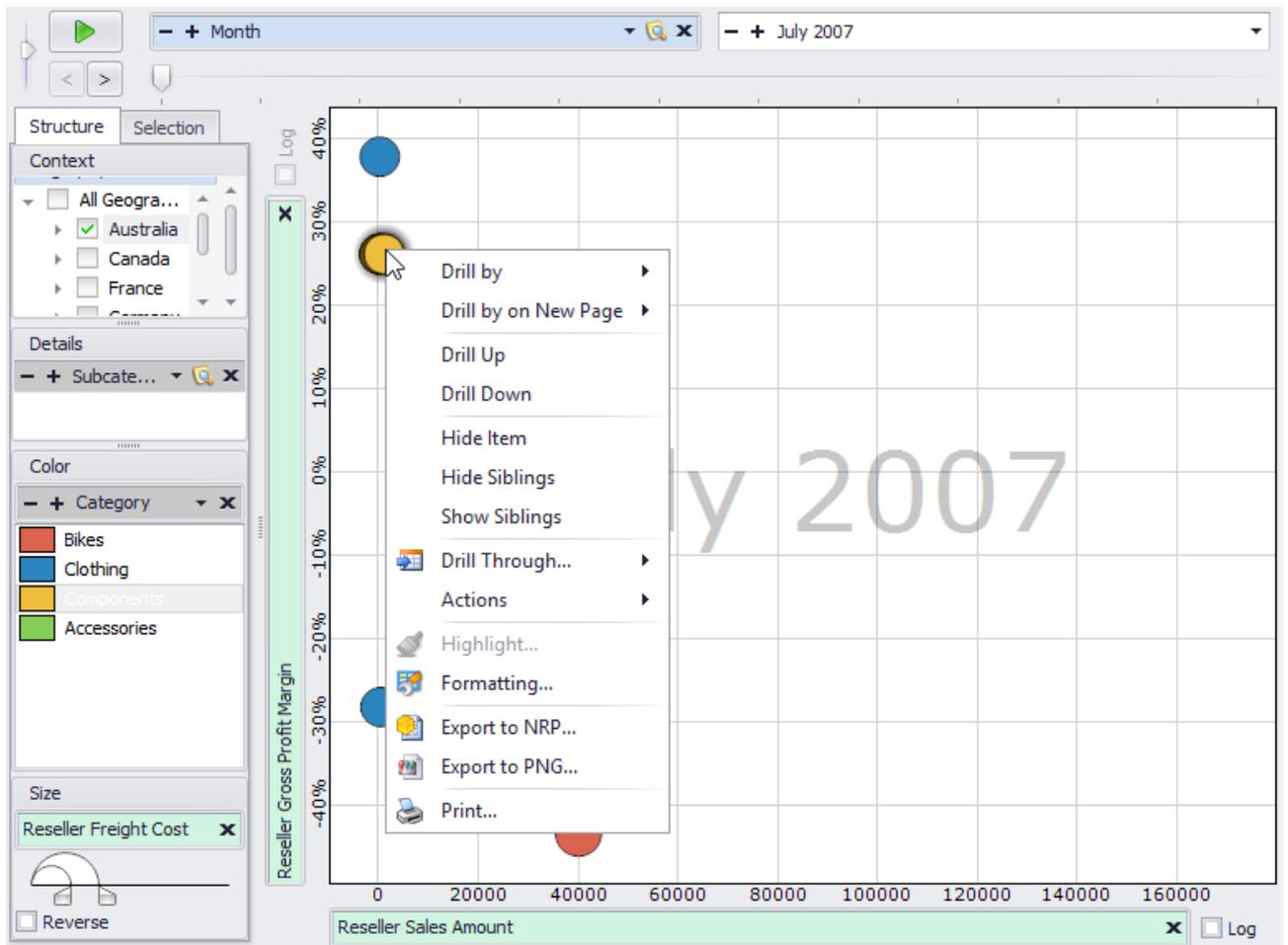


Or you can turn off the drawing of trails at all by unchecking the “Trail” option:



6.9.8 Context Menu of the Diagram

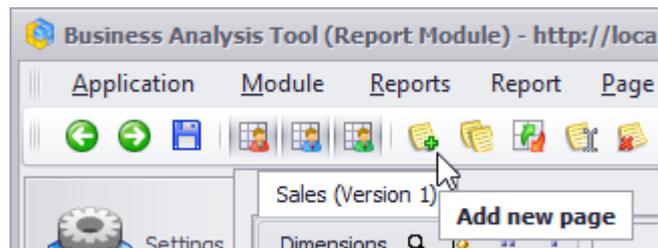
If you press the right mouse button on any of the circles in the scatter-diagram then you will see the context menu with a set of operations, which can be used for page navigation, changing the page, printing or exporting:



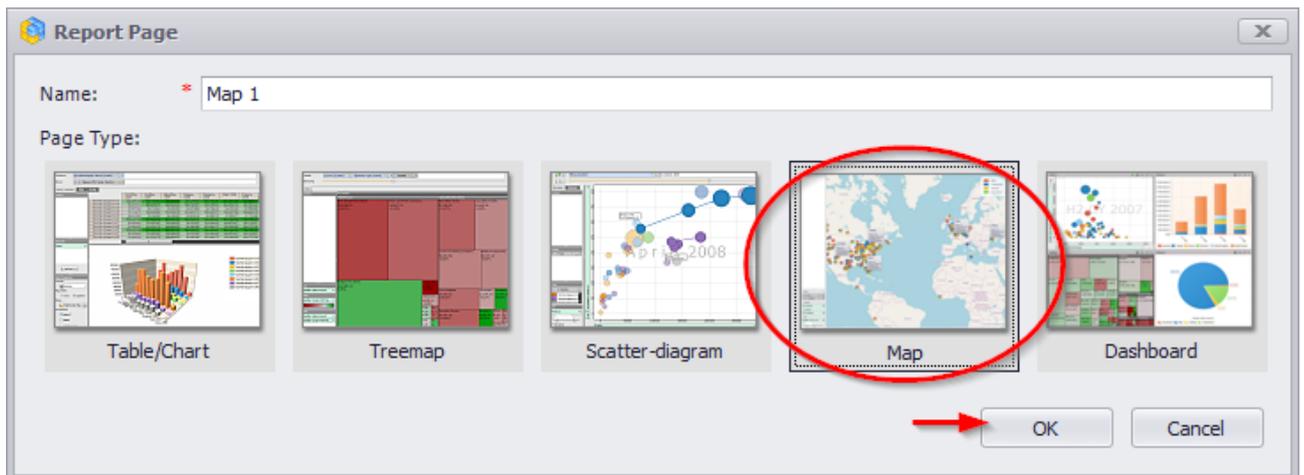
The set of operations in the context menu is the same as in a treemap-diagram or table headers menus. Therefore there is no need to describe them once again. If you'll have any questions, please refer to the descriptions of the corresponding operations in the chapters dedicated to table and treemap-diagram.

6.10 Map

To add a map to your report press the “Add new page” button on the toolbar:



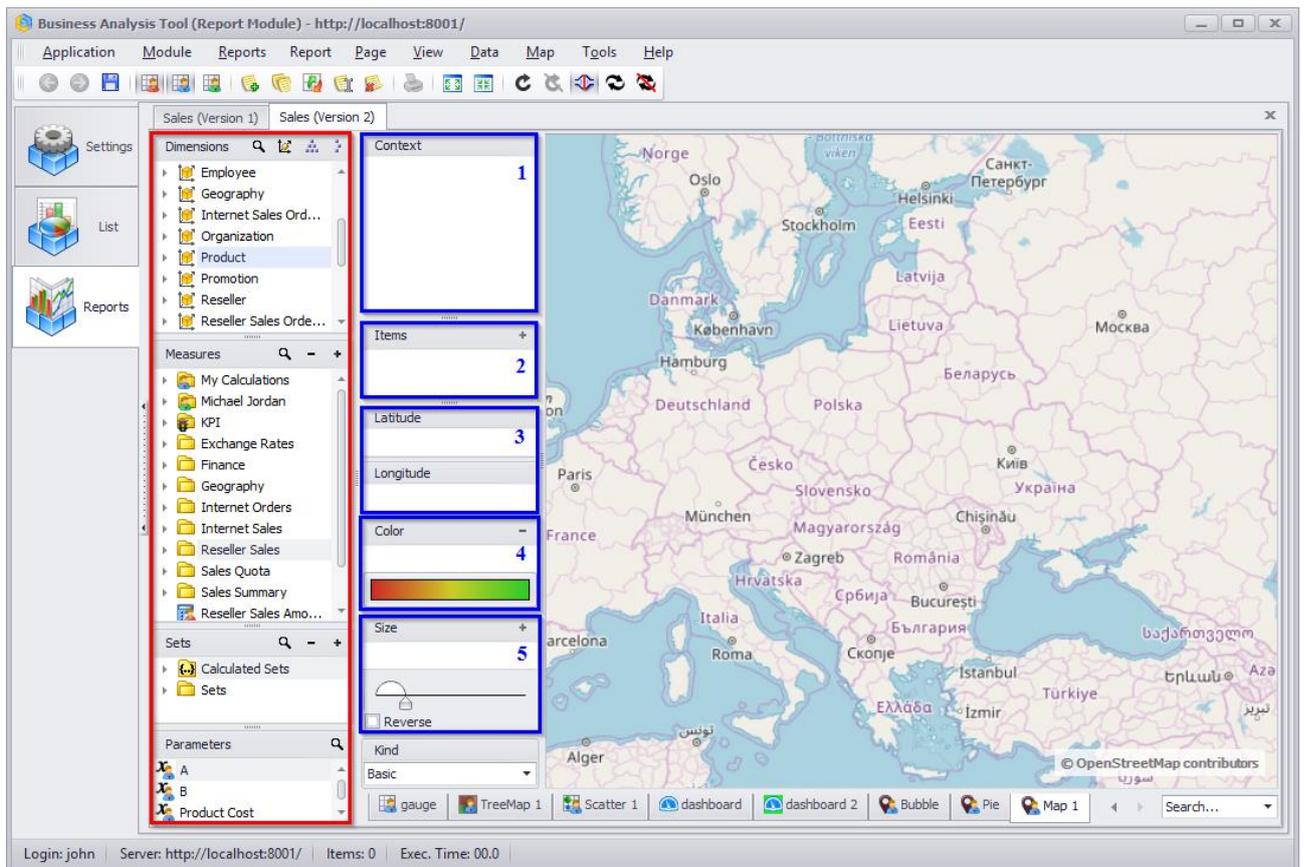
In the appeared dialog select the Map page type and fill in the name of a new page:



Press «OK» and an empty map will appear.

6.10.1 Designers

Map has the following structure:



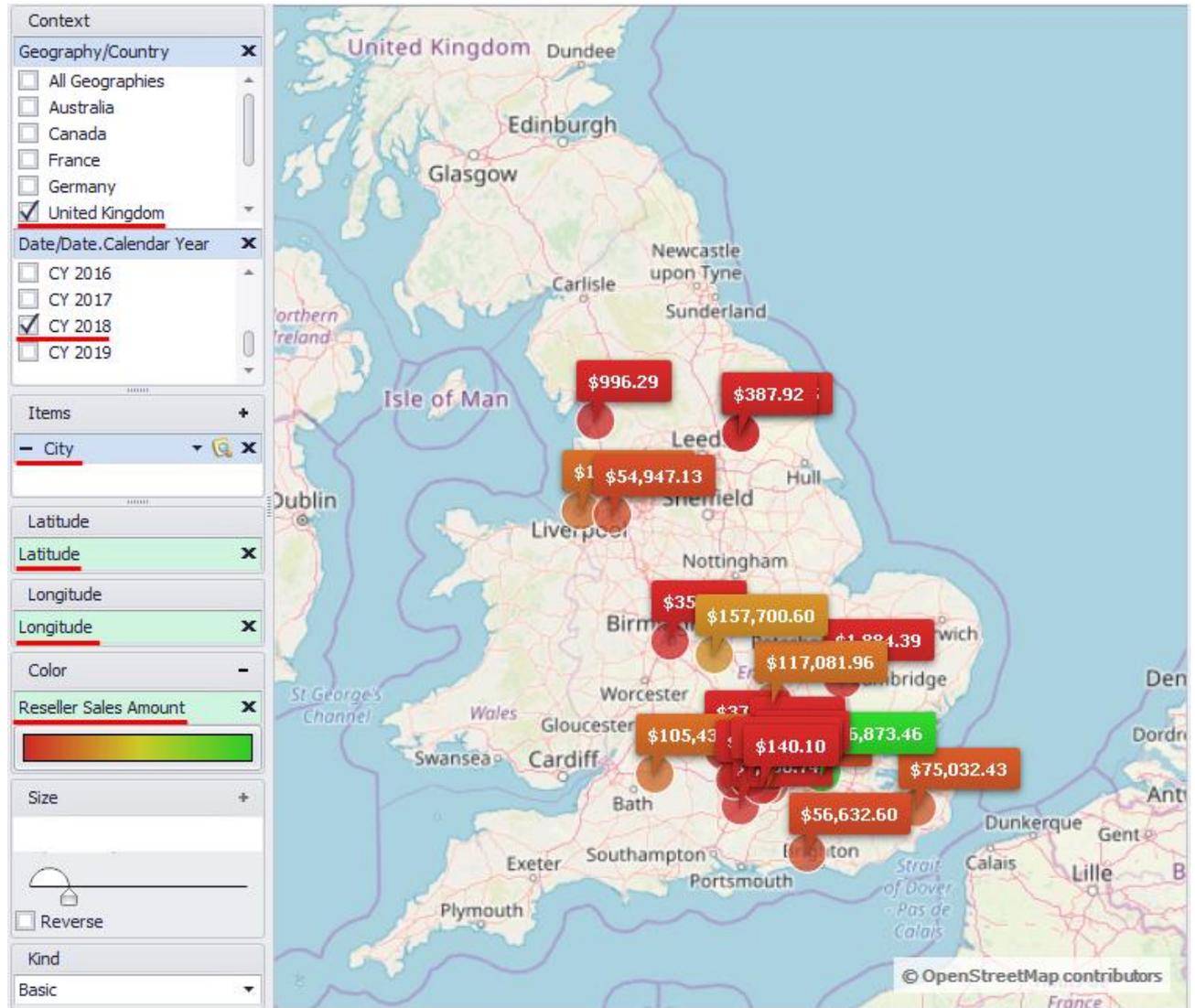
At the left side dimensions and measures are marked in red. The designers are marked in blue.

Here is the set of designers available in the map:

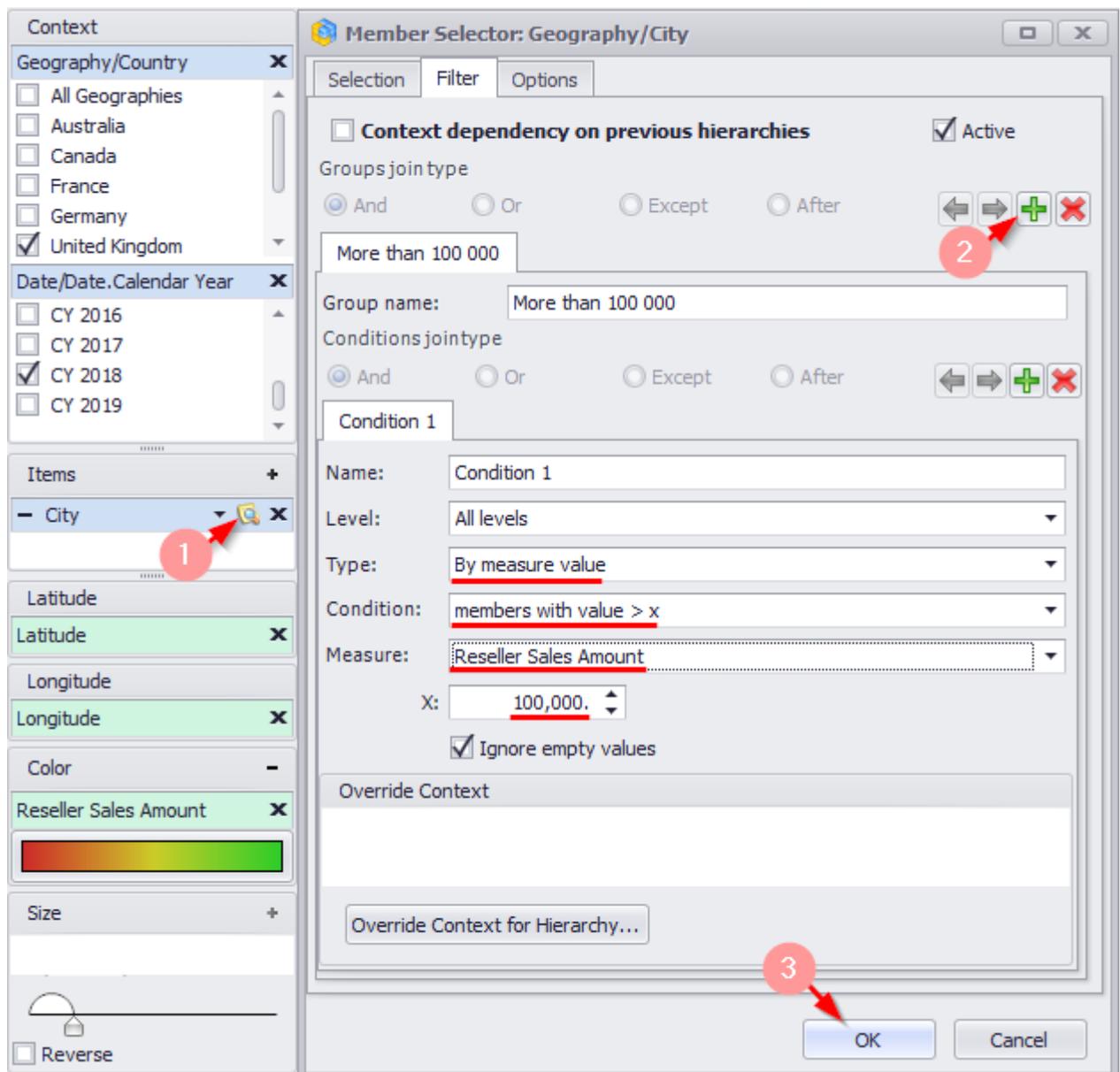
1. Context designer. It does the same thing as the corresponding designer in the table and treemap pages, bounds the data shown in the report.
2. Items designer. Here you can drop the hierarchy of geography.
3. Latitude/Longitude designer. Latitude / Longitude measures, which are specified on a cube and correspond to the geographical coordinates of the selected geography hierarchy.
4. Color designer. Determines the color of the circles in the map.
5. Size designer. Determines the sizes of the circles in the map.

6.10.2 Building the Report

Let's build the report that will show those cities of the United Kingdom, where the value of the Reseller Sales Amount measure for all products in 2018 is more than 100 thousand. To do that, drop the "Geography / Country" to the context designer and select "United Kingdom", then drag in the context designer "Date / Date.Calendar Year" and select 2018. In the item designer, drop the "City". To the "Latitude/Longitude" drag "Latitude" and "Longitude" measures, "Reseller Sales Amount" measure drop in the color designer:



Now let's create a filter that displays only cities on the map, for which the value of the “Reseller Sales Amount” is more than 100 thousand. To do this, add the following filter in the “City” hierarchy:



After that you will see the following:



6.10.3 Map types

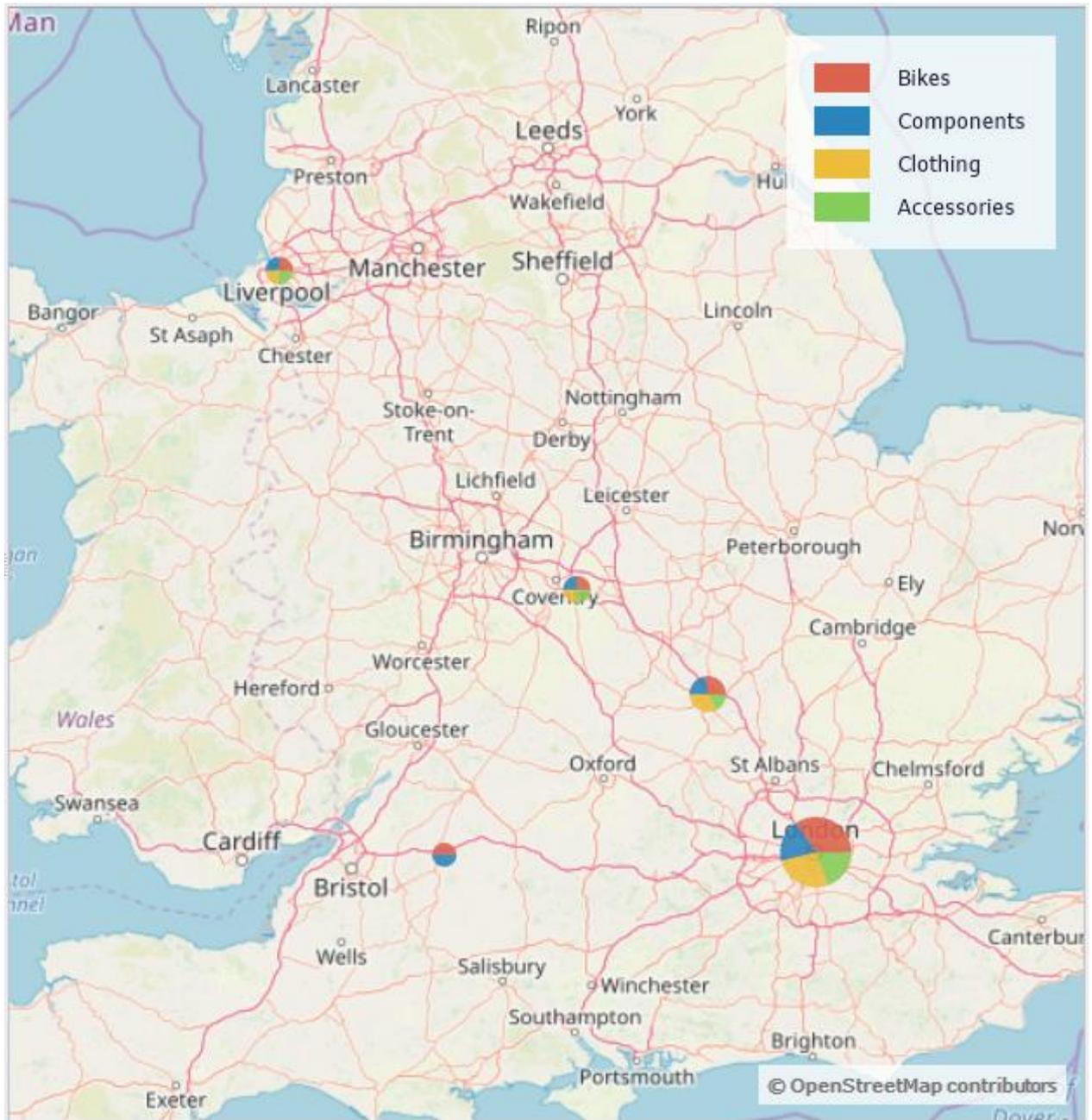
There are two types of map:

- ✓ Bubble

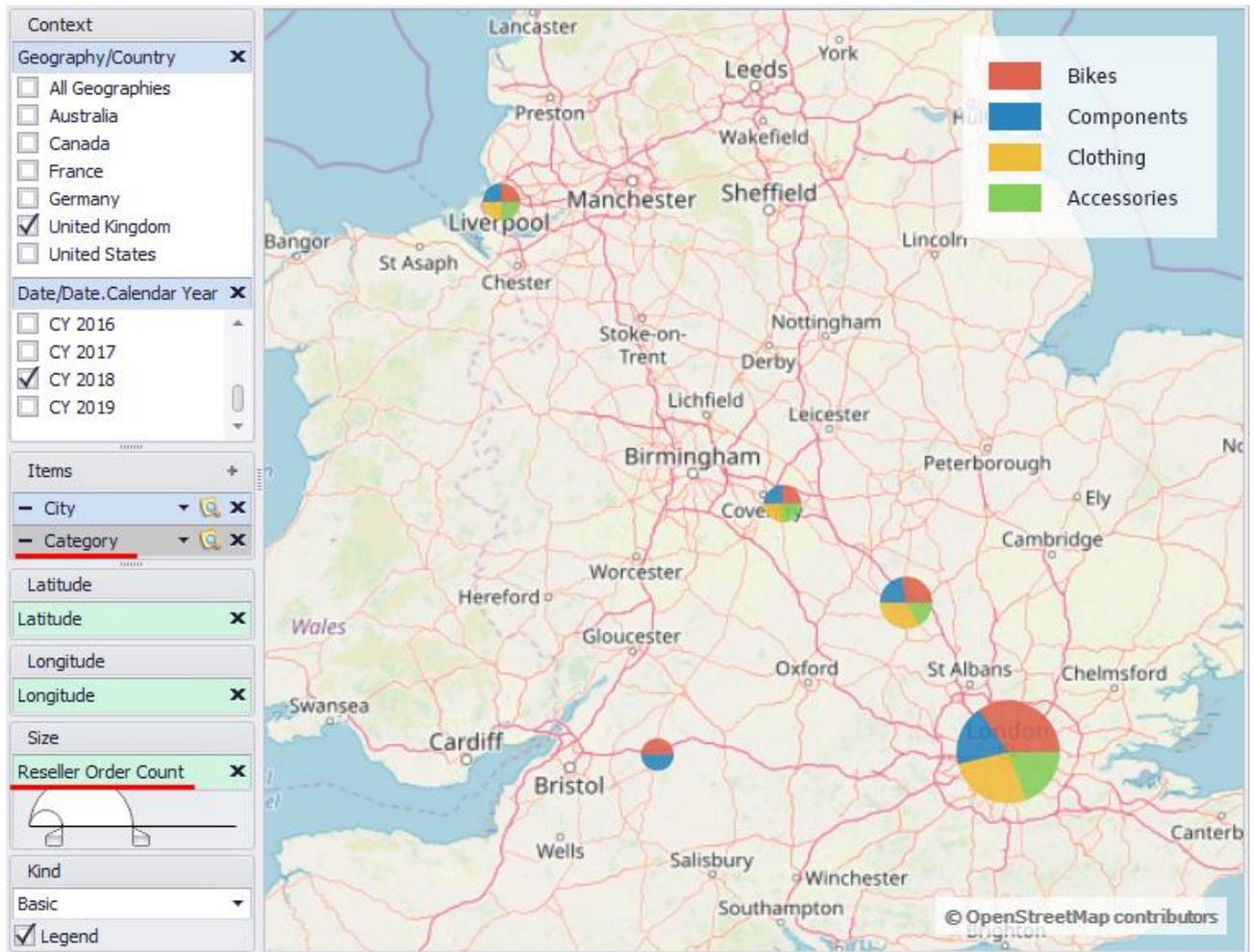
We have built this type of maps with you earlier:



✓ Pic



Let's display the "Reseller Order Count" measure for product categories for the map displayed above. To do this, drag the "Category" hierarchy into the "Items" designer, and drop the "Reseller Order Count" measure into the "Size" designer:

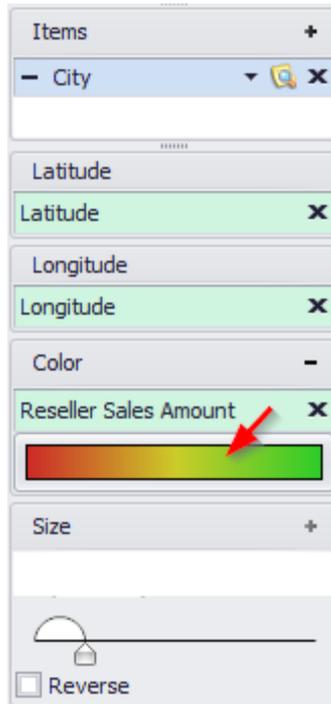


6.10.4 Color Designer

Using the Color designer for Bubble type maps you can use the gradient to set the color of the circles on the map



You can change the highlight rule by pressing the button that is showing the gradient:



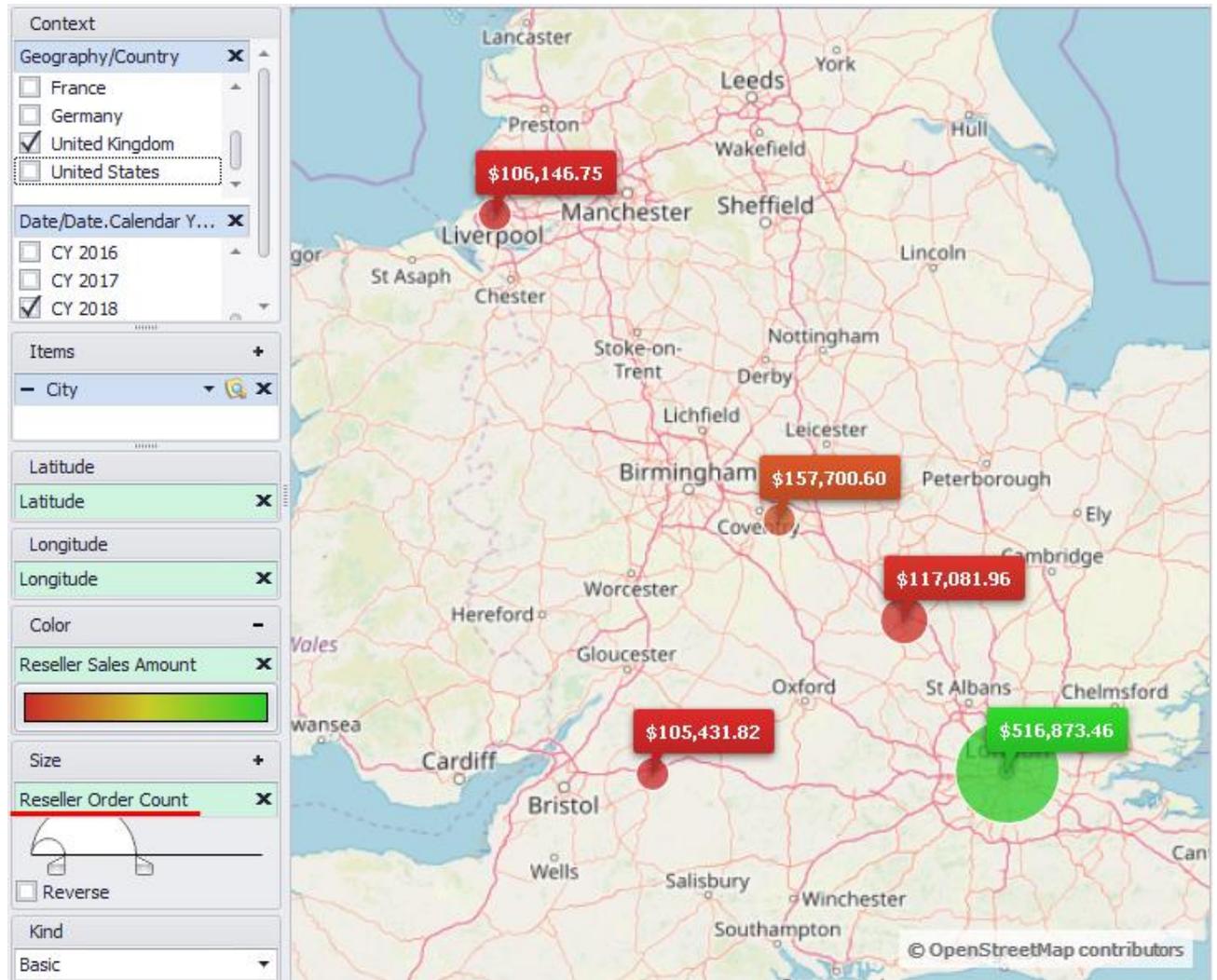
The window for setting up the gradient will appear, exactly the same as you could see when setting up the gradient for highlighting in the table:



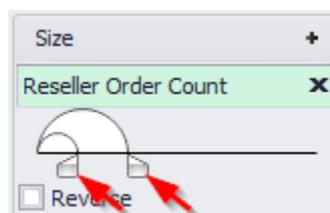
6.10.5 Size Designer

Using the “Size” designer you can set the measure, the values of which for every element will determine the size of the corresponding circle.

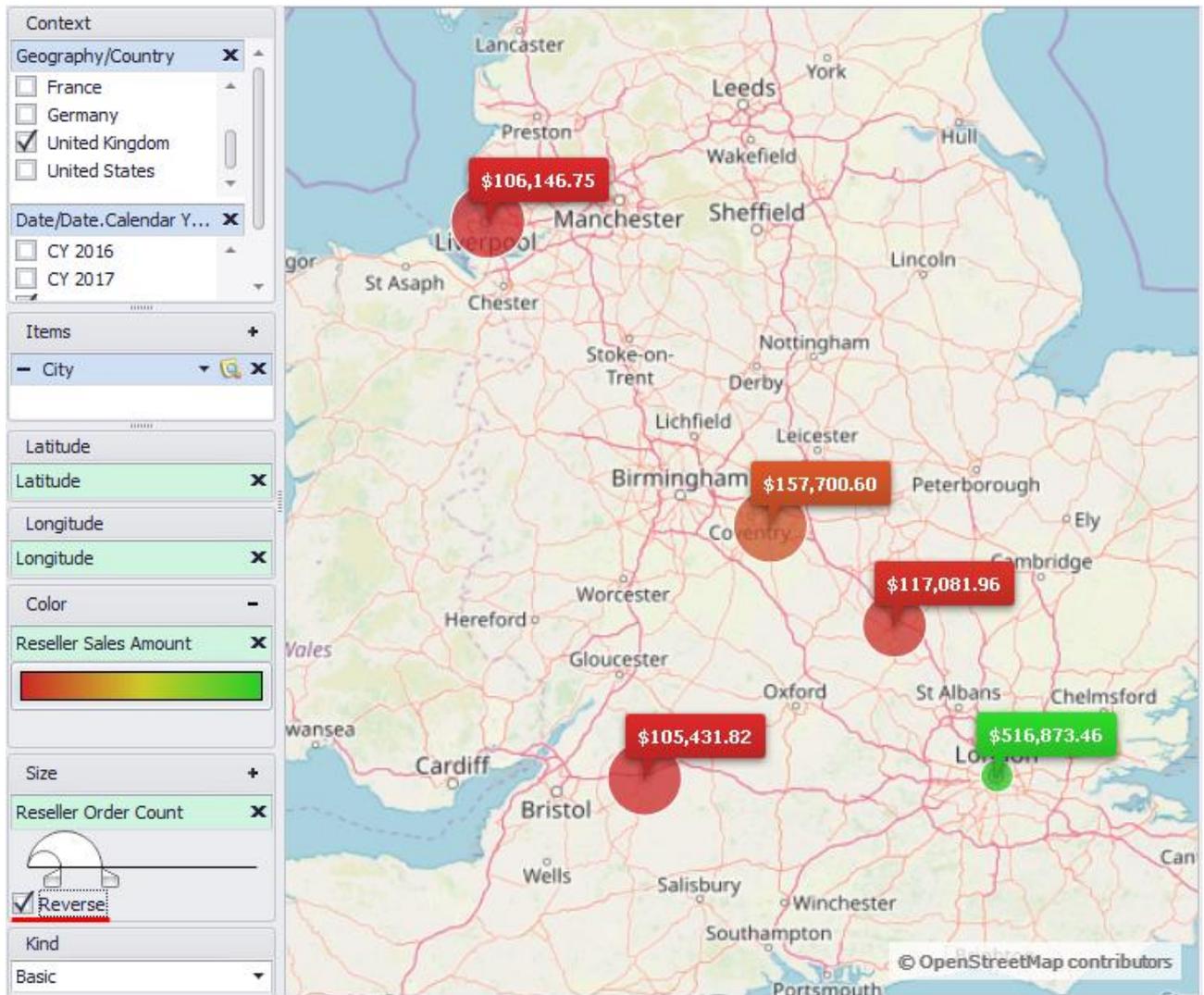
Let's go for the Bubble card, which we created earlier drag the “Reseller Order Count” measure into the “Size” designer:



You can adjust the sizes of the circles on the diagram by setting the range of sizes in the “Size” designer. The smallest and the largest circle sizes can be set using the special control:

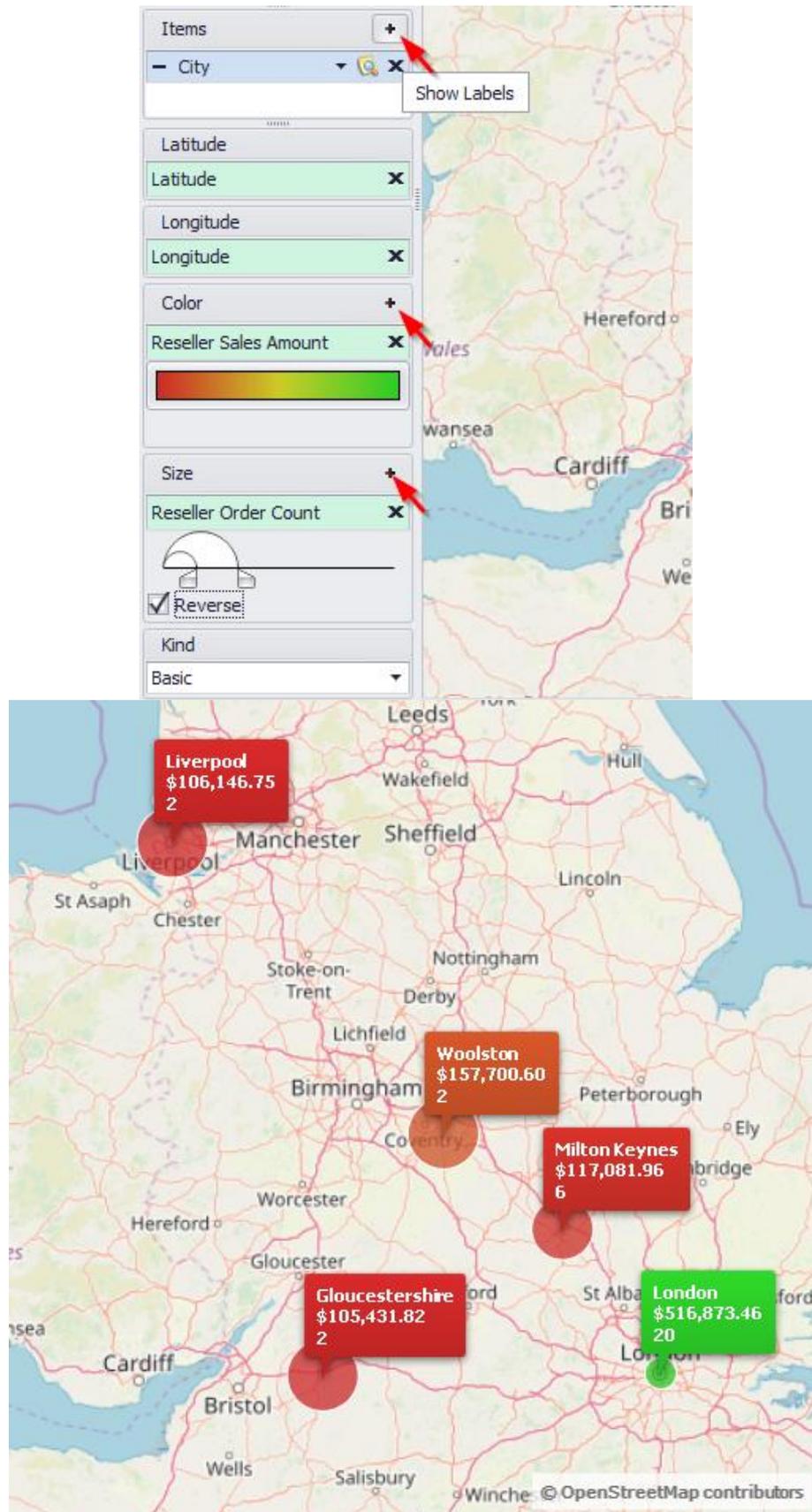


Also you can make the dependency of the size from the measure value reversed by checking the “Reverse” option:

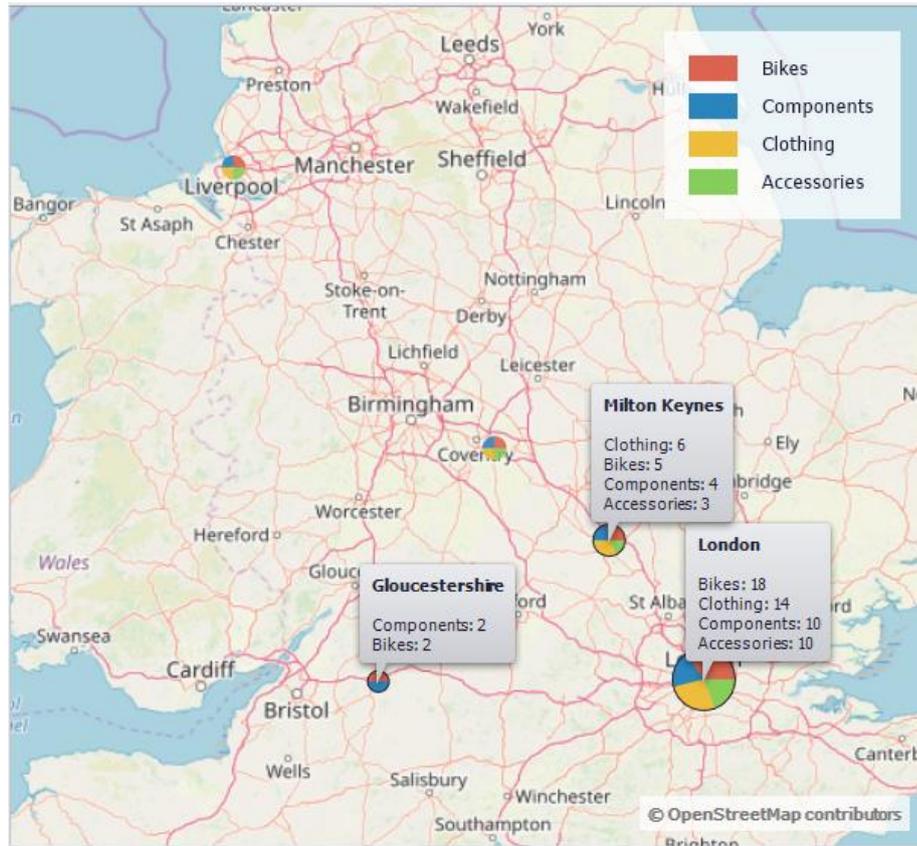


6.10.6 Labels

To display the labels of elements on the map, click on the “Show labels” button:

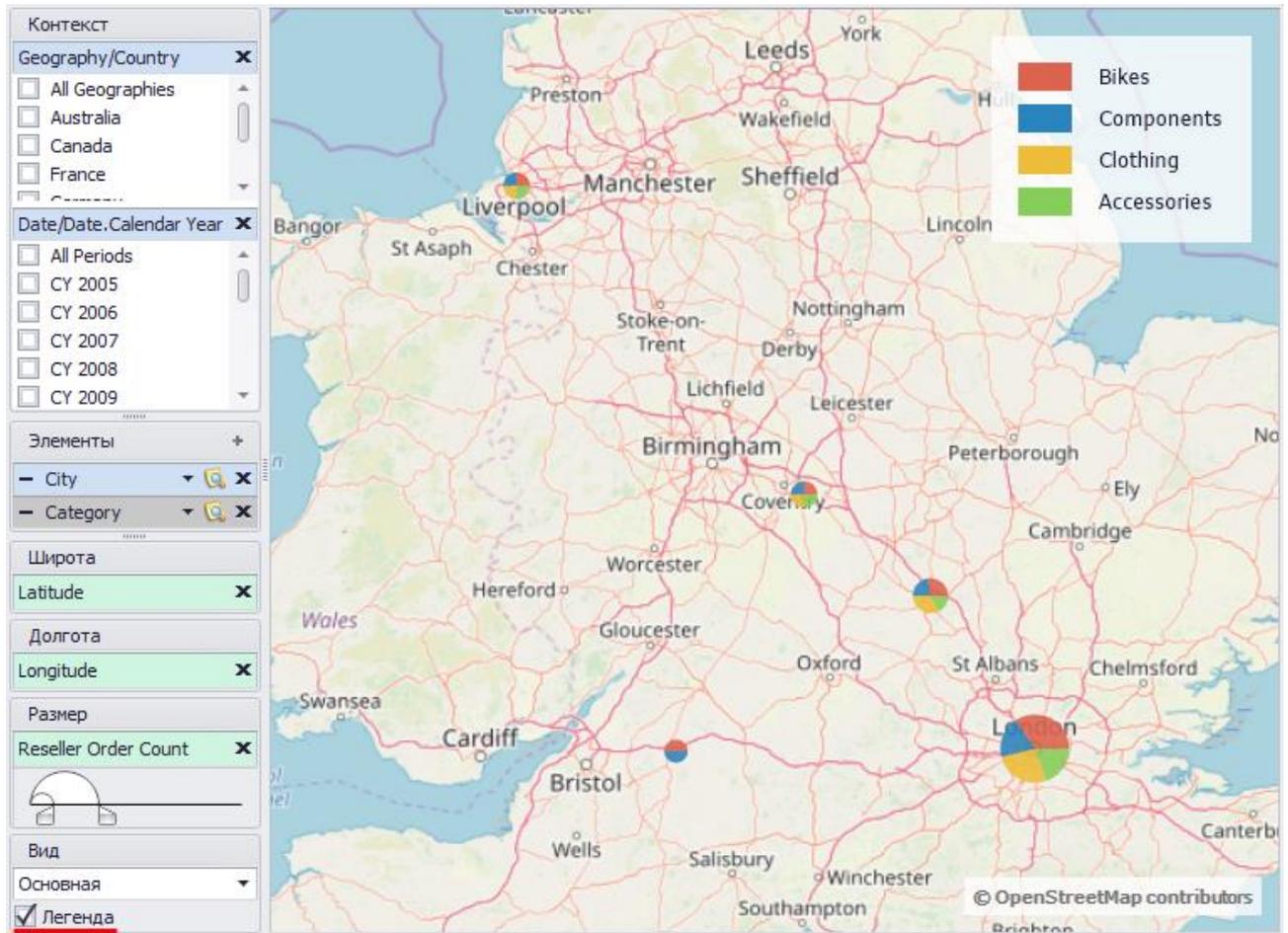


Pie maps allow you to display the values of labels of one or more elements on the map. To display the values of several labels, use the Ctrl + mouse combination:



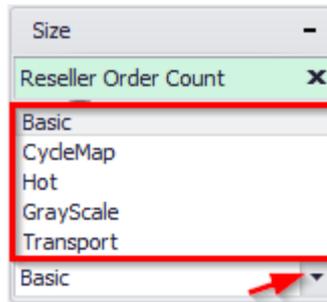
6.10.7 Legend

For Pie maps, you can to display or not to display a legend:



6.10.8 Kinds for map

The following kinds for map are available to you:



✓ Basic



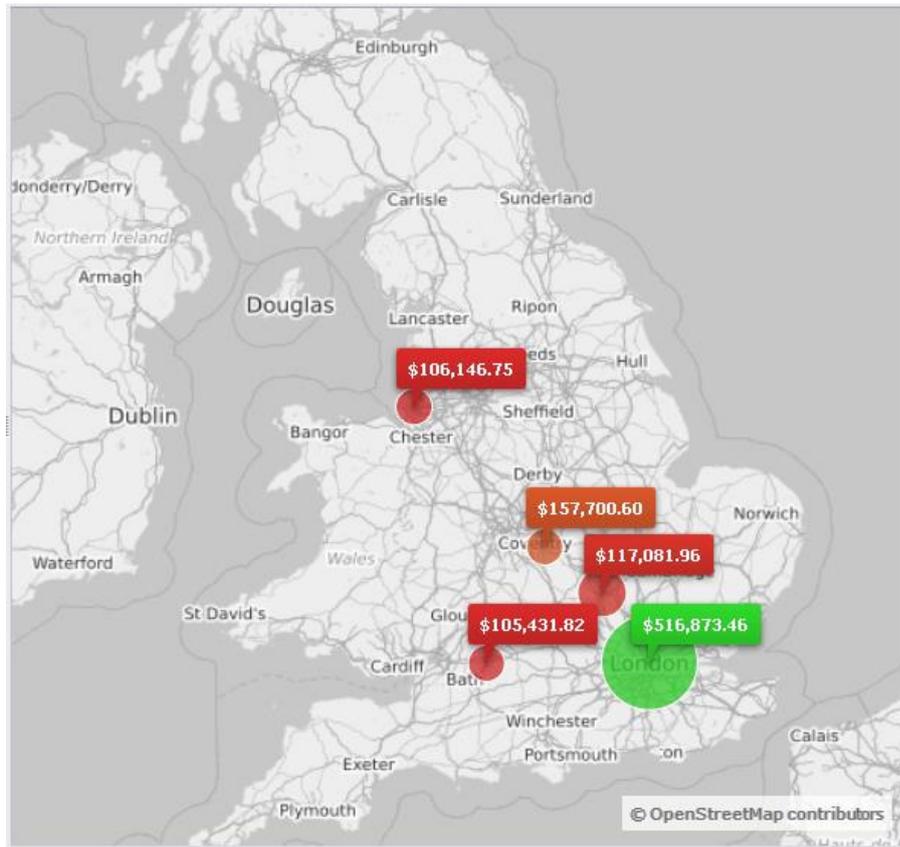
✓ Cyclemap



✓ Hot



✓ GrayScale

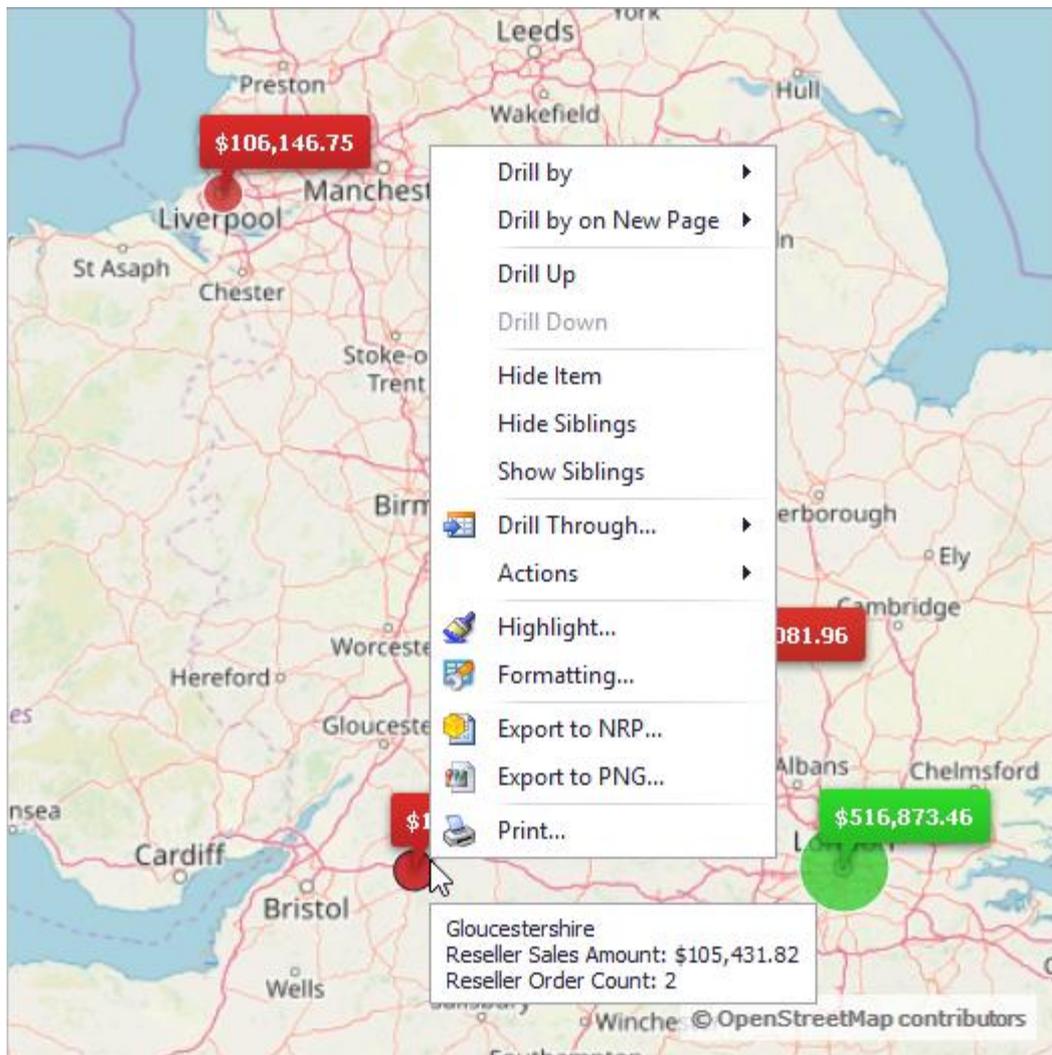


✓ Transport



6.10.9 Context Menu of the Map

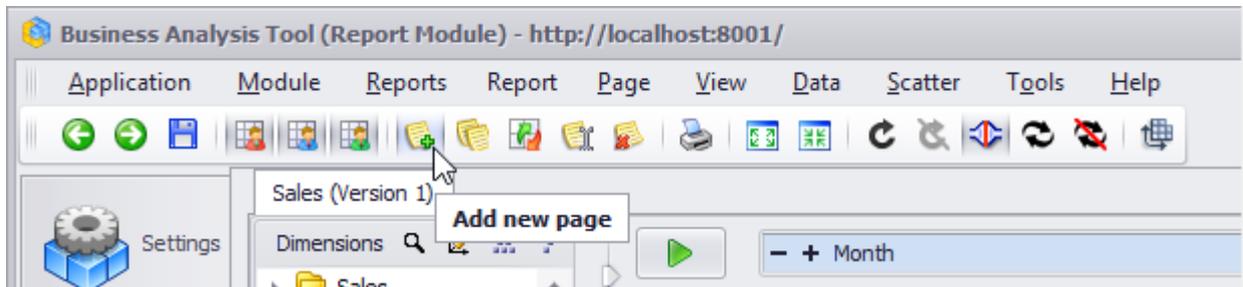
If you press the right mouse button on any of the circles in the map then you will see the context menu with a set of operations, which can be used for page navigation, changing the page, printing or exporting:



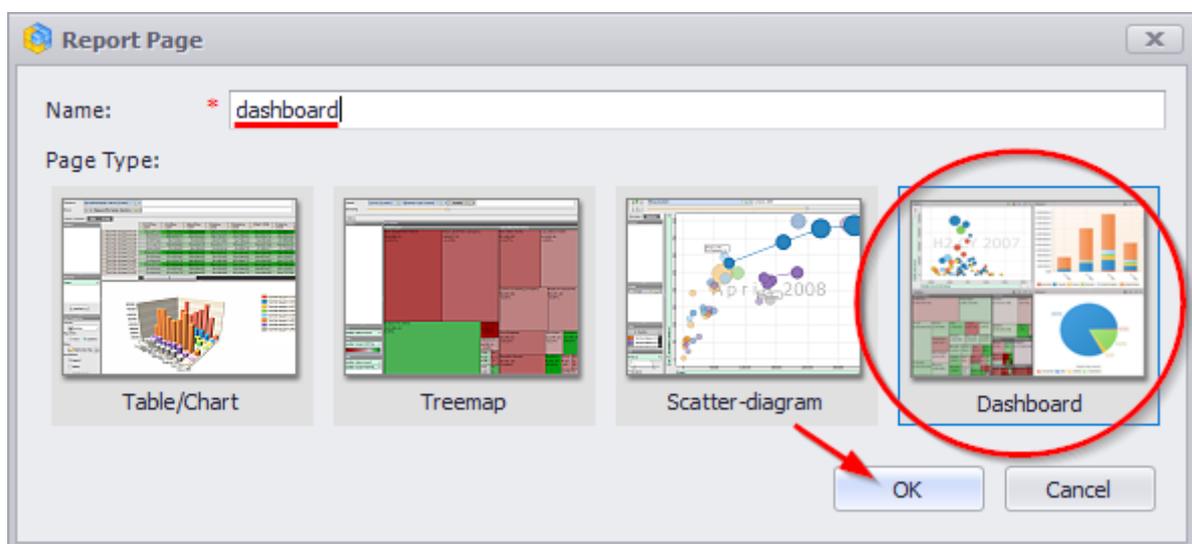
The set of operations in the context menu is the same as in a treemap-diagram or table headers menus. Therefore there is no need to describe them once again. If you'll have any questions, please refer to the descriptions of the corresponding operations in the chapters dedicated to table and treemap-diagram.

6.11 Dashboard

Dashboard is a kind of a page which allows to display several components: tables, treemaps, scatter diagrams, maps. In order to add a dashboard to your report, press “Add new page” on your toolbar:



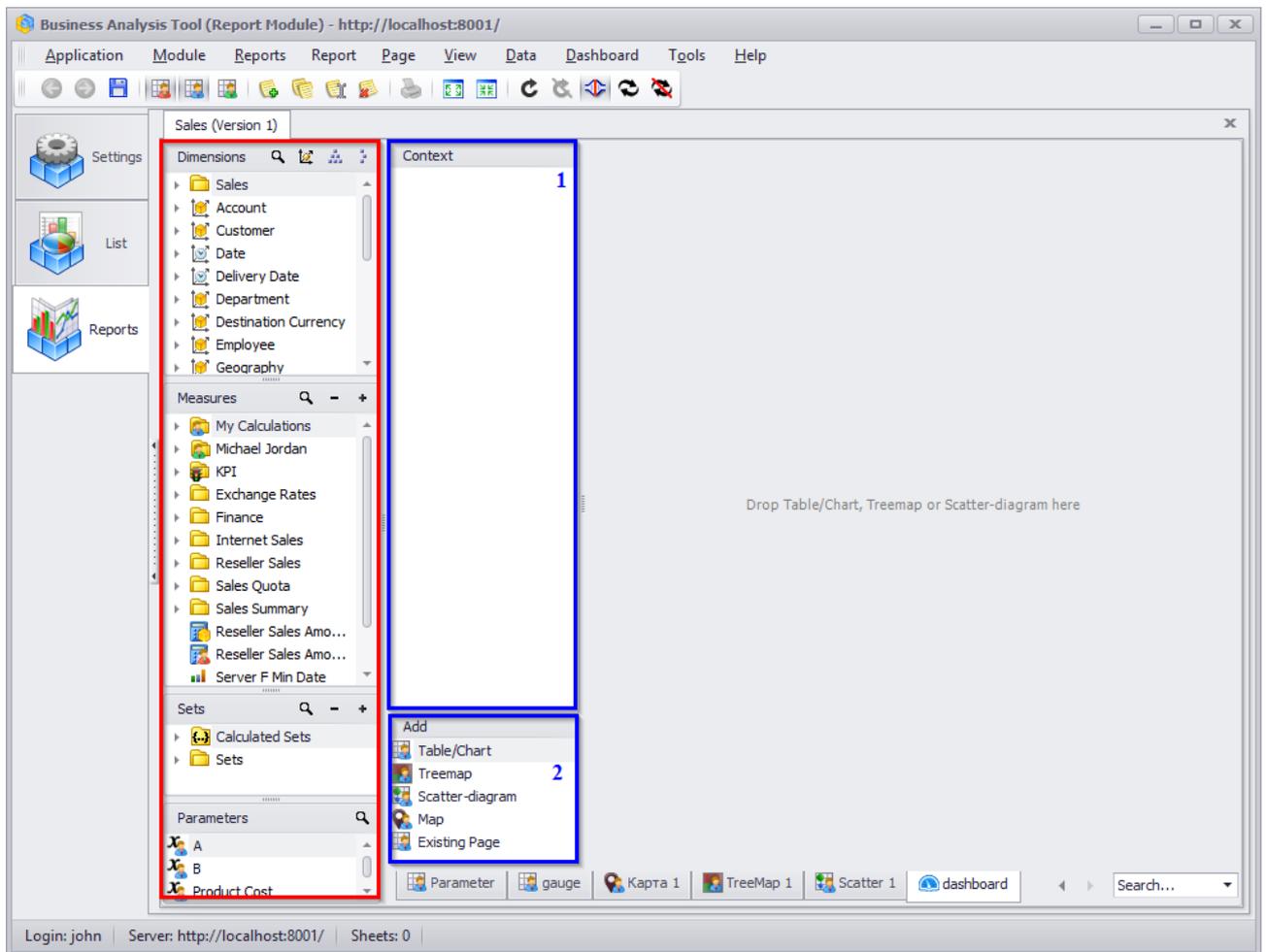
In the window below select the type “Dashboard” and enter its name:



Press «OK» and you will have an empty dashboard on your screen.

6.11.1 Designers

The structure of the dashboard is as following:



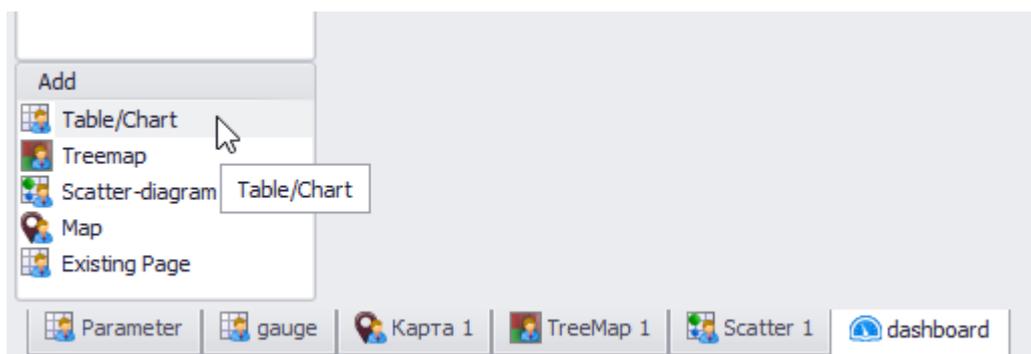
On the left side you can see dimensions and measures (marked with red rectangle). The editors are shown with blue rectangle:

1. Context editor does the same thing that the similar designer in the table, treemap, scatter diagram and map: it sets the context for all components of the dashboard.
2. Page editor: allows to set up the contents of the dashboard.

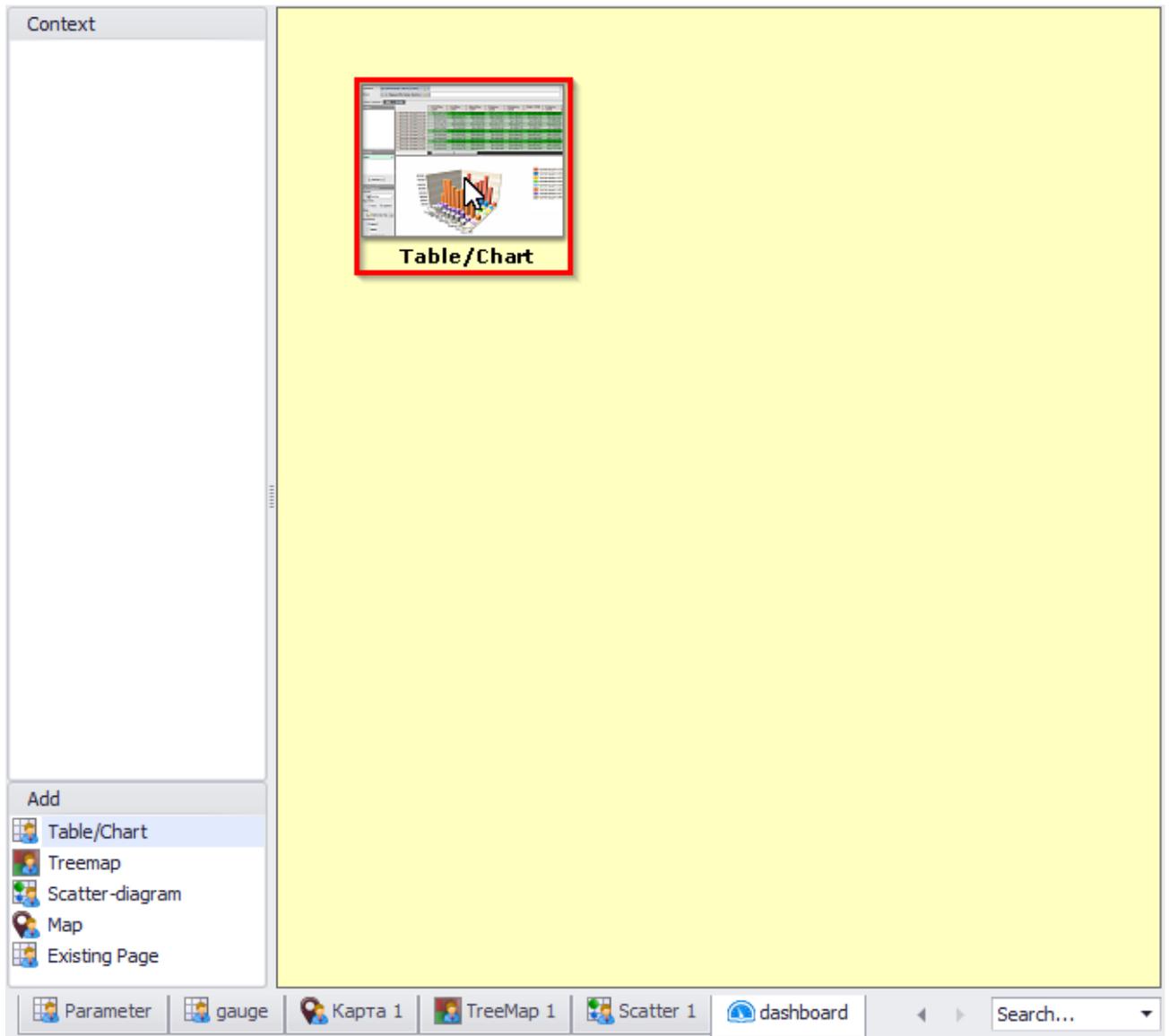
6.11.2 Building a Dashboard

There are two ways of how to build the dashboard:

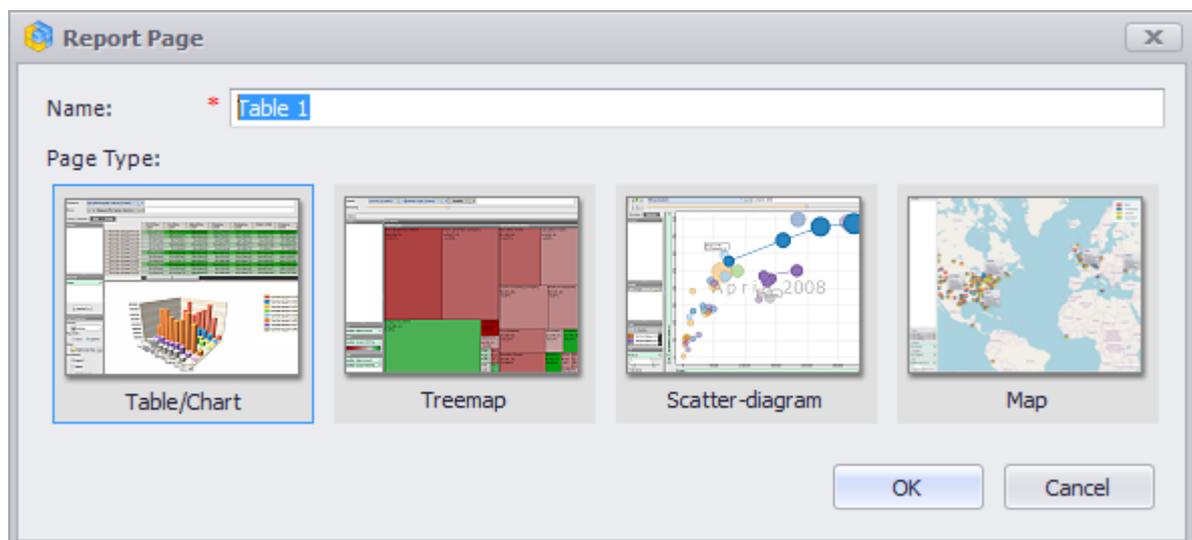
1. You can add new elements to it



Select the necessary type of the object and drag&drop to the dashboard area:



As a result you will get a familiar window where the table is already selected:



After you press «OK» you will have the table designer opened. Construct the following report:

Dashboard Designer - dashboard (Table 1)

Report View Data Table

Columns: - + Date/Date.Calendar

Rows: - + Product/Product Categories

Rows / Columns Filter Sorting

| Context | Product/Prod... | CY 2005 | CY 2006 | CY 2007 | CY 2008 |
|---------|-----------------|--------------|--------------|--------------|--------------|
| | Accessories | \$505.89 | \$2,318.40 | \$7,413.36 | \$4,044.88 |
| | Bikes | \$184,883.75 | \$498,900.48 | \$638,794.59 | \$334,981.23 |
| | Clothing | \$859.41 | \$12,139.72 | \$21,796.70 | \$9,650.38 |
| | Components | \$15,386.88 | \$90,252.35 | \$137,062.55 | \$52,275.37 |

Measures: Reseller Freight Cost

Sales | Version: 1 | Rows: 4 | Columns: 4 | Exec. Time: 00.1

Save and close it:

Dashboard Designer - dashboard (Table 1)

Report View Data Table

Dimensions: Destination Currency, Employee, Geography, Internet Sales Ord..., Organization, Product

Columns: - + Date/Date.Calendar

Rows: - + Product/Product Categories

| Context | Product/Prod... | CY 2005 | CY 2006 |
|---------|-----------------|--------------|--------------|
| | Accessories | \$505.89 | \$2,318.40 |
| | Bikes | \$184,883.75 | \$498,900.48 |

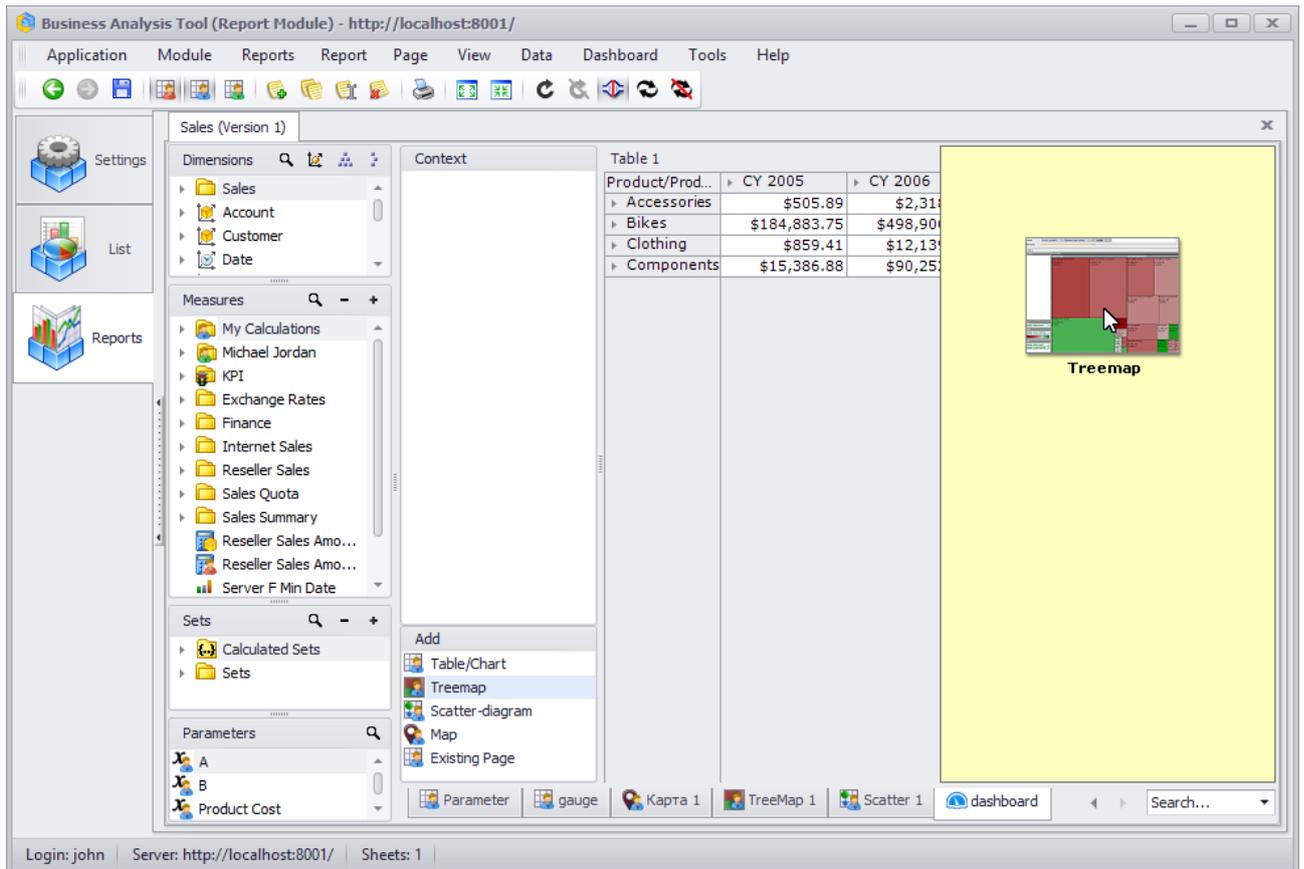
As a result, on the dashboard page you will see the constructed table:

The screenshot shows the Business Analysis Tool (Report Module) interface. The main window displays a dashboard with a table titled "Table 1" showing sales data for various product categories from 2005 to 2008. The interface includes a menu bar, a toolbar, and several panels for configuring the report, such as Dimensions, Measures, Sets, and Parameters.

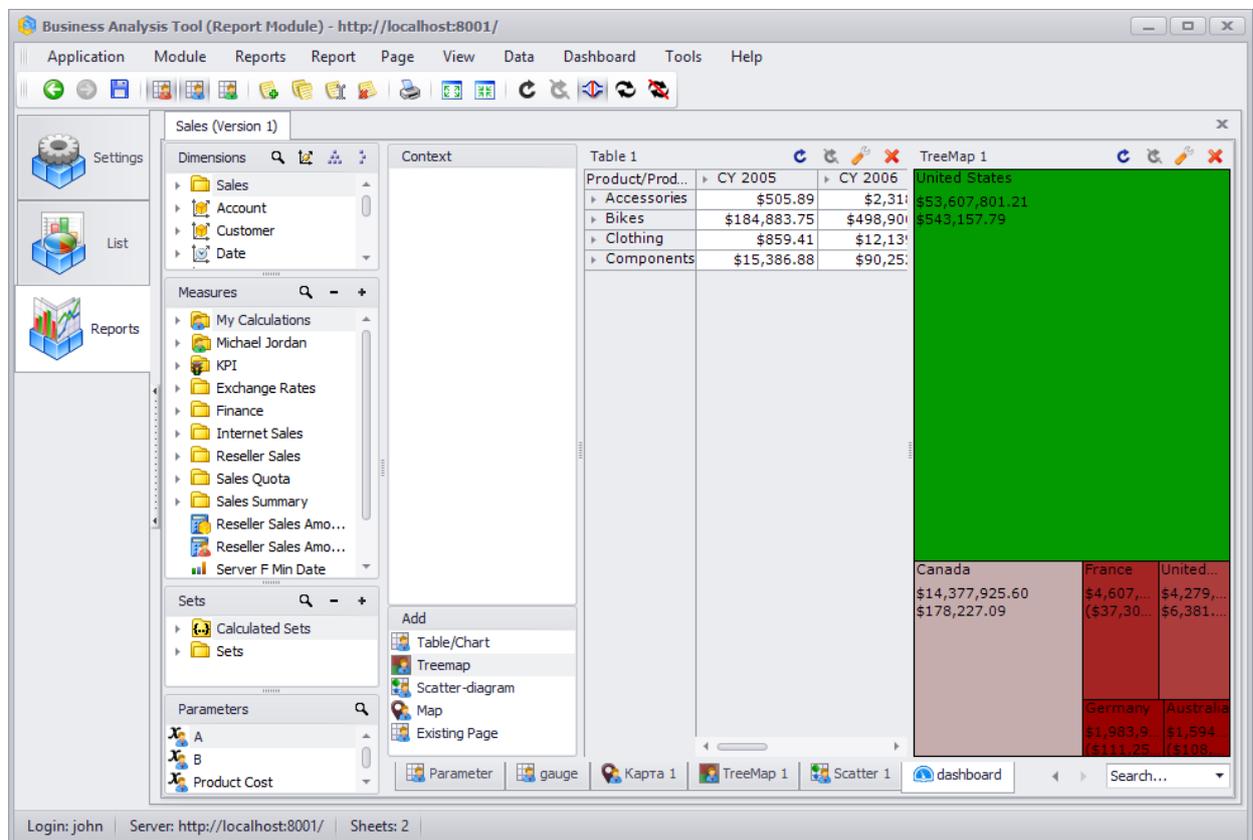
| Product/Prod... | CY 2005 | CY 2006 | CY 2007 | CY 2008 |
|-----------------|--------------|--------------|--------------|--------------|
| Accessories | \$505.89 | \$2,318.40 | \$7,413.36 | \$4,044.88 |
| Bikes | \$184,883.75 | \$498,900.48 | \$638,794.59 | \$334,981.23 |
| Clothing | \$859.41 | \$12,139.72 | \$21,796.70 | \$9,650.38 |
| Components | \$15,386.88 | \$90,252.35 | \$137,062.55 | \$52,275.37 |

At the bottom of the dashboard, there is a status bar showing "Login: john | Server: http://localhost:8001/ | Sheets: 1".

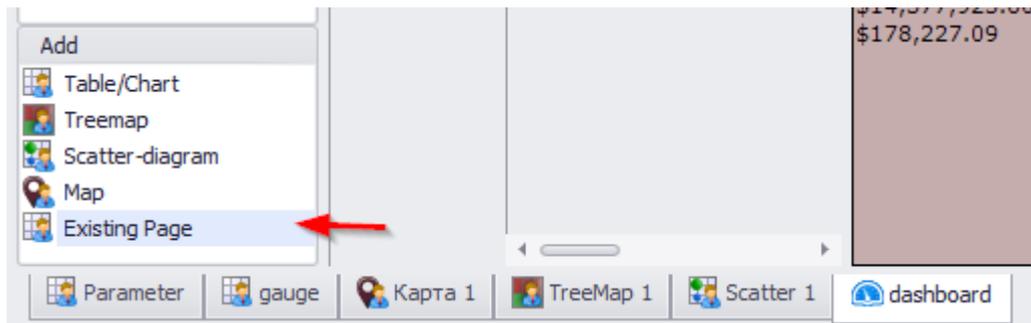
When we add objects to a dashboard, we can set up their future position. Let us add a treemap on the dashboard:



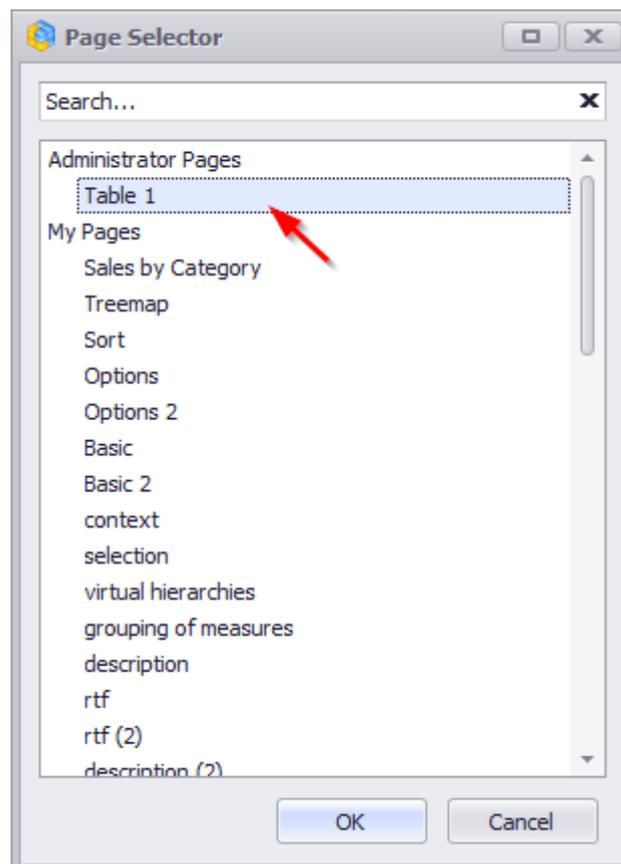
The area marked with yellow shows that the treemap will be located exactly in that area:



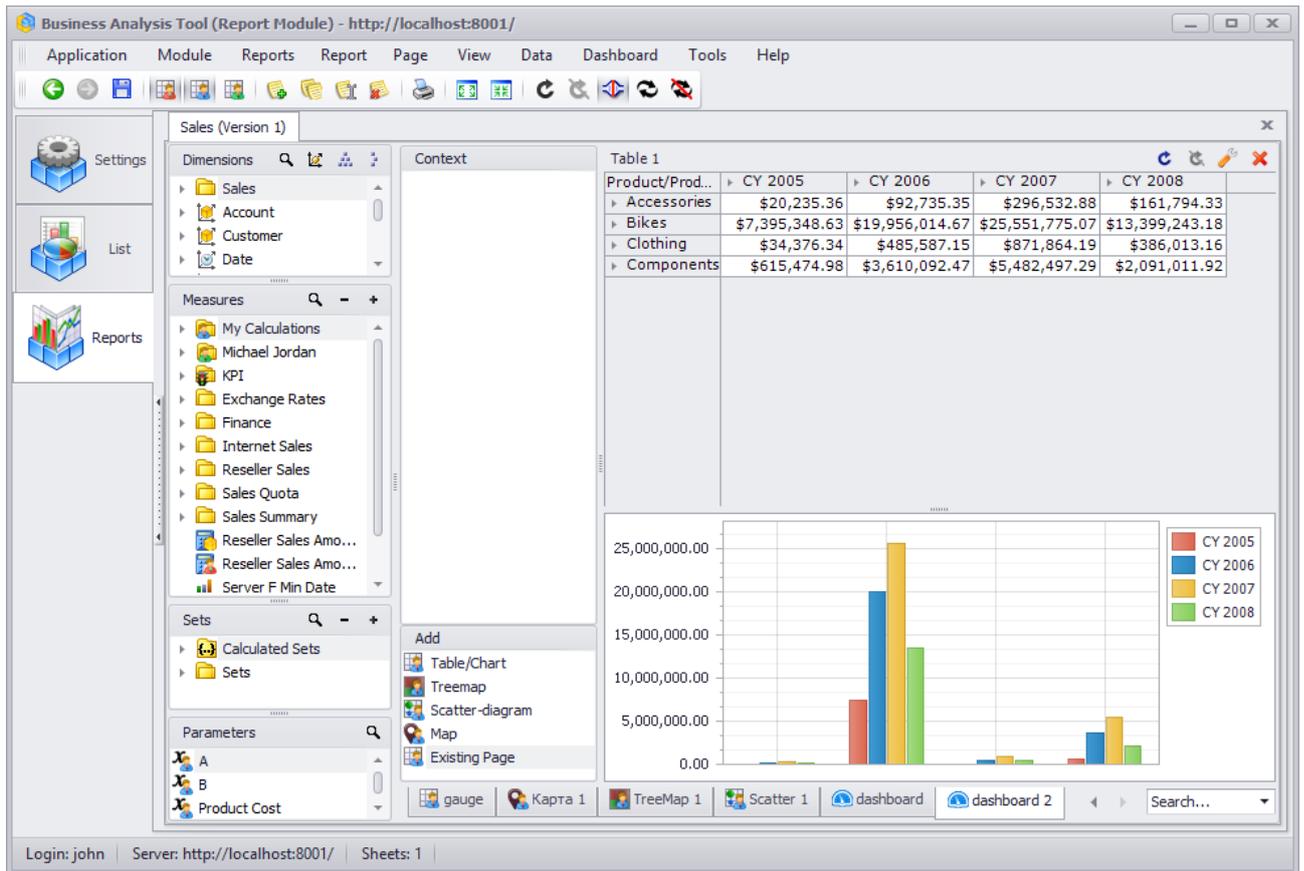
2. You can create new Dashboard objects using existing pages:
Select “Existing Page” as shown below and drop it on the dashboard area:



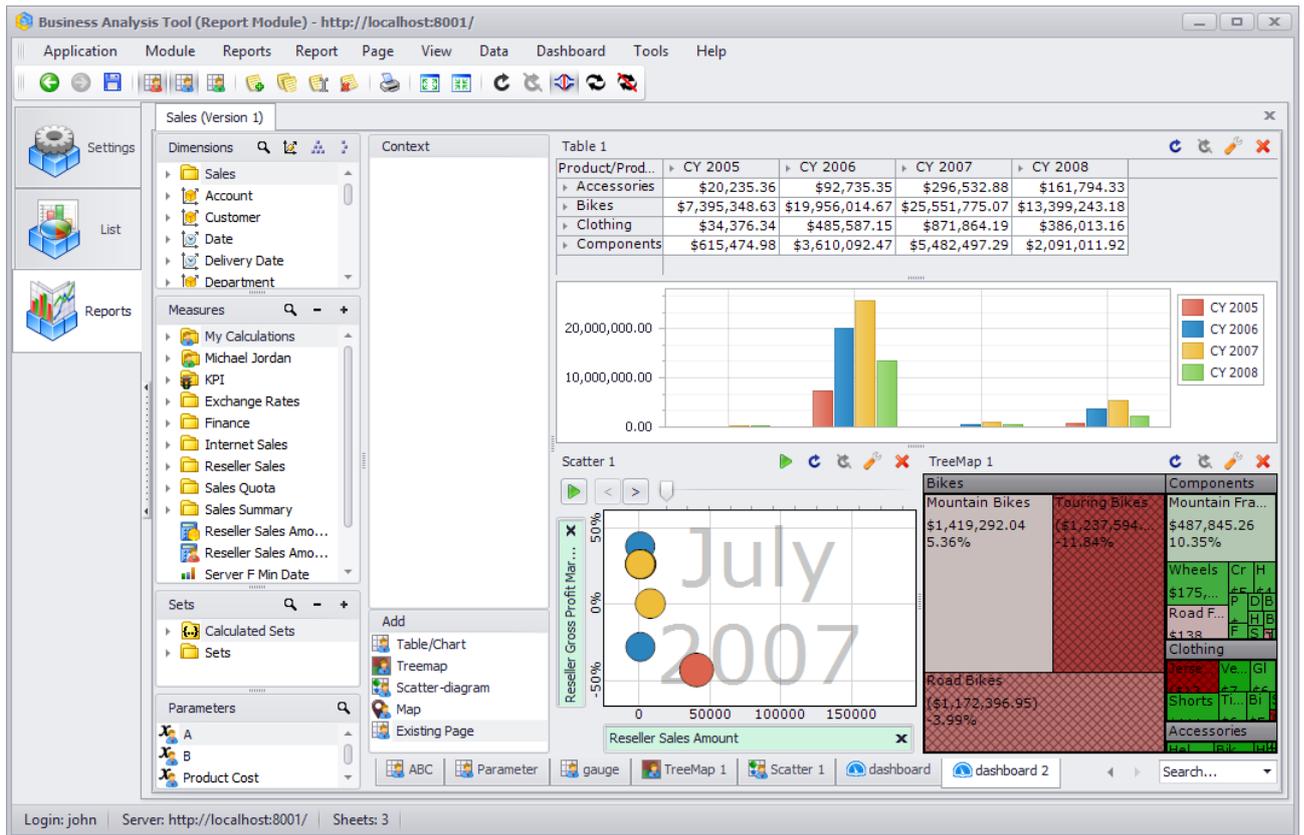
In the next dialog select one of existing pages:



We'll get the following dashboard:



One after another let us add a treemap and a scatter. After that we'll get this:



6.11.3 Navigation on the Dashboard

You can perform navigation on the dashboard and change it using the context menu:

The screenshot displays the Business Analysis Tool (Report Module) interface. The main dashboard area contains several visualizations: a table titled 'Table 1' showing sales data for CY 2005, CY 2006, and CY 2007; a bar chart showing sales amounts; a scatter plot titled 'Scatter 1' showing 'Reseller Gross Profit Mar...' vs 'Reseller Sales Amount'; and a treemap showing a hierarchical view of sales data. A context menu is open over the treemap, listing various actions such as 'Drill by', 'Drill by on New Page', 'Drill Up', 'Drill Down', 'Hide Item', 'Keep Only This', 'Hide Siblings', 'Show Siblings', 'Drill Through...', 'Actions', 'Highlight...', 'Formatting...', 'Export to NRP...', 'Export to PDF...', and 'Export to PNG...'. The interface also includes a left sidebar with 'Settings', 'List', and 'Reports' sections, and a top menu bar with 'Application', 'Module', 'Reports', 'Report', 'Page', 'View', 'Data', 'Dashboard', 'Tools', and 'Help'.

| Product/Prod... | CY 2005 | CY 2006 | CY 2007 |
|-----------------|----------------|-----------------|---------------|
| Accessories | \$20,235.36 | \$92,735.35 | \$296,5... |
| Bikes | \$7,395,348.63 | \$19,956,014.67 | \$25,551,7... |
| Clothing | \$34,376.34 | \$485,587.15 | \$871,8... |
| Components | \$615,474.98 | \$3,610,092.47 | \$5,482,4... |

All these options of the context menu were earlier described in this manual.

You can edit every component of the dashboard separately by pressing the following button



Context

Table 1

| Product/Prod... | CY 2005 | CY 2006 | CY 2007 | CY 2008 |
|-----------------|----------------|-----------------|-----------------|-----------------|
| Accessories | \$20,235.36 | \$92,735.35 | \$296,532.88 | \$161,794.33 |
| Bikes | \$7,395,348.63 | \$19,956,014.67 | \$25,551,775.07 | \$13,399,243.18 |
| Clothing | \$34,376.34 | \$485,587.15 | \$871,864.19 | \$386,013.16 |
| Components | \$615,474.98 | \$3,610,092.47 | \$5,482,497.29 | \$2,091,011.92 |

Bar chart showing sales for CY 2005 (red), CY 2006 (blue), CY 2007 (yellow), and CY 2008 (green). The Y-axis ranges from 0.00 to 20,000,000.00. A red arrow points to the edit icon in the top right corner of the chart area.

Scatter 1

Reseller Gross Profit Mar... (Y-axis)

Reseller Sales Amount (X-axis)

July 2007

TreeMap 1

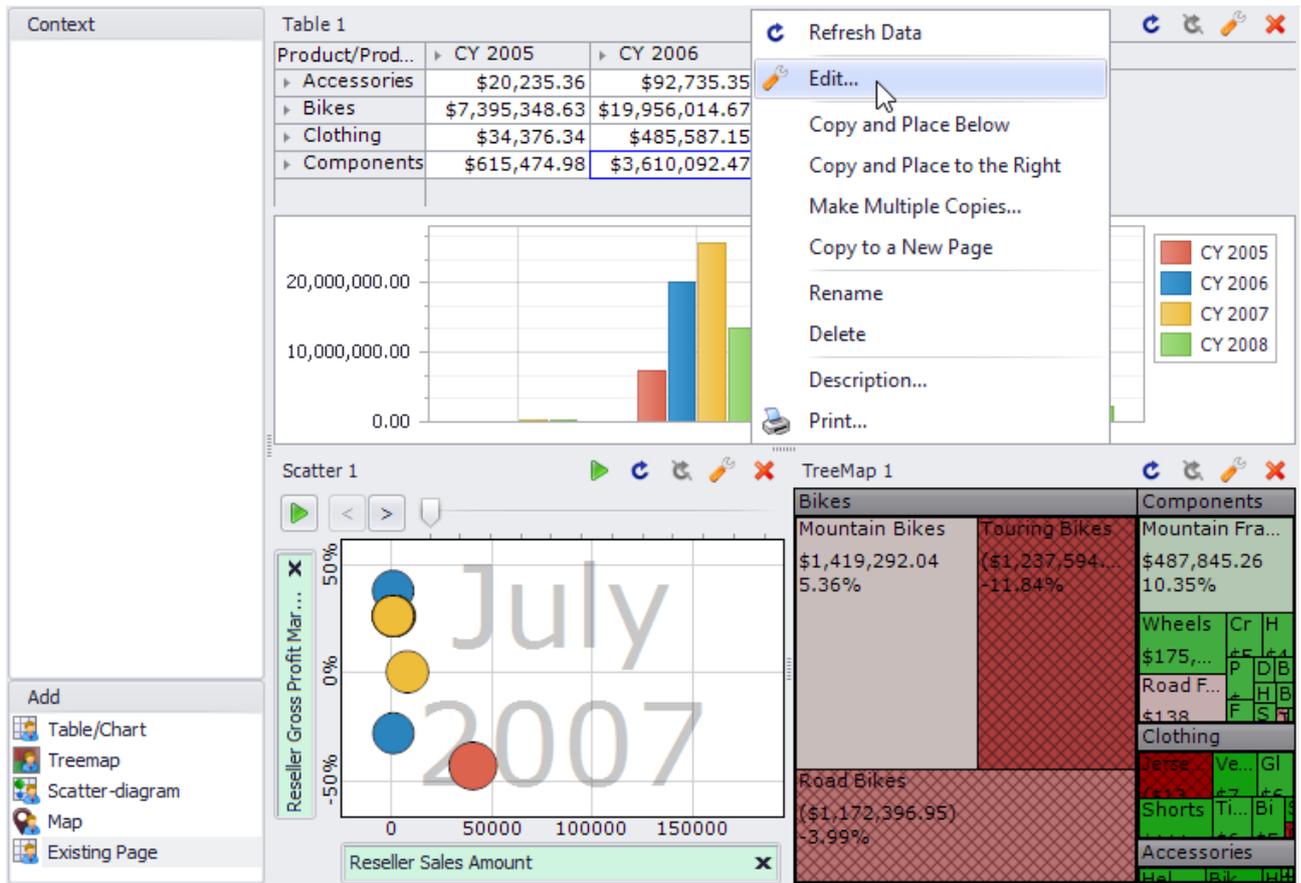
| Bikes | | Components |
|-------------------------|----------------------------|------------------------|
| Mountain Bikes | Touring Bikes | Mountain Fra... |
| \$1,419,292.04 5.36% | (\$1,237,594... -11.84% | \$487,845.26 10.35% |
| | | Wheels Cr H |
| | | \$175,... |
| | | Road F... H B |
| | | \$138 F S F |
| | | Clothing |
| | | Jerse... ve... GI |
| | | Shorts Ti... Bi S |
| | | Accessories |
| | | Hel... Ed... I... |

TreeMap 1 showing hierarchical data for Bikes and Components. A red arrow points to the edit icon in the top right corner of the treemap area.

Add

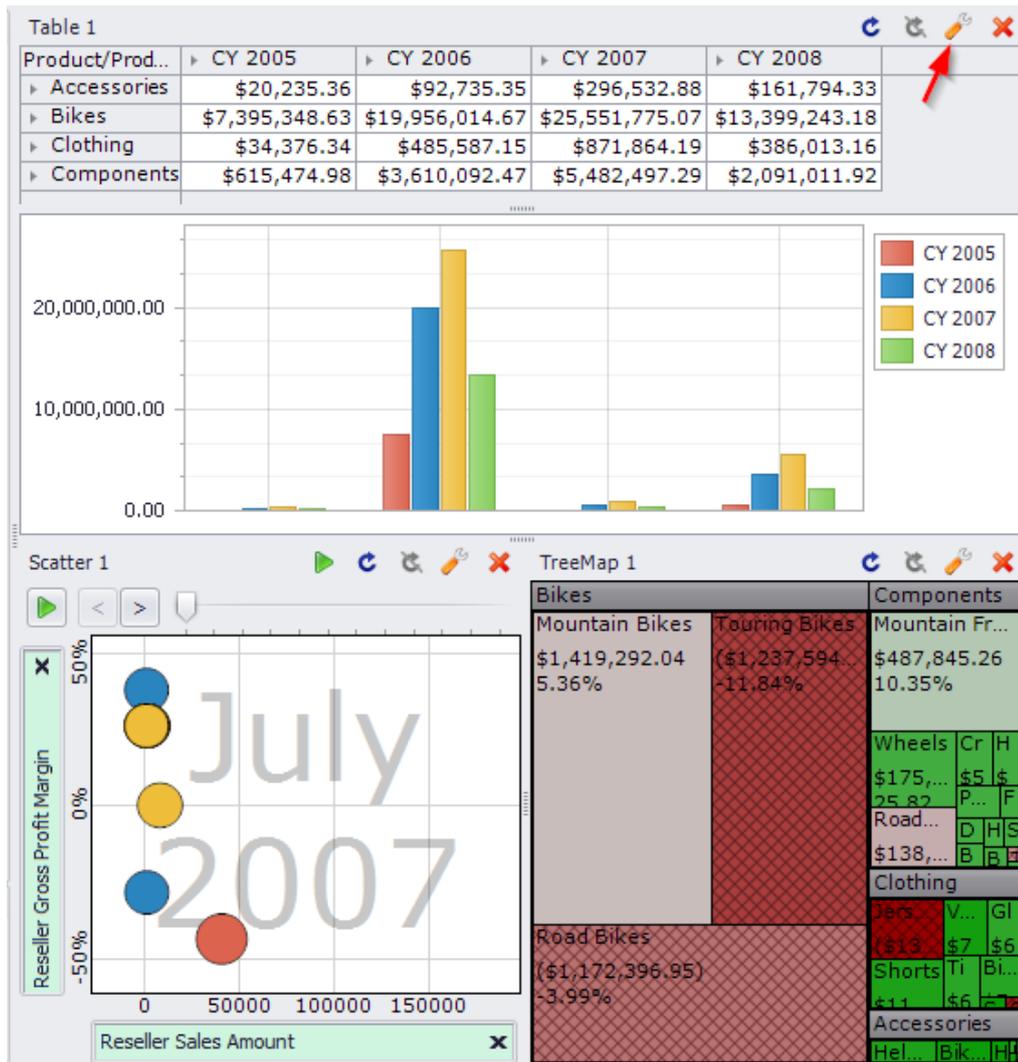
- Table/Chart
- Treemap
- Scatter-diagram
- Map
- Existing Page

There is a context menu with the “Edit” item on the header of the component:

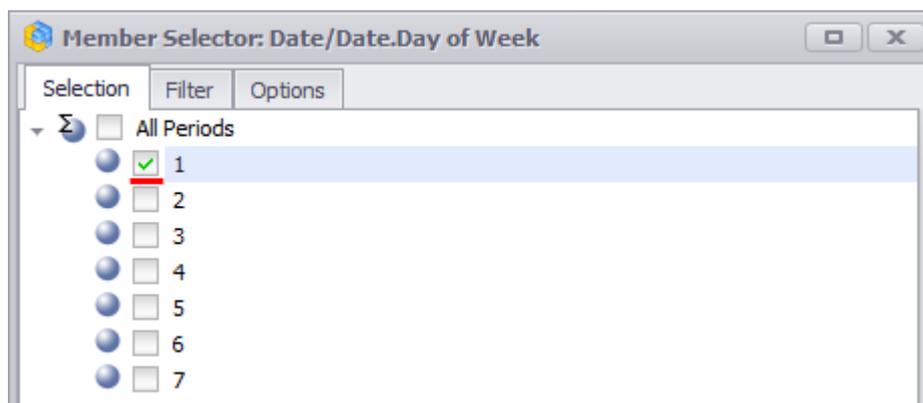


This context menu has a set of other actions, for example “Make Multiple Copies”. Let us look more closely at this action.

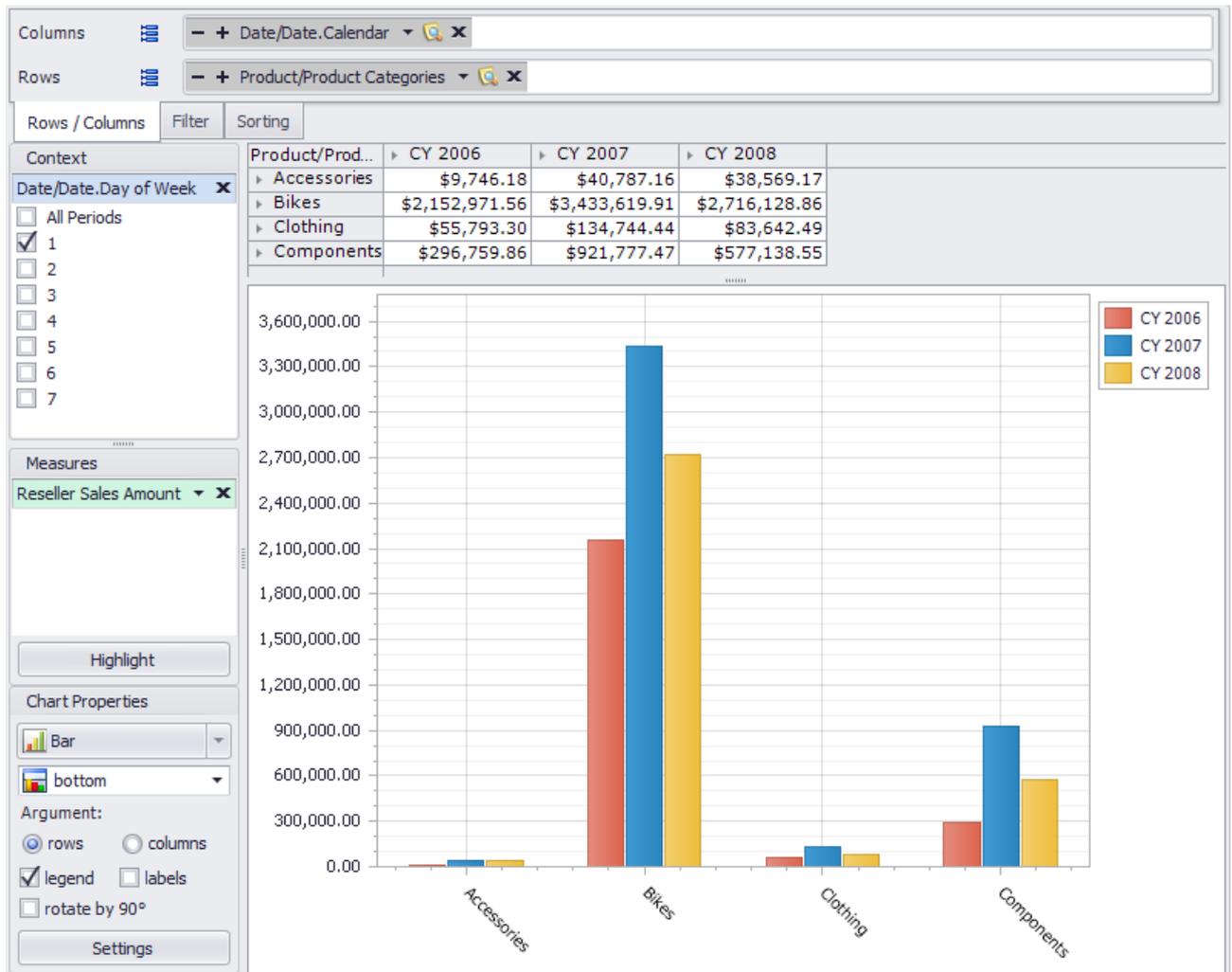
Let us assume that we're interested in getting sales by days of the week. Let us edit the following component:



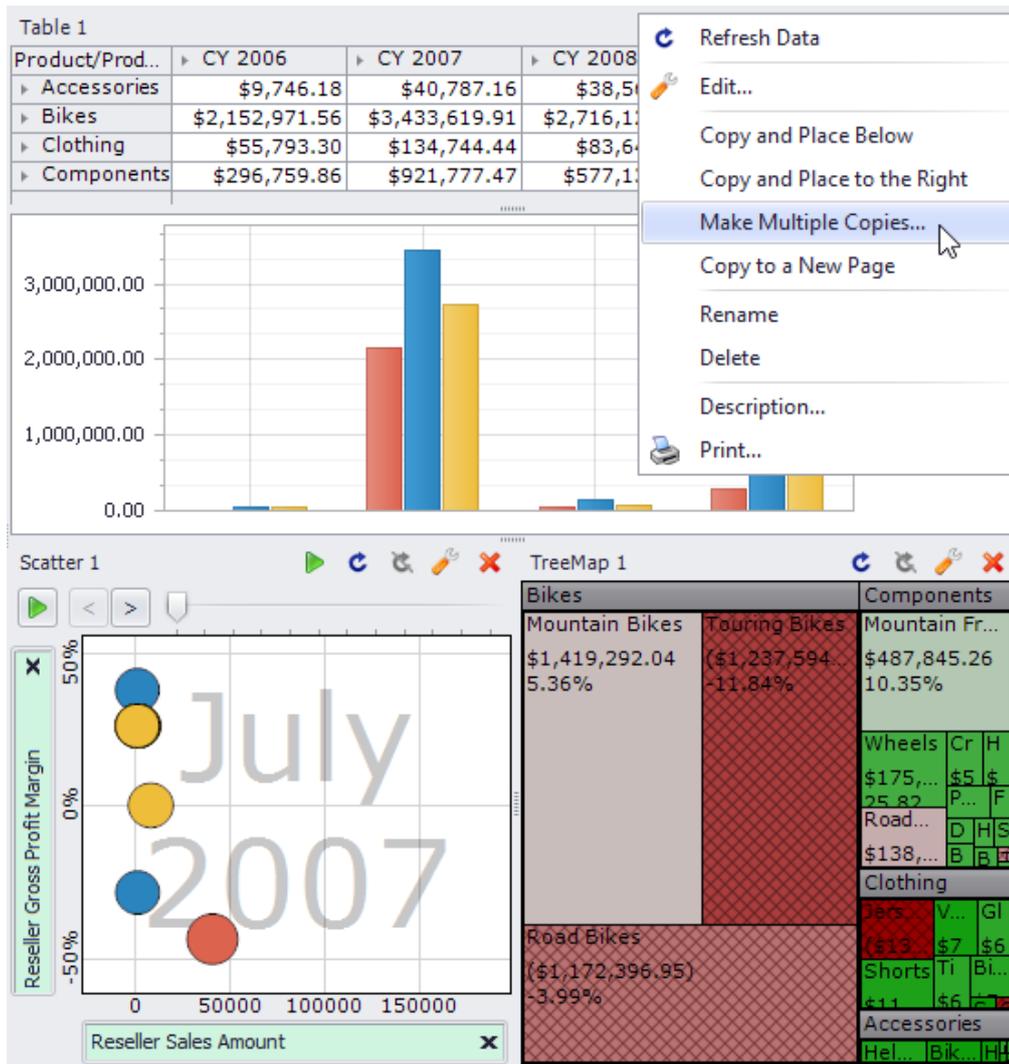
In the designer for this component put the “Date.Day of Week” into context and select the first day of the week:



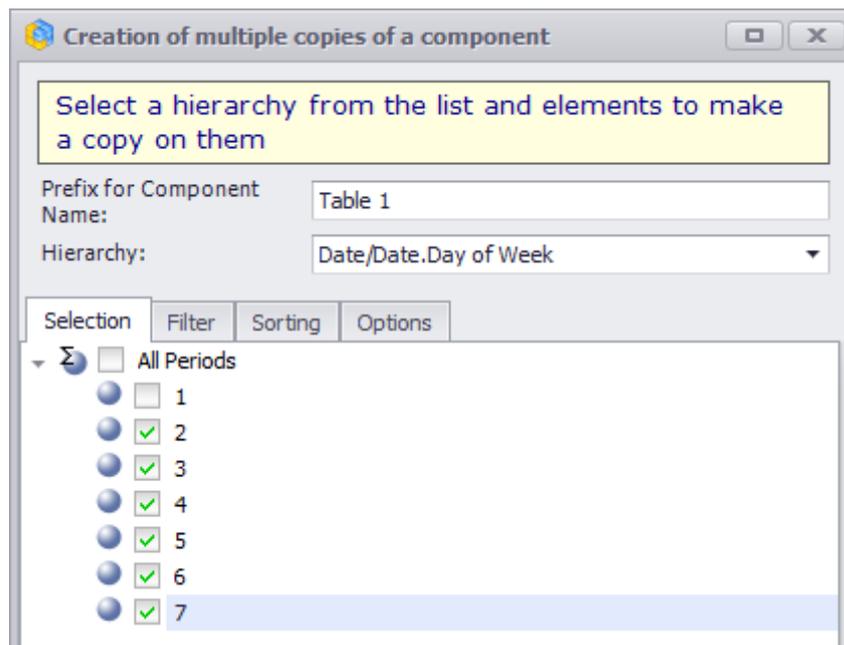
As a result we'll get the following report:



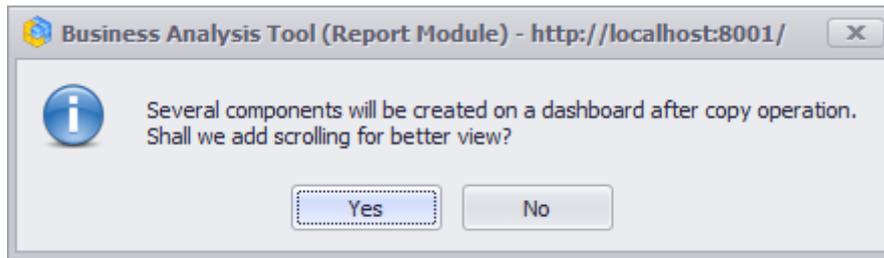
Save this component and close it. Now let us create several components based on that:



In the member selector window select all the rest days of the week:



As a result we'll get this warning:



Pressing «Yes» will add a scrolling to the dashboard. The dashboard will look like this:

Business Analysis Tool (Report Module) - http://localhost:8001/

Application Module Reports Report Page View Data Dashboard Tools Help

Sales (Version 1)

Dimensions: Sales, Account, Customer, Date, Delivery Date, Department

Measures: My Calculations, Michael Jordan, KPI, Exchange Rates, Finance, Internet Sales, Reseller Sales, Sales Quota, Sales Summary, Reseller Sales Amo..., Reseller Sales Amo..., Server F Min Date

Sets: Calculated Sets, Sets

Parameters: A, B, Product Cost

Table 1

| Product/Prod... | CY 2006 | CY 2007 | CY 2008 |
|-----------------|----------------|----------------|----------------|
| Accessories | \$9,746.18 | \$40,787.16 | \$38,569.17 |
| Bikes | \$2,152,971.56 | \$3,433,619.91 | \$2,716,128.86 |
| Clothing | \$55,793.30 | \$134,744.44 | \$83,642.49 |
| Components | \$296,759.86 | \$921,777.47 | \$577,138.55 |

Table 2

| Product/Prod... | CY 2005 | CY 2006 | CY 2007 | CY 2008 |
|-----------------|----------------|----------------|----------------|------------|
| Accessories | \$3,593.20 | \$5,577.84 | \$33,720.56 | \$41.99 |
| Bikes | \$1,413,253.52 | \$2,082,726.08 | \$3,045,659.48 | |
| Clothing | \$7,038.58 | \$9,487.17 | \$98,212.74 | |
| Components | \$114,523.02 | \$171,325.62 | \$422,064.92 | \$2,141.39 |

Chart 1: Bar chart showing sales for CY 2006, CY 2007, and CY 2008 across product categories.

Chart 2: Bar chart showing sales for CY 2005, CY 2006, CY 2007, and CY 2008 across product categories.

Dashboard components: ABC, Parameter, gauge, TreeMap 1, Scatter 1, dashboard, dashboard 2

Login: john | Server: http://localhost:8001/ | Sheets: 9

6.11.4 Exporting a Dashboard

You can save the dashboard as a picture in PNG format. Select the menu item “Export to PNG...” from the context menu or from the main menu “Dashboard”:

The screenshot shows the Business Analysis Tool (Report Module) interface. The main window displays a dashboard with a table and two bar charts. A context menu is open over the top chart, showing options: Scrolling, Report Page Description..., Export to NRP..., Export to Excel..., Export to PDF..., Export to PNG..., and Print... The 'Export to PNG...' option is highlighted by the mouse cursor.

The dashboard content includes:

- Table 1:** A table with columns for CY 2007 and CY 2008. The data is as follows:

| | CY 2007 | CY 2008 |
|----|----------------|----------------|
| .8 | \$40,787.16 | \$38,569.17 |
| .6 | \$3,433,619.91 | \$2,716,128.86 |
| .0 | \$134,744.44 | \$83,642.49 |
| .6 | \$921,777.47 | \$577,138.55 |
- Table 12:** A table with columns for CY 2005, CY 2006, CY 2007, and CY 2008. The data is as follows:

| Product/Prod... | CY 2005 | CY 2006 | CY 2007 | CY 2008 |
|-----------------|----------------|----------------|----------------|------------|
| Accessories | \$3,593.20 | \$5,577.84 | \$33,720.56 | \$41.99 |
| Bikes | \$1,413,253.52 | \$2,082,726.08 | \$3,045,659.48 | |
| Clothing | \$7,038.58 | \$9,487.17 | \$98,212.74 | |
| Components | \$114,523.02 | \$171,325.62 | \$422,064.92 | \$2,141.39 |

The interface also shows a left sidebar with 'Sales (Version 1)' dimensions (Account, Customer, Date, Delivery Date, Department) and measures (My Calculations, Michael Jordan, KPI, Exchange Rates, Finance, Internet Sales, Reseller Sales, Sales Quota, Sales Summary, Reseller Sales Amo..., Reseller Sales Amo..., Server F Min Date). The bottom status bar shows 'Login: john', 'Server: http://localhost:8001/', and 'Sheets: 9'.

After that you have to select the file on the disk. You will get the image of the dashboard.

6.12 Shared Pages

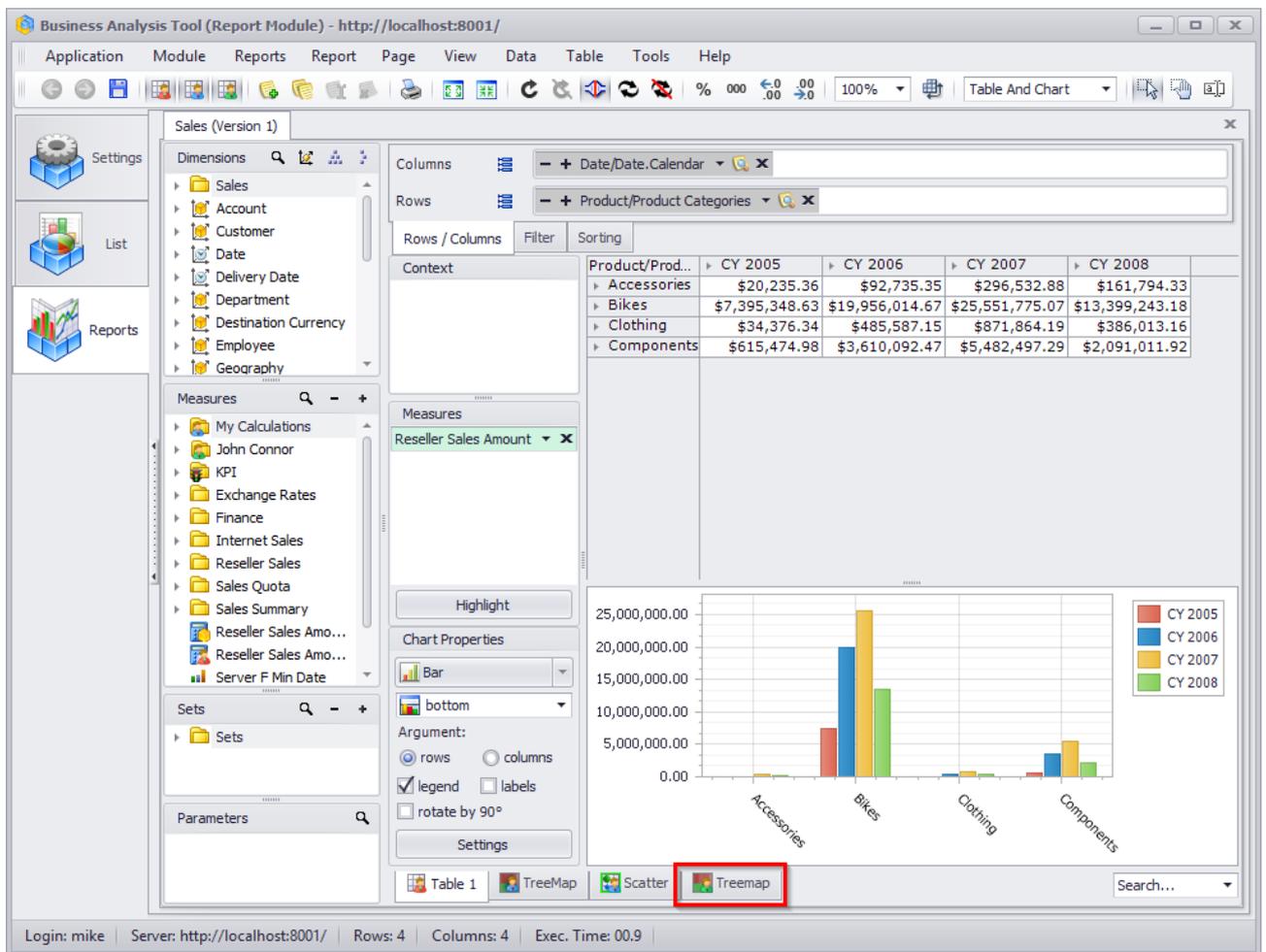
All the pages created by administrators, this user and other users have different icons:

The screenshot displays the Business Analysis Tool (Report Module) interface. The main window shows a data table with columns for Product/Prod... and years CY 2005, CY 2006, CY 2007, and CY 2008. The rows are categorized by Product/Prod...: Accessories, Bikes, Clothing, and Components. A bar chart below the table visualizes the data for Bikes, showing sales for CY 2005, CY 2006, CY 2007, and CY 2008. The chart shows a significant increase in sales for Bikes in CY 2007 compared to previous years.

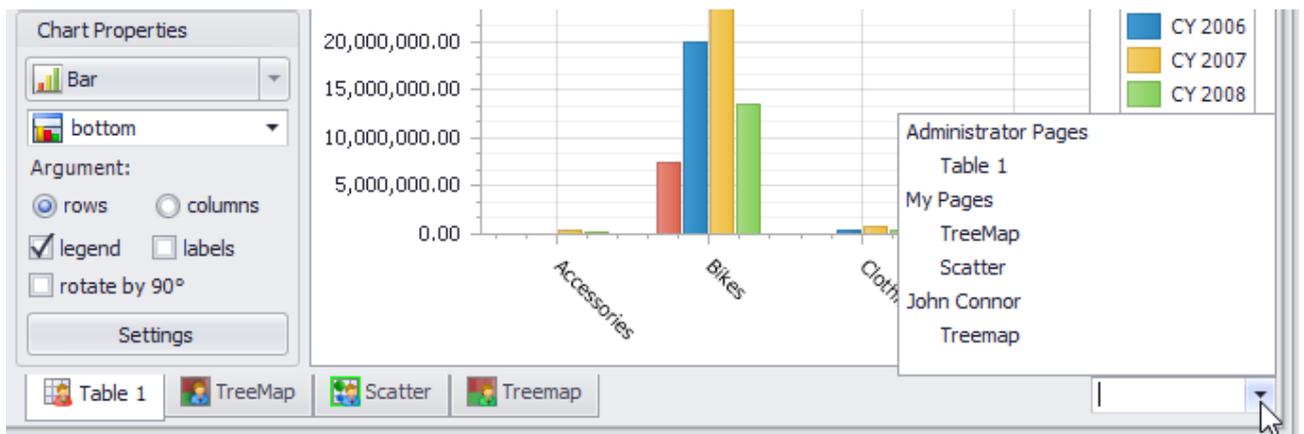
| Product/Prod... | CY 2005 | CY 2006 | CY 2007 | CY 2008 |
|-----------------|----------------|-----------------|-----------------|-----------------|
| Accessories | \$20,235.36 | \$92,735.35 | \$296,532.88 | \$161,794.33 |
| Bikes | \$7,395,348.63 | \$19,956,014.67 | \$25,551,775.07 | \$13,399,243.18 |
| Clothing | \$34,376.34 | \$485,587.15 | \$871,864.19 | \$386,013.16 |
| Components | \$615,474.98 | \$3,610,092.47 | \$5,482,497.29 | \$2,091,011.92 |

The interface also includes a left sidebar with navigation options (Settings, List, Reports), a top menu bar (Application, Module, Reports, Report, Page, View, Data, Table, Tools, Help), and a bottom status bar showing login information (Login: mike), server address (Server: http://localhost:8001/), and execution time (Exec. Time: 00.9).

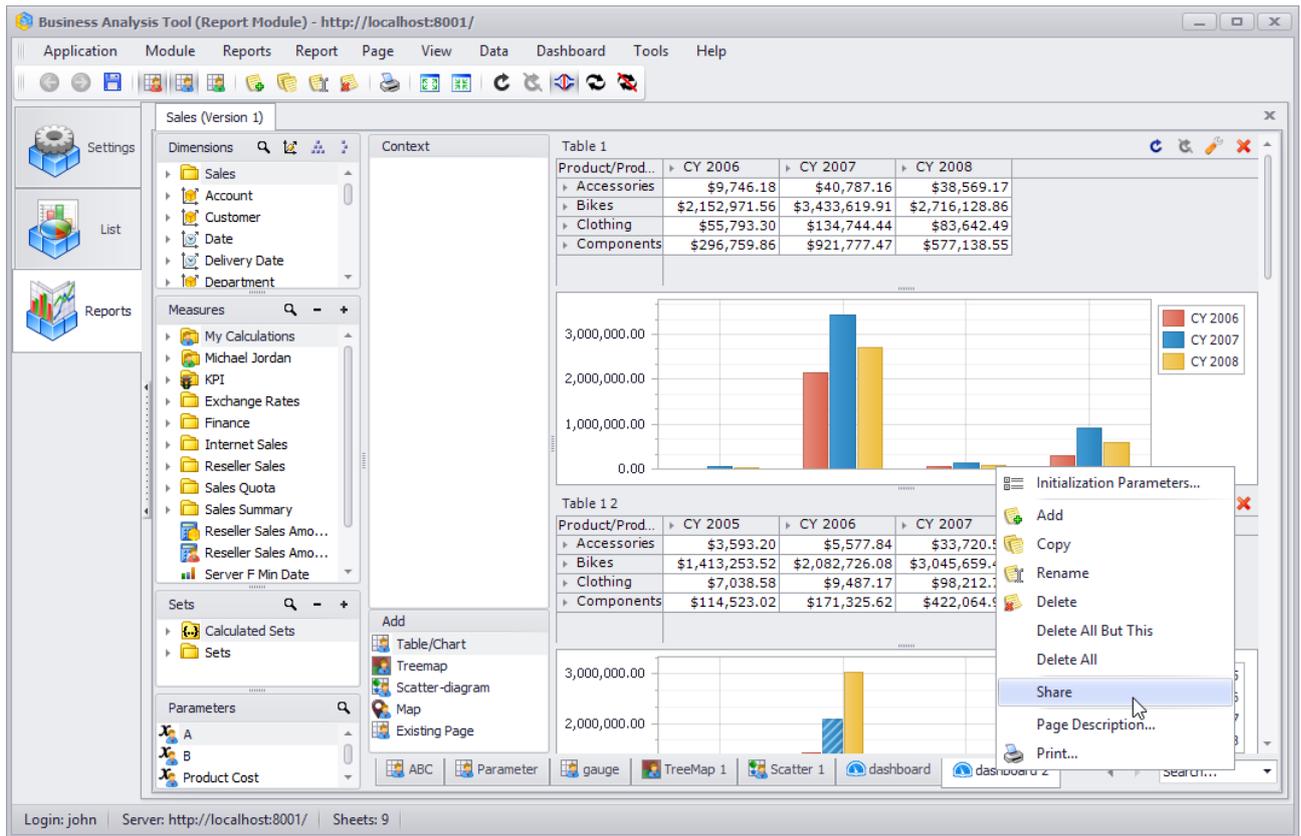
Users can share their pages with other users. In order to share a page, press the right mouse button on the page and select the appropriate menu item. Other users and administrators will see this page with green icon:



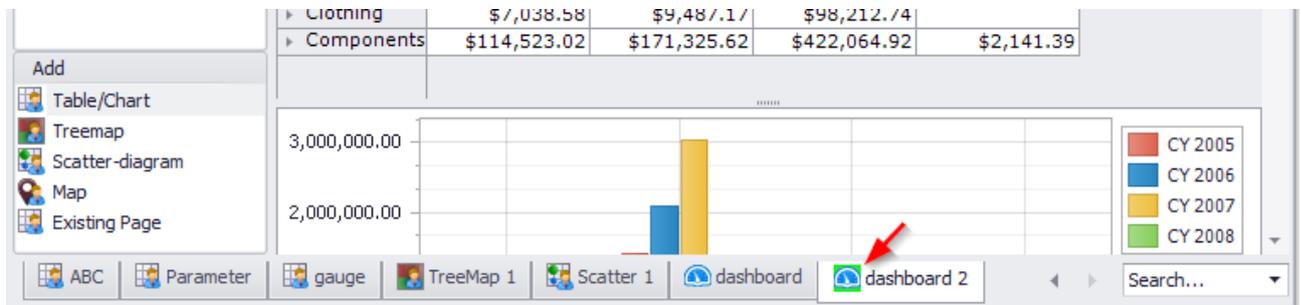
If you click in the “Search” bar, you will be able to see who is the owner of the page:



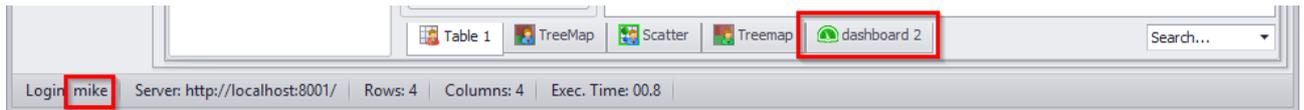
Let us look at the example of sharing a page. User John opens a report. He opens the context menu and selects “Share”:



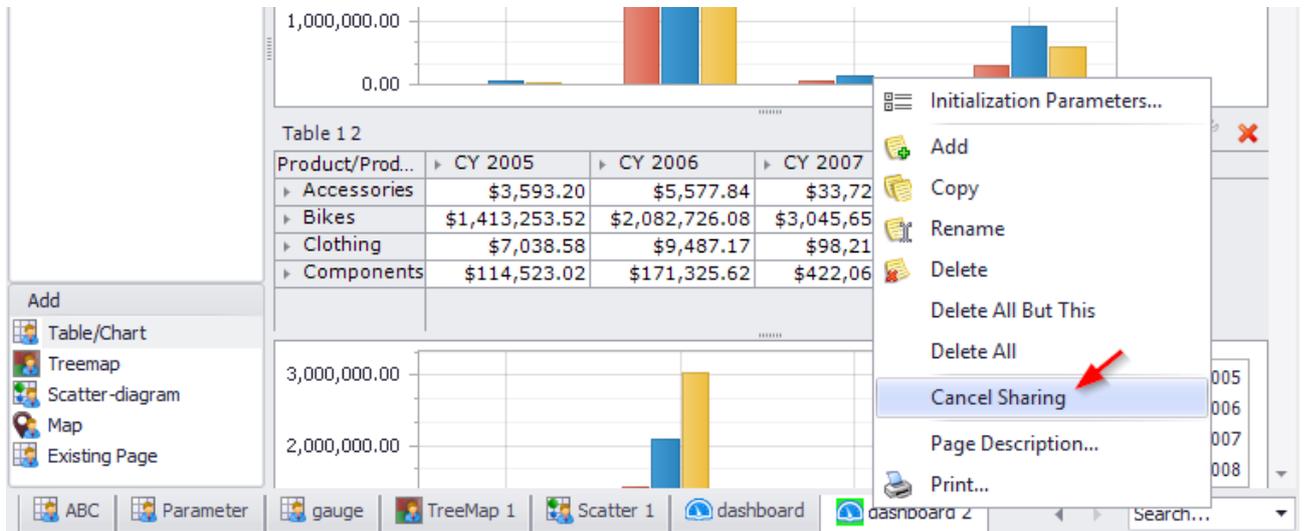
The page will look like this:



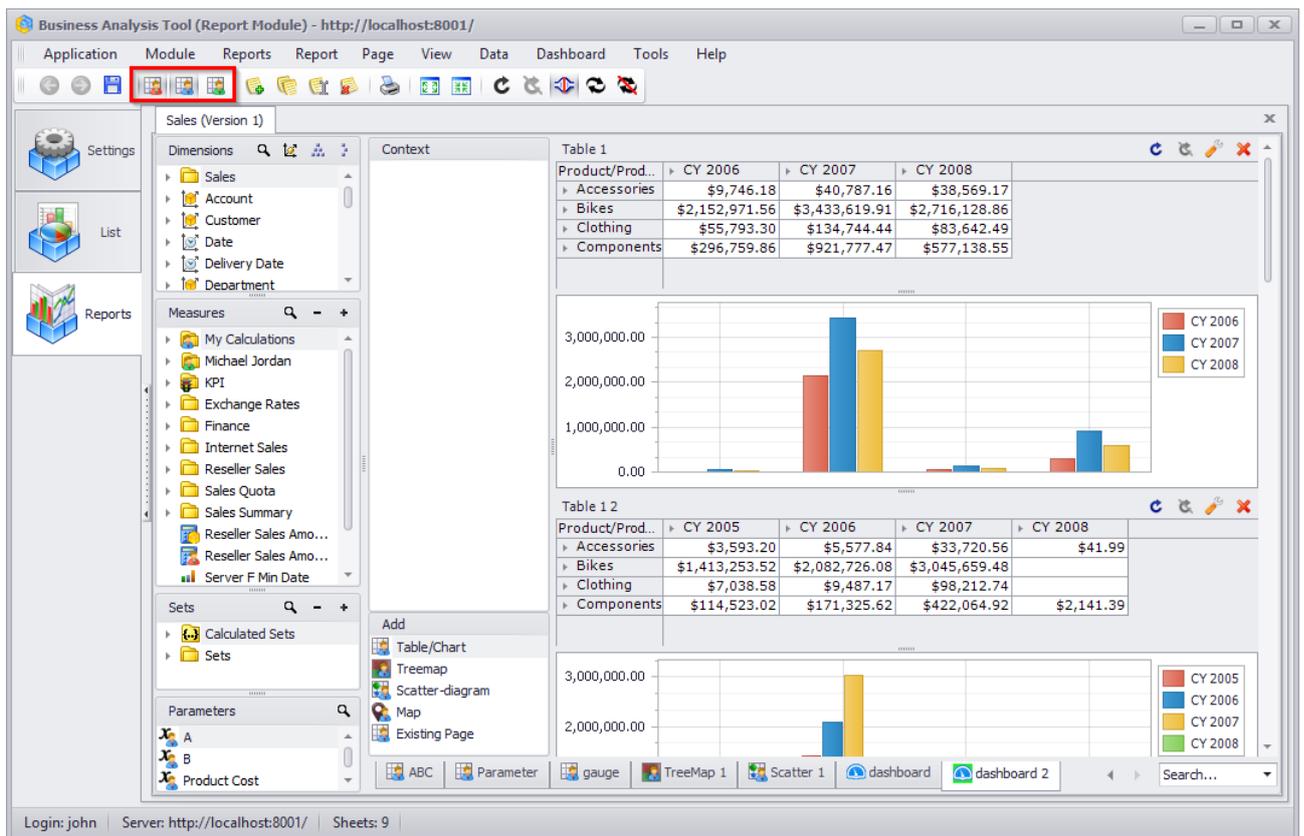
When the user Mike opens the same report, he will see this:



Shared access can be removed at any time by choosing the “Cancel Sharing” menu item:



You can select which type of the pages to look at:

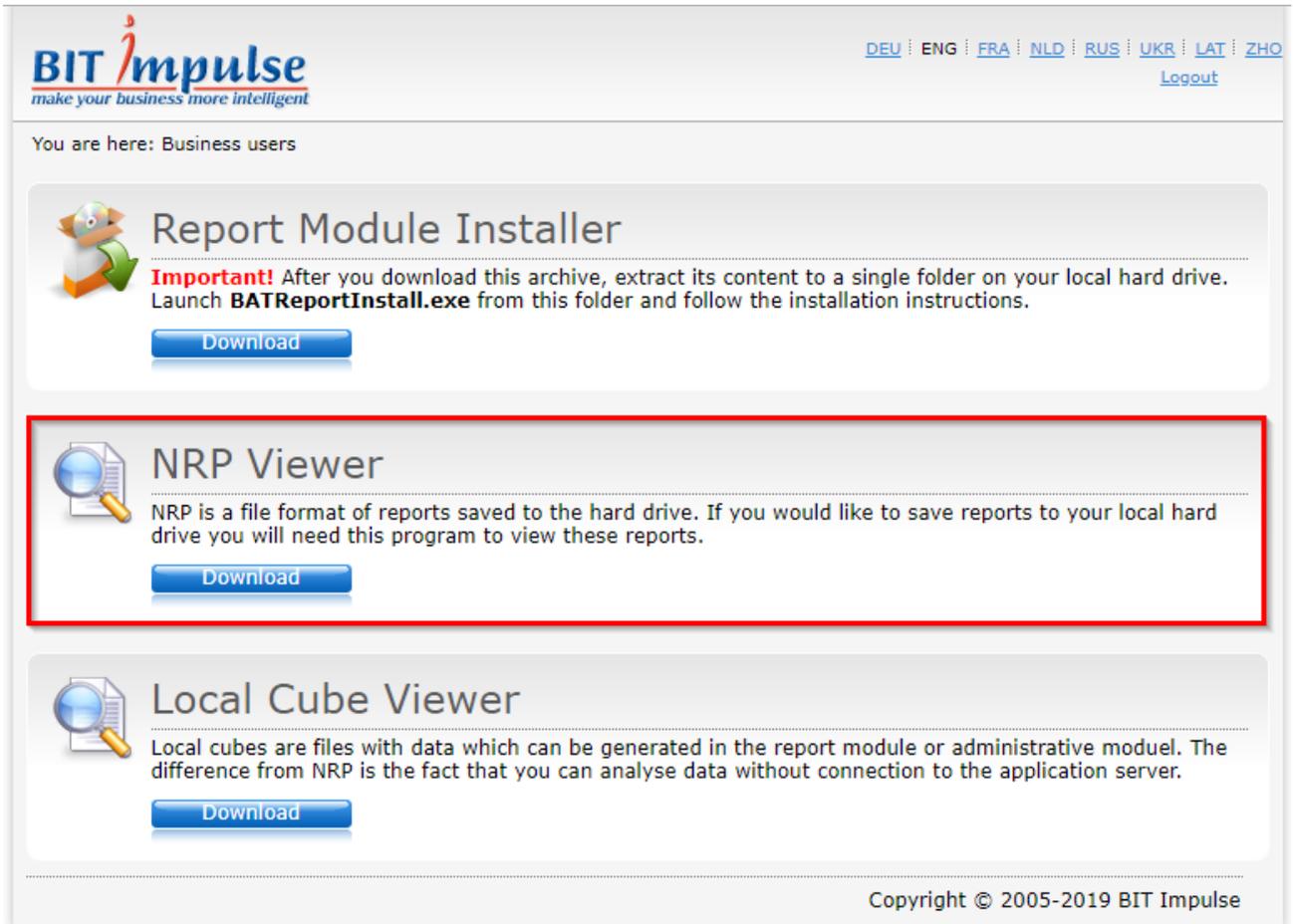


7 Broadcasting Reports by Mail

After you create your report in BAT you will have the ability to set up the automatic broadcasting of those reports to the users' e-mails. Users will receive the reports in the special NRP format.

7.1 NRP files

NRP is the file format, developed for compact and safe storing of reports. There is a special NRP-files viewer, which you can find at the Business Analysis Tool web portal:



The screenshot shows the BIT Impulse web portal interface. At the top left is the logo "BIT Impulse" with the tagline "make your business more intelligent". At the top right are language links: DEU, ENG, FRA, NLD, RUS, UKR, LAT, ZHO, and a Logout link. Below the header, it says "You are here: Business users". The main content area has three sections, each with an icon, a title, a description, and a "Download" button. The "NRP Viewer" section is highlighted with a red border. The "Local Cube Viewer" section is also visible. At the bottom right, there is a copyright notice: "Copyright © 2005-2019 BIT Impulse".

Report Module Installer
Important! After you download this archive, extract its content to a single folder on your local hard drive. Launch **BATReportInstall.exe** from this folder and follow the installation instructions.
[Download](#)

NRP Viewer
NRP is a file format of reports saved to the hard drive. If you would like to save reports to your local hard drive you will need this program to view these reports.
[Download](#)

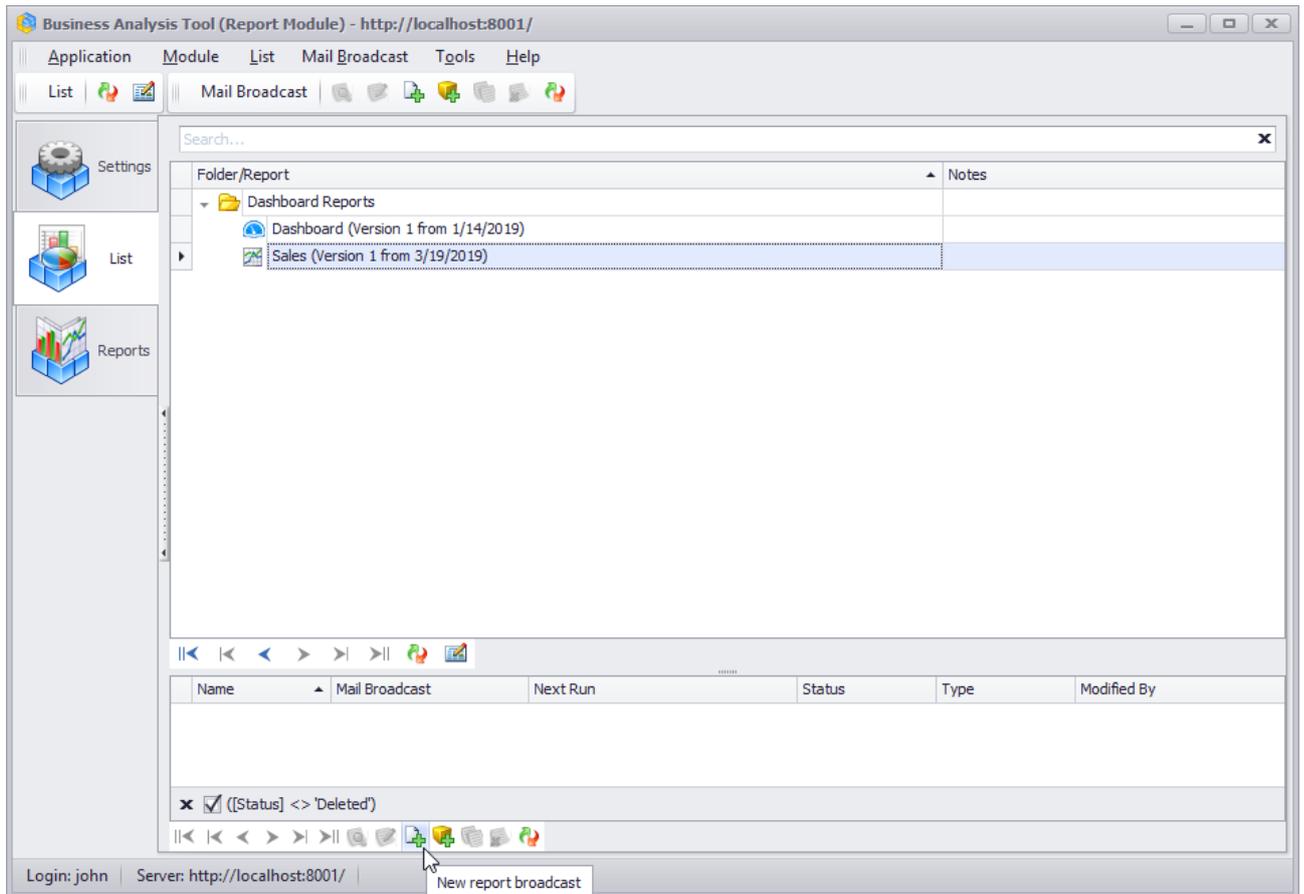
Local Cube Viewer
Local cubes are files with data which can be generated in the report module or administrative moduel. The difference from NRP is the fact that you can analyse data without connection to the application server.
[Download](#)

Copyright © 2005-2019 BIT Impulse

After downloading and installing the viewer you will be able to view NRP-files the same way as you do it with PDF, DOC and other types of files.

7.2 Setting Up the Mail Broadcast

Switch to the “List” tab and select the report for which you would like to set up a mail broadcast. Now press the “New Report Broadcast” button:



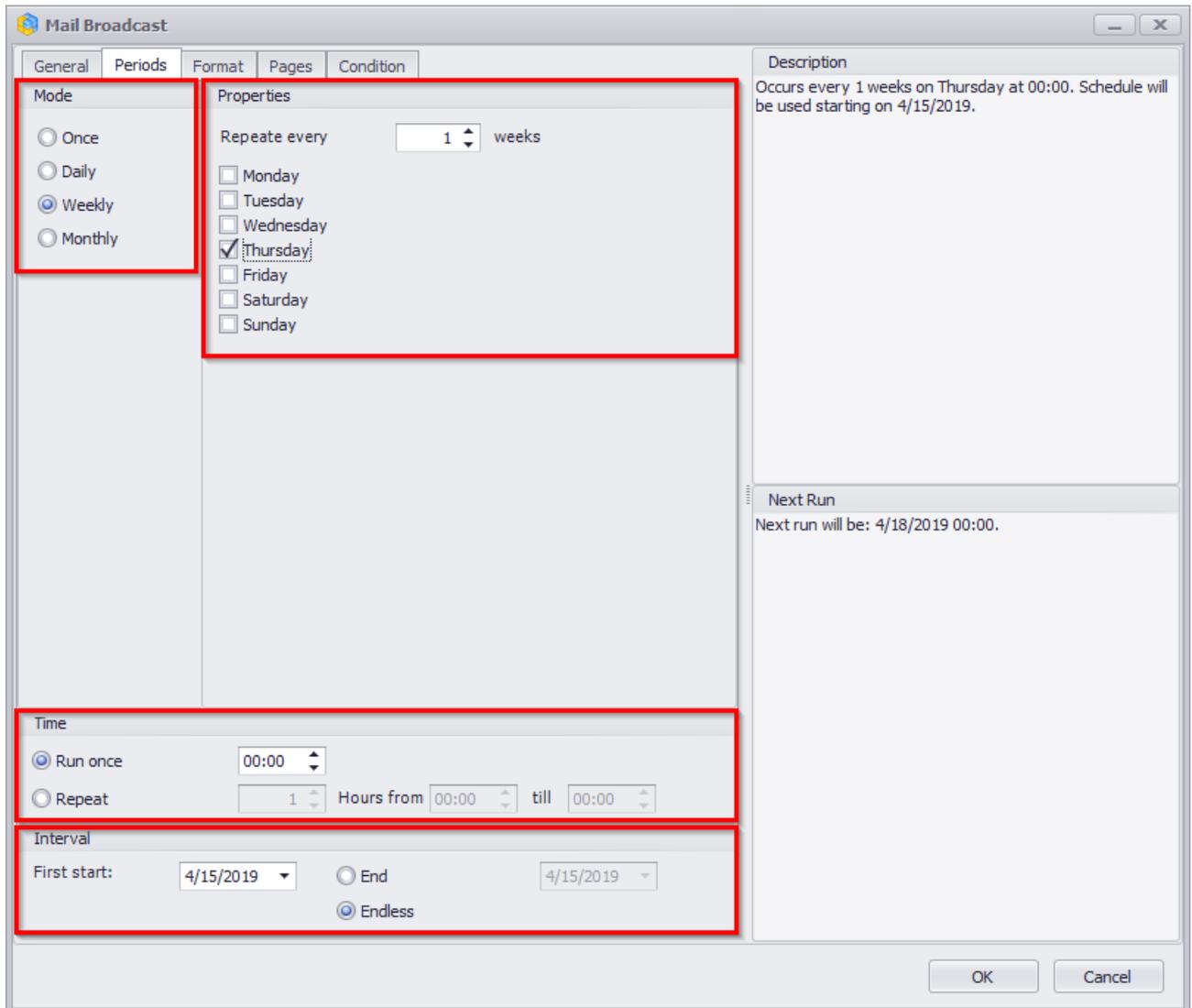
A form for mail broadcast settings will appear:

The screenshot shows a dialog box titled "Mail Broadcast" with a standard Windows-style title bar (minimize, maximize, close buttons). The dialog is divided into several sections:

- General Tab:** This is the active tab. It contains:
 - Status:** A checkbox labeled "Mail Broadcast is active" which is checked.
 - Name:** A checkbox labeled "Use report name" which is checked, followed by a text input field containing "Redefined name...".
 - Cube Language:** A dropdown menu currently set to "Default".
 - Notes:** A large text area with the placeholder text "Here can be your notes...".
- Description:** A text area on the right side containing the text: "Occurs every 1 weeks on at 00:00. Schedule will be used starting on 4/15/2019."
- Next Run:** A section at the bottom right of the dialog showing "Next Run" with the value "Never." highlighted in blue.
- Buttons:** "OK" and "Cancel" buttons are located at the bottom right of the dialog.

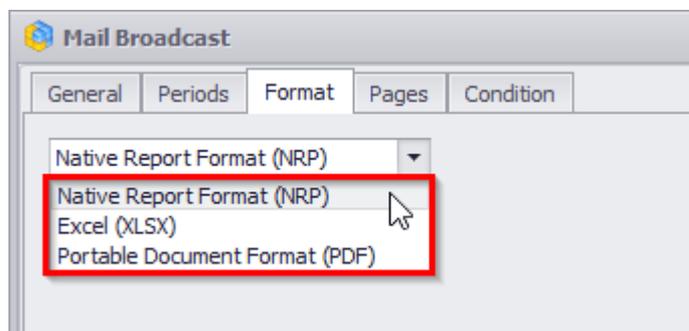
On the tab “General” you can select the status of the mail broadcast (you can change it later if necessary), assign a name to this broadcast, choose the language of the cube or to use the report name instead, and to add the notes.

On the tab “Periods” use the section “Mode” to select one of the scheduling modes:

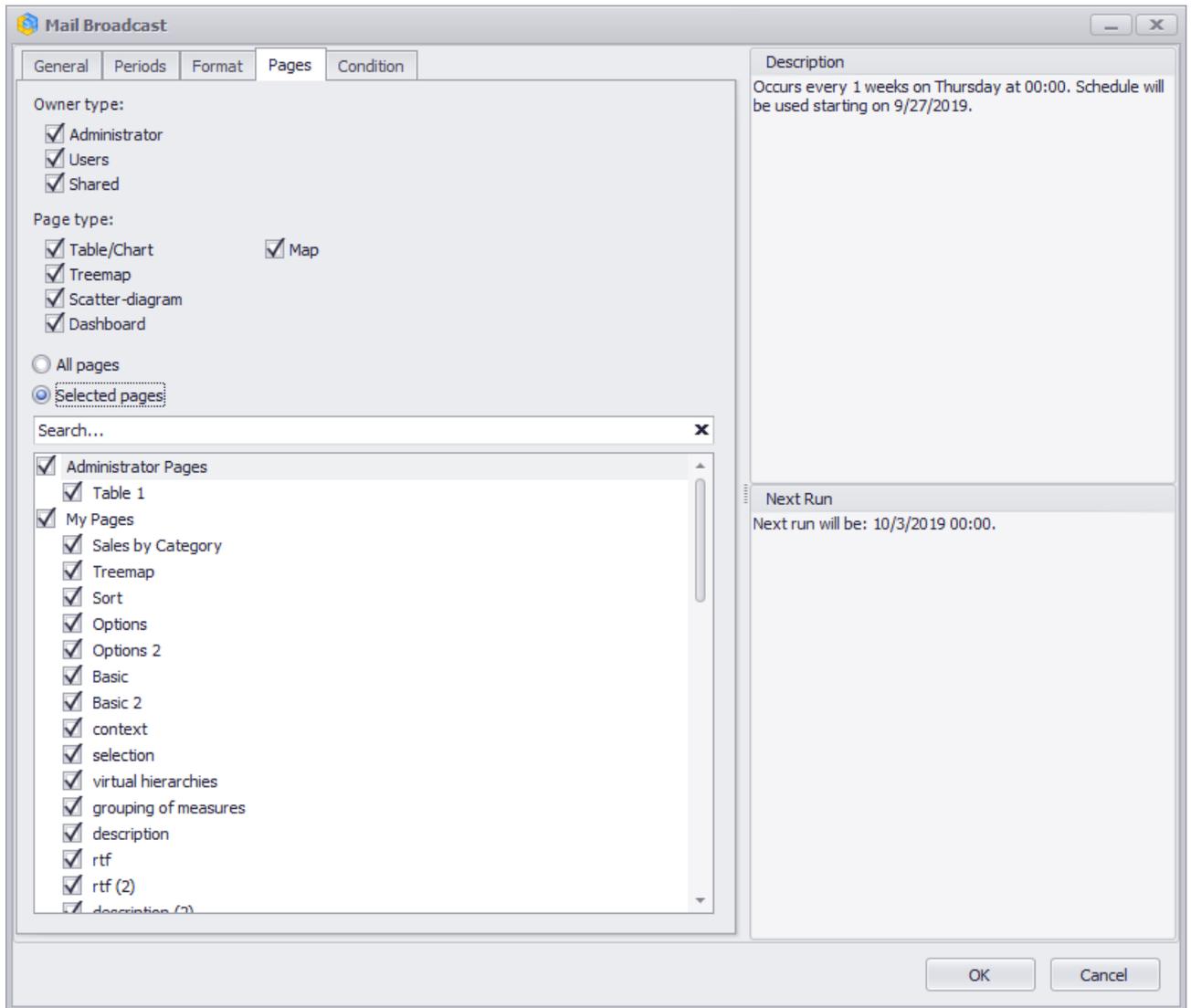


In the section “Properties” set up the date and periods. In the lower left zone there is a possibility to set up the desired time, or to set up “send every N hours”. Also there is a possibility to set up the end date of the mail broadcast. In the right part of the window there is a description that tells about when the mail broadcast will be working and what is the first date and time when it will run.

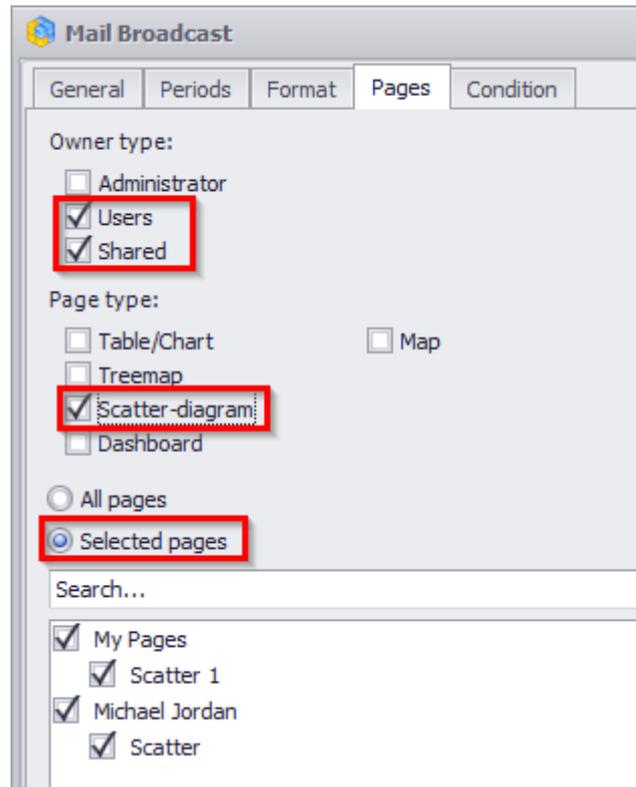
On the tab “Format” you will have to select the file type that will be sent:



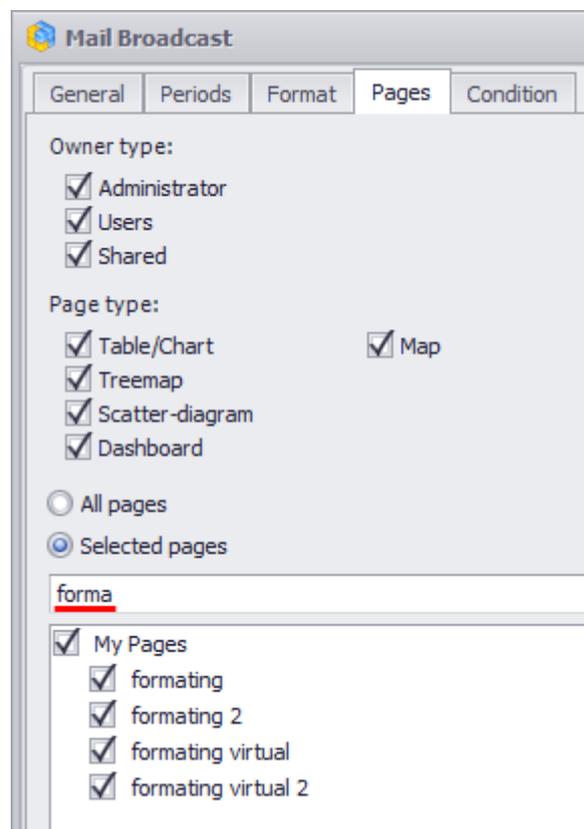
The tab “Pages” is used to select the set of pages that will be sent to the user:



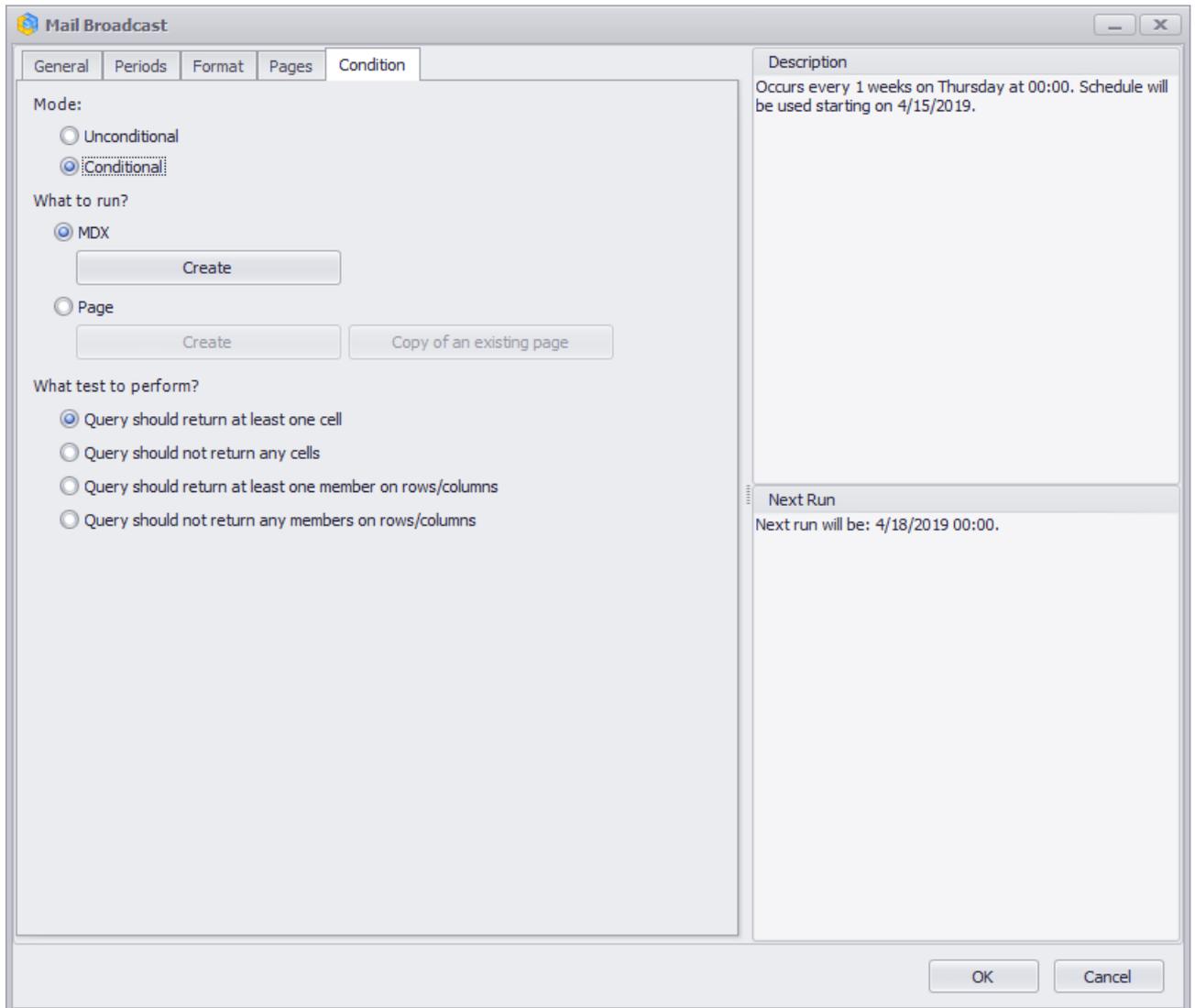
There exist three types of pages: administrator pages, user pages and shared pages. It is possible to set up the desired type of page and to select the specific pages:



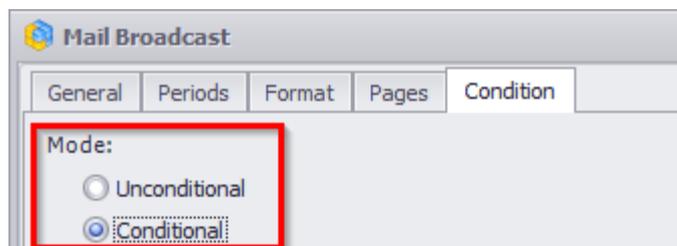
In the edit box “Search” there is a way to quickly select the pages by name:



The tab “Condition” allows to set up optional condition that will be checked to decide if to send the mail or not to send:

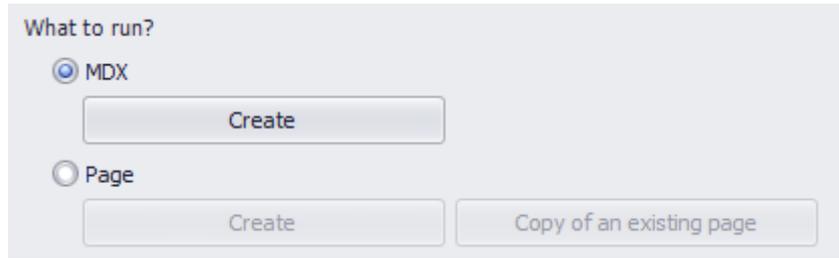


By default there are no conditions. It means that the mail broadcast will work always. But you can change it here:

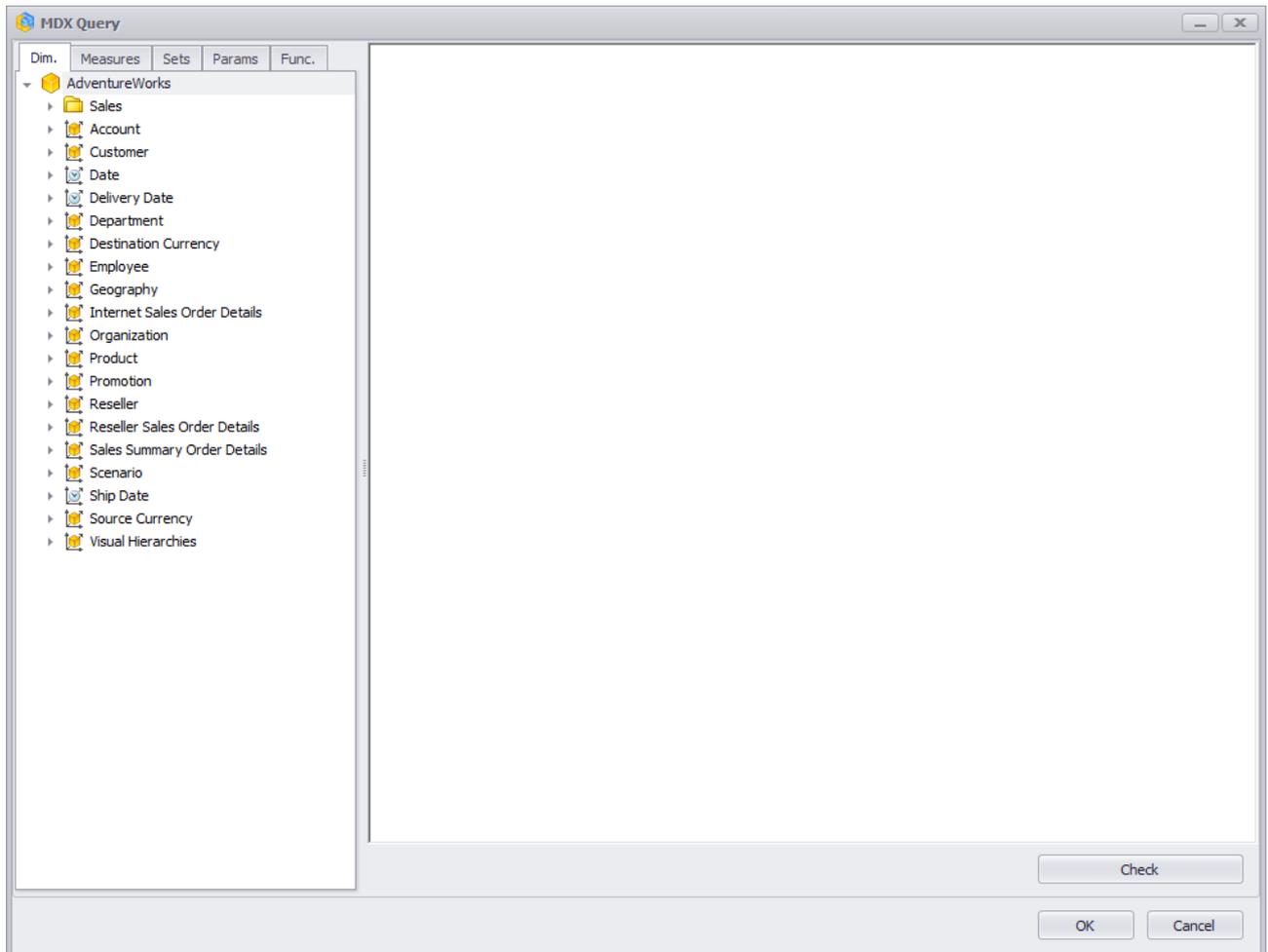


- Unconditional: the report will be sent always;
- Conditional: the report will be sent only if the condition is met.

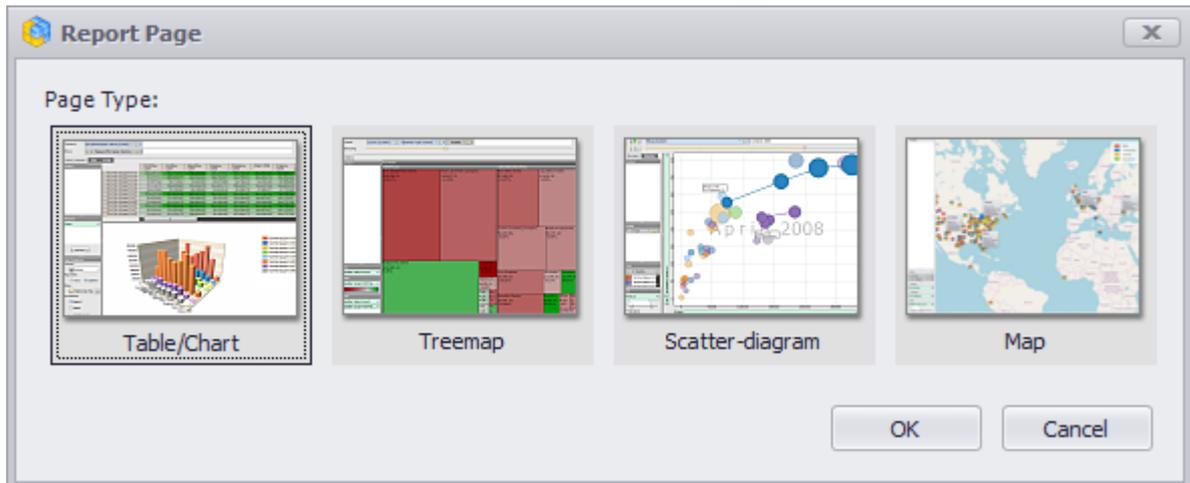
If you selected “Conditional”, you have to set up the condition using one of the ways:



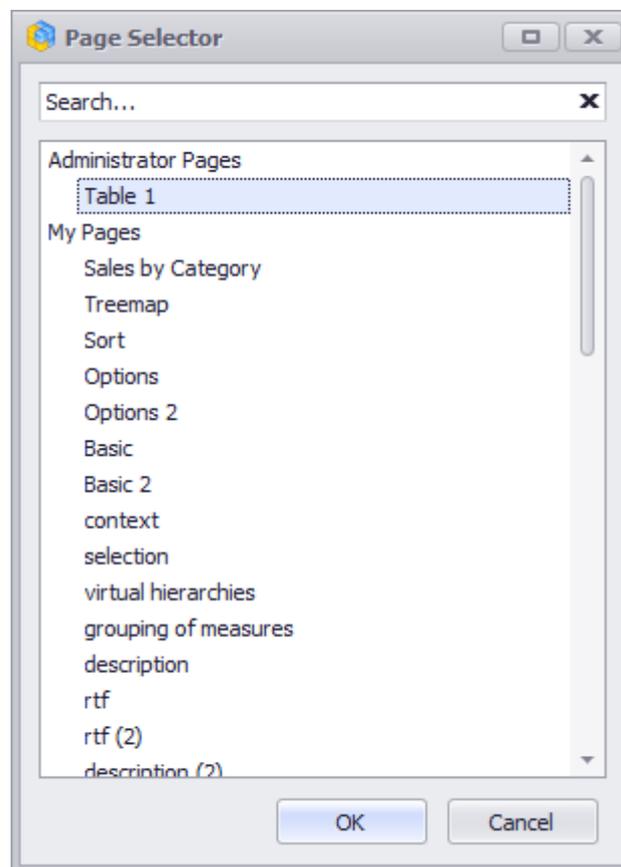
- **MDX:** you can write an arbitrary MDX by pressing the button “Create”



- you can create a new page or to use an existing page. If you create a new page, the window for page type selection will appear:



In the case if you select an existing page, there will be another window:



In both cases a new designer form will be open.

Then you have to define how the condition is checked. There are 4 ways:

- Query should return at least one cell;
- Query should not return any cells;
- Query should return at least one member on rows/columns;
- Query should not return any members on rows/columns.

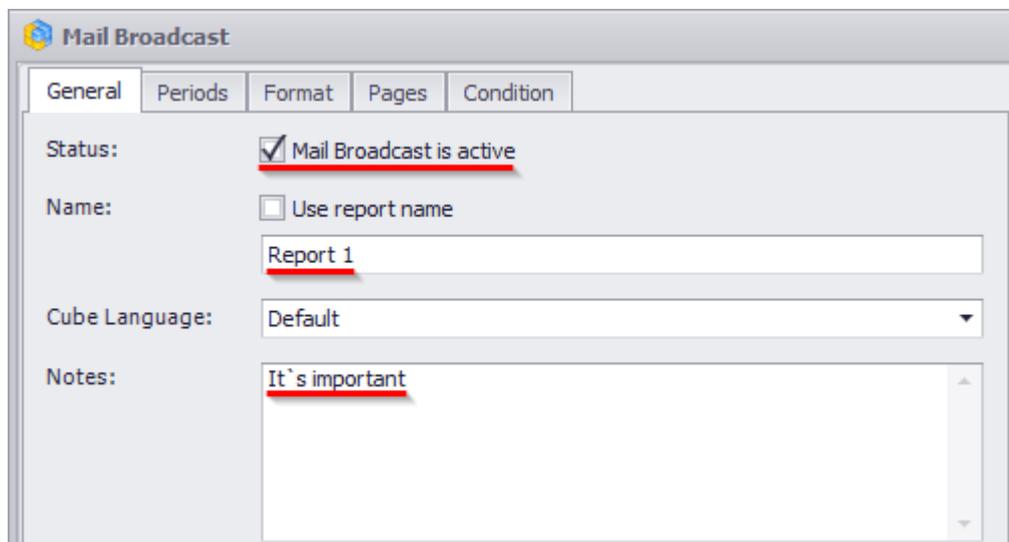
The report will be sent only in the case if the condition is met.

Administrator also has a choice to select the user context under which the test will be performed:

- **Current user:** the check will be made in the context of the user for whom the report is generated;
- **Administrator:** the check is performed in context of administrator.

Note: to make sure the user gets the report by mail, their e-mail should be specified. Report module users also have a possibility to create mail broadcasts. But for the report users there are some restrictions: they can create mail broadcasts only for themselves, but not for other users. Therefore the tab “Users” is not shown for the users.

Let us set up the schedule so that all users will get a report «*Report 1*» on the first and third Monday of May every 2 hours till 6pm in NRP format, including just pages «*Table 1*». To achieve this goal, fill in the forms as shown:



The screenshot shows the 'Mail Broadcast' configuration window with the following fields and values:

- Status:** Mail Broadcast is active
- Name:** Use report name
Report 1
- Cube Language:** Default
- Notes:** It`s important

The tab "Periods":

The screenshot shows the 'Mail Broadcast' application window with the 'Periods' tab selected. The window is divided into several sections:

- General:** Contains tabs for 'General', 'Periods', 'Format', 'Pages', and 'Condition'. The 'Periods' tab is active.
- Mode:** Radio buttons for 'Once', 'Daily', 'Weekly', and 'Monthly'. 'Monthly' is selected and underlined in red.
- Properties:**
 - Day of month:** Radio button selected. A grid of checkboxes for days 1-31 and 'Last' is shown.
 - Every:** Radio button selected. Checkboxes for 'All', 'First', 'Second', 'Third', 'Fourth', and 'Last' are shown. 'First', 'Third', and 'May' (under 'Month') are checked and underlined in red.
 - Day of week:** Radio button selected. Checkboxes for 'All', 'Monday', 'Tuesday', 'Wednesday', 'Thursday', 'Friday', 'Saturday', and 'Sunday' are shown. 'Monday' is checked and underlined in red.
 - Month:** Checkboxes for 'All', 'January', 'February', 'March', 'April', 'May', 'June', 'July', 'August', 'September', 'October', 'November', and 'December'. 'May' is checked and underlined in red.
- Time:** Radio buttons for 'Run once' and 'Repeat'. 'Repeat' is selected and highlighted with a red box. The 'Repeat' section includes a frequency of '2' and a time range from '10:00' to '18:00', all highlighted with a red box.
- Interval:** Radio buttons for 'End' and 'Endless'. 'End' is selected and highlighted with a red box. The 'End' section includes a 'First start' date of '4/15/2019' and an 'End' date of '5/31/2019', both highlighted with a red box.
- Description:** Text area containing the schedule description: 'Occurs every First, Third Monday in May at 10:00 and each 2 hour(s) till 18:00. Schedule will be used between 4/15/2019 - 5/31/2019.'
- Next Run:** Text area showing 'Next run will be: 5/6/2019 10:00.'
- Buttons:** 'OK' and 'Cancel' buttons at the bottom right.

Select NRP on the tab “Format”. Select the necessary pages on the “Pages” tab:

The screenshot shows the 'Mail Broadcast' configuration window with the 'Pages' tab selected. The window has a title bar with a gear icon and the text 'Mail Broadcast'. Below the title bar are five tabs: 'General', 'Periods', 'Format', 'Pages', and 'Condition'. The 'Pages' tab is active. The main area contains the following options:

- Owner type:**
 - Administrator
 - Users
 - Shared
- Page type:**
 - Table/Chart
 - Treemap
 - Scatter-diagram
 - Dashboard
 - Map
- Selection:**
 - All pages
 - Selected pages

Below these options is a search field labeled 'Search...'. Underneath the search field is a list of items with checkboxes:

- Administrator Pages
- Table 1

The tab “Condition” should be like this:

Mail Broadcast

General | Periods | Format | Pages | **Condition**

Mode:

Unconditional

Conditional

What to run?

MDX

Create

Page

Create Copy of an existing page

What test to perform?

Query should return at least one cell

Query should not return any cells

Query should return at least one member on rows/columns

Query should not return any members on rows/columns

Description

Occurs every First, Third Monday in May at 10:00 and each 2 hour(s) till 18:00. Schedule will be used between 4/15/2019 - 5/31/2019.

Next Run

Next run will be: 5/6/2019 10:00.

OK Cancel

After pressing «OK» you will get a new record in the list of mail broadcasts:

| Name | Mail Broadcast | Next Run | Sta... | Type | Modified By |
|----------|--|----------------|--------|--------------|-------------------|
| Report 1 | Occurs every First, Third Monday in May at 10:00 and each 2 hour(s) till 18:00. Schedule will be used between 4/15/2019 - 5/3... | 5/6/2019 10... | Active | Report (n... | John Connor(john) |

✘ ((Status] <> Deleted)

Let us assume we need to get the report “Sales Loss” only in the case if the loss had place. We want to make so that this report comes by mail every first day of every month at 10:00am, but only in the case if the sales of “Bikes” decreased in France in comparison with the previous month. If the sales did not decrease, it is not necessary to send the report.

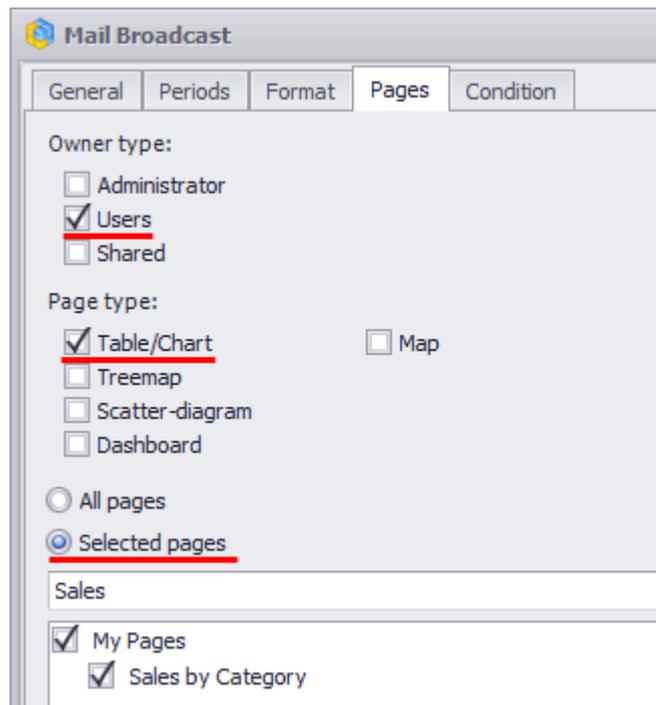
To implement this task let us fill in the tab “General”:

The screenshot shows the 'Mail Broadcast' configuration window with the 'General' tab selected. The 'Status' checkbox 'Mail Broadcast is active' is checked and underlined in red. The 'Name' field contains 'Sales Loss', which is also underlined in red. The 'Cube Language' is set to 'Default'. The 'Notes' field contains the text 'Here can be your notes...'. The other tabs are 'Periods', 'Format', 'Pages', and 'Condition'.

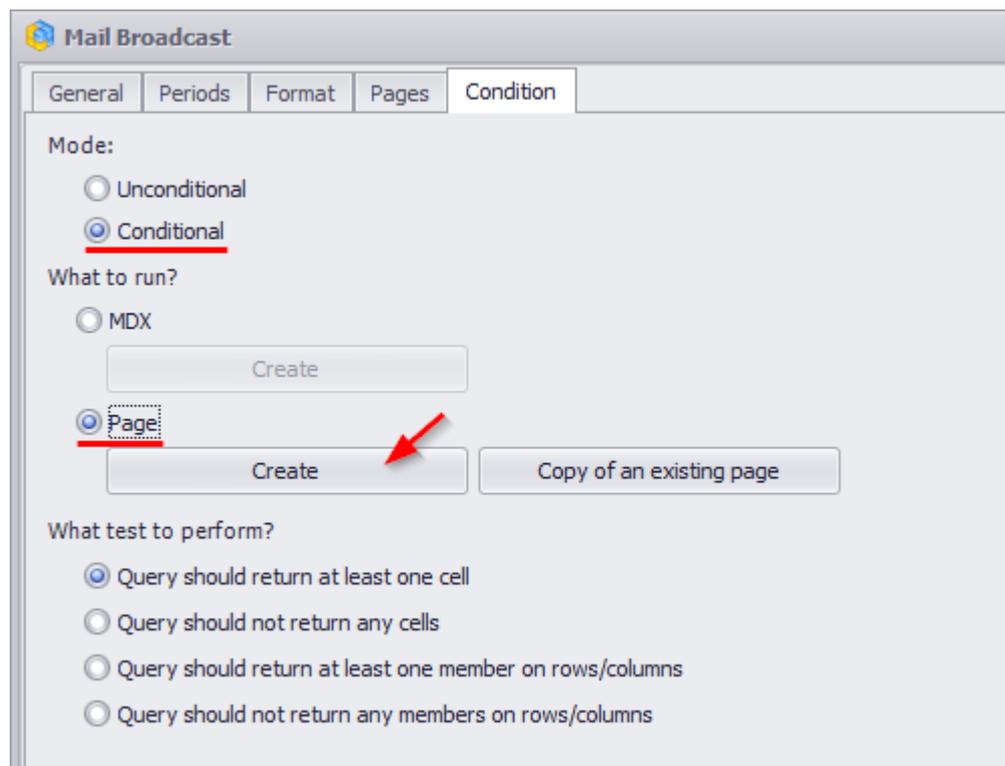
On the tab “Periods” set the following parameters:

The screenshot shows the 'Mail Broadcast' configuration window with the 'Periods' tab selected. The 'Periods' tab is circled in red. The 'Mode' section has 'Monthly' selected and underlined in red. Under 'Day of month', '1' is checked and underlined in red. Under 'Month', all months from January to December are checked. The 'Time' section has 'Run once' selected with a time of '10:00' underlined in red. The 'Repeat' option is unselected.

Select NRP on the tab “Format”. Select the necessary pages on the the tab “Pages”:



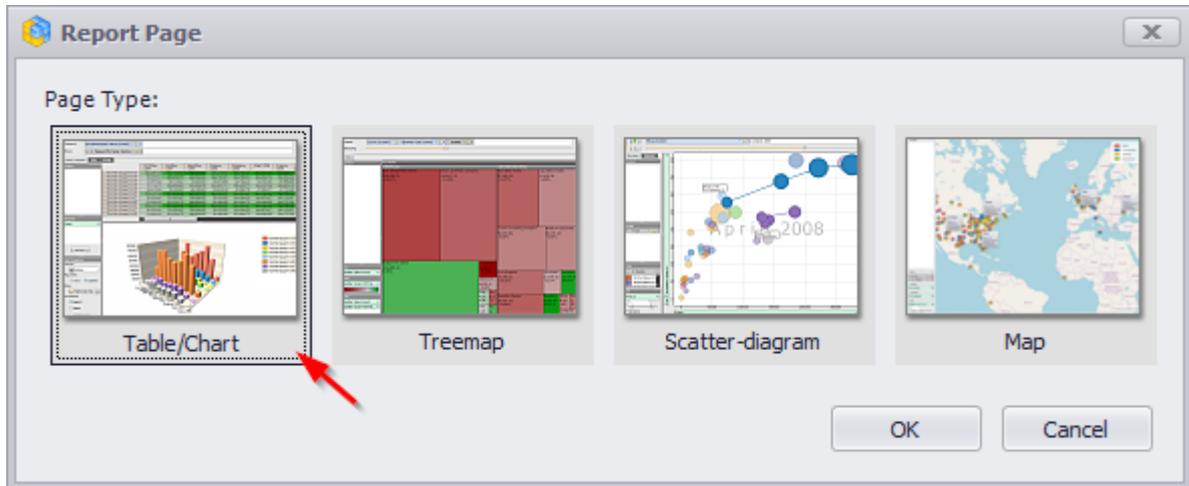
Select “Conditional” on the tab “Condition”:



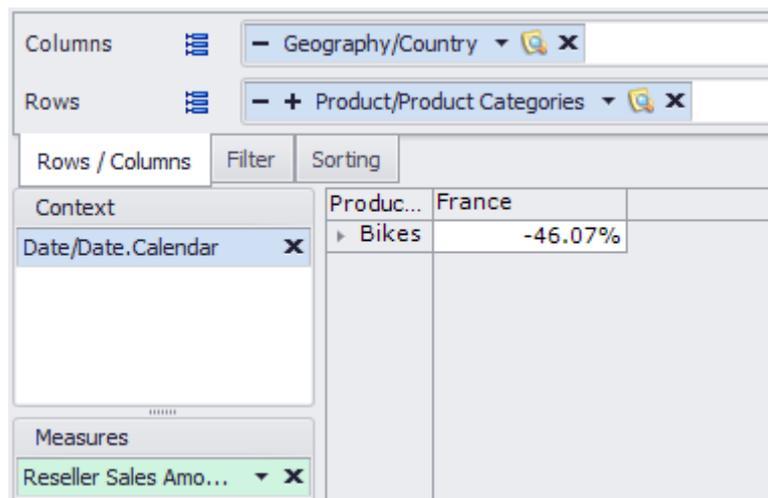
Now we have a goal – to set up the condition “if the sales decreased in comparison with the previous month, then send the report, otherwise don’t send”.

The condition will be implemented using a regular table (like in regular reports). This table will contain a filter which checks the loss of sales. If the table returns at least one row, it means that the condition is met and the report should be sent.

Let us show how this should be set up:



In the page designer let us select the following data:



To set up the date it is preferable to use the “floating period”:

Member Selector: Date/Date.Calendar

Selection Filter Options

Date Range Tree

Fixed period

By months

From 06 2008 to 06 2008

Floating period

Back (<in the past>)

Forward (<in the future>)

Period

By months

Next 1 months including this month

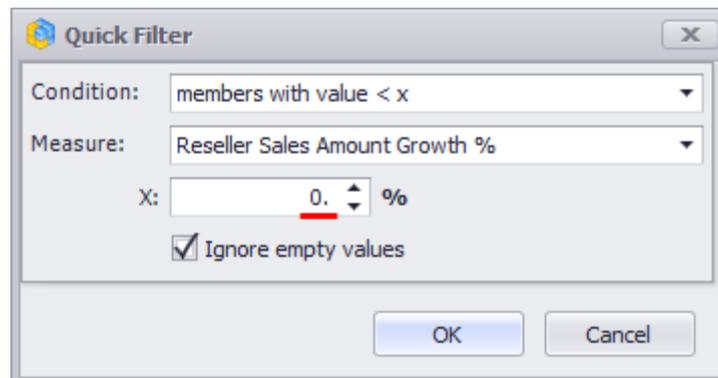
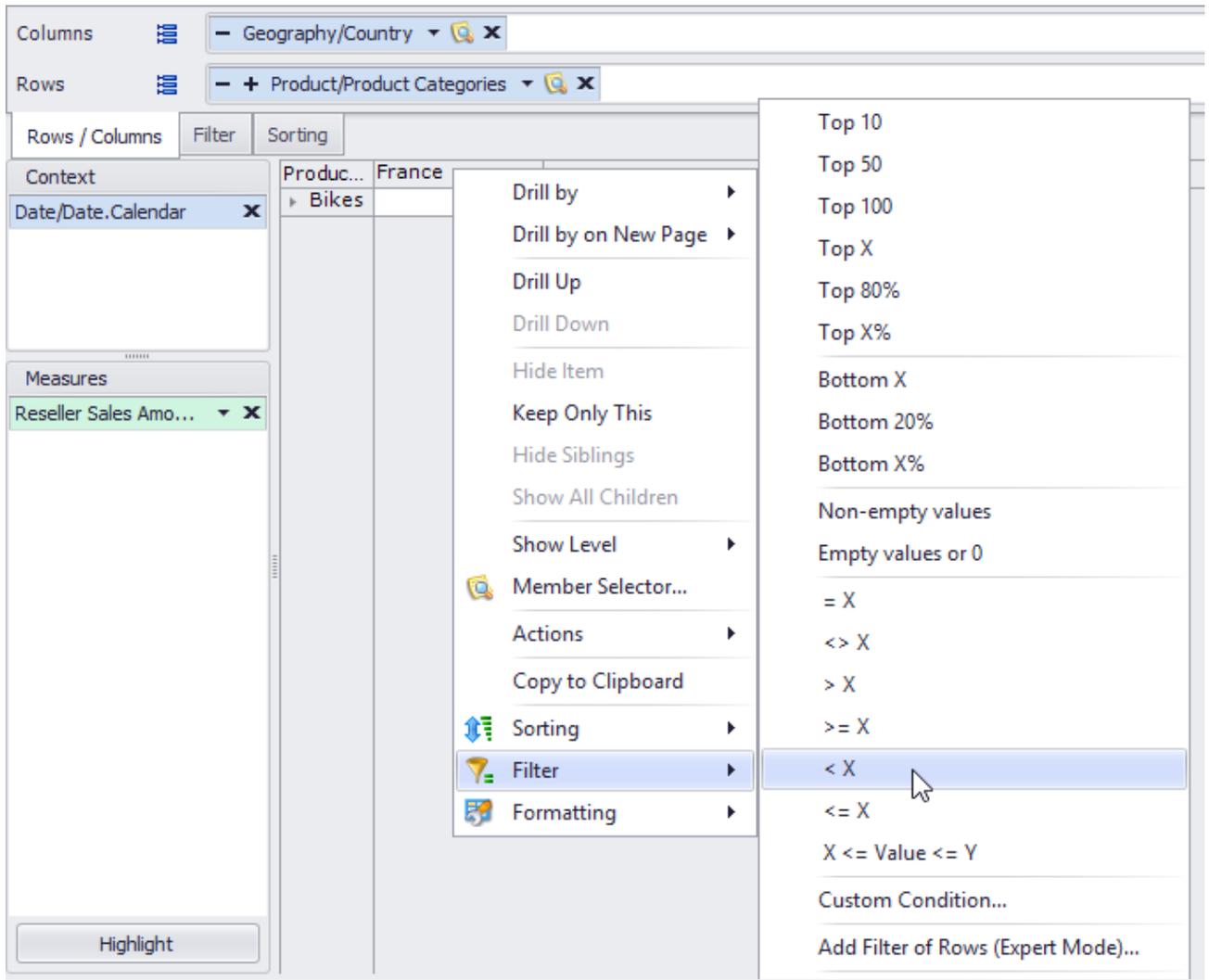
Offset from the current month: 0 months

Data will be shown from 6/1/2008 to 6/30/2008.

OK Cancel

The rows contain the “Bikes” category, the columns contain France. The date is in context.

Let us set up the filter:



This filter will return a row only in the case if the sales of bikes in the last month decreased in one of the countries in comparison to the previous month. Then let us save and close the page.

In the schedule settings in “What test to do” we have to select “Query should return at least one cell” (we know that the report will return data only in the case if there is a loss of sales):

Member Selector: Date/Date.Calendar

Selection Filter Options

Date Range Tree

Fixed period

By months

From 04 2019 to 04 2019

Floating period

Back (<<in the past>>)

Forward (<<in the future>>)

Period

By months

Last 1 months including this month

Offset from the current month: 0 months

Data will be shown from 3/1/2019 to 3/31/2019.

OK Cancel

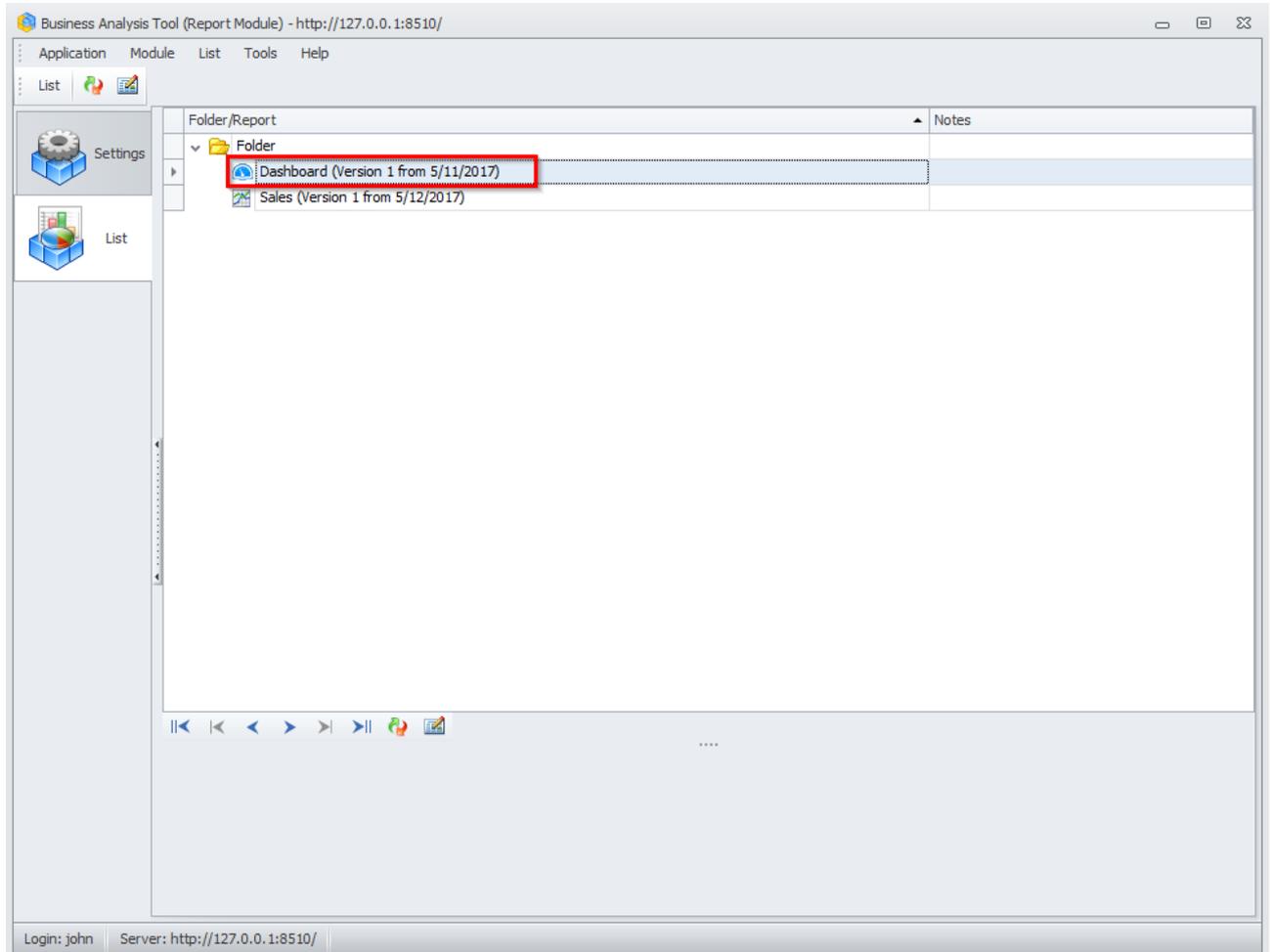
After you press «OK» the list of mail broadcasts will have a new record:

| Name | Mail Broadcast | Next Run | Sta... | Type | Modified By |
|--------------|---|----------------|--------|--------------|-------------------|
| ▶ Sales Loss | Occurs 1 days in January, February, March, April, May, June, July, August, September, October, November, D... | 5/1/2019 10... | Active | Report (...) | John Connor(john) |

8 «Interactive Dashboard» report

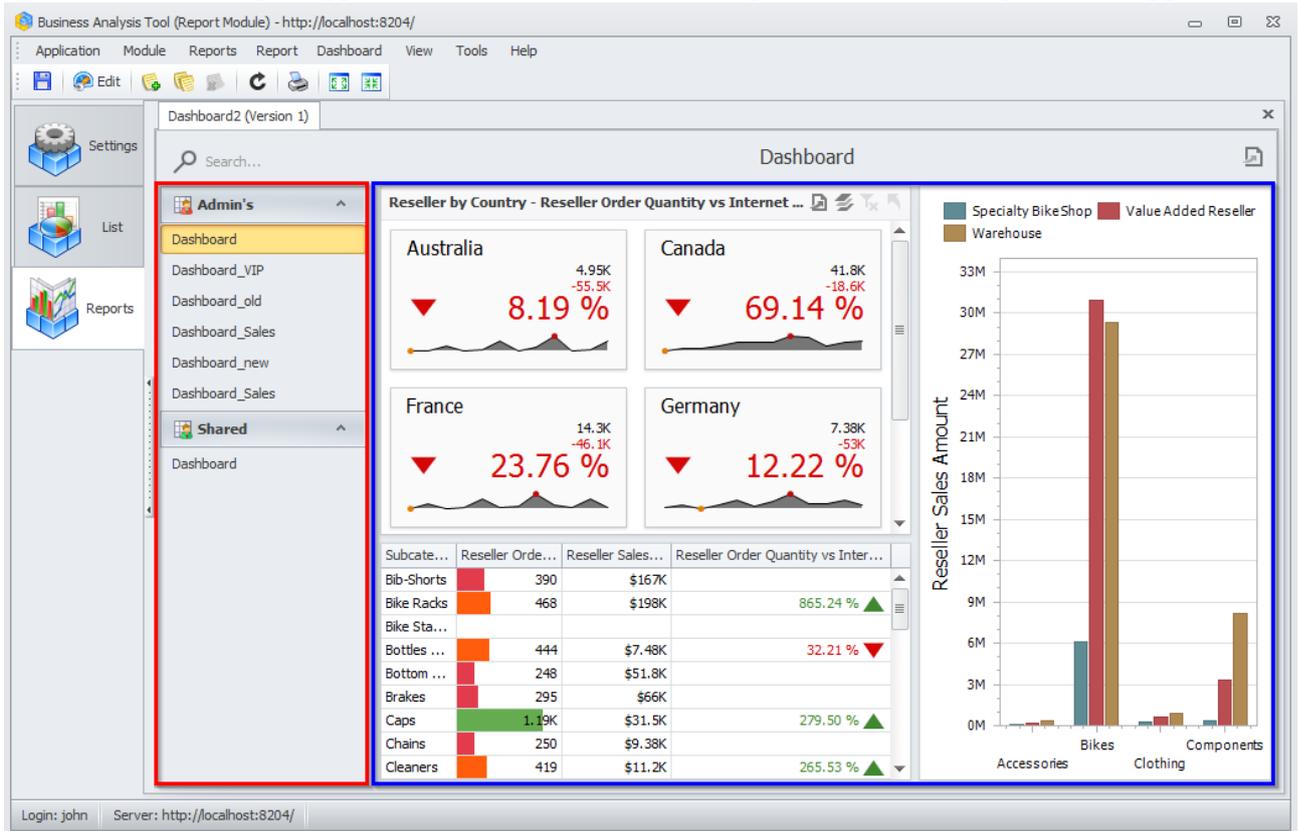
Dashboard is a type of a report with the following components: “Pivot”, “Grid”, “Chart”, “Scatter Chart”, “Pies”, “Gauges”, “Cards”, “Treemap”, “Filter Elements”, “Images”, “Text Box”, “Group”.

Upon starting a program, a dashboard-type report appears in reports tree.



Note: this one must be created by administrator.

When the report type «Interactive Dashboard» is opened, the following window appears:



The list of all the reports will be shown on the left:

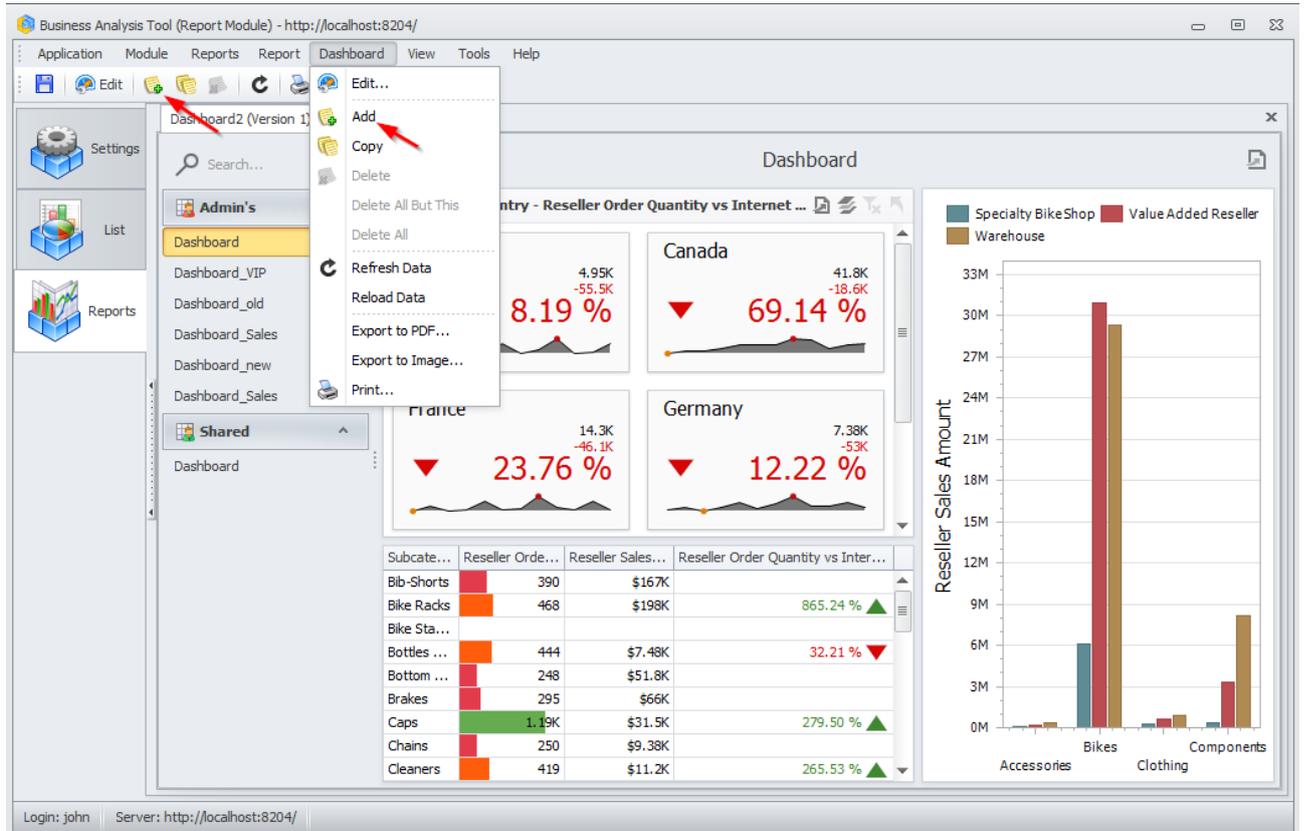
- Admin's – reports created by administrator
- My – owner's reports
- Shared – reports shared with other users.

Dashboard elements themselves are shown on the right.

As we can see, there is no My Dashboards list. Let us create an «Interactive Dashboard».

8.1 How to create an «Interactive Dashboard»

There are several ways to create an «Interactive Dashboard»:



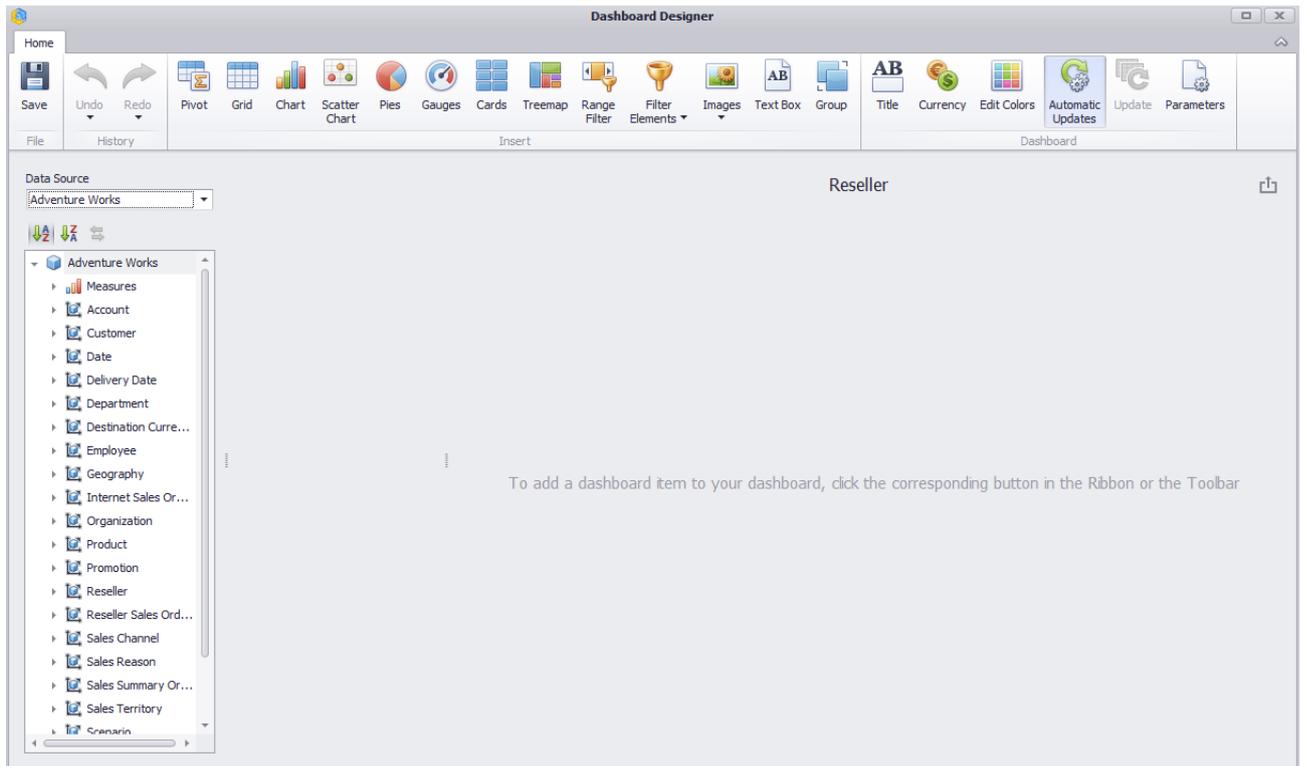
Way 1. In a “Dashboard” menu choose “Add”.

Way 2. Click “Add new Dashboard” button in a toolbar.

A window appears, where you should write a name for the «Interactive Dashboard»:

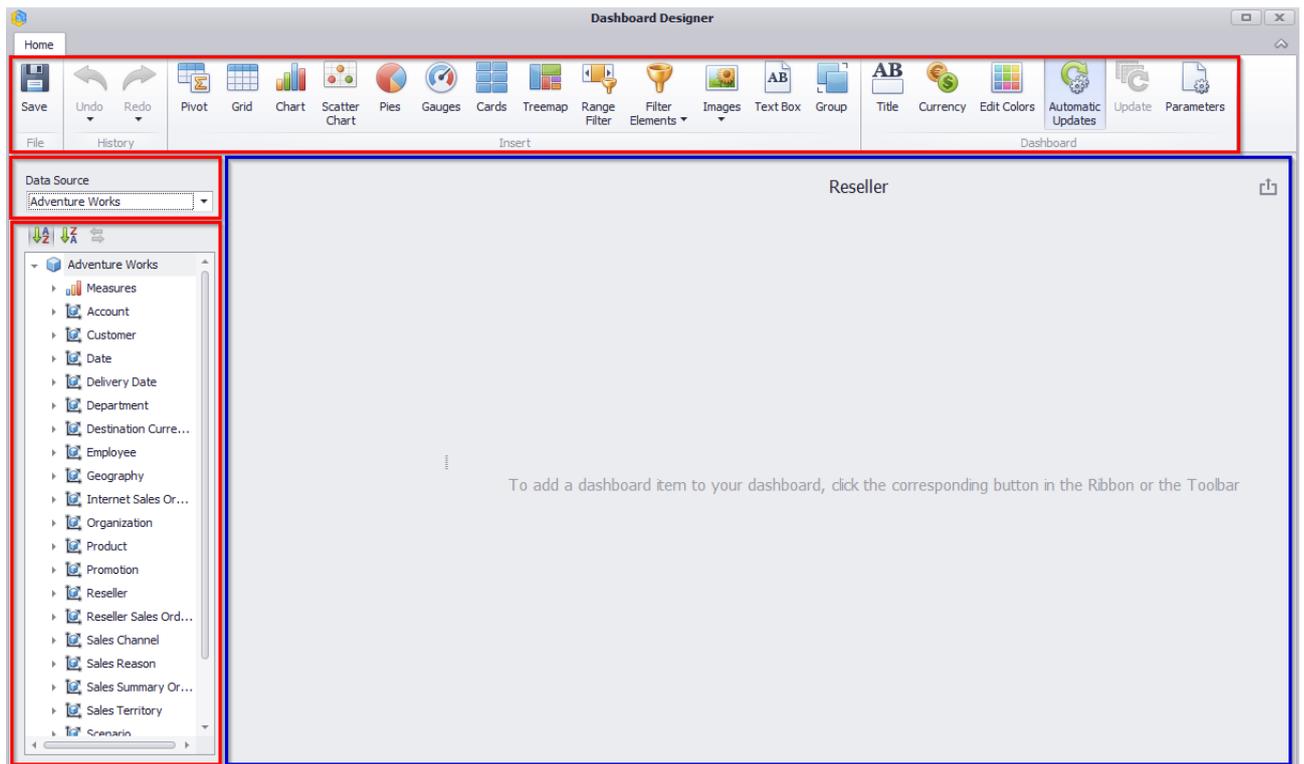
The screenshot shows a dialog box titled 'Dashboard' with a 'Name:' field containing the text 'Reseller'. The 'OK' button is highlighted with a red arrow.

As a result, a dashboard designer window will appear:



8.2 Basic dashboard navigation

We will take a previously-created dashboard as an example of navigation:



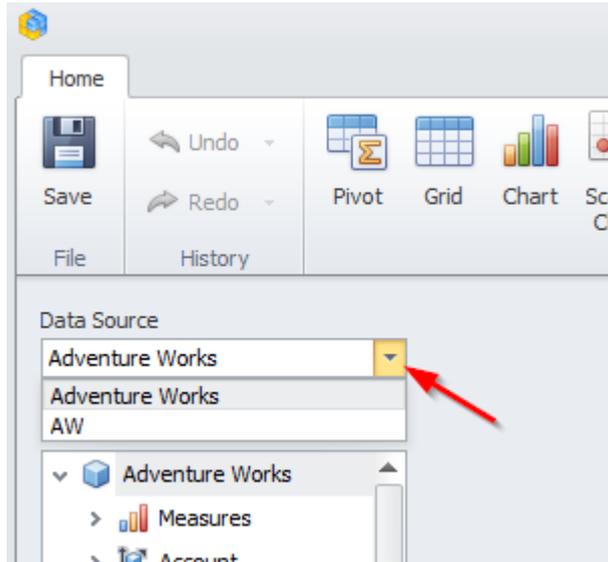
A toolbar with dashboard elements is located in the upper part of the window:

- Pivot
- Grid
- Chart
- Scatter Chart
- Pies
- Gauges
- Cards
- Treemap
- Range Filter
- Filter Elements
- Images
- Text Box
- Group

The following functionality is available for dashboard elements:

- Title
- Currency
- Edit Colors
- Parameters

In the left part of the window there is a data source (OLAP DB) with respective hierarchies, dimensions. One dashboard can have several data sources:



Note: In order for a dashboard to have several data sources you should contact an administrator.

8.3 Dashboard elements

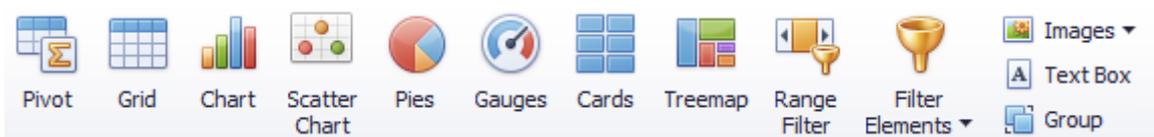
Dashboard designer window consists of following elements:

- ✓ Pivot
- ✓ Grid
- ✓ Chart
- ✓ Scatter Chart
- ✓ Pies
- ✓ Gauges
- ✓ Cards
- ✓ Treemap
- ✓ Range Filter
- ✓ Filter Elements
- ✓ Images
- ✓ Text Box
- ✓ Group

8.4 Create, delete, convert to, duplicate and other possibilities

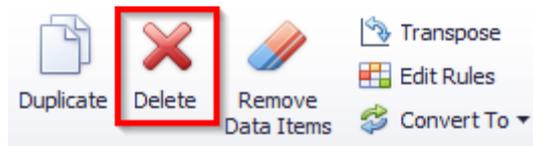
8.4.1 Create

In order to create a new dashboard element, you need to click a respective icon in dashboard designer window:

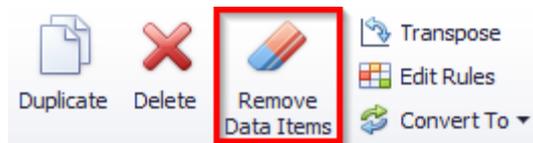


8.4.2 Delete

In order to delete a dashboard element, you need to click an icon in a toolbar:

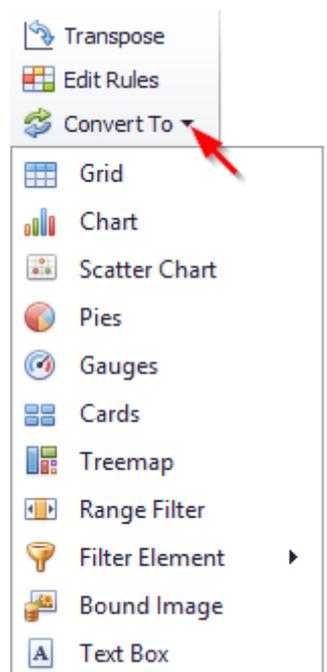


In order to quickly delete all the filled fields of one of a dashboard element (grid, chart, etc.) you need to click an icon:



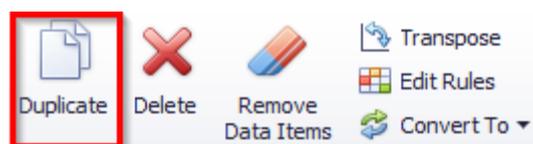
8.4.3 Convert To

It is possible to modify one dashboard element into another by choosing a respective item in the toolbar:



8.4.4 Duplicate

In order to duplicate an existing dashboard element, you need to click an icon in a toolbar:



8.4.5 Transpose

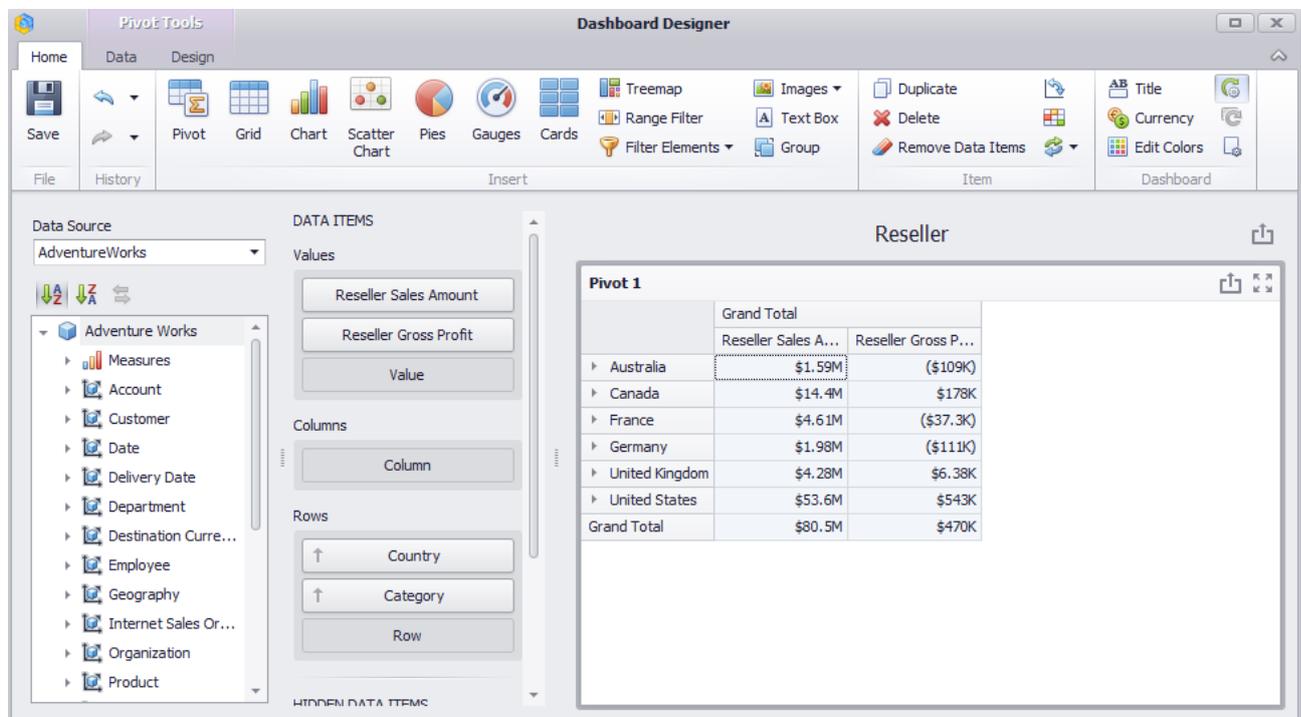
For such dashboard element as pivot, chart, scatter chart, pie there is a possibility to transpose lines and columns for a grid, parameters and sets of diagrams, axes “X” and “Y” of a chart:



8.5 Pivot

Pivot is a multidimensional array of data.

Let us take a “Pivot” that shows volume of sales and profit by product category in each country as an example. For this we choose “Pivot” in the toolbar, in the value field we will have “Reseller Sales Amount” and “Reseller Gross Profit” measures, on the rows of the “Country” and “Category” hierarchy. The pivot will look the following:



The screenshot shows the Dashboard Designer interface with the Pivot Tools ribbon active. The Pivot configuration is as follows:

- Data Source:** AdventureWorks
- Measures (Values):** Reseller Sales Amount, Reseller Gross Profit
- Columns:** Column
- Rows:** Country, Category

The resulting Pivot table, titled "Reseller", displays the following data:

| | Grand Total | |
|------------------|---------------------|---------------------|
| | Reseller Sales A... | Reseller Gross P... |
| ▶ Australia | \$1.59M | (\$109K) |
| ▶ Canada | \$14.4M | \$178K |
| ▶ France | \$4.61M | (\$37.3K) |
| ▶ Germany | \$1.98M | (\$111K) |
| ▶ United Kingdom | \$4.28M | \$6.38K |
| ▶ United States | \$53.6M | \$543K |
| Grand Total | \$80.5M | \$470K |

8.5.1 Expand/minimize

By clicking  and  buttons, you can expand/collapse the data to the desired level.

8.5.2 Layout type

The Pivot layout can be:

- Compact

Pivot 1

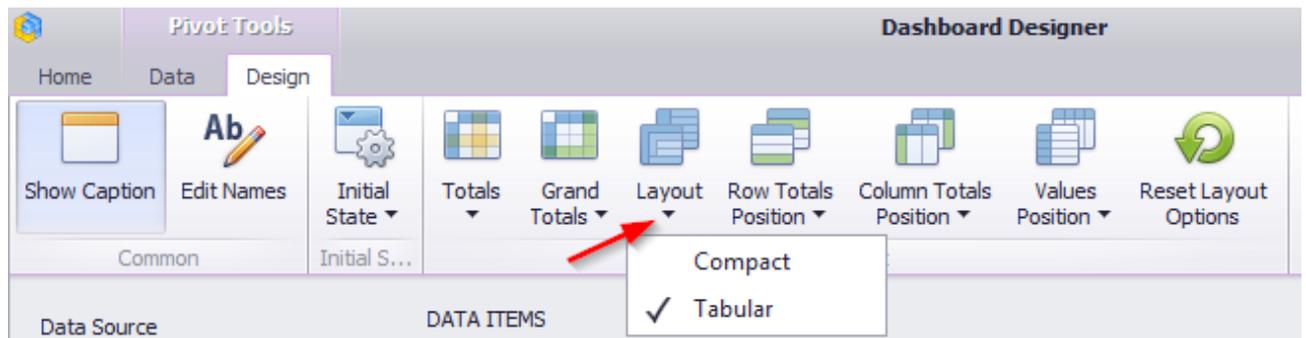
| | | Grand Total | |
|---|-----------------|---------------------|---------------------|
| | | Reseller Sales A... | Reseller Gross P... |
| ▼ | Australia Total | \$1.59M | (\$109K) |
| | Accessories | \$23.9K | \$8.98K |
| | Bikes | \$1.32M | (\$132K) |
| | Clothing | \$42.9K | \$748 |
| | Components | \$204K | \$13.7K |
| ▼ | Canada Total | \$14.4M | \$178K |
| | Accessories | \$118K | \$40.6K |
| | Bikes | \$11.6M | (\$112K) |
| | Clothing | \$379K | \$53.2K |
| | Components | \$2.24M | \$196K |
| ▼ | France Total | \$4.61M | (\$37.3K) |
| | Accessories | \$48K | \$15.9K |
| | Bikes | \$3.56M | (\$136K) |
| | Clothing | \$128K | \$15.5K |
| | Components | \$871K | \$66.8K |

- Tabular

Pivot 1

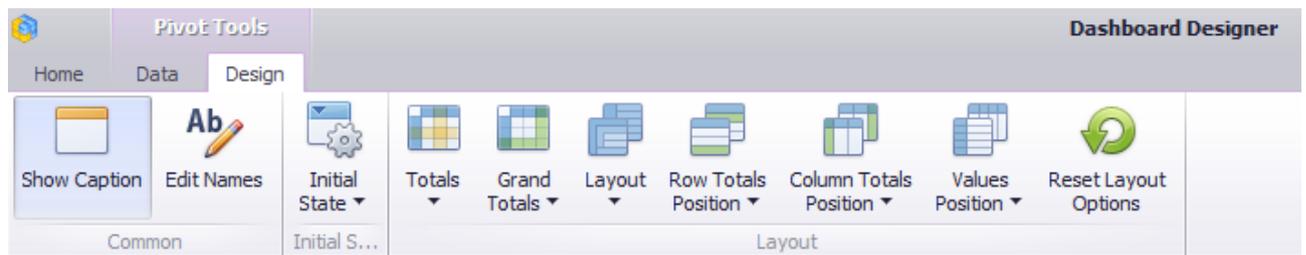
| | | Grand Total | | |
|-----------------|-----------|---------------------|---------------------|-----------|
| | | Reseller Sales A... | Reseller Gross P... | |
| ▼ | Australia | Accessories | \$23.9K | \$8.98K |
| | | Bikes | \$1.32M | (\$132K) |
| | | Clothing | \$42.9K | \$748 |
| | | Components | \$204K | \$13.7K |
| Australia Total | | | \$1.59M | (\$109K) |
| ▼ | Canada | Accessories | \$118K | \$40.6K |
| | | Bikes | \$11.6M | (\$112K) |
| | | Clothing | \$379K | \$53.2K |
| | | Components | \$2.24M | \$196K |
| Canada Total | | | \$14.4M | \$178K |
| ▼ | France | Accessories | \$48K | \$15.9K |
| | | Bikes | \$3.56M | (\$136K) |
| | | Clothing | \$128K | \$15.5K |
| | | Components | \$871K | \$66.8K |
| France Total | | | \$4.61M | (\$37.3K) |

Use the “Layout” button in the “Design” ribbon tab to change the Pivot layout:



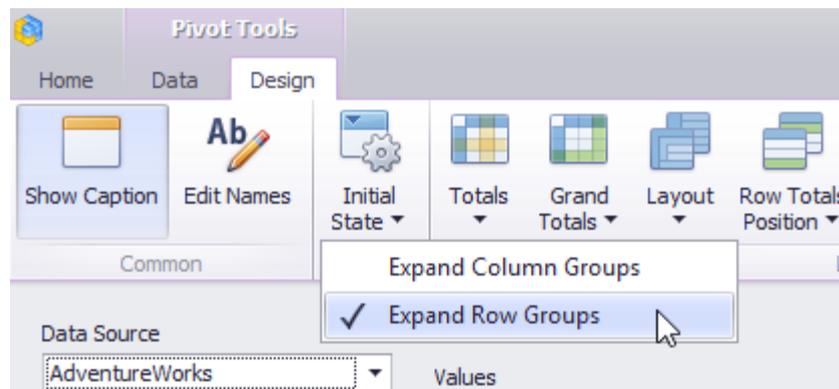
8.5.3 Totals

You can control the visibility of totals and grand totals for the entire Pivot dashboard item:



8.5.4 Initial state

“Initial State” of a pivot may be the following:



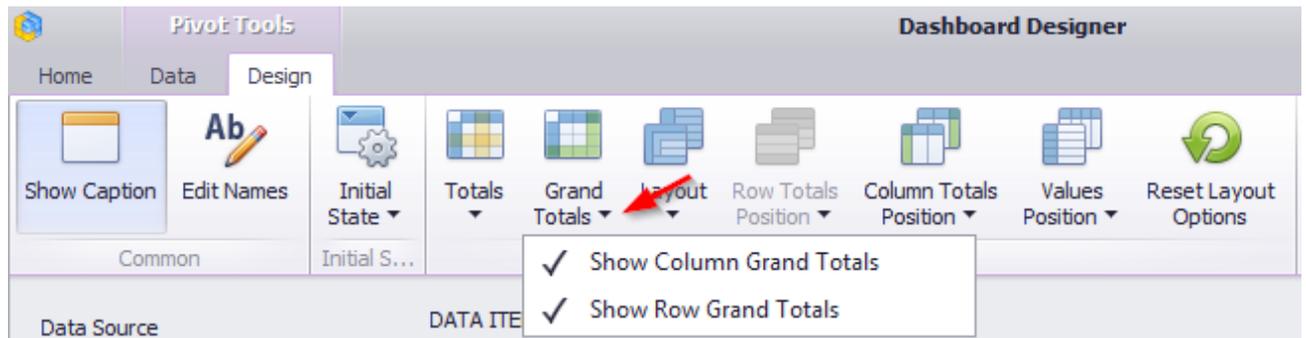
- Expand Column Groups
- Expand Row Groups

By ticking this functionality box, we will always see an expanded level:

| Pivot 1 | | |
|-----------------------|---------------------|---------------------|
| | Grand Total | |
| | Reseller Sales A... | Reseller Gross P... |
| ▼ Australia Total | \$1.59M | (\$109K) |
| Accessories | \$23.9K | \$8.98K |
| Bikes | \$1.32M | (\$132K) |
| Clothing | \$42.9K | \$748 |
| Components | \$204K | \$13.7K |
| ▼ Canada Total | \$14.4M | \$178K |
| Accessories | \$118K | \$40.6K |
| Bikes | \$11.6M | (\$112K) |
| Clothing | \$379K | \$53.2K |
| Components | \$2.24M | \$196K |
| ▼ France Total | \$4.61M | (\$37.3K) |
| Accessories | \$48K | \$15.9K |
| Bikes | \$3.56M | (\$136K) |
| Clothing | \$128K | \$15.5K |
| Components | \$871K | \$66.8K |
| ▼ Germany Total | \$1.98M | (\$111K) |
| Accessories | \$35.1K | \$12.1K |
| Bikes | \$1.54M | (\$136K) |
| Clothing | \$71.6K | (\$882) |
| Components | \$334K | \$13.3K |
| ▼ United Kingdom T... | \$4.28M | \$6.38K |
| Accessories | \$42.6K | \$14.5K |
| Bikes | \$3.41M | (\$79.2K) |
| Clothing | \$119K | \$13.4K |
| Components | \$712K | \$57.7K |
| ▼ United States Total | \$53.6M | \$543K |
| Accessories | \$304K | \$104K |
| Bikes | \$44.8M | (\$396K) |
| Clothing | \$1.04M | \$151K |
| Components | \$7.43M | \$685K |
| Grand Total | \$80.5M | \$470K |

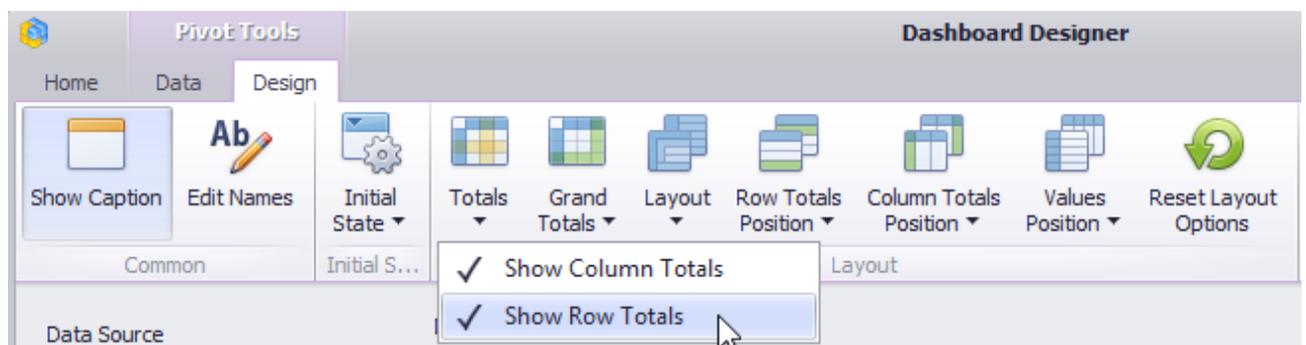
8.5.5 Grand Totals

In the pivot table, you can enable or disable grand totals:



8.5.6 Totals

For the pivot of the tabular type (s. 8.5.2), you can enable and disable totals for the highest level:



For instance, the image below displays the Pivot dashboard item with the disabled row totals:

| | | Grand Total | | | | Grand Total | |
|-----------------|-------------|---------------------|---------------------|--------------|-------------|---------------------|---------------------|
| | | Reseller Sales A... | Reseller Gross P... | | | Reseller Sales A... | Reseller Gross P... |
| ▼ Australia | Accessories | \$23.9K | \$8.98K | ▼ Australia | Accessories | \$23.9K | \$8.98K |
| | Bikes | \$1.32M | (\$132K) | | Bikes | \$1.32M | (\$132K) |
| | Clothing | \$42.9K | \$748 | | Clothing | \$42.9K | \$748 |
| | Components | \$204K | \$13.7K | | Components | \$204K | \$13.7K |
| Australia Total | | \$1.59M | (\$109K) | ▼ Canada | Accessories | \$118K | \$40.6K |
| ▼ Canada | Accessories | \$118K | \$40.6K | | Bikes | \$11.6M | (\$112K) |
| | Bikes | \$11.6M | (\$112K) | | Clothing | \$379K | \$53.2K |
| | Clothing | \$379K | \$53.2K | | Components | \$2.24M | \$196K |
| | Components | \$2.24M | \$196K | Canada Total | | \$14.4M | \$178K |
| Canada Total | | \$14.4M | \$178K | | | | |

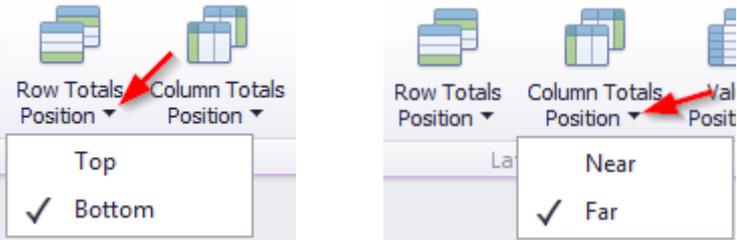
Moreover, you can control the visibility of totals for individual dimensions/measures by using the data item's context menu (“Show Totals” and “Show Grand Totals” options):

The screenshot shows a PivotTable with a context menu open over the 'Reseller Gross Profit' measure. The menu options are: Format..., Show Values (checked), Show Totals (checked), Show Grand Totals (highlighted), Add Format Rule, Edit Rules..., Clear Rules, and Rename... The PivotTable data is as follows:

| | | CY 2017 | | CY 2018 | | Grand Total |
|--|--------------|---------------------|---------------------|---------------------|---------------------|-------------|
| | | Reseller Sales A... | Reseller Gross P... | Reseller Sales A... | Reseller Gross P... | |
| | | \$847K | (\$97.7K) | \$747K | (\$11K) | \$1.59M |
| | | \$15.6K | \$5.83K | \$8.36K | \$3.15K | \$23.9K |
| | | \$681K | (\$112K) | \$643K | (\$20.1K) | \$1.32M |
| | | \$26.1K | \$296 | \$16.8K | \$452 | \$42.9K |
| | | \$125K | \$8.21K | \$78.6K | \$5.49K | \$204K |
| | | \$5.65M | \$43.1K | \$2.39M | \$32.2K | \$8.04M |
| | | \$58.1K | \$19.8K | \$32.4K | \$11.9K | \$90.5K |
| | | \$4.42M | (\$74.7K) | \$1.91M | (\$11.5K) | \$6.33M |
| | | \$178K | \$21.9K | \$77.5K | \$7.55K | \$255K |
| | | \$998K | \$76.1K | \$371K | \$24.3K | \$1.37M |
| | France Total | \$2.37M | (\$56.1K) | \$1.38M | (\$4.95K) | \$3.75M |
| | Accessories | \$26.6K | \$8.64K | \$16.3K | \$5.88K | \$42.9K |
| | Bikes | \$1.79M | (\$104K) | \$1.11M | (\$27.4K) | \$2.91M |

8.5.7 Totals Position

If necessary, you can change the Pivot dashboard item's totals/grand totals position:

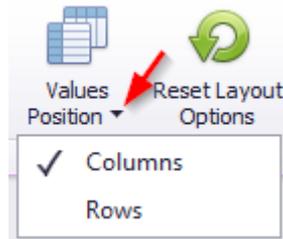


| | | Grand Total | |
|-------------------|-------------|---------------------|---------------------|
| | | Reseller Sales A... | Reseller Gross P... |
| Grand Total | | \$80.5M | \$470K |
| ▼ Australia Total | | \$1.59M | (\$109K) |
| Australia | Accessories | \$23.9K | \$8.98K |
| | Bikes | \$1.32M | (\$132K) |
| | Clothing | \$42.9K | \$748 |
| | Components | \$204K | \$13.7K |
| ▼ Canada Total | | \$14.4M | \$178K |
| Canada | Accessories | \$118K | \$40.6K |
| | Bikes | \$11.6M | (\$112K) |
| | Clothing | \$379K | \$53.2K |
| | Components | \$2.24M | \$196K |

| | | Grand Total | |
|-----------------|-------------|---------------------|---------------------|
| | | Reseller Sales A... | Reseller Gross P... |
| ▼ Australia | Accessories | \$23.9K | \$8.98K |
| | Bikes | \$1.32M | (\$132K) |
| | Clothing | \$42.9K | \$748 |
| | Components | \$204K | \$13.7K |
| Australia Total | | \$1.59M | (\$109K) |
| ▼ Canada | Accessories | \$118K | \$40.6K |
| | Bikes | \$11.6M | (\$112K) |
| | Clothing | \$379K | \$53.2K |
| | Components | \$2.24M | \$196K |
| Canada Total | | \$14.4M | \$178K |
| Grand Total | | \$16M | \$69.5K |

8.5.8 Values Position

The Pivot dashboard item allows you to control the position of headers used to arrange summary values corresponding to different measures:



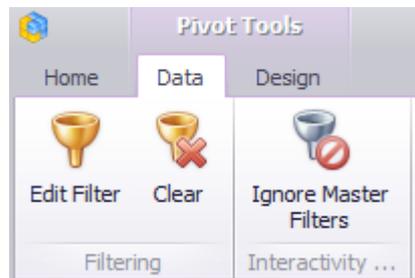
| | | Grand Total | |
|-------------|-------------|---------------------|---------------------|
| | | Reseller Sales A... | Reseller Gross P... |
| ▼ Australia | Accessories | \$23.9K | \$8.98K |
| | Bikes | \$1.32M | (\$132K) |
| | Clothing | \$42.9K | \$748 |
| | Components | \$204K | \$13.7K |
| ▼ Canada | Accessories | \$118K | \$40.6K |
| | Bikes | \$11.6M | (\$112K) |
| | Clothing | \$379K | \$53.2K |
| | Components | \$2.24M | \$196K |

| | | | Grand Total |
|-------------|---------------------|---------------------|-------------|
| ▼ Australia | Accessories | Reseller Sales A... | \$23.9K |
| | | Reseller Gross P... | \$8.98K |
| | Bikes | Reseller Sales A... | \$1.32M |
| | | Reseller Gross P... | (\$132K) |
| Clothing | Reseller Sales A... | \$42.9K | |
| | Reseller Gross P... | \$748 | |
| Components | Reseller Sales A... | \$204K | |
| | Reseller Gross P... | \$13.7K | |
| ▼ Canada | Accessories | Reseller Sales A... | \$118K |
| | | Reseller Gross P... | \$40.6K |
| | Bikes | Reseller Sales A... | \$11.6M |
| | | Reseller Gross P... | (\$112K) |
| Clothing | Reseller Sales A... | \$379K | |
| | Reseller Gross P... | \$53.2K | |
| Components | Reseller Sales A... | \$2.24M | |
| | Reseller Gross P... | \$196K | |

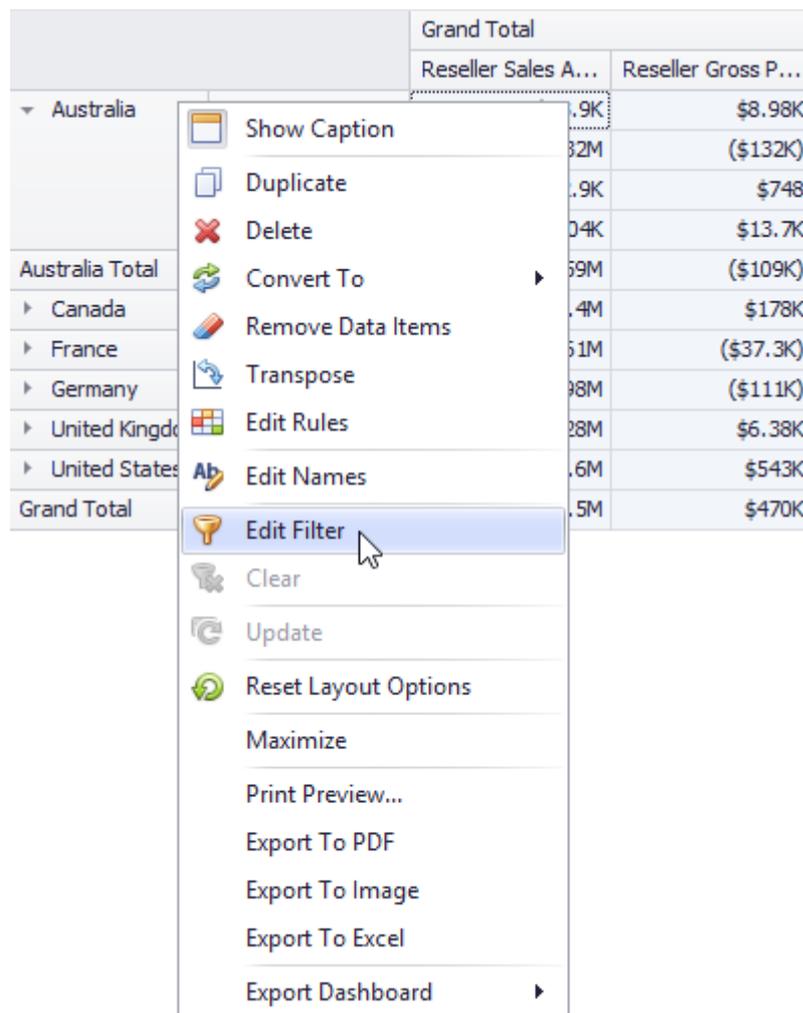
8.5.9 Filter

In the tab “Data” it is possible to create a quick filter for the whole pivot. It could be done in two ways:

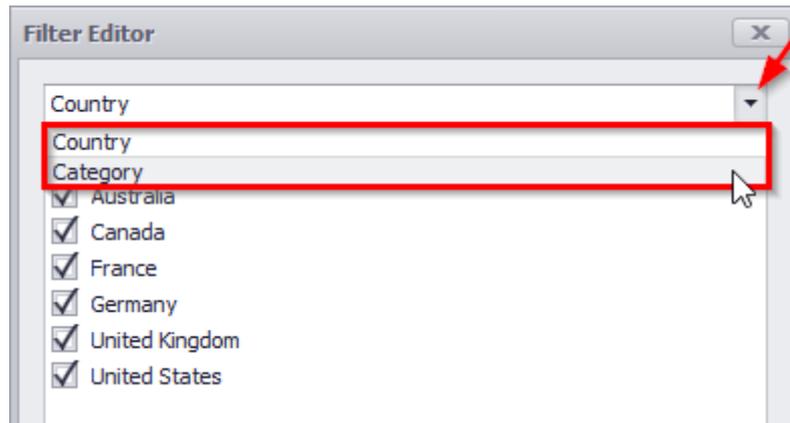
Way 1. Click “Edit Filter” button in “Data” tab in dashboard design window.



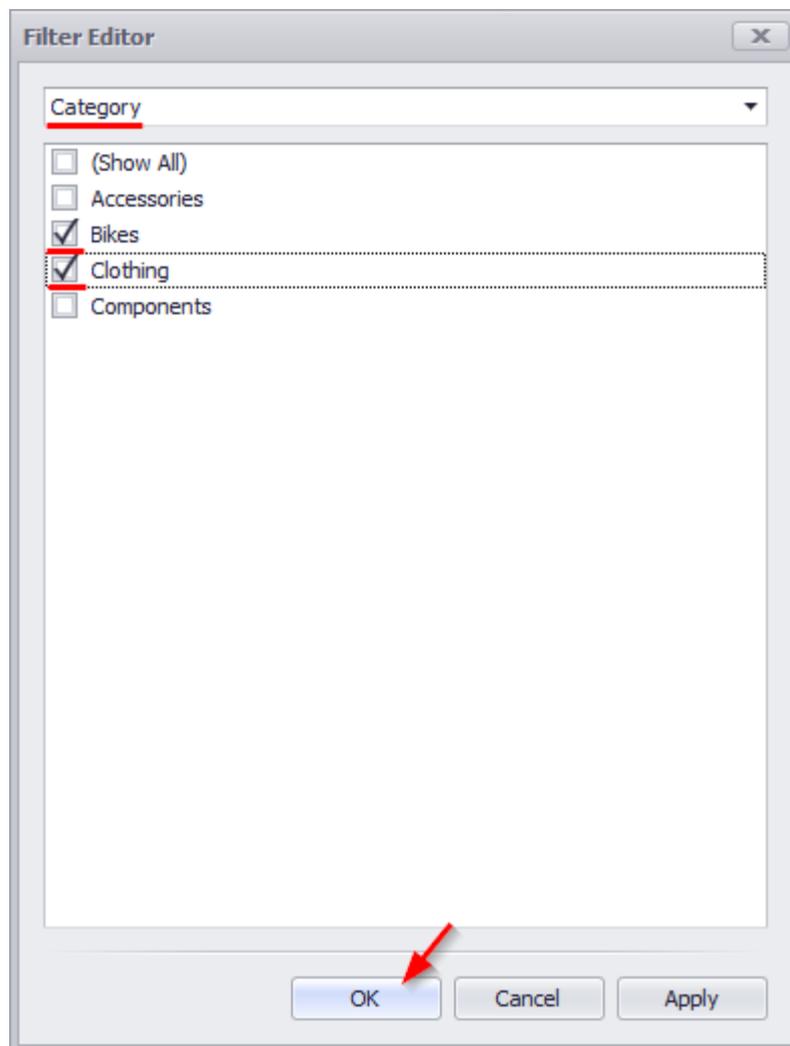
Way 2. Open context menu (click the right mouse button) at any place of a pivot.



Only those hierarchies, which are present in the report, may be a filter for a Pivot:



Let us display, for instance, values “Reseller Sales Amount” and “Reseller Gross Profit” for product categories “Bikes” and “Clothing”:

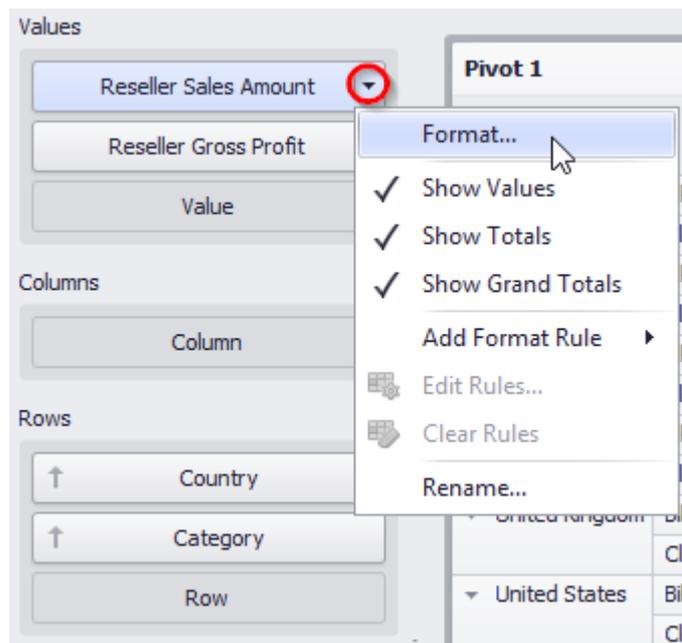


Pivot will look the following:

| | | Grand Total | |
|------------------|----------|---------------------|---------------------|
| | | Reseller Sales A... | Reseller Gross P... |
| ▼ Australia | Bikes | \$1.32M | (\$132K) |
| | Clothing | \$42.9K | \$748 |
| ▼ Canada | Bikes | \$11.6M | (\$112K) |
| | Clothing | \$379K | \$53.2K |
| ▼ France | Bikes | \$3.56M | (\$136K) |
| | Clothing | \$128K | \$15.5K |
| ▼ Germany | Bikes | \$1.54M | (\$136K) |
| | Clothing | \$71.6K | (\$882) |
| ▼ United Kingdom | Bikes | \$3.41M | (\$79.2K) |
| | Clothing | \$119K | \$13.4K |
| ▼ United States | Bikes | \$44.8M | (\$396K) |
| | Clothing | \$1.04M | \$151K |
| Grand Total | | \$68.1M | (\$758K) |

8.5.10 Format

In order to change the format of a calculating value, you need to open context menu:



A numeric-format form will open:

The screenshot shows a 'Numeric Format' dialog box with the following settings:

- Format type: Currency
- Unit: Auto
- Precision: 2
- Currency: Use dashboard settings
- Culture: Use dashboard settings
- Include group separator

The preview box displays the formatted number: \$1.23B and (\$1.23B).

The form contains following fields:

- ✓ Format type – format type may be:

Auto
General
Number
Currency
Scientific
Percent

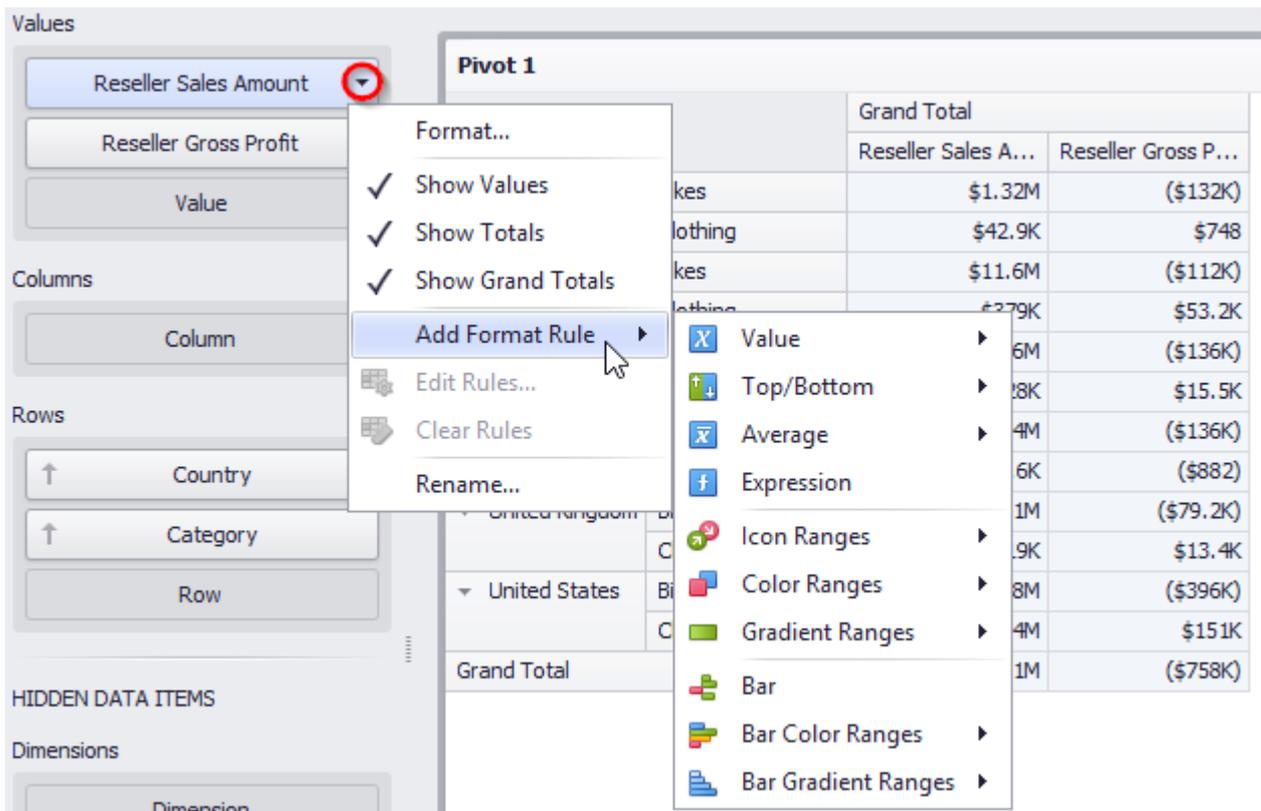
- ✓ Unit – Date and currency format type may have the following presentation:

Auto
Ones
Thousands
Millions
Billions

- ✓ Precision – number of symbols after comma;
- ✓ Currency – currency will use toolbar parameters by default (interface language), or you could choose specific currency type from a dropdown list;
- ✓ Culture – reference culture for a region should be specified;
- ✓ Include group separator – turn a space on/off.

8.5.11 Formatting

Upon opening value context menu, it is possible to create a formatting rule (highlighting):



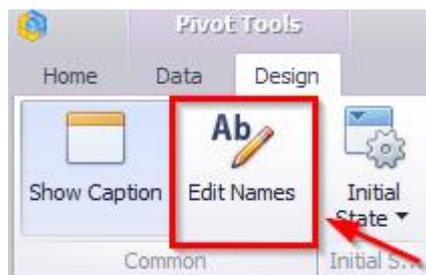
In abstract 8.18 a process of creation of formatting rules is described in more details.

8.5.12 Title

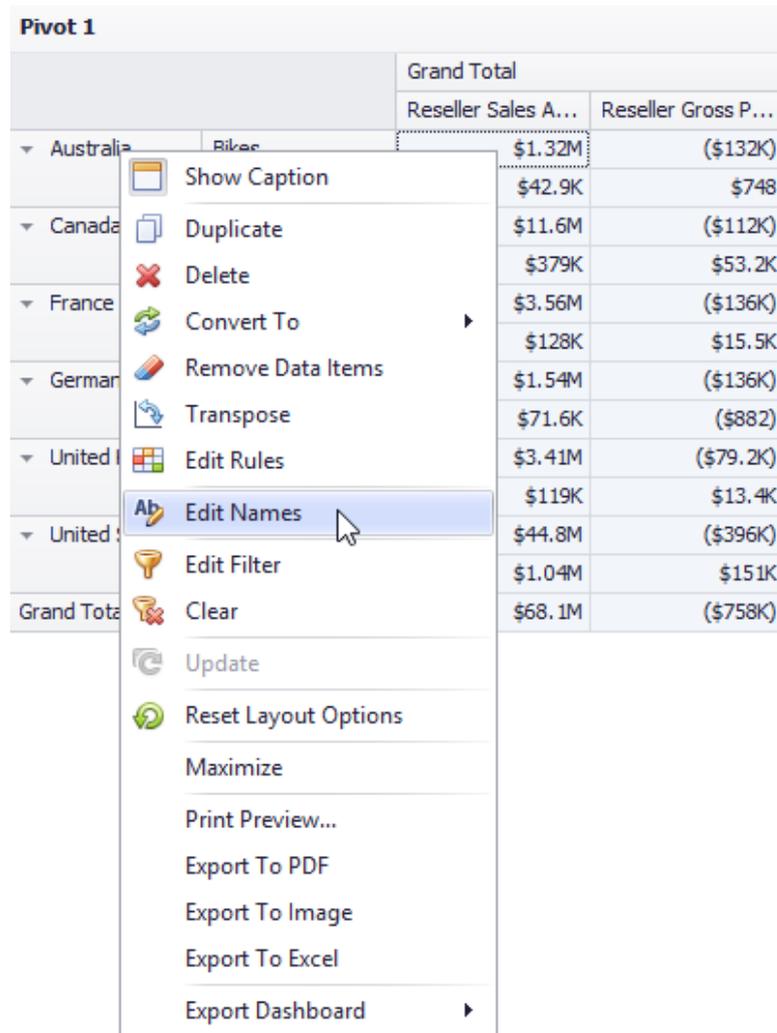
Before saving a created pivot let us rename its title.

This may be done in two ways:

Way 1. In "Design" tab press "Edit Names" icon.



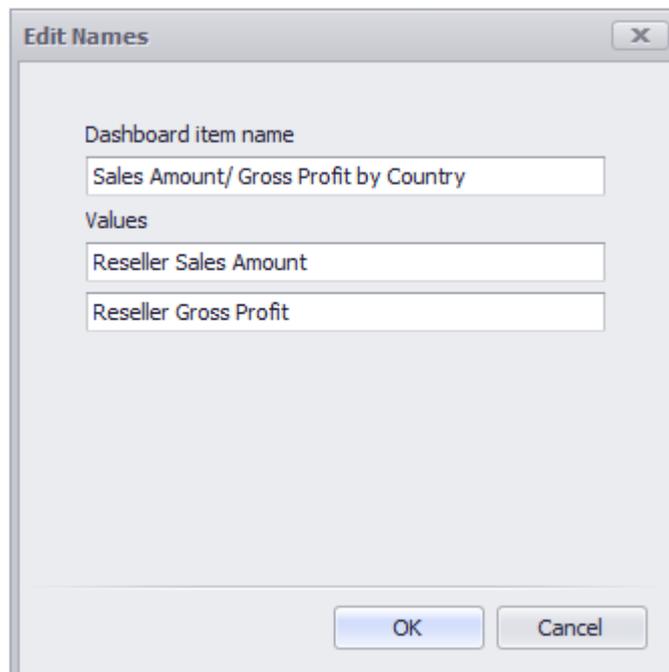
Way 2. Open context menu in a pivot (click the right mouse button) and choose “Edit Names” from the list.



The image shows a PivotTable titled "Pivot 1" with a context menu open over it. The menu includes options like "Show Caption", "Duplicate", "Delete", "Convert To", "Remove Data Items", "Transpose", "Edit Rules", "Edit Names", "Edit Filter", "Clear", "Update", "Reset Layout Options", "Maximize", "Print Preview...", "Export To PDF", "Export To Image", "Export To Excel", and "Export Dashboard". The "Edit Names" option is highlighted by the mouse cursor.

| | | Grand Total | |
|------------------|-------|---------------------|---------------------|
| | | Reseller Sales A... | Reseller Gross P... |
| ▼ Australia | Bikes | \$1.32M | (\$132K) |
| ▼ Canada | | \$42.9K | \$748 |
| ▼ France | | \$11.6M | (\$112K) |
| ▼ Germany | | \$379K | \$53.2K |
| ▼ United Kingdom | | \$3.56M | (\$136K) |
| ▼ United States | | \$128K | \$15.5K |
| ▼ United States | | \$1.54M | (\$136K) |
| ▼ United States | | \$71.6K | (\$882) |
| ▼ United States | | \$3.41M | (\$79.2K) |
| ▼ United States | | \$119K | \$13.4K |
| ▼ United States | | \$44.8M | (\$396K) |
| ▼ United States | | \$1.04M | \$151K |
| Grand Total | | \$68.1M | (\$758K) |

In an appeared form enter the following data:



The "Edit Names" dialog box is shown with the following fields:

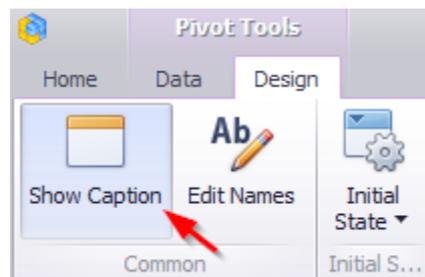
- Dashboard item name: Sales Amount/ Gross Profit by Country
- Values: Reseller Sales Amount
- Reseller Gross Profit

Buttons: OK, Cancel

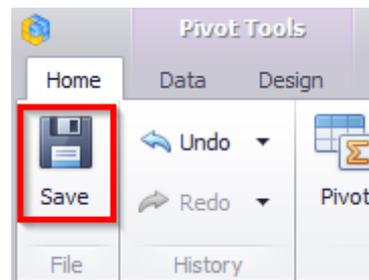
Now a pivot title looks the following:

| | | Grand Total | |
|------------------|----------|---------------------|---------------------|
| | | Reseller Sales A... | Reseller Gross P... |
| ▼ Australia | Bikes | \$1.32M | (\$132K) |
| | Clothing | \$42.9K | \$748 |
| ▼ Canada | Bikes | \$11.6M | (\$112K) |
| | Clothing | \$379K | \$53.2K |
| ▼ France | Bikes | \$3.56M | (\$136K) |
| | Clothing | \$128K | \$15.5K |
| ▼ Germany | Bikes | \$1.54M | (\$136K) |
| | Clothing | \$71.6K | (\$882) |
| ▼ United Kingdom | Bikes | \$3.41M | (\$79.2K) |
| | Clothing | \$119K | \$13.4K |
| ▼ United States | Bikes | \$44.8M | (\$396K) |
| | Clothing | \$1.04M | \$151K |
| Grand Total | | \$68.1M | (\$758K) |

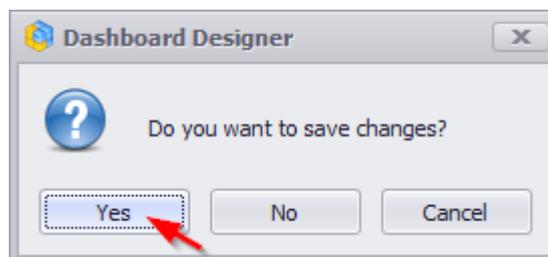
If needed, title may not be displayed:



Before closing a pivot should be saved by clicking a “Save” icon in the toolbar:



Or an application will offer to save a pivot itself:

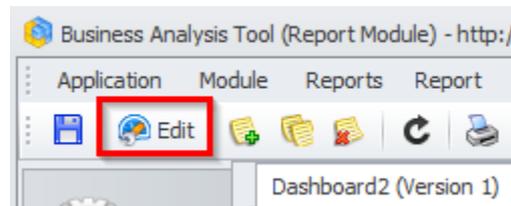


A new dashboard element — a pivot Reseller will be the result:

The screenshot shows the Business Analysis Tool (Report Module) interface. The main window displays a dashboard titled "Reseller" with a pivot table titled "Sales Amount/gross Profit by Country". The pivot table shows sales and gross profit data for various countries and product categories.

| | | Grand Total | |
|----------------|----------|---------------------|---------------------|
| | | Reseller Sales A... | Reseller Gross P... |
| Australia | Bikes | \$1.32M | (\$132K) |
| | Clothing | \$42.9K | \$748 |
| Canada | Bikes | \$11.6M | (\$112K) |
| | Clothing | \$379K | \$53.2K |
| France | Bikes | \$3.56M | (\$136K) |
| | Clothing | \$128K | \$15.5K |
| Germany | Bikes | \$1.54M | (\$136K) |
| | Clothing | \$71.6K | (\$882) |
| United Kingdom | Bikes | \$3.41M | (\$79.2K) |
| | Clothing | \$119K | \$13.4K |
| United States | Bikes | \$44.8M | (\$396K) |
| | Clothing | \$1.04M | \$151K |
| Grand Total | | \$68.1M | (\$758K) |

For next dashboard element editing it is needed to click an “Edit” icon in the toolbar:



8.5.13 Export

If needed you can export a pivot into PDF, Excel or a picture format by clicking the right mouse button in a pivot:

| | | Grand Total | |
|------------------|------|---------------------|---------------------|
| | | Reseller Sales A... | Reseller Gross P... |
| ▼ Australia | Bike | | (\$132K) |
| | Clot | | \$748 |
| ▼ Canada | Bike | | (\$112K) |
| | Clot | | \$53.2K |
| ▼ France | Bike | | (\$136K) |
| | Clot | | \$15.5K |
| ▼ Germany | Bike | | (\$136K) |
| | Clot | | (\$882) |
| ▼ United Kingdom | Bike | | (\$79.2K) |
| | Clot | | \$13.4K |
| ▼ United States | Bike | | (\$396K) |
| | Clot | | \$151K |
| Grand Total | | | (\$758K) |

- Show Caption
- Duplicate
- Delete
- Convert To
- Remove Data Items
- Transpose
- Edit Rules
- Edit Names
- Edit Filter
- Clear
- Update
- Reset Layout Options
- Maximize
- Print Preview...
- Export To PDF
- Export To Image
- Export To Excel
- Export Dashboard

✓ Export To PDF

The following options are available when exporting the Pivot dashboard item to a PDF:

Export To PDF - Sales Amount/Gross Profit by Country

Page Layout: Portrait Landscape

Size: Letter

Show Title:

Title: Sales Amount/Gross Profit by Cou

Print Headers on Every Page:

Scale Mode: None

Scale Factor: 1

Auto Fit Page Count: 1

Include: Filters Parameters

Position: Below

Reset Export Cancel

- Page Layout – page orientation;
- Size – page size;
- Show Title – to display or not to display page title;
- Title – name of page title;
- Print Headers on Every Page – to print or not to print a title on every page;
- Scale Mode – zoom mode;
- Scale Factor – specifies the scale factor (in fractions of 1) by which a dashboard is scaled;
- Auto Fit Page Count – specifies the number of horizontal/vertical pages spanning the total width/height of a dashboard;
- Include Filters / Parameters – allows you to include master filter values / parameter values to the exported document;
- Position – specifies the position of the master filter and parameter values in the exported document.

✓ Export To Excel

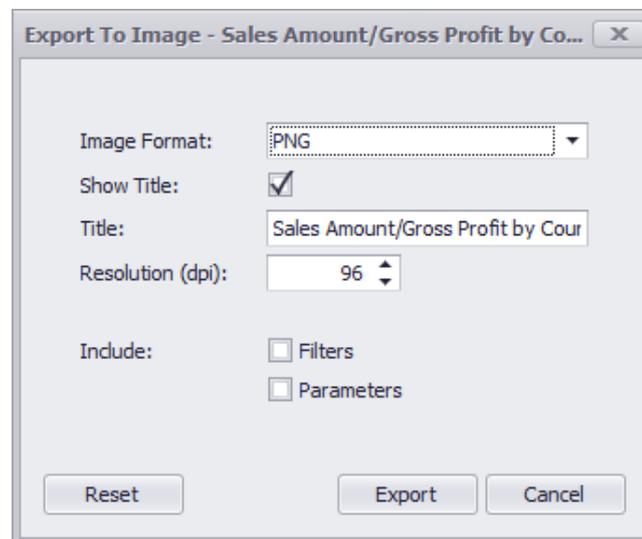
While exporting into Excel the following options are available:



- Excel Format – xlsx, xls, csv formats;
- Separator – specifies the string used to separate values in the exported CSV document;
- Include Filters / Parameters – allows you to include master filter values / parameter values to the exported document;
- Position – specifies the position of the master filter and parameter values in the exported document.

✓ Export to Image.

While exporting into a picture format the following options are available:

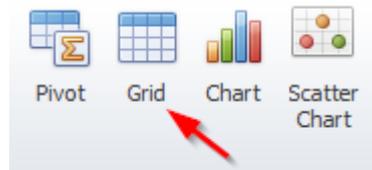


- Image Format – PNG, JPEG, GIF formats;
- Show Title – specifies the image format in which the dashboard item is exported;
- Title – name of a pivot title;
- Resolution(dpi) – specifies the resolution (in dpi) used to export a dashboard;
- Include Filters / Parameters – allows you to include master filter values / parameter values to the exported document.

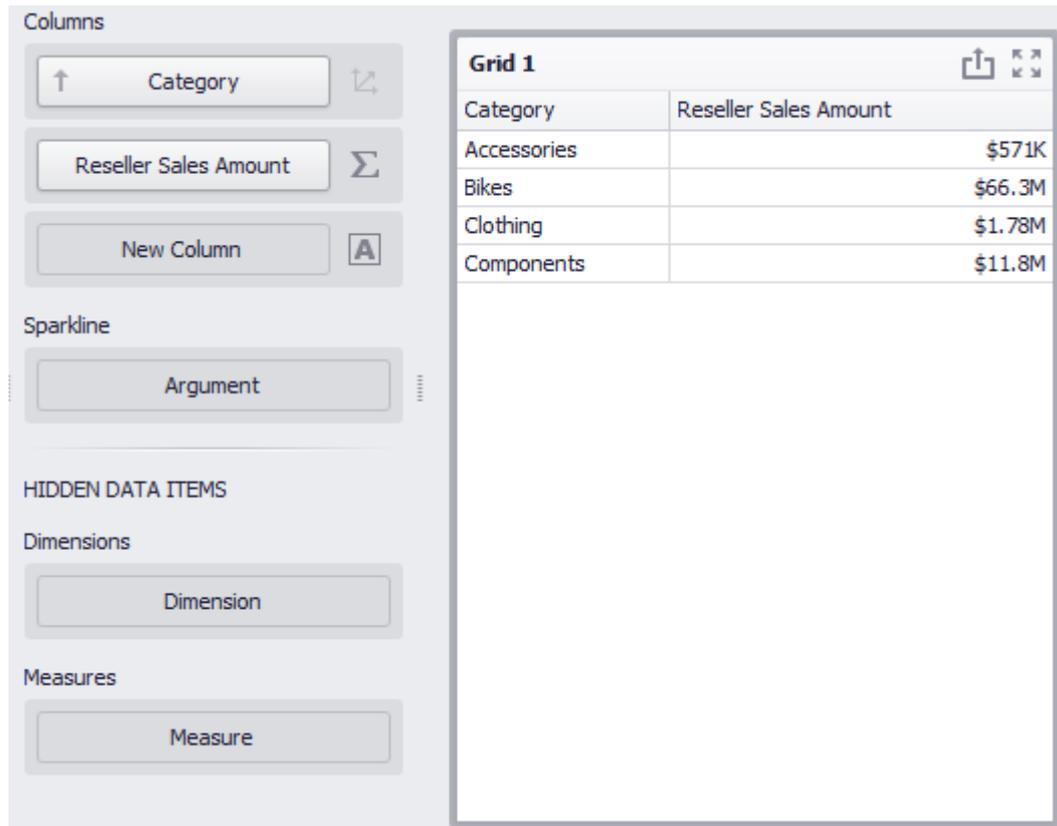
8.6 Grid

Let us add a new element Grid to an already-existing dashboard.

For this we first click an “Edit” icon on a dashboard toolbar, and then in a dashboard design window click a “Grid” button:



Let us look at the grid, which will display the results of sales by product categories. In the column move a “Category dimension and a “Reseller Sales Amount” measure:

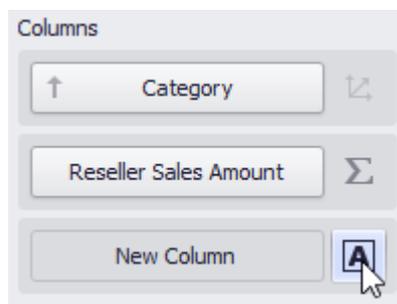


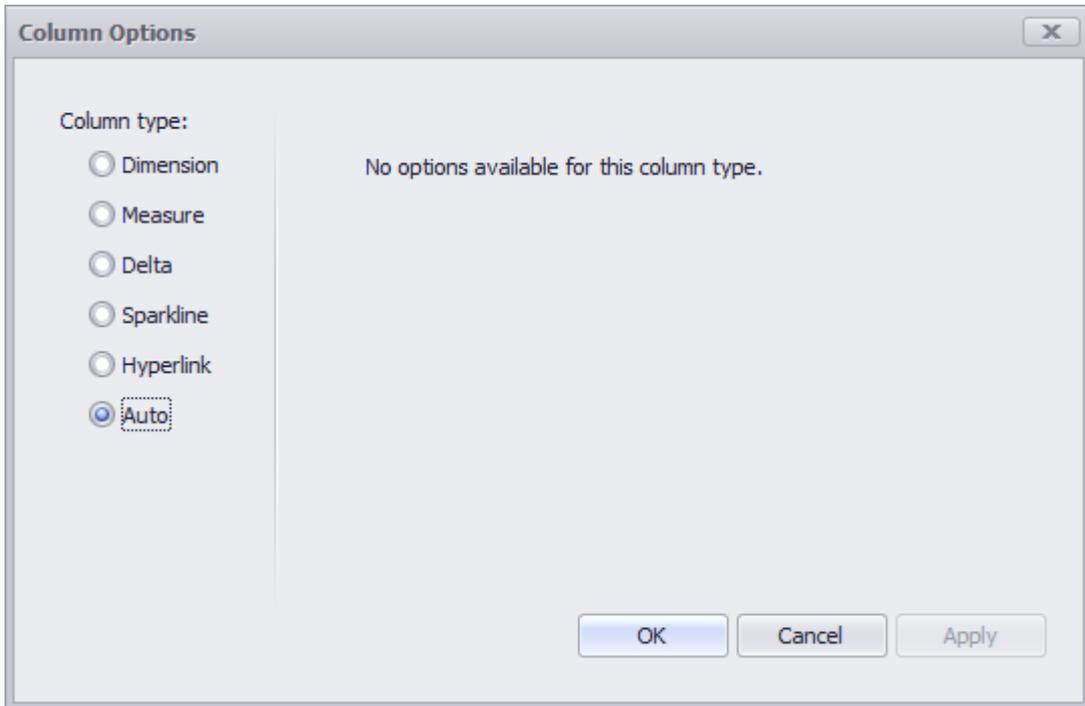
The screenshot shows a dashboard design window. On the left, there is a 'Columns' panel with three items: 'Category' (with an upward arrow icon), 'Reseller Sales Amount' (with a summation symbol icon), and 'New Column' (with an 'A' icon). Below this is a 'Sparkline' panel with 'Argument'. Underneath is a 'HIDDEN DATA ITEMS' section with 'Dimensions' (containing 'Dimension') and 'Measures' (containing 'Measure'). On the right, a 'Grid 1' is displayed with two columns: 'Category' and 'Reseller Sales Amount'. The data rows are: Accessories (\$571K), Bikes (\$66.3M), Clothing (\$1.78M), and Components (\$11.8M).

| Category | Reseller Sales Amount |
|-------------|-----------------------|
| Accessories | \$571K |
| Bikes | \$66.3M |
| Clothing | \$1.78M |
| Components | \$11.8M |

8.6.1 Column type

Columns in a grid may be of the following type:

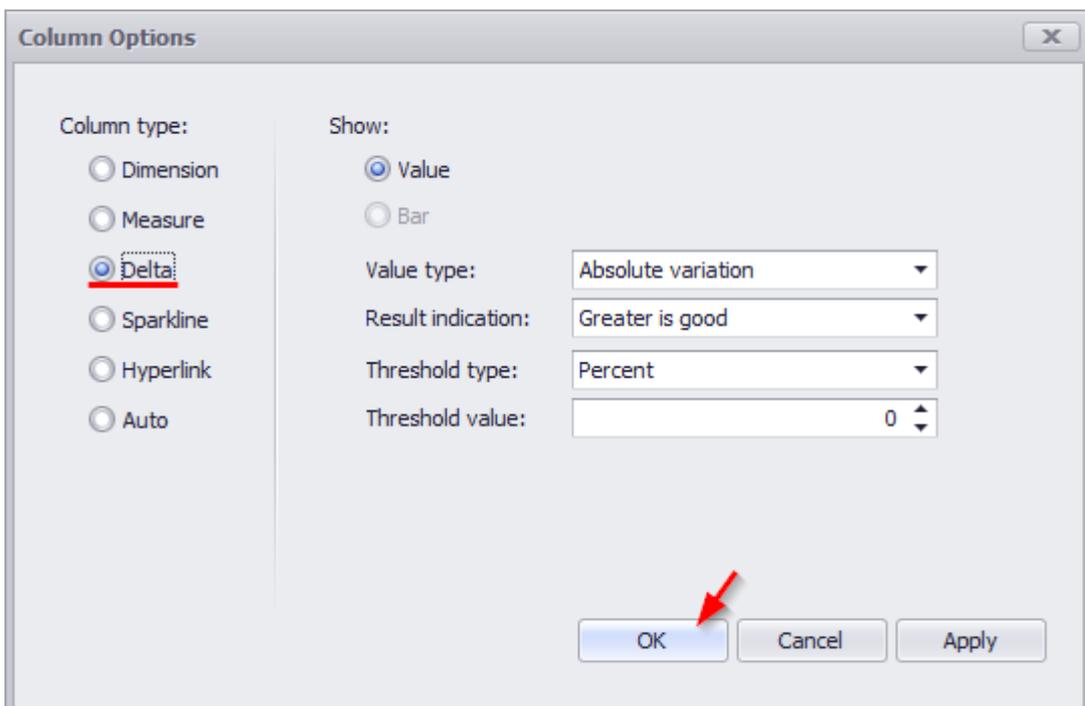




- ✓ Dimension – a column shows DB dimension;
- ✓ Measure – a column shows measure value;
- ✓ Delta – a column, which shows a delta of two measures, where one is an actual and the other – a target;
- ✓ Sparkline – a chart, which shown a measure value in a given interval (date and time);
- ✓ Hyperlink – a *hyperlink* column allows you to display hyperlinks in the Grid dashboard item;
- ✓ Auto – a column type is defined automatically.

8.6.2 Delta column

Let us create a column of a “Delta” type. Choose the type and click an «OK» button:



In a column field two new fields – “Actual” and “Target” appear. Let’s choose a “Internet Order Quantity” measure for real values (actual), and a “Reseller Order Quantity” measure will be a target. We will get a new column, which will show a delta value and its indicator:

The screenshot shows a BI tool interface with a column field configuration on the left and a data grid on the right. The column field is named "New Column" and contains "Internet Order Quantity" and "Reseller Order Quantity". The data grid, titled "Grid 1", shows the following data:

| Category | Reseller Sales Amount | Internet Order Quantity vs Reseller Order Quantity |
|-------------|-----------------------|--|
| Accessories | \$571K | +10.3K ▲ |
| Bikes | \$66.3M | -59.8K ▼ |
| Clothing | \$1.78M | -55.4K ▼ |
| Components | \$11.8M | |

Red annotations point to the delta values and indicators in the grid, labeled "Delta Values" and "Delta Indication".

A delta value type may be the following:

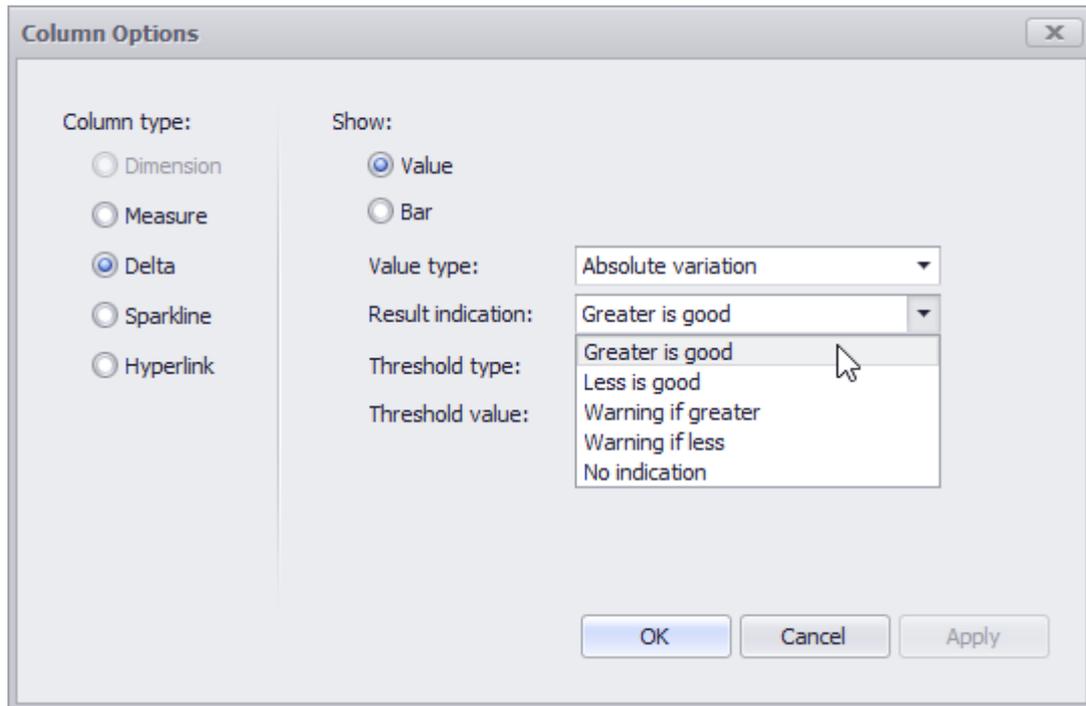
The "Column Options" dialog box shows the following configuration:

- Column type:**
 - Dimension
 - Measure
 - Delta
 - Sparkline
 - Hyperlink
- Show:**
 - Value
 - Bar
- Value type:** Absolute variation
- Result indication:** Actual value
- Threshold type:**
- Threshold value:** U

Buttons: OK, Cancel, Apply

- Actual value – an actual measure value;
- Absolute variation – difference between an actual and a target;
- Percent variation – percent of difference between an actual and a target;
- Percent of target – percent of an actual and a target.

An indicator may have the following value:



- Greater is good – «good» a target is achieved (an actual is bigger than a target);
- Less is good – «bad» a goal is not achieved (an actual is less than a target);
- Warning if greater – a target is bigger than an actual;
- Warning if less – a target is less than an actual;
- No indication – indication is not displayed.

For the delta, you can set the threshold value, which will indicate the excess of the actual above the target.

The threshold can be of the following type:

Column Options

Column type:

- Dimension
- Measure
- Delta
- Sparkline
- Hyperlink

Show:

- Value
- Bar

Value type: Absolute variation

Result indication: Greater is good

Threshold type: Percent

Threshold value: Absolute
Percent

OK Cancel Apply

Let's get back to our grid and see if the target is achieved as a percentage. For this, let's fill out the form as follows:

Column Options

Column type:

- Dimension
- Measure
- Delta
- Sparkline
- Hyperlink

Show:

- Value
- Bar

Value type: Percent variation

Result indication: Greater is good

Threshold type: Percent

Threshold value: 0.00 %

OK Cancel Apply

As a result, we will see a delta column in which all the values exceeding the target are highlighted with a green indicator, and the red values are those that have not reached a target:

| Grid 1 | | |
|-------------|-----------------------|--|
| Category | Reseller Sales Amount | Internet Order Quantity vs Reseller Order Quantity |
| Accessories | \$571K | +39.68 % ▲ |
| Bikes | \$66.3M | -79.73 % ▼ |
| Clothing | \$1.78M | -85.89 % ▼ |
| Components | \$11.8M | |

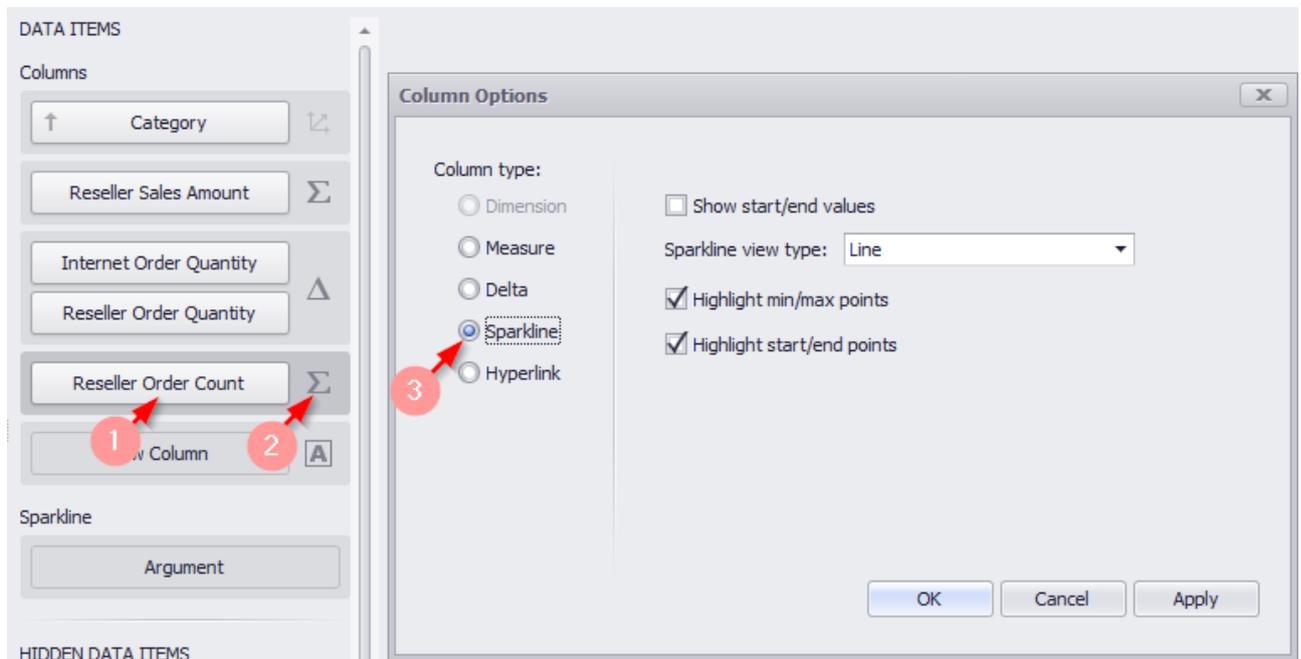
Obviously, the target was achieved only for “Accessories” category.
The delta value can be displayed not only as text, but also as a diagram:

The screenshot shows the 'Column Options' dialog box. On the left, the 'Columns' pane lists 'Category', 'Reseller Sales Amount', 'Internet Order Quantity', and 'Reseller Order Quantity'. A red arrow points to the 'Internet Order Quantity' column's options. In the 'Column Options' dialog, under 'Column type', 'Delta' is selected. Under 'Show', 'Bar' is selected and 'Always show zero level' is unchecked. A red arrow points to the 'OK' button.

| Grid 1 | | |
|-------------|-----------------------|--|
| Category | Reseller Sales Amount | Internet Order Quantity vs Reseller Order Quantity |
| Accessories | \$571K | |
| Bikes | \$66.3M | |
| Clothing | \$1.78M | |
| Components | \$11.8M | |

8.6.3 Sparkline Column

Let's create a column of a “Sparkline” type. For this, let's consider how the quantity of orders for product categories changed depending on the month of the year. For this, we will insert the “Reseller Order Count” measure in the columns and select the “Sparkline” column type:



The following settings will be available in the opened form:

- ✓ Show start/end values – species whether or not to display sparkline start/end values within a grid cell;
- ✓ Sparkline view type:
 - Line
 - Area
 - Bar
 - Win/Loss – a column-type graph (of the same size) with a Win (maximum value) mark and a Loss (minimum value) mark.
- ✓ Highlight min/max points
- ✓ Highlight start/end points.

Fill out the form in the following way:

Column Options

Column type:

- Dimension
- Measure
- Delta
- Sparkline
- Hyperlink

Show start/end values

Sparkline view type: Area

Highlight min/max points

Highlight start/end points

OK Cancel Apply

Then in the “Sparkline” field, drag the “Month of Year” dimension. As a result, we get the following report:

Columns

- Category
- Reseller Sales Amount
- Internet Order Quantity
- Reseller Order Quantity
- Reseller Order Count
- New Column

Sparkline

- Month of Year

HIDDEN DATA ITEMS

Dimensions

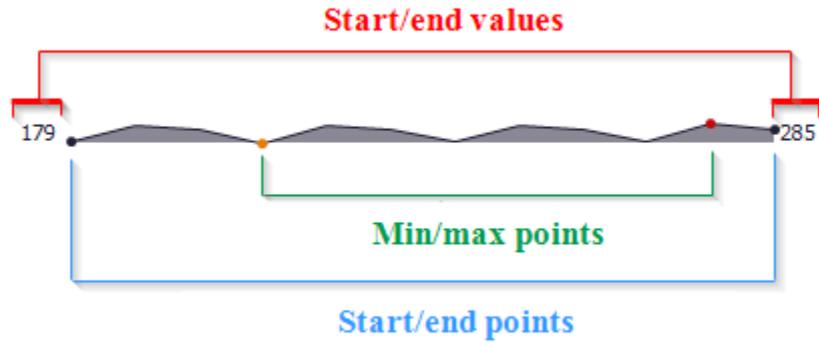
- Dimension

Measures

Grid 1

| Category | Reseller Sales Amount | Internet Order Quantity vs Reseller Order Quantity | Reseller Order Count |
|-------------|-----------------------|--|----------------------|
| Accessories | \$571K | | 60 119 |
| Bikes | \$66.3M | | 179 285 |
| Clothing | \$1.78M | | 127 221 |
| Components | \$11.8M | | 97 257 |

The following data is displayed in the sparkline column:



8.6.4 Hyperlink column

A hyperlink column allows you to display hyperlinks in the Grid dashboard item.

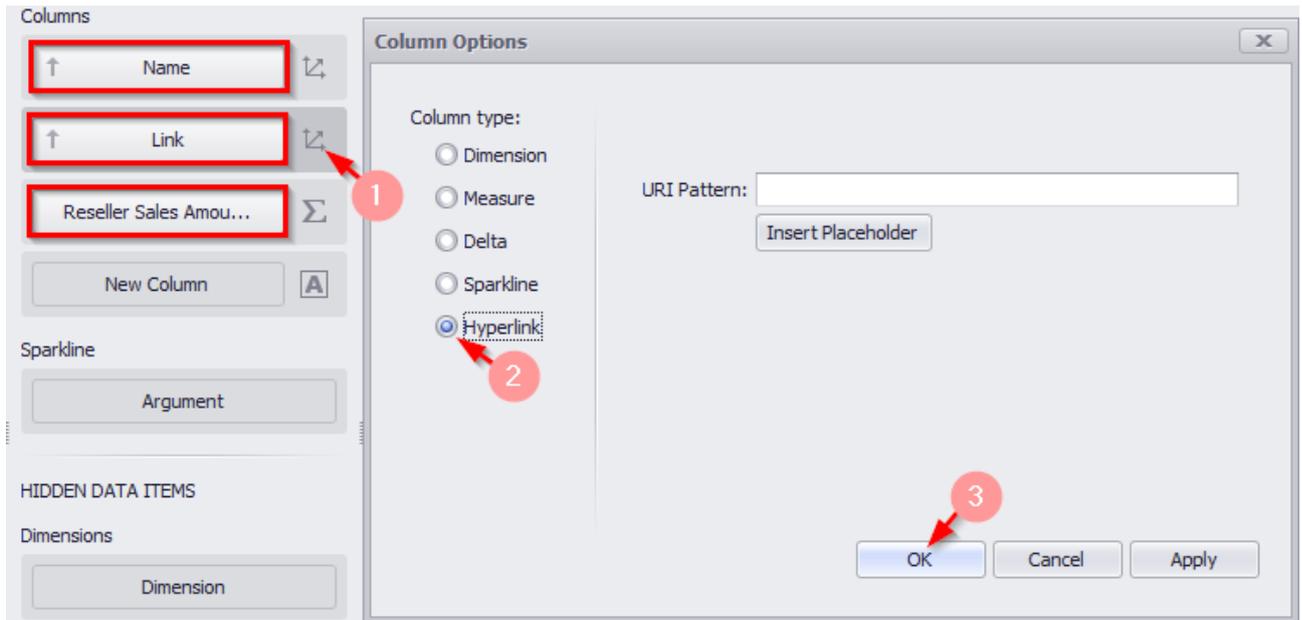
You can provide hyperlinks as a separate data column or they can be automatically created at run-time from any column using the specified URI pattern.

8.6.4.1 Data Field Containing Uri Values

For example, take the data source of type excel-table, which contains the following fields:

| | A | B | C | D |
|---|----------------|---|-----------------------|---|
| 1 | Name | Link | Reseller Sales Amount | |
| 2 | Australia | https://en.wikipedia.org/wiki/Australia | 1,594,335.38 | |
| 3 | Canada | https://en.wikipedia.org/wiki/Canada | 14,377,925.60 | |
| 4 | France | https://en.wikipedia.org/wiki/France | 4,607,537.94 | |
| 5 | Germany | https://en.wikipedia.org/wiki/Germany | 1,983,988.04 | |
| 6 | United Kingdom | https://en.wikipedia.org/wiki/United Kin | 4,279,008.83 | |
| 7 | United States | https://en.wikipedia.org/wiki/United Sta | 53,607,801.21 | |
| 8 | | | | |

Now let's create a table and fill it with the following data:



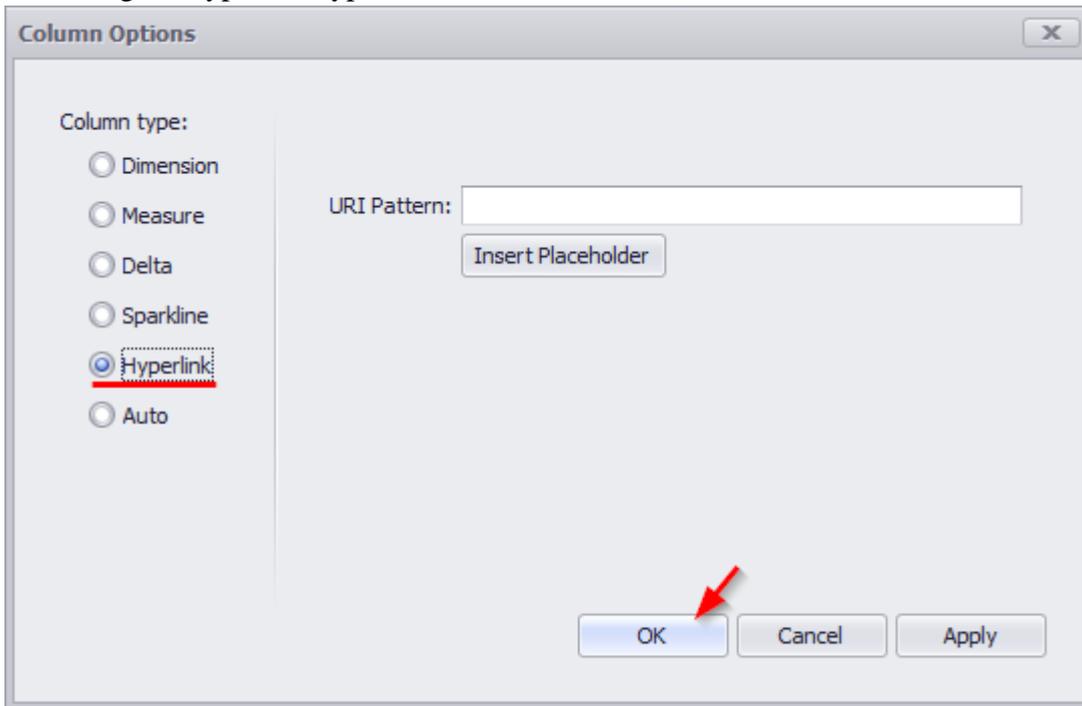
The Grid displays column values as clickable hyperlinks allowing you to navigate to the Wiki's pages:

| Name | Link | Reseller Sales Amount (Sum) |
|----------------|---|-----------------------------|
| Australia | https://en.wikipedia.org/wiki/Australia | 1.59M |
| Canada | https://en.wikipedia.org/wiki/Canada | 14.4M |
| France | https://en.wikipedia.org/wiki/France | 4.61M |
| Germany | https://en.wikipedia.org/wiki/Germany | 1.98M |
| United Kingdom | https://en.wikipedia.org/wiki/United_Kingdom | 4.28M |
| United States | https://en.wikipedia.org/wiki/United_States | 53.6M |

You can bind the display value and URI value to different data fields. Click the “New Column” data item placeholder:



and change its type to “Hyperlink”:



Drag and drop the “OfficialName” field to the display value data item placeholder to display official country names. Drag and drop the “Link” field to the Uri data item placeholder to specify URIs.

The Grid displays official country names with links obtained from the Link data source field:

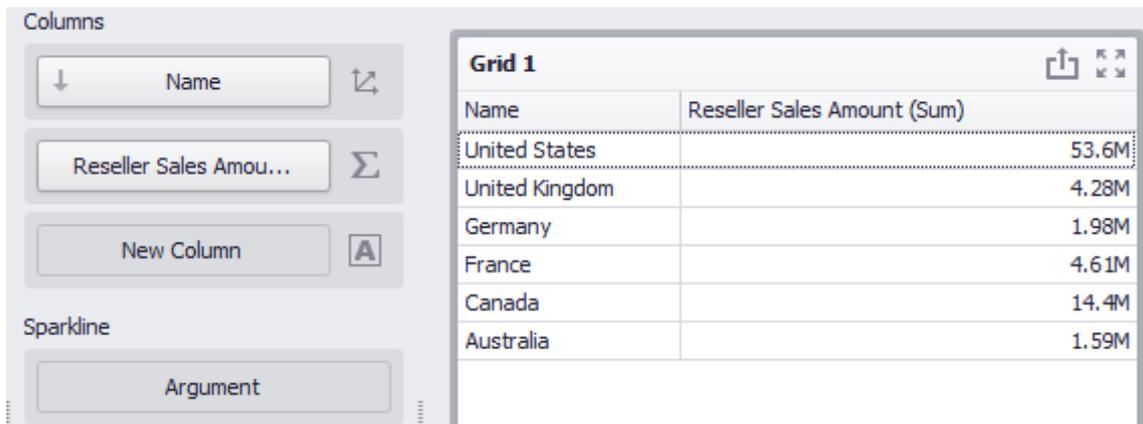
The 'Columns' pane on the left shows the 'OfficialName' and 'Link' fields highlighted with a red box. The 'Grid 1' table on the right displays the following data:

| Name | Reseller Sales Amount (...) | OfficialName |
|--------------|-----------------------------|---|
| Australia | 1.59M | Commonwealth of Australia |
| Canada | 14.4M | Canada |
| France | 4.61M | French Republic |
| Germany | 1.98M | Federal Republic of Germany |
| United Ki... | 4.28M | United Kingdom of Great Britain and No... |
| United St... | 53.6M | United States of America |

8.6.4.2 URI

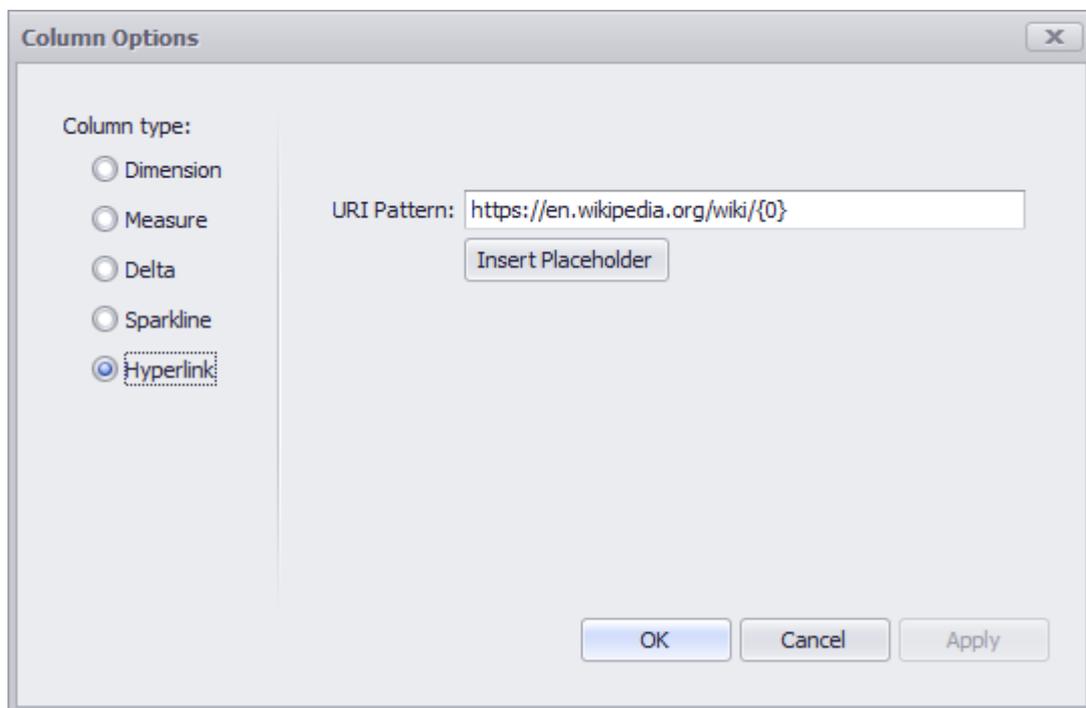
In this case, a specified URI pattern is used to generate links.

Create the following grid:



The screenshot shows the 'Columns' pane on the left and a grid titled 'Grid 1' on the right. The grid has two columns: 'Name' and 'Reseller Sales Amount (Sum)'. The data rows are: United States (53.6M), United Kingdom (4.28M), Germany (1.98M), France (4.61M), Canada (14.4M), and Australia (1.59M). The 'Name' column has a small icon next to it, indicating its column type.

Click the “Column Type” indicator button next to the “Name” data item and change its type to “Hyperlink”. Specify the URI Pattern option as follows: `https://en.wikipedia.org/wiki/{0}`



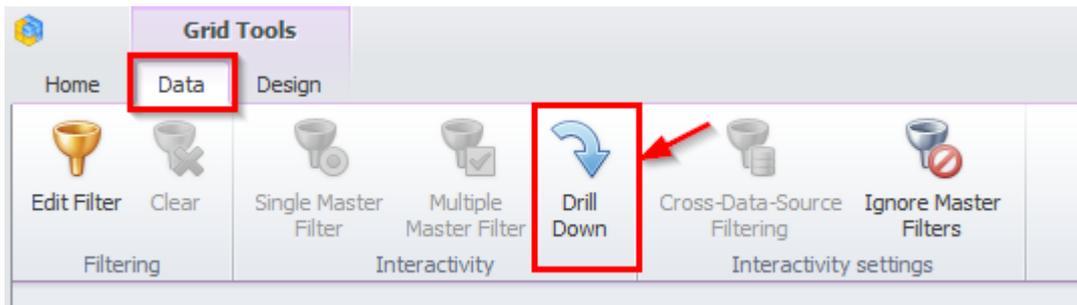
The 'Column Options' dialog box is shown. On the left, under 'Column type:', the 'Hyperlink' radio button is selected. In the center, the 'URI Pattern' field contains the text `https://en.wikipedia.org/wiki/{0}`. Below the field is an 'Insert Placeholder' button. At the bottom are 'OK', 'Cancel', and 'Apply' buttons.

The {0} placeholder is replaced with the “Name” data item value. The links are generated for country names and displayed in the grid as illustrated in the following picture:

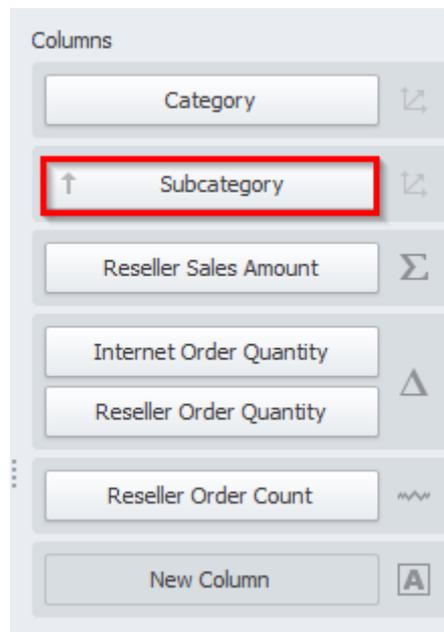
| Name | Reseller Sales Amount (Sum) |
|---|-----------------------------|
| United States | 53.6M |
| United Kingdom | 4.28M |
| Germany | 1.98M |
| France | 4.61M |
| Canada | 14.4M |
| Australia | 1.59M |

8.6.5 Drill Down

Let's see what product subcategories in the “Accessories” category were of positive dynamics. For this, in the “Data” tab on the toolbar, click the “Drill Down” icon



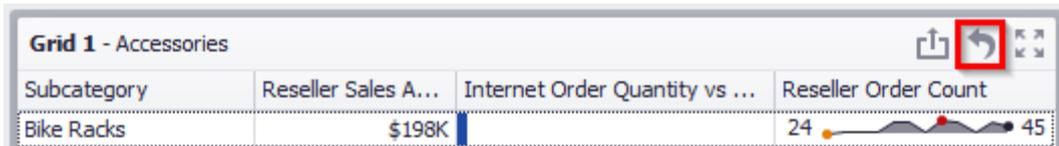
and in the grid itself, in the “Columns” field under the “Category” hierarchy, drag the “Subcategory” hierarchy:



Now by clicking the “Accessories” product category, we will see all the product subcategories that it includes:

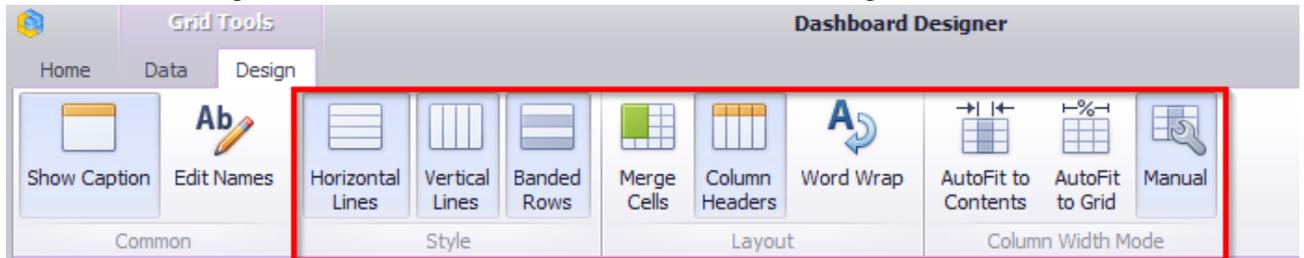
| Subcategory | Reseller Sales A... | Internet Order Quantity vs ... | Reseller Order Count |
|-------------------|---------------------|--------------------------------|----------------------|
| Bike Racks | \$198K | | 24 45 |
| Bike Stands | | | 0 0 |
| Bottles and Cages | \$7.48K | | 26 47 |
| Cleaners | \$11.2K | | 27 39 |
| Fenders | | | 0 0 |
| Helmets | \$259K | | 54 90 |
| Hydration Packs | \$65.5K | | 16 30 |
| Locks | \$16.2K | | 11 22 |
| Pumps | \$13.5K | | 12 22 |
| Tires and Tubes | \$925 | | 2 13 |

In order to get back to the initial grid view click a grid icon:



8.6.6 Additional grid properties

In a “Design” tab of a Grid dashboard element the following toolbar is available:



- ✓ Horizontal Lines – show horizontal grid lines;
- ✓ Vertical Lines – show vertical grid lines;
- ✓ Banded Rows – banded rows are not supported when cell merging is enabled;

| Category | Reseller Sales Amount | Internet Order Quantity vs Reseller Ord... | Reseller Order Count |
|-------------|-----------------------|--|----------------------|
| Accessories | \$571K | | 60 |
| Bikes | \$66.3M | | 179 |
| Clothing | \$1.78M | | 127 |
| Components | \$11.8M | | 97 |

- ✓ Merge Cells – merge adjacent cells with identical data (“Drill Down” has to be off);

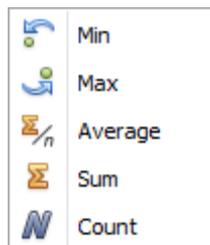
| Category | Subcategory | Reseller Sales Amount | Internet Order Quantity vs Re... | Reseller Order Count |
|-------------|-------------------|-----------------------|----------------------------------|----------------------|
| Accessories | Bike Racks | \$198K | | 24 |
| | Bike Stands | | | 0 |
| | Bottles and Cages | \$7.48K | | 26 |
| | Cleaners | \$11.2K | | 27 |
| | Fenders | | | 0 |
| | Helmets | \$259K | | 54 |
| | Hydration Packs | \$65.5K | | 16 |
| | Locks | \$16.2K | | 11 |
| | Pumps | \$13.5K | | 12 |
| | Tires and Tubes | \$925 | | 2 |
| Bikes | Mountain Bikes | \$26.5M | | 63 |
| | Road Bikes | \$29.4M | | 93 |
| | Touring Bikes | \$10.5M | | 23 |

- ✓ Column – show column headers;
- ✓ Word Wrap;
- ✓ AutoFit to Contents;
- ✓ AutoFit to Grid;
- ✓ Manual – adjust the width of columns manually.

By clicking a grid title, the following functionality will be available:

| Category | Subcategory | Reseller Sales A... | Internet Order... | Reseller Order Count |
|----------|-------------------|---------------------|-------------------|----------------------|
| | Bike Racks | \$198K | | 24 |
| | Bike Stands | | | 0 |
| | Bottles and Cages | \$7.48K | | 26 |
| | Cleaners | \$11.2K | | 27 |
| | Fenders | | | 0 |
| | Helmets | \$259K | | 54 |
| | Hoodies | \$65.5K | | 16 |
| | Locks | \$16.2K | | 11 |
| | Pumps | \$13.5K | | 12 |
| | Tire | \$925 | | 2 |
| | Mountain Bikes | \$26.5M | | 63 |

- ✓ Fit to Content – fit the column width to its content;
- ✓ Fit Width – specify the column width and fix it;
- ✓ Column Width – specify the fixed column width;
- ✓ Add Format Rule – possibility to choose one of the formatting ways form a dropdown list (the process is described in more details in abstract 8.18);
- ✓ Edit Rules – possibility to change the existing highlighting rules;
- ✓ Clear Rules – deletion of all the highlighting rules;
- ✓ Add Total – possibility to display:



- ✓ Clear Totals – delete all summaries.

Let's display the minimum and maximum value of the “Reseller Sales Amount” measure in our grid:

| Subcategory | Reseller Sales A... | Internet Order Quantity vs... | Reseller Order Count |
|-------------------|---------------------|-------------------------------|----------------------|
| Bike Racks | \$198K | | 24 |
| Bike Stands | | | 0 |
| Bottles and Cages | \$7.48K | | 26 |
| Cleaners | \$11.2K | | 27 |
| Fenders | | | 0 |
| Min = \$925 | | | |
| Max = \$259K | | | |

8.6.7 Export

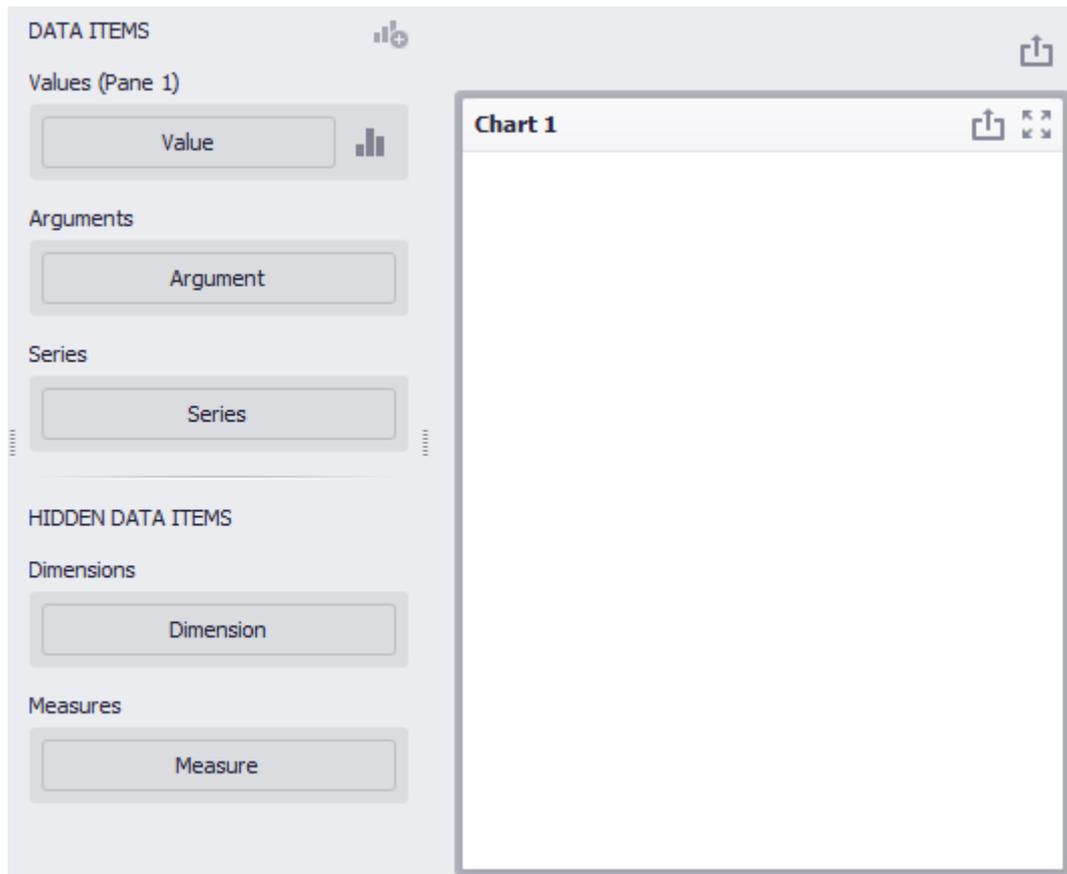
A grid can be exported into PDF, Excel or a picture format. Way are described in abstract 8.5.13.

8.7 Chart

To create a chart, you need to click a “Chart” icon in the dashboard designer window on the toolbar:



As a result, a new dashboard element appears:

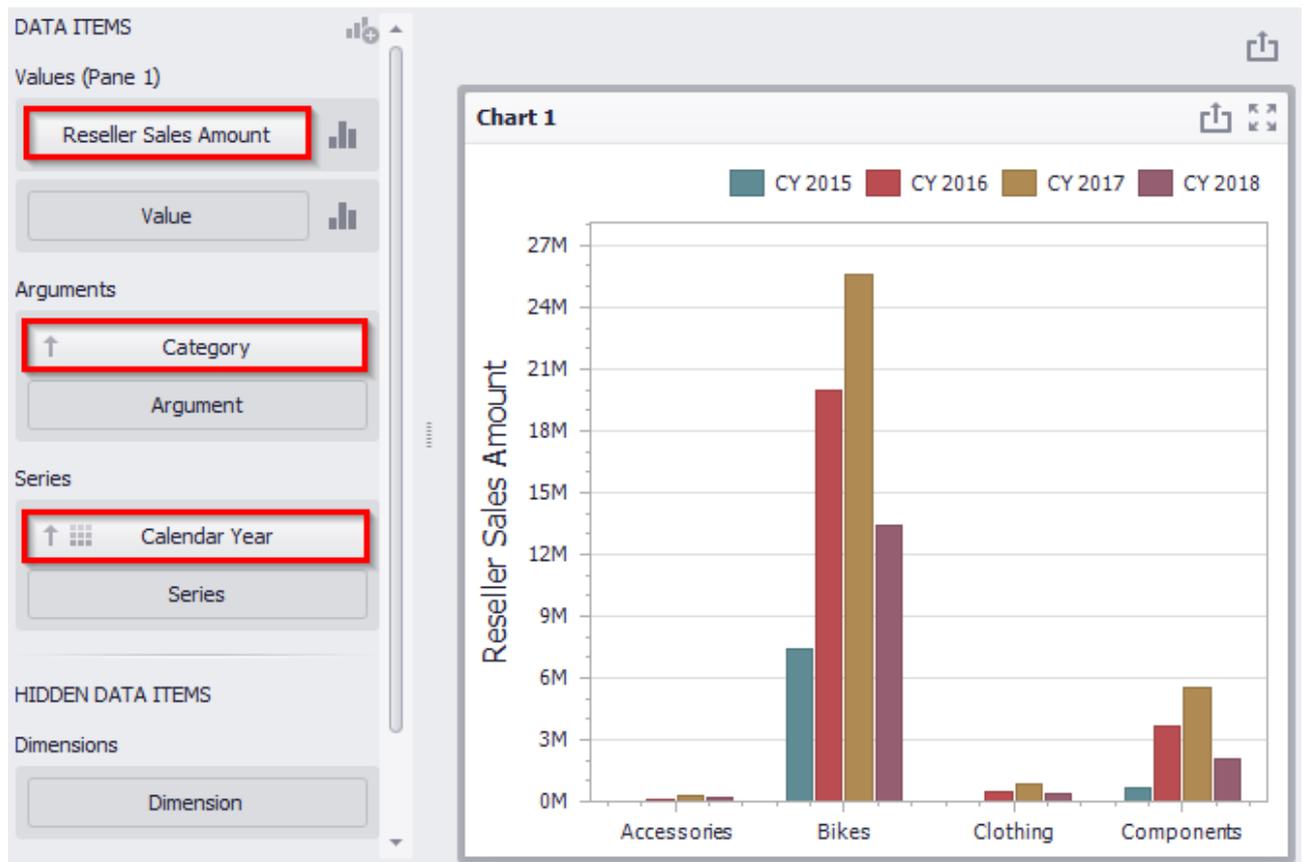


The left item contains the following chart parameters:

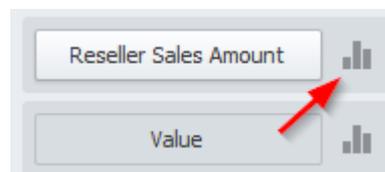
- Values – measure, data is displayed on the Y-axis;
- Argument – dimension, data is displayed on the X-axis;
- Series – dimension, data that is used to create series.

In the field on the right there will be a chart itself.

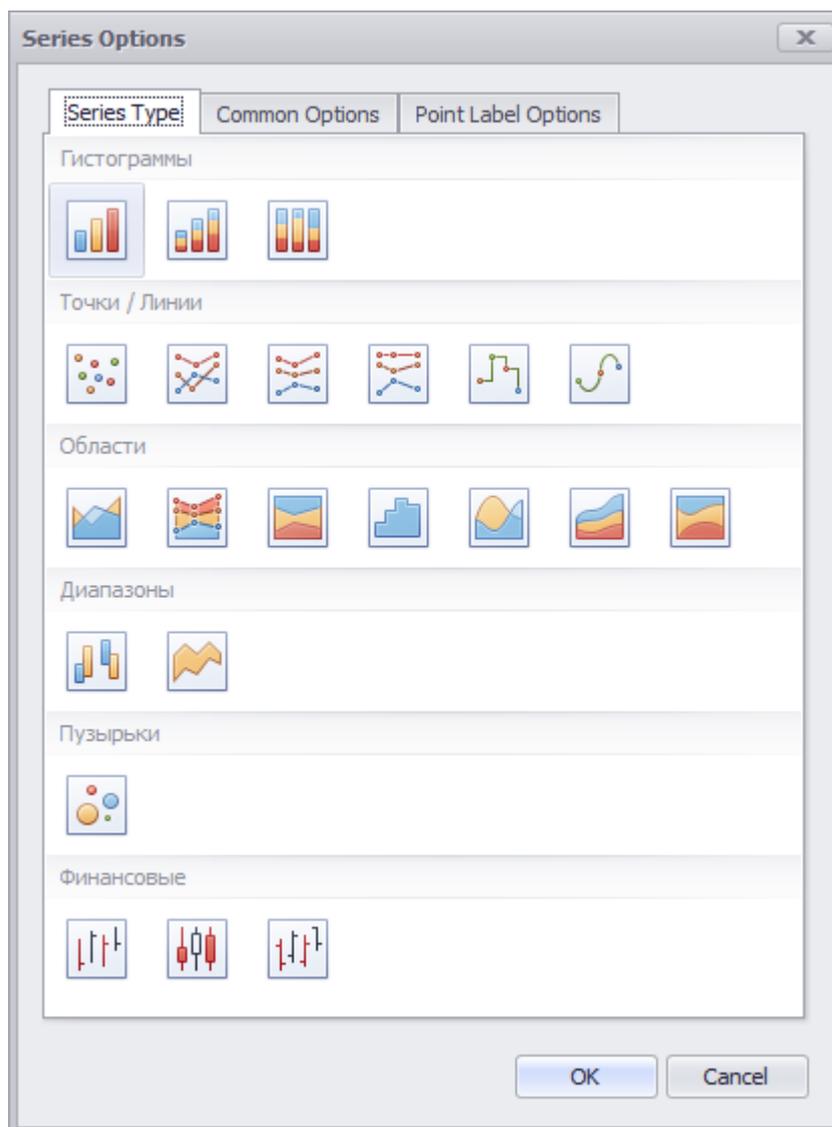
Let us create a chart, which will show the sales volume of product categories by year. Having filled in the fields as in the picture below, you will get the following chart:



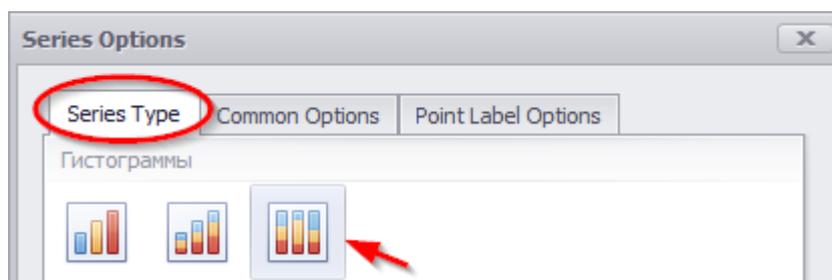
Let us change its type:



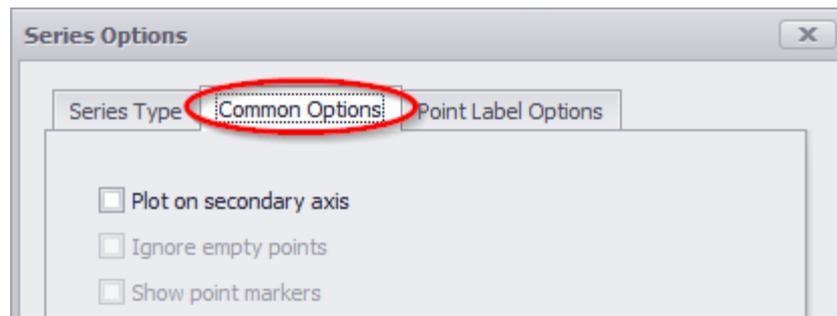
A window of the following view will open:



The first tab “Series Type” allows redefining a chart type. Among all the suggested options, let us choose “Full-Stacker Bar”:



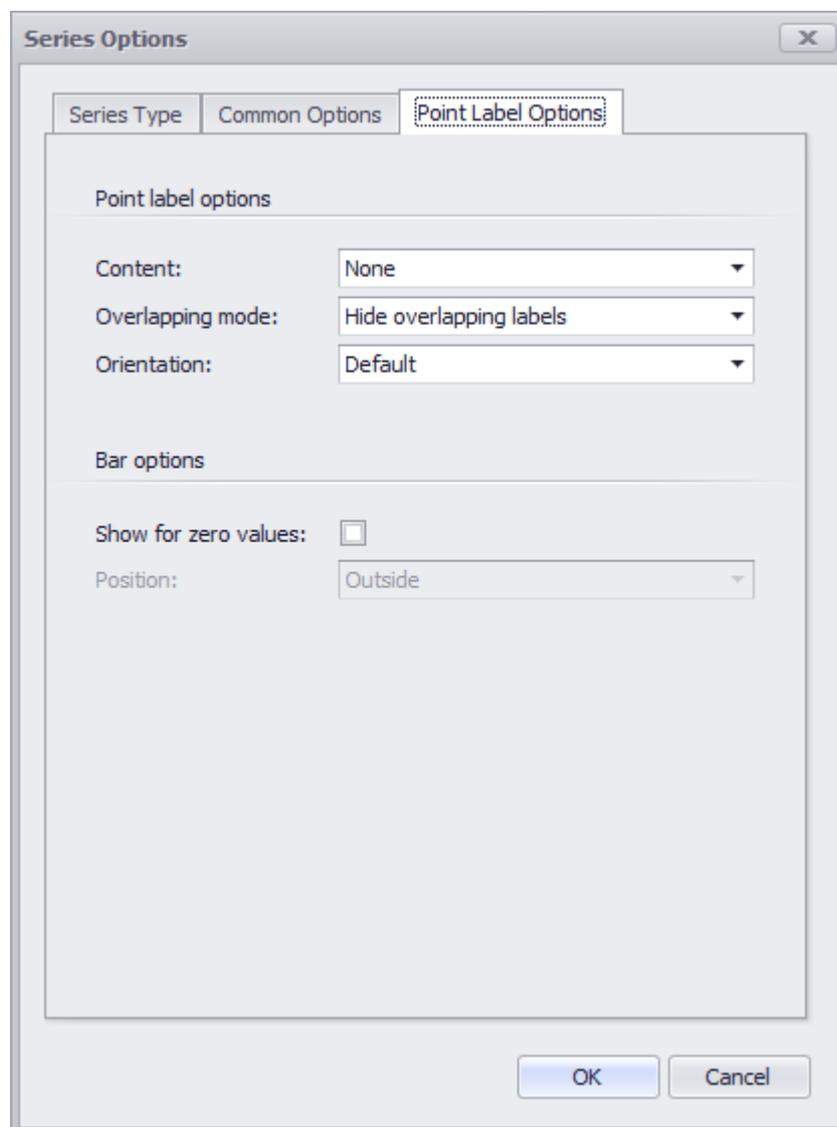
A “Common Options” tab offers following possibilities:



- ✓ Plot on secondary axis – data is displayed secondary axis
- ✓ Ignore empty points – not to display zero values in a chart;
- ✓ Show point markers – for a chart of an “Area” type point markers are displayed.

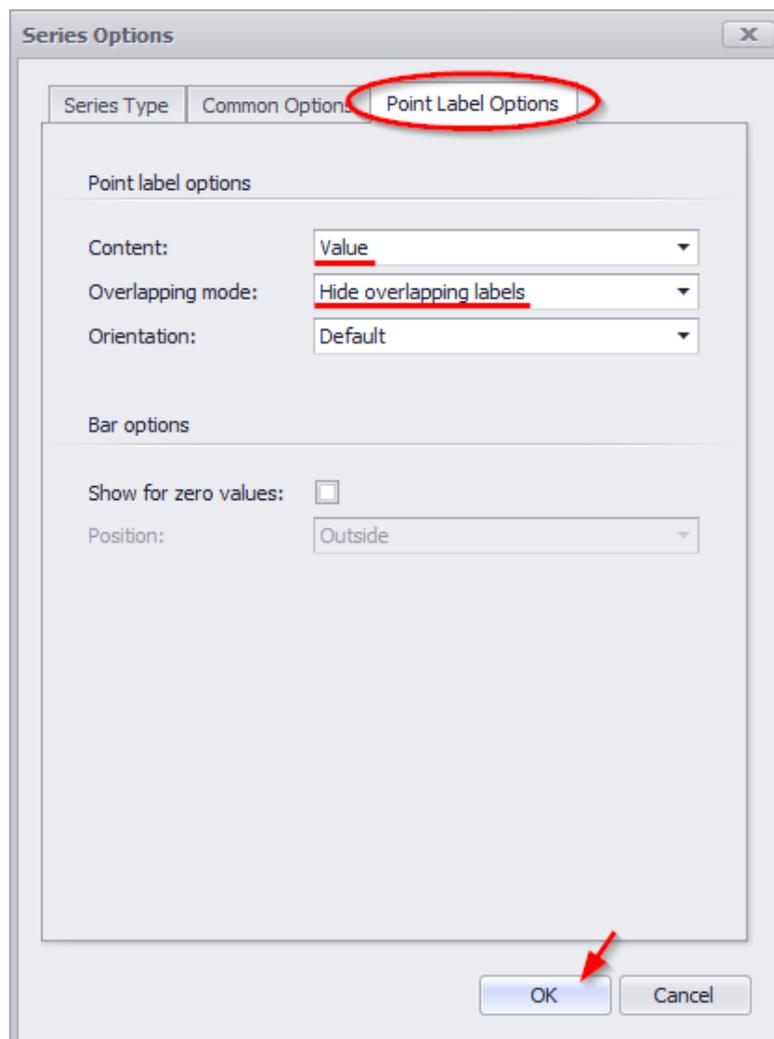
We will not change anything here.

In a “Point Label Options” tab, the following possibilities are available:

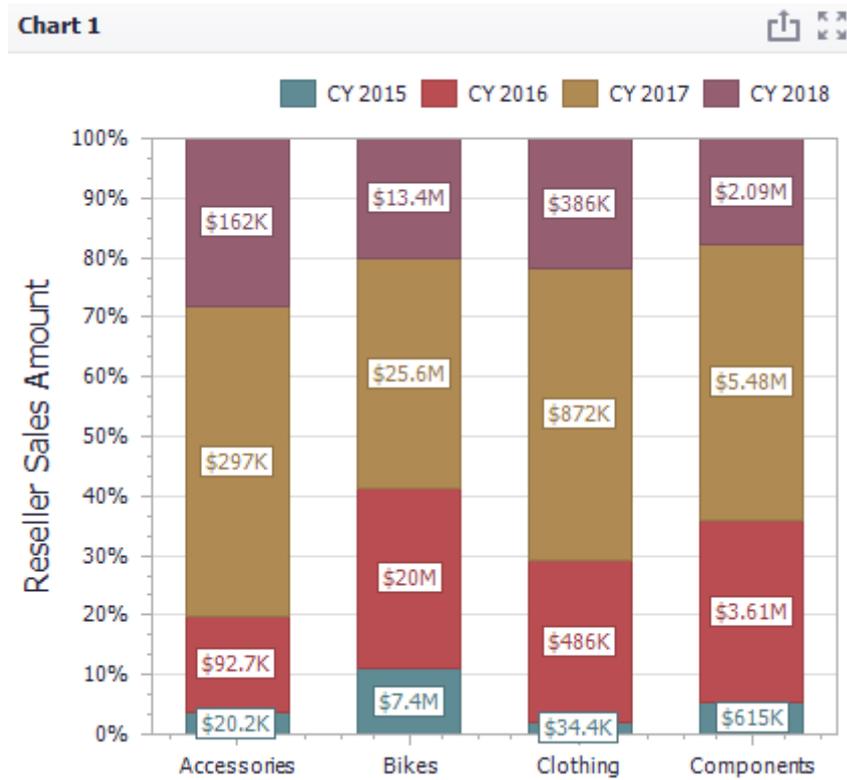


- ✓ Content:
 - Select All
 - Argument
 - Series Name
 - Value
 - Percent
- ✓ Overlapping mode:
 - Hide overlapping labels – hide overlapping labels;
 - None – display all the labels;
 - Reposition overlapping labels – hide overlapping labels regime is off (all the labels without overlapping will be shown).
- ✓ Orientation:
 - Default – labels are located horizontally;
 - Rotate to the Right – labels rotation for 90 degrees clockwise;
 - Rotate to the Left - labels rotation for 90 degrees counterclockwise.
- ✓ Bar options:
 - Show for zero values – to display or not to display zero values;
 - Position – labels position either outside or inside (for Histograms and Bubbles).

Fill out the following tab as shown below:



As a result, the report will have the following view:



Let us add one more data panel:

DATA ITEMS

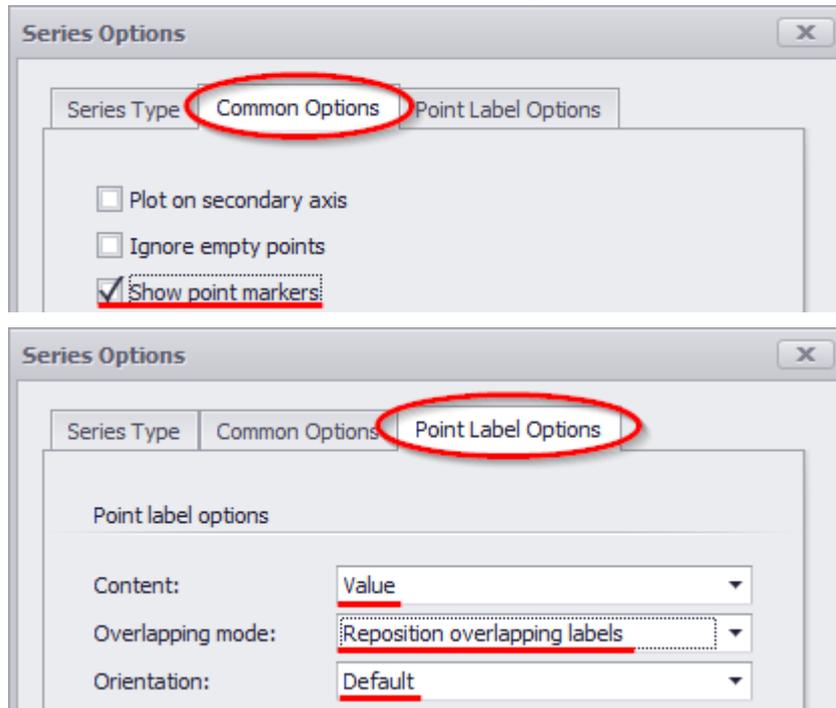
Values (Pane 1)

- Reseller Sales Amount
- Value

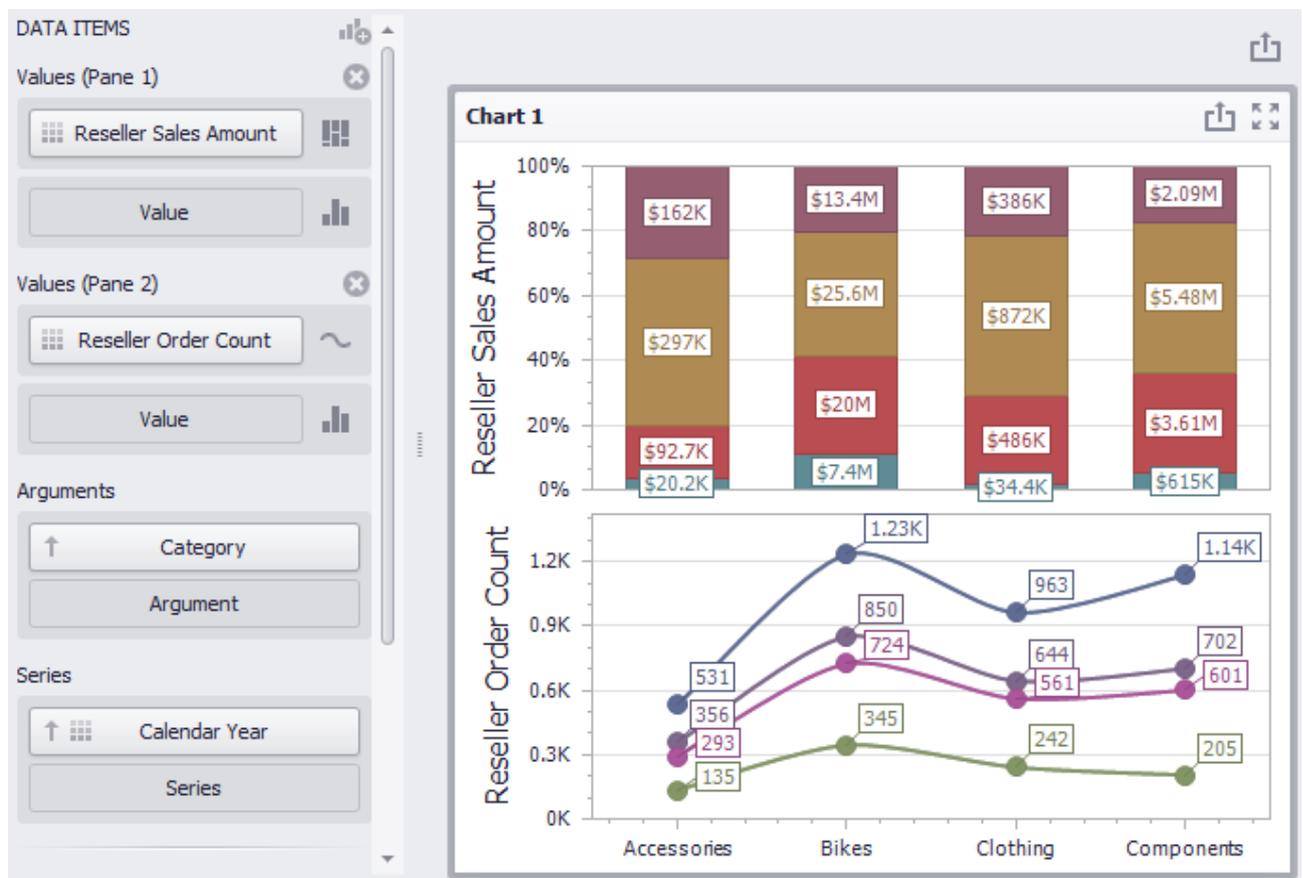
Arguments

- Category
- Argument

To the existing chart, we add one more panel that displays the number of orders for all the same product categories by year. For this, drag the “Reseller Order Count” measure to the value bar, select the “Spline” type of the chart and set the following parameters on the remaining tabs:

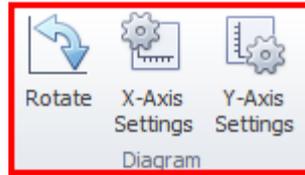


As a result, we will get the following chart:



8.7.1 X/Y – Axis settings

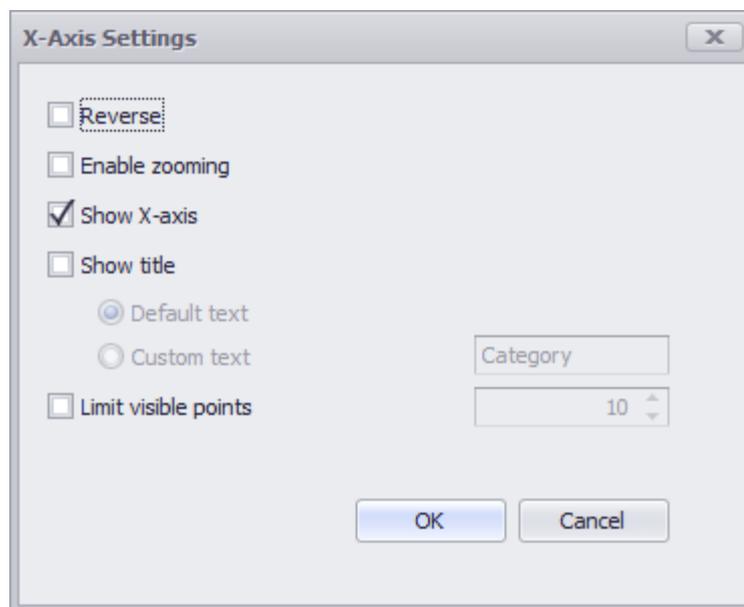
The chart in the dashboard has two axes – “X” and “Y”. The “X”-axis is the axis of the arguments, and the “Y”-axis is the numerical axis of the measure value. The following options for chart are in the “Design” tab:



- ✓ Rotate – rotate the diagram at 90°
- ✓ “X” – Axis Settings
- ✓ “Y” – Axis Settings

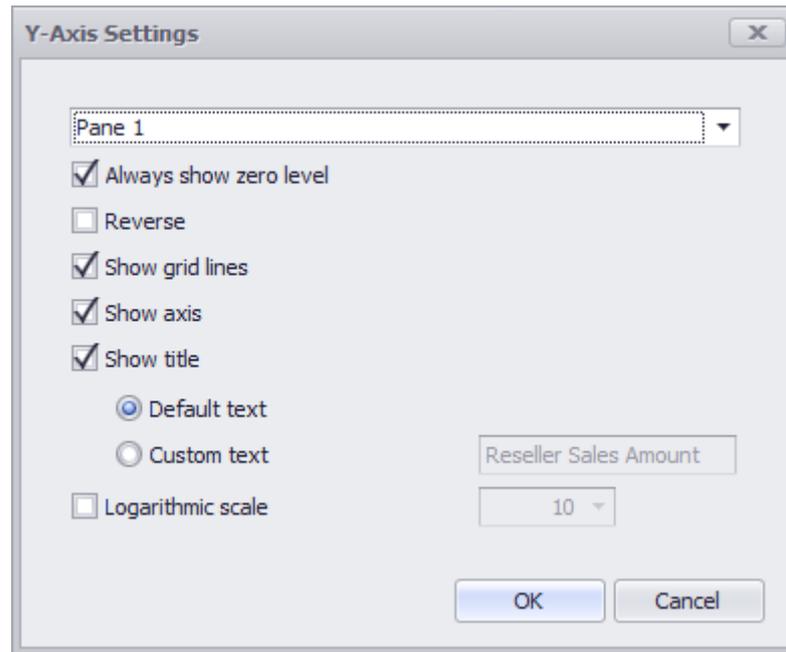
Let us have a look at the settings for each axis.

For “X”-axis, the following parameters are available:



- ✓ Reverse – display values in descending order;
- ✓ Enable zooming
- ✓ Show X-axis
- ✓ Show title
 - Default text – dimension name
 - Custom text – text, entered by a user
- ✓ Limit visible points – a number of visible point on an axis.

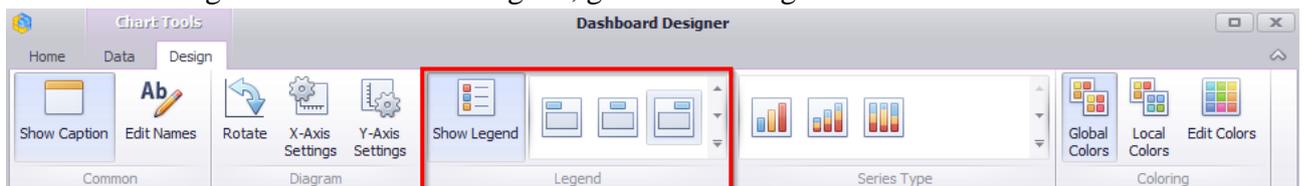
For “Y”-axis, the following parameters are available:



- ✓ Always show zero level
- ✓ Reverse – rotate an axis at 180°
- ✓ Show grid lines – to display or not to display grid lines
- ✓ Show axis – show/hide an axis
- ✓ Show title – to display or not to display a title;
 - Default text – dimension name
 - Custom text – text, entered by a user
- ✓ Logarithmic scale – to display or not to display a logarithmic scale.

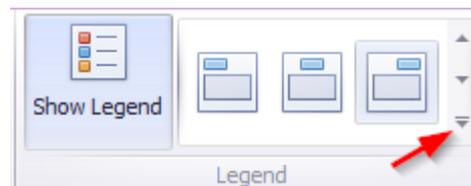
8.7.2 Legend

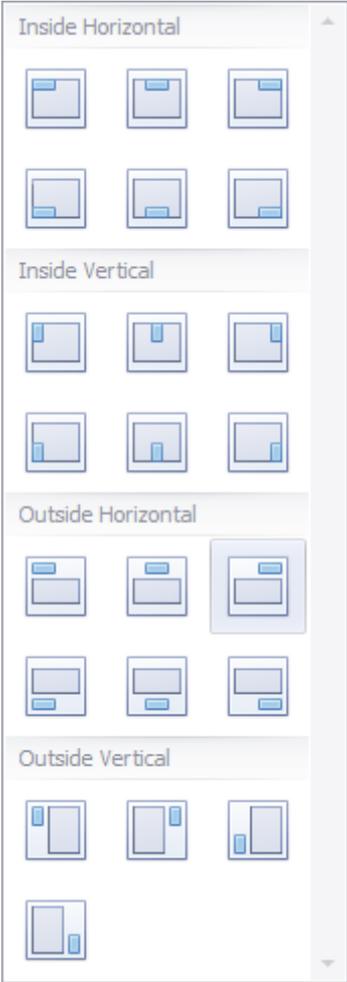
To change the location of the legend, go to the “Design” tab:



The following functionality will be available on the toolbar:

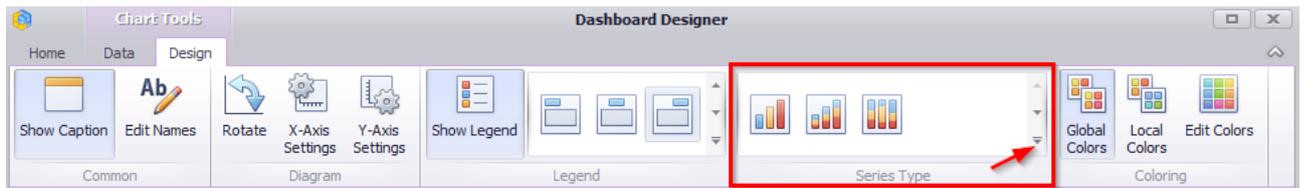
- ✓ Show Legend – to display or not to display a legend;
- ✓ Legend location:



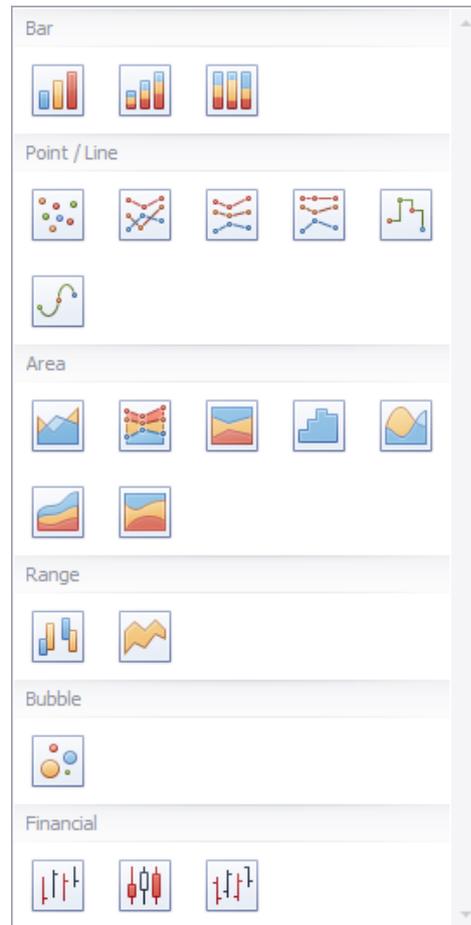


8.7.3 Series Type

You can change the type of the row on the toolbar in a “Design” tab.



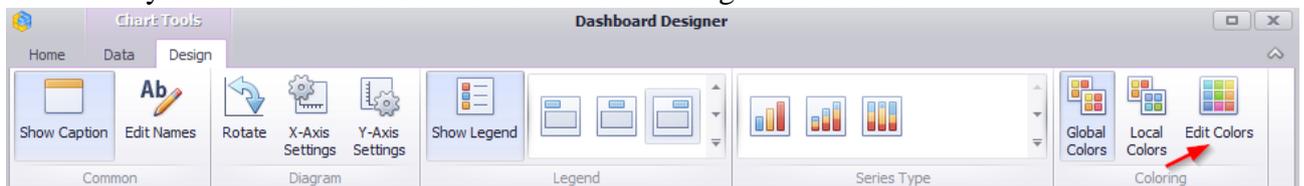
The following chart types are available in the drop-down list:



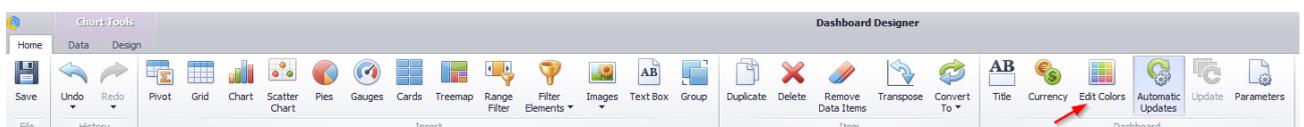
8.7.4 Edit Colors

You can change the color of the chart elements in two ways:

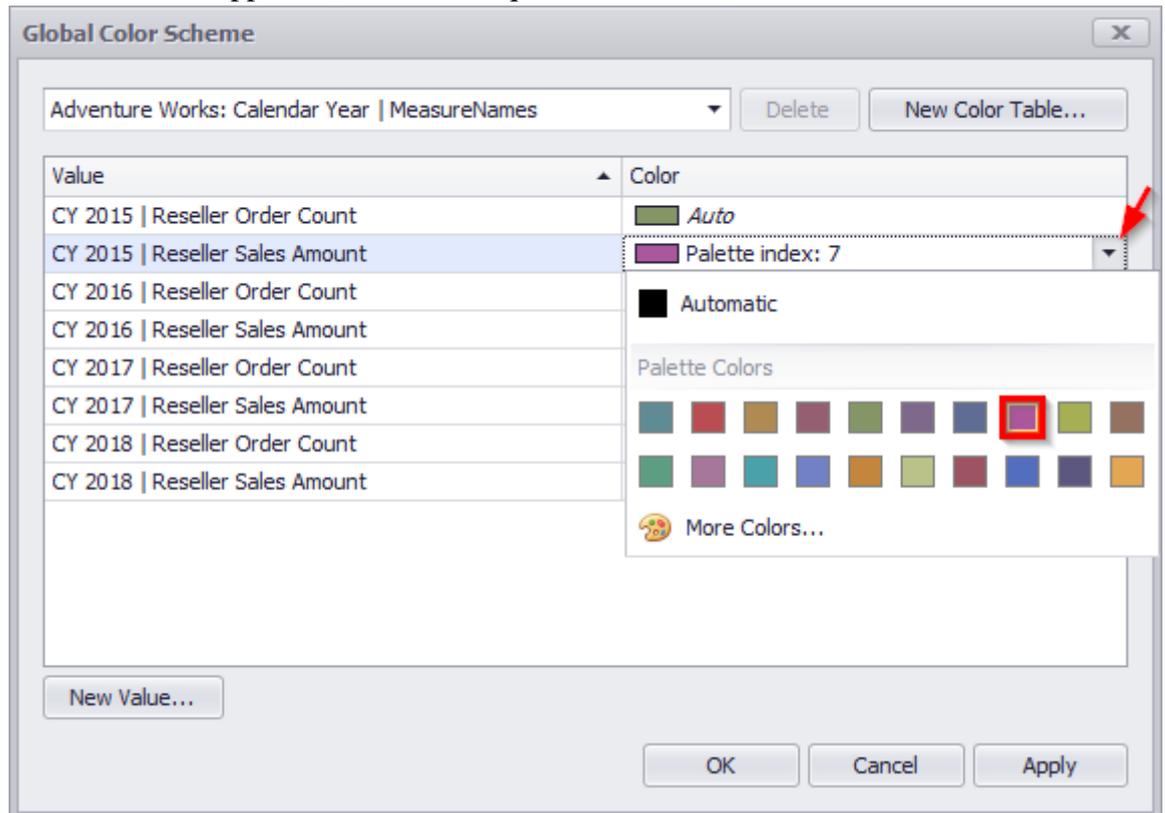
Way 1. Click an “Edit Colors” icon in the “Design” tab toolbar:



Way 2. Click an “Edit Colors” icon in the “Home” tab toolbar:



In the window that appeared, select the required element and set the color for it:



8.7.5 Drill Down

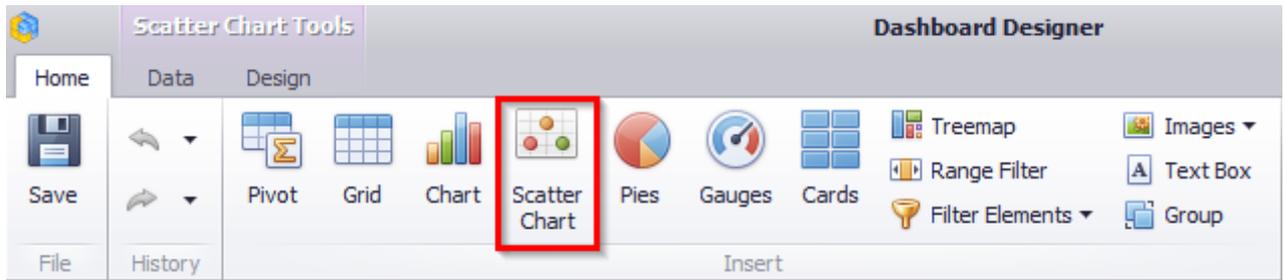
Such a function as **Drill Down** is possible for charts. It is described in abstract 8.6.5 in more details.

8.7.6 Export

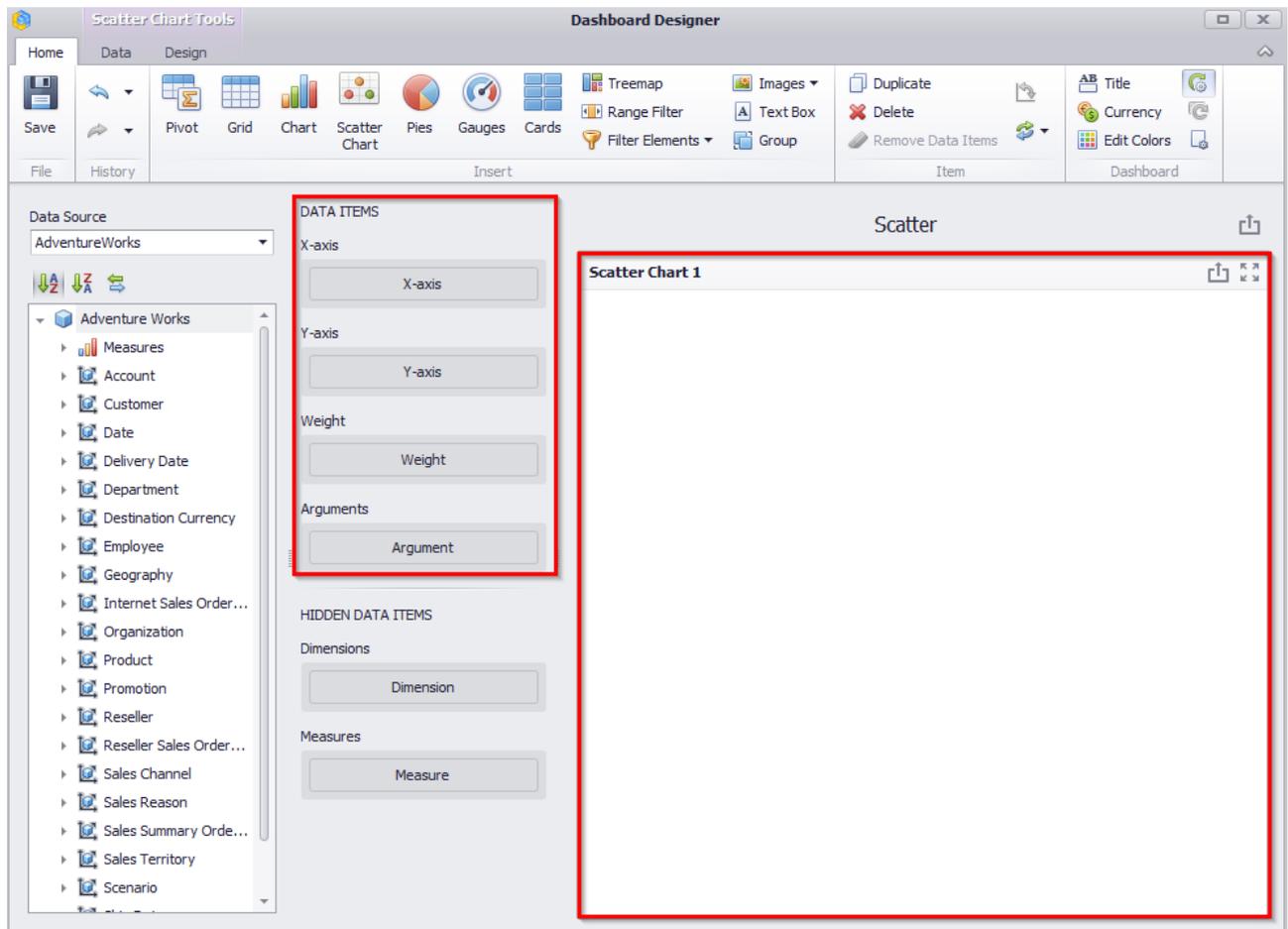
Charts can be printed and exported into PDF, Excel or an image. Ways to do this are described in abstract 8.5.13

8.8 Scatter Chart

In order to create a scatter chart click a “Scatter Chart” icon in “Dashboard Designer” window toolbar:



An empty scatter chart will appear:

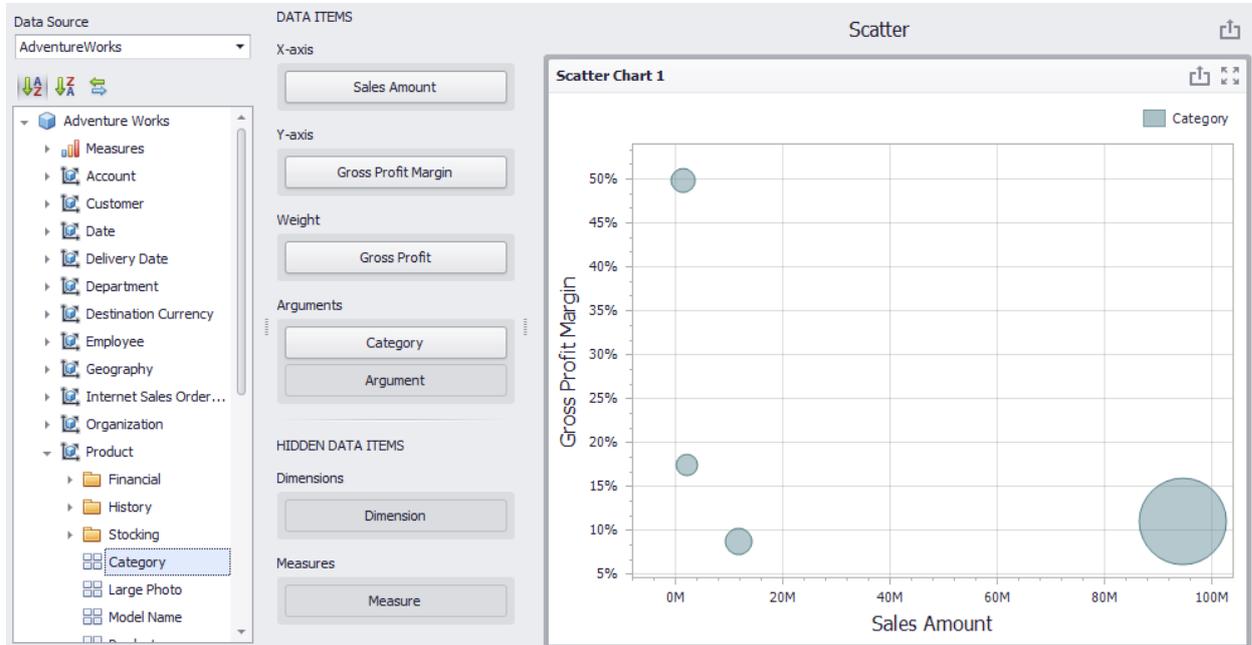


A scatter chart contains the following fields:

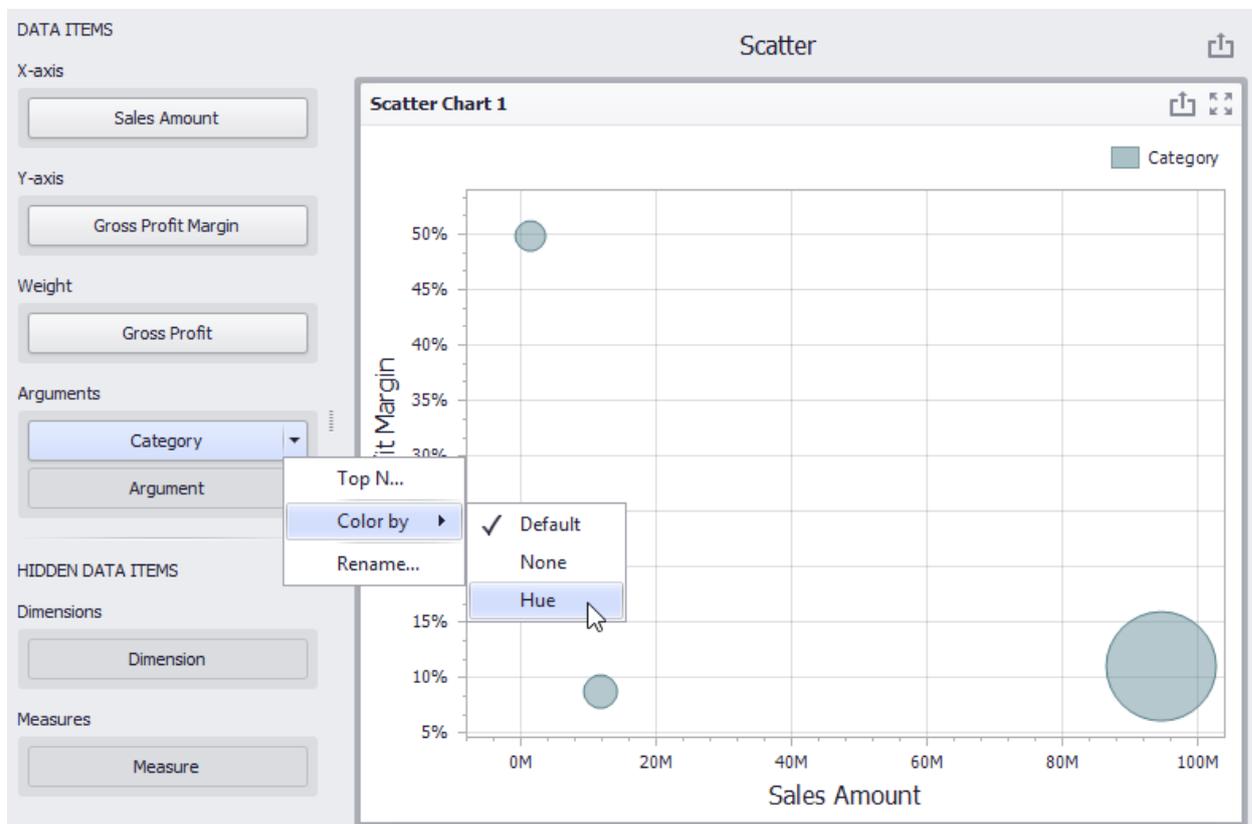
- ✓ “X”-Axis – contains the data item against which the X-coordinates of data points are calculated;
- ✓ “Y”-Axis – contains the data item against which the Y-coordinates of data points are calculated;
- ✓ Weight – contains the data item whose values are used to calculate the weight of data points;
- ✓ Argument – contains data items providing scatter chart arguments that are used to create data points.

Let us build a scatter that will display the values of the “Sales Amount” measure and “Gross Profit Margin” measure for product categories, and the size of the circle will correspond to the value of the “Gross Profit” measure.

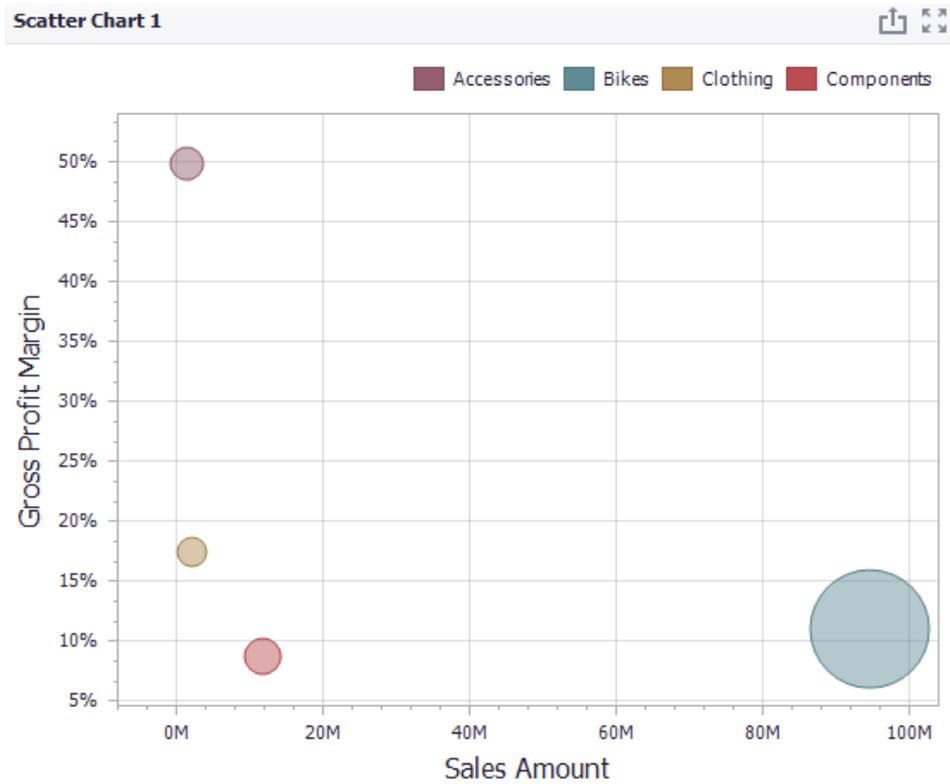
To do this, drag the “Sales Amount” measure to the “X”-axis, “Gross Profit Margin” measure to the “Y”-axis, “Gross Profit” to the “Weight” field, and drop the “Category” hierarchy into the argument:



By default, a scatter chart does not contain the elements coloring. In order to color the elements, you need to select “Hue” from the drop-down list by right-clicking the “Category” hierarchy in the context menu:



As a result, a scatter chart will have the following view:



Let us find out which subcategories of products of the “Bikes” category gave such a high profit. To do this, select the “Subcategory” hierarchy in the argument field, and enable the “Drill Down” in the “Data” tab:

The screenshot shows the "Dashboard Designer" interface with the "Data" tab selected. The "Drill Down" icon in the Interactivity section is highlighted with a red box. In the "Arguments" section of the "Scatter" chart configuration, the "Subcategory" field is also highlighted with a red box. The chart preview on the right shows the same data as the previous figure.

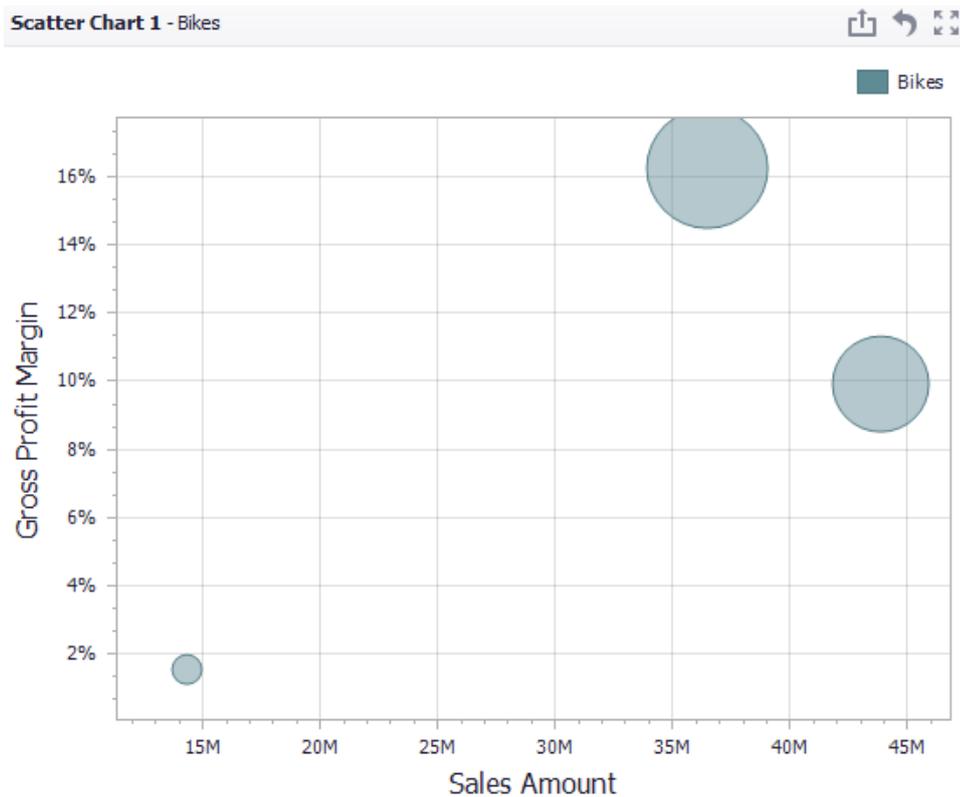
Dashboard Designer Configuration:

- Filtering:** Edit Filter, Clear
- Interactivity:** Single Master Filter, Multiple Master Filter, **Drill Down** (highlighted)
- Interactivity settings:** Cross-Data-Source Filtering, Ignore Master Filters

Scatter Chart Configuration:

- Data Source:** AdventureWorks
- X-axis:** Sales Amount
- Y-axis:** Gross Profit Margin
- Weight:** Gross Profit
- Arguments:** Category, **Subcategory** (highlighted), Argument
- HIDDEN DATA ITEMS:** Dimension
- Measures:** Measure

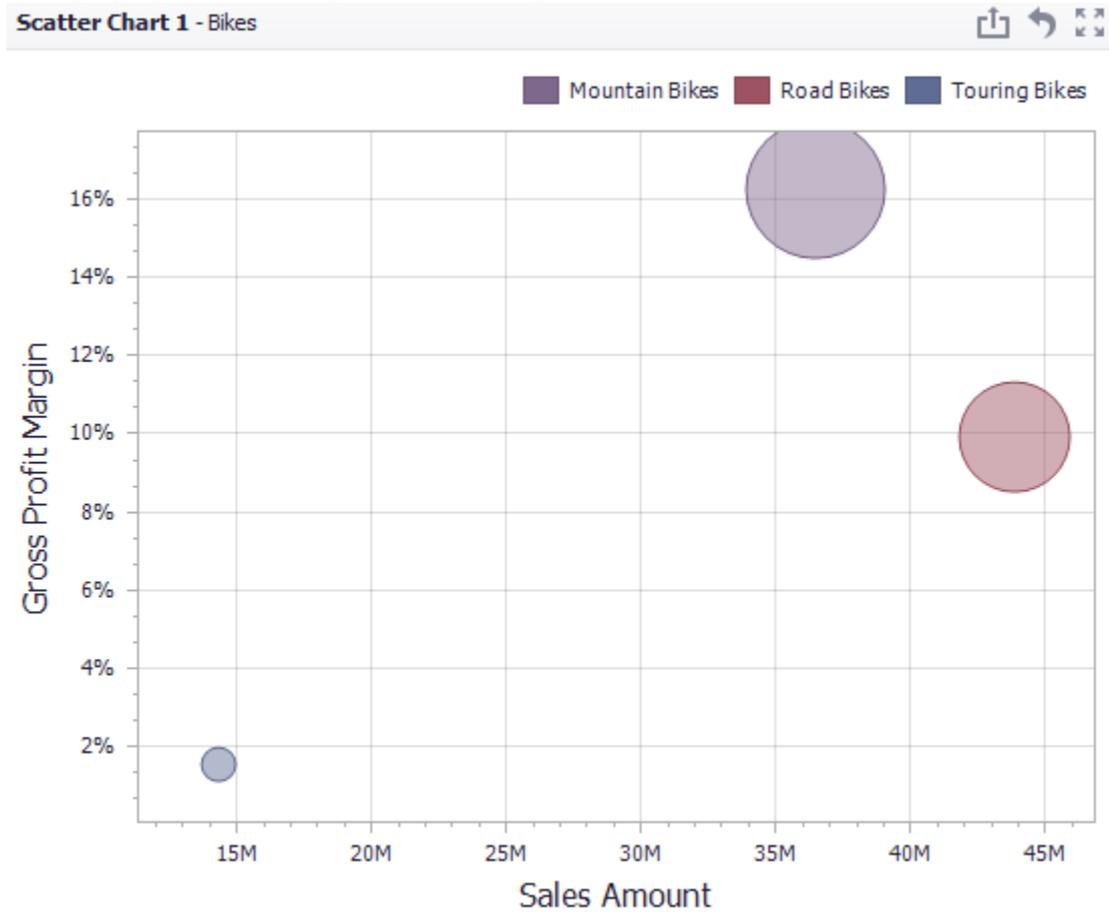
By clicking the “Bikes” product category, we will see the number of product subcategories that it includes, and the corresponding measures values for them:



Let us turn “Hue” on for subcategories as well:

The screenshot shows the configuration panel for "Scatter Chart 1 - Bikes". The X-axis is set to "Sales Amount" and the Y-axis is "Gross Profit Margin". The "Arguments" section includes "Category" (grid icon), "Subcategory" (dropdown menu), and "Argument" (text input). A context menu is open over the "Subcategory" dropdown, with options: "Top N...", "Color by" (selected), "Rename...", and "Hue". The "Color by" sub-menu is also open, showing "Default" (checked), "None", and "Hue".

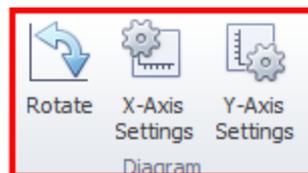
After that, a scatter chart will get back to its initial view. However, after clicking “Bikes” product category again, we will get the following view of a scatter chart:



To return to the previous detail level (drill up), use the Drill Up button (the  icon).

8.8.1 X/Y – Axis settings

In a “Design” tab, there are the following scatter chart parameters:

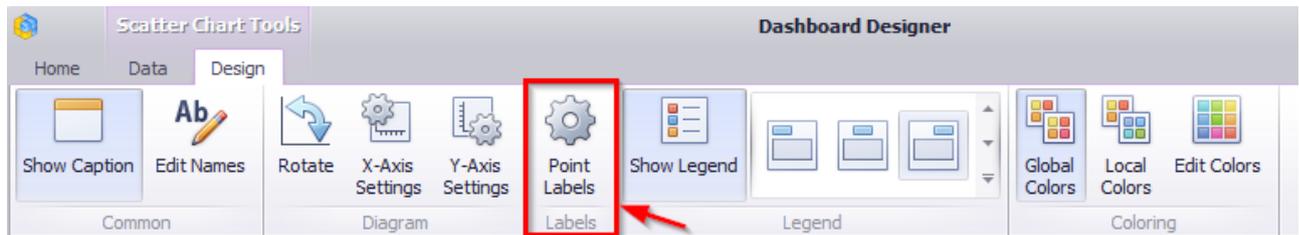


- ✓ Rotate - rotate at 90°
- ✓ “X”-Axis Settings
- ✓ “Y”-Axis Settings

Note: axis properties are described in more details in abstract 8.7.1

8.8.2 Point Labels

In order to display points, values in a scatter chart, you need to click the following icon in “Design” tab in a toolbar:



As a result, a form with the following parameters will appear:

The image shows a 'Point Label Settings' dialog box with a close button (X) in the top right corner. It contains the following settings:

- Show point labels:
- Content: Argument (dropdown menu)
- Overlapping mode: Hide overlapping labels (dropdown menu)
- Orientation: Default (dropdown menu)
- Position: Outside (dropdown menu)

At the bottom of the dialog are 'OK' and 'Cancel' buttons.

- ✓ Show point labels – to display or not to display labels;
- ✓ Content – labels values
 - Argument – point labels show argument values;
 - Weight – point labels show the weight summary value;
 - Values – point labels show summary values from “X” and “Y”-axes;
 - Argument and weight - point labels show the argument value and the corresponding weight summary value;
 - Argument and values - point labels show argument values and corresponding summary values.
- ✓ Overlapping mode
 - Hide overlapping labels – if two or more labels overlap, some of them are automatically hidden to avoid overlapping;
 - None - the overlapping resolving algorithm is disabled;
 - Reposition overlapping labels - the default algorithm to re-position point labels in a random way, and avoid overlapping labels.
- ✓ Orientation:
 - Default – A point label is displayed in its default orientation;
 - Rotate to the Right – A point label is rotated 90 degrees clockwise;
 - Rotate to the Left – A point label is rotated 90 degrees counter clockwise.

- ✓ Position
 - Outside – labels are located inside a point;
 - Insite – labels are located outside a point.

For a scatter chart, you can also change legend's location and redefine coloring for toolbar elements. This process is described in more details in abstracts 8.7.2 and 8.7.4.

8.8.3 Drill Down

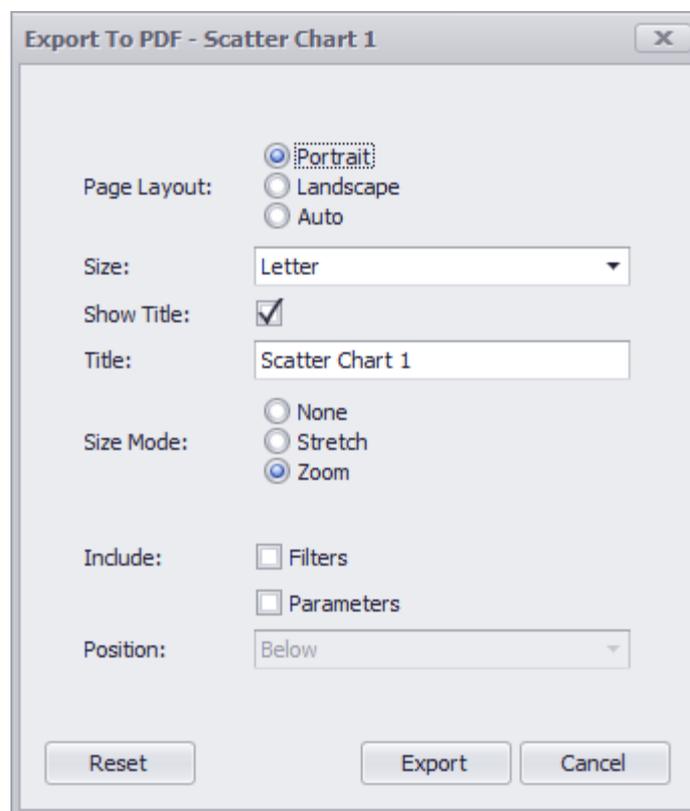
For a Scatter Chart such functionality as “Drill Down” is also available. Its working principle is described in abstract 8.6.5.

8.8.4 Export

When it is necessary, you can print or export a Scatter Chart into PDF, Excel or an image.

- ✓ Export To PDF

While exporting, the following options are available:

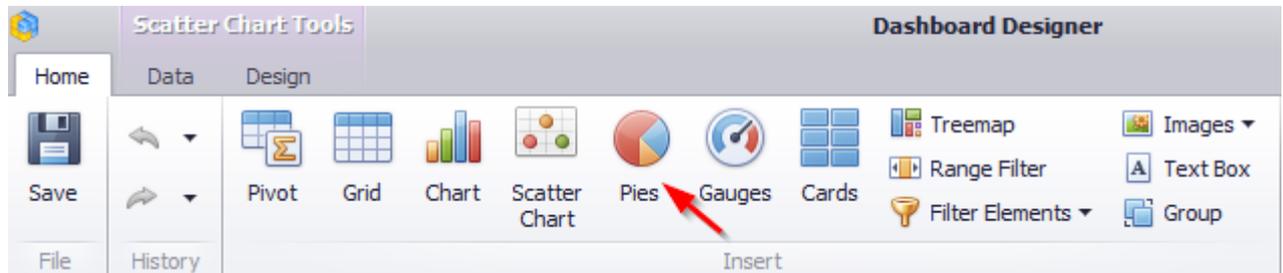


- Page Layout – specifies the page orientation used to export a Scatter Chart dashboard item;
- Size – specifies the standard paper size;
- Show Title – specifies whether or not to apply the dashboard item caption to the exported document title;
- Title – specifies the title of the exported document;
- Size Mode – specifies the export size mode for the Scatter Chart dashboard item;
- Include Filters / Parameters – allows you to include master filter values / parameter values to the exported document;
- Position – specifies the position of the master filter and parameter values in the exported document.

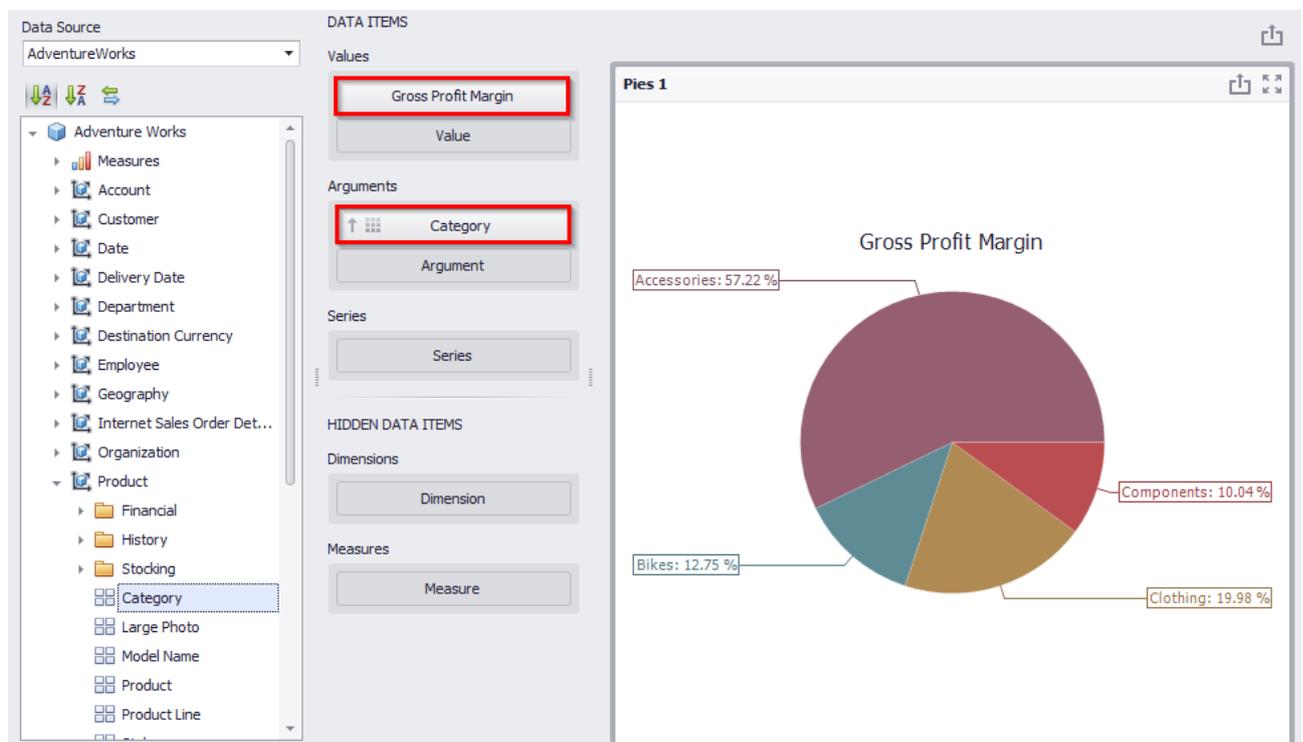
- ✓ Export to Excel
See abstract 8.5.13
- ✓ Export to Image
See abstract 8.5.13

8.9 Pies

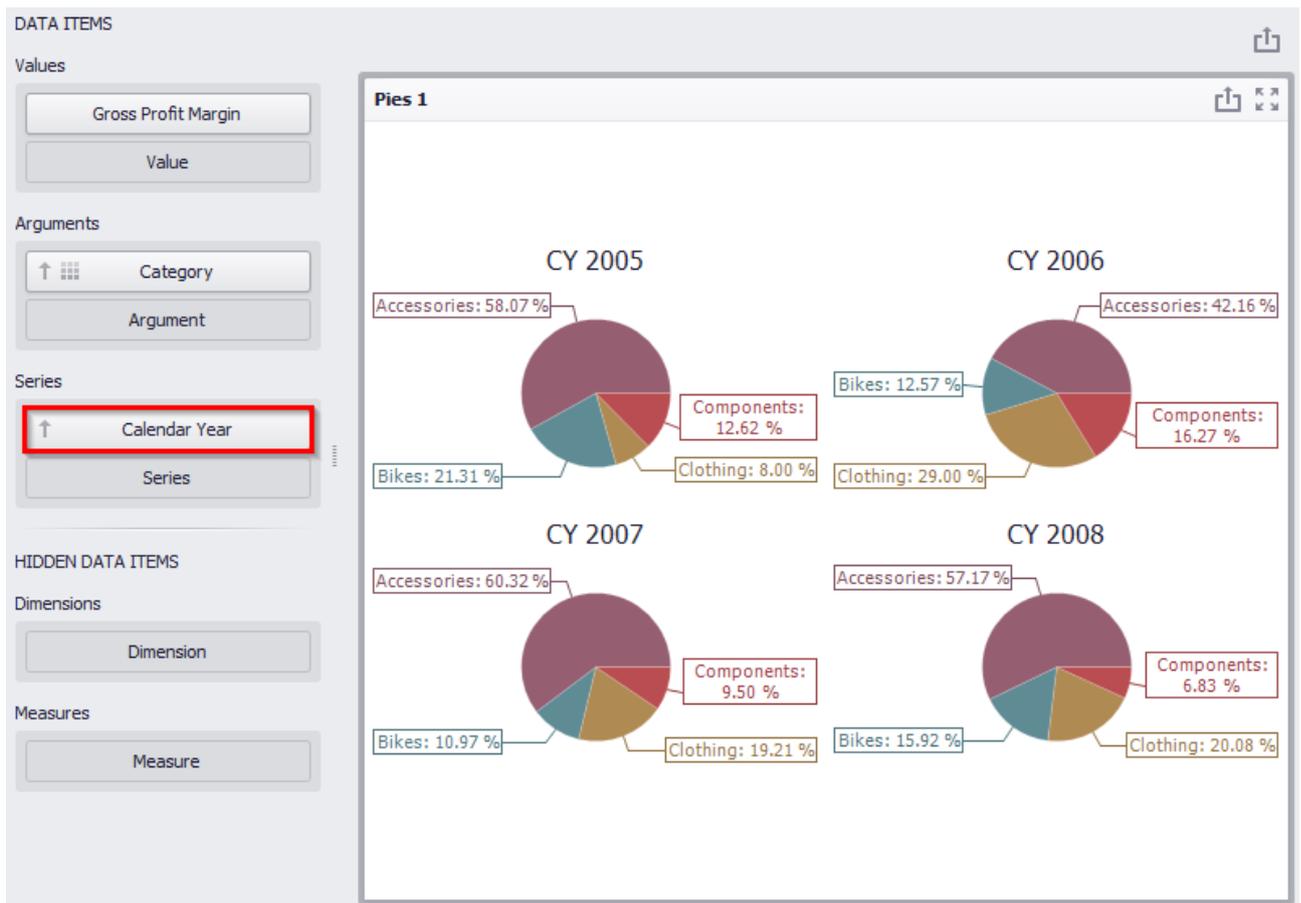
In order to create Pies, click the following icon in a dashboard designer window:



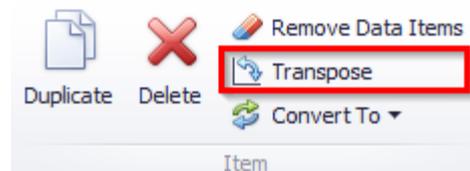
Let us create pies that will display the gross profit margin by product categories. For this, let us move the “Gross Profit Margin” measure into a value field, and “Category” into an argument:



Now let us have a look how “Gross Profit Margin” measure value has changed through the years. For this, let us move “Calendar Year” into rows:

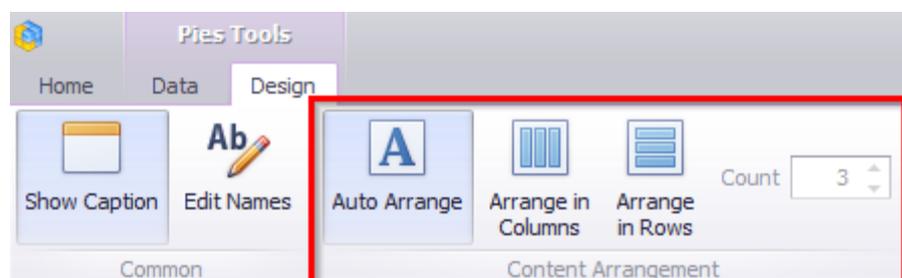


If necessary, you can quickly swap the value of an argument and a row by using the following icon on the toolbar:



8.9.1 Layout

In a “Design” tab, you can define the way to display pies elements:



- ✓ Auto Arrange – by default, the “Auto Arrange” option is enabled, which automatically resizes pies to fit within the dashboard item;

✓ Arrange in Columns – place the elements in the given number of columns:

The screenshot displays the Microsoft Power BI Desktop interface. The 'Pie Tools' ribbon is active, with the 'Arrange in Columns' button highlighted in red. A 'Count' dropdown menu is set to '3'. The main workspace shows a dashboard titled 'Дашборд 1' containing four pie charts, one for each year from 2005 to 2008. Each pie chart is annotated with data labels for 'Accessories', 'Bikes', 'Clothing', and 'Components'.

| Year | Accessories | Bikes | Clothing | Components |
|---------|-------------|---------|----------|------------|
| CY 2005 | 58 | 21.31 % | 8.00 % | 12.62 % |
| CY 2006 | 42 | 12.57 % | 29.00 % | 16.27 % |
| CY 2007 | 6 | 10.97 % | 19.21 % | 9.50 % |
| CY 2008 | 57 | 15.92 % | 20.08 % | 5.83 % |

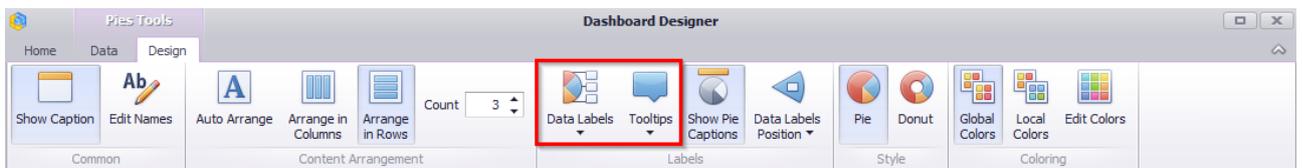
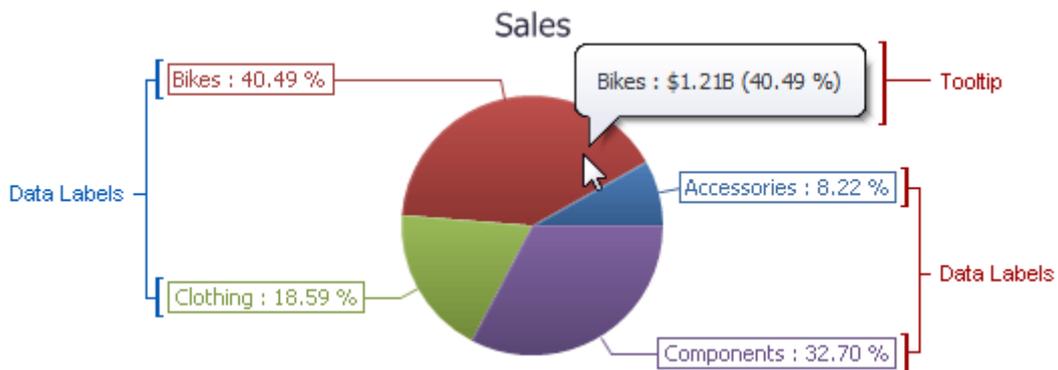
✓ Arrange in Rows – place the elements in the given number of rows:

The screenshot shows the Microsoft Power BI Desktop interface. The 'Pie Tools' ribbon is active, with the 'Arrange in Rows' button highlighted in a red box. A 'Count' dropdown menu is set to '3'. The main workspace displays a dashboard titled 'Дашборд 1' containing four pie charts for the years 2005, 2006, 2007, and 2008. Each chart shows the percentage distribution of three categories: Accessories, Bikes, and Clothing.

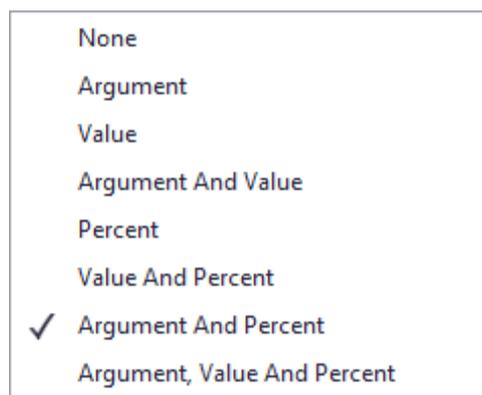
| Year | Accessories | Bikes | Clothing |
|---------|-------------|---------|----------|
| CY 2005 | 58.07 % | 21.31 % | 8.00 % |
| CY 2006 | 42.16 % | 12.57 % | 29.00 % |
| CY 2007 | 60.32 % | 10.97 % | 19.21 % |
| CY 2008 | 57.17 % | 15.92 % | 20.08 % |

8.9.2 Labels

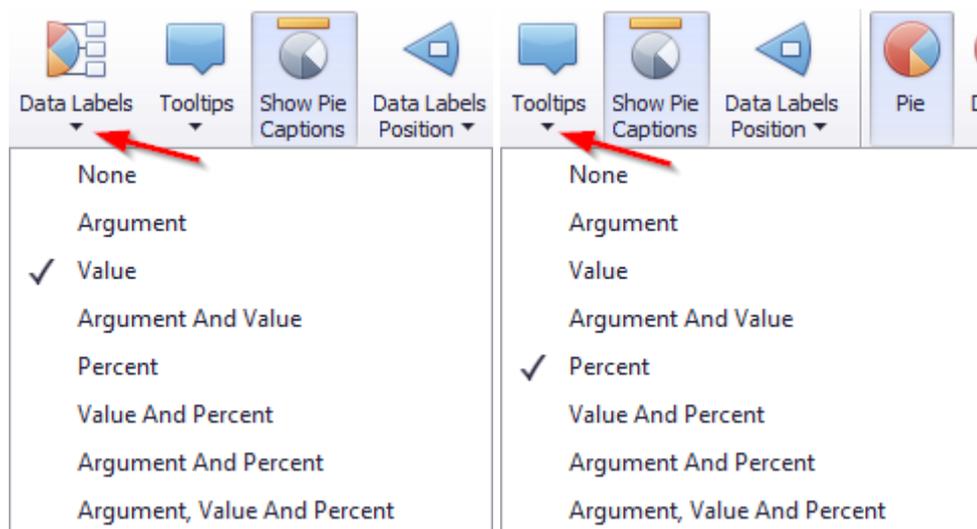
Pies display “data labels” that contain descriptions for pie segments, and provide “tooltips” with additional information:



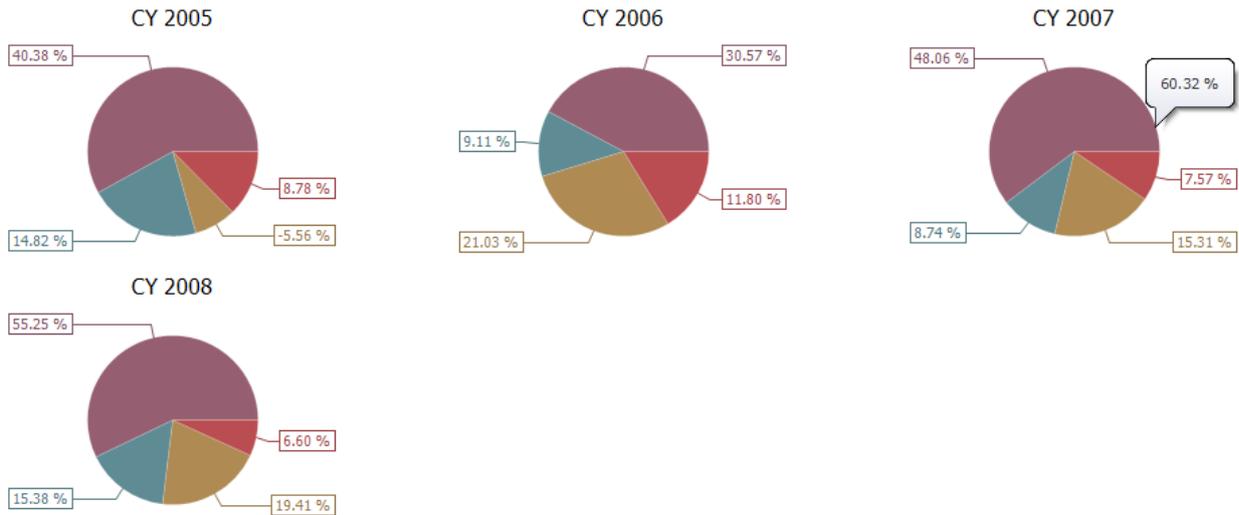
In “Data Labels” and “Tooltips” drop-down lists, you can choose one of the ways to display data values:



Let us display the value of “Gross Profit Margin” in the data signatures of our pies, while in the tooltips - the share value, and display the signatures to the pies itself:

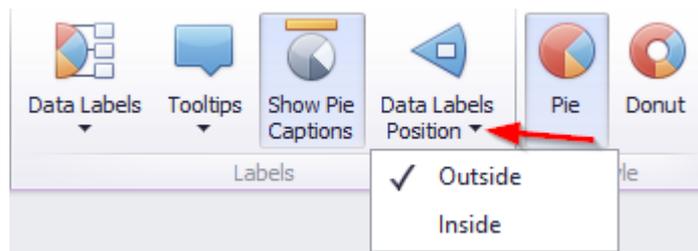


Pies will look the following:



8.9.3 Data Labels Position

Data Labels Position may be as follows:



8.9.4 Style

Pie has two ways to display:



8.9.5 Edit Colors

Default colors can be edited if needed. This process is described in more details in abstract 8.7.4.

8.9.6 Drill Down

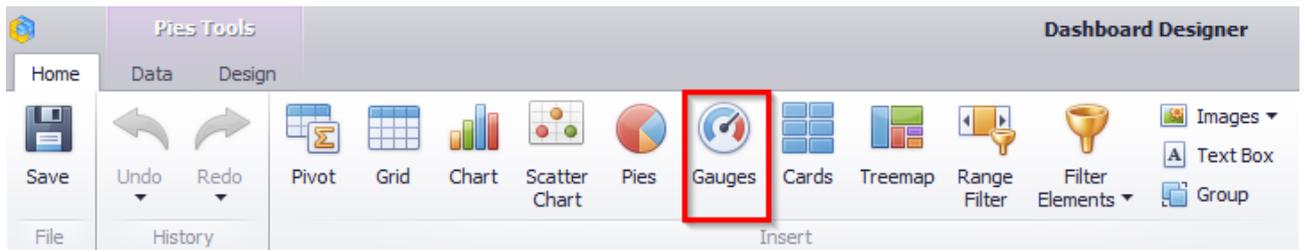
Such a function as **Drill Down** is available for pies. Its working principle is described in abstract 8.6.5.

8.9.7 Export

If needed, pies can be exported into PDF, Excel or an image. It is described in more details in abstract 8.5.13

8.10 Gauges

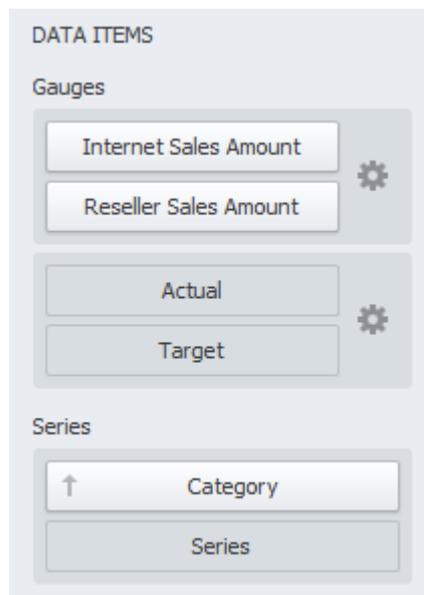
In order to create a dashboard element called “Gauges” you need to click the following icon in a designer window toolbox of a dashboard:



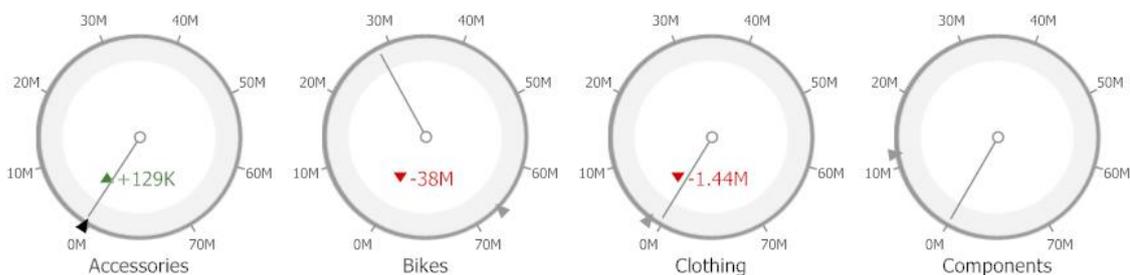
Gauges is a kind of an indicator, which displays the following values: target, actual, delta value.

Target is a gauges arrow, “Actual” is a gauges sign on the scales, “Delta” is an indicator sign on a gauges.

Let us have a look at gauges that have “Reseller Sales Amount” measure as a target, and “Internet Sales Amount” as a actual, and analyze them in terms of product categories. For this, fill in the fields in the following way:

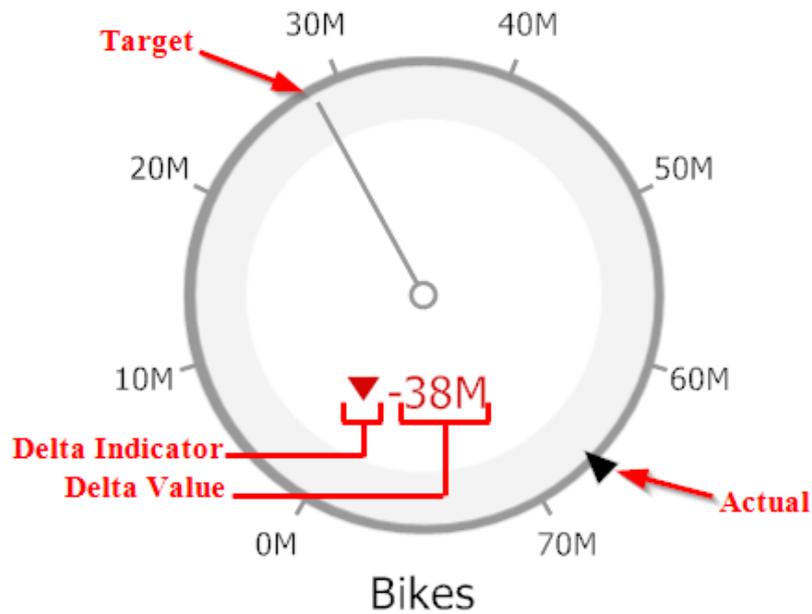


As a result, we will get some gauges:

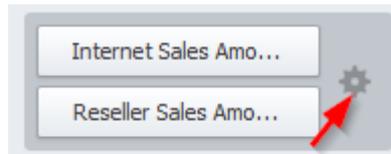


8.10.1 Delta

By default, a gauge shown the difference between an actual and a target. This difference is called delta:



In order to change delta settings you need to click the following icon:



A form with the following indicator parameters will appear:

The 'Gauge Options' dialog box has two sections: 'Scale Options' and 'Delta Options'. 'Scale Options' includes 'Minimum value' (0) and 'Maximum value' (60000000), both with 'Auto' checkboxes. 'Delta Options' includes 'Value type' (Absolute variation), 'Result indication' (Greater is good), 'Threshold type' (Percent), and 'Threshold value' (0). 'OK' and 'Cancel' buttons are at the bottom.

Value type:

- ✓ Actual Value – value of an actual measure;
- ✓ Absolute Variation – difference between an actual and a target;
- ✓ Percentage Variation – percent of difference between an actual and a target;
- ✓ Percentage of Target – percent of an actual and a target.

Result indication:

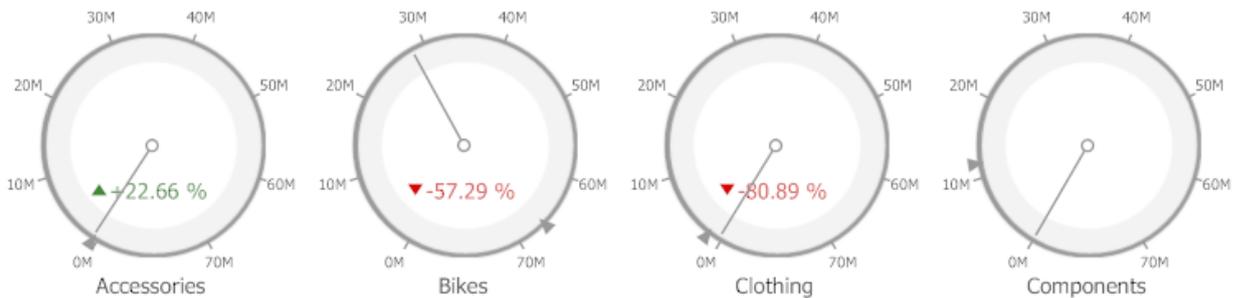
- ✓ Greater is Good – The 'good' indication is displayed if the actual value exceeds the target value; if the target value exceeds the actual value, the 'bad' indication is displayed;
- ✓ Less is Good – The 'bad' indication is displayed if the actual value exceeds the target value; if the target value exceeds the actual value, the 'good' indication is displayed;
- ✓ Warning if Greater – A warning is displayed if the actual value exceeds the target value; otherwise, no indication is displayed;
- ✓ Warning if Less – A warning is displayed if the target value exceeds the actual value; otherwise, no indication is displayed;
- ✓ No Indication – Indication is not displayed.

For the delta, you can set the threshold value, which will indicate the excess of the actual above the target. The threshold type can be percent or absolute.

Let us display the percentage of difference between an actual and a target for our gauges. We are interested in those values for which the percentage of difference is greater than zero. For this, fill out the form as follows:

The screenshot shows the 'Gauge Options' dialog box. It has two main sections: 'Scale Options' and 'Delta Options'. In 'Scale Options', 'Minimum value' is 0 and 'Maximum value' is 60000000, both with 'Auto' checked. In 'Delta Options', 'Value type' is 'Percent variation', 'Result indication' is 'Greater is good', 'Threshold type' is 'Percent', and 'Threshold value' is '0.00 %'. A red arrow points to the 'OK' button.

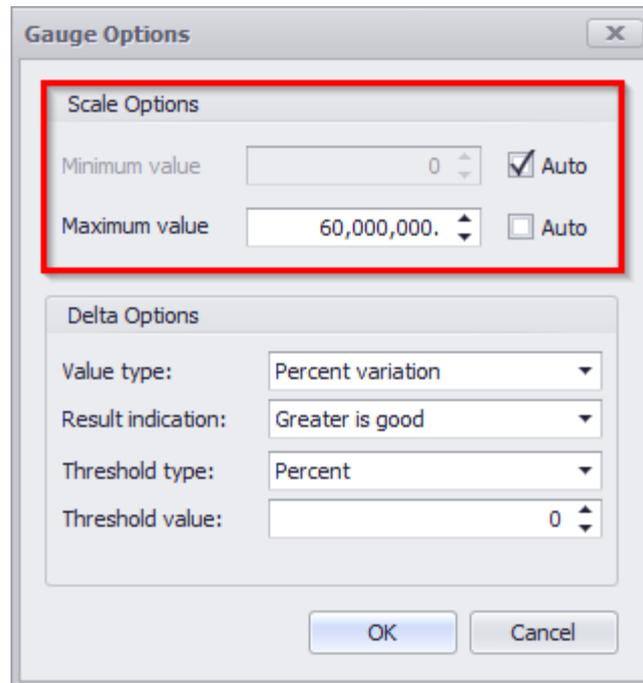
As a result, we will get gauges of the following view:



8.10.2 Gauge Scale

By default, the Gauge dashboard item automatically determines the range of the gauge scales based on the values they display.

You can override this behavior and specify maximum and minimum values on the scale:

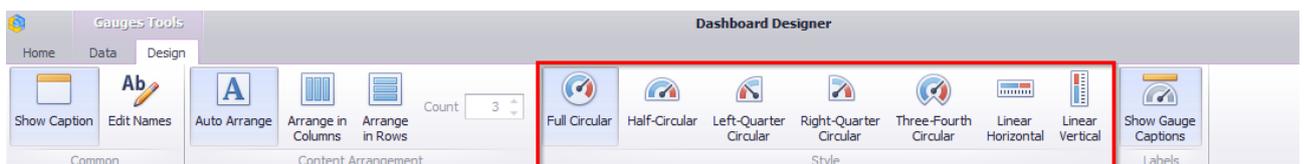


8.10.3 Layout

Different layout options are available for gauges. Principle and working method are described in abstract 8.9.1.

8.10.4 Style

The Gauge dashboard item allows you to select the gauge type:



8.10.5 Drill Down

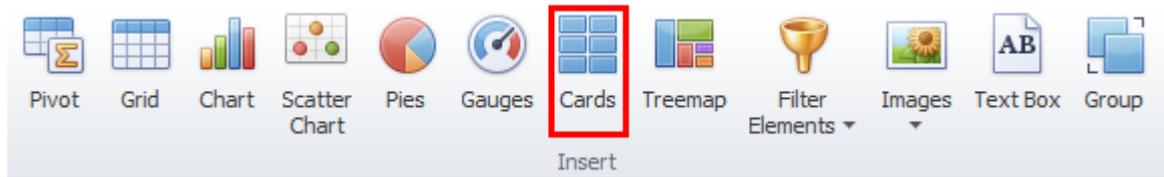
Such a function as “Drill Down” is available for indicators. Working principle of this functionality is described in abstract 8.6.5.

8.10.6 Export

You can print indicators as well as export them into PDF, Excel or an image. The ways are described in abstract 8.5.13.

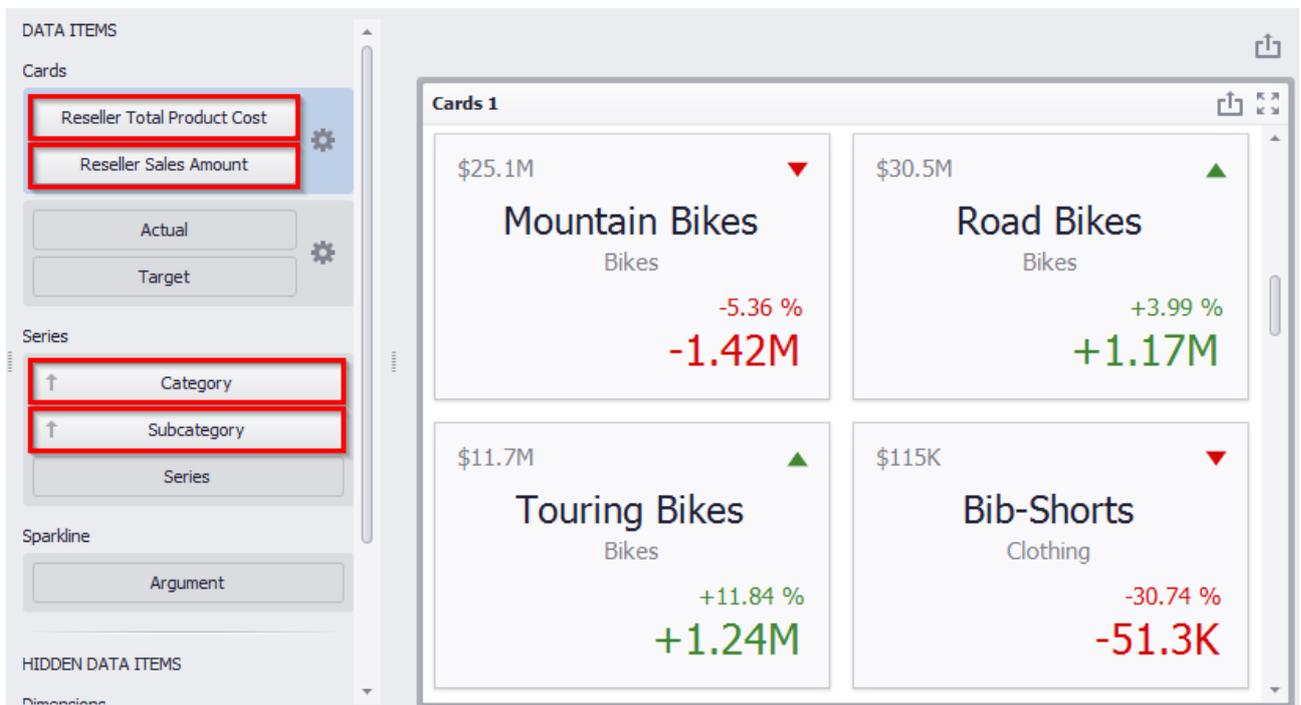
8.11 Cards

To create a “Cards” dashboard element, click the toolbar icon in the dashboard designer window:

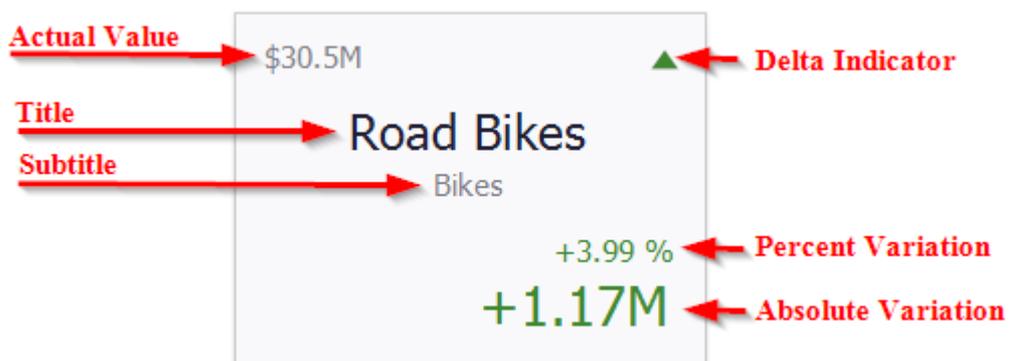


A “Cards” dashboard element is a series of cards, each of which displays the difference between two values (measures).

Let's show the difference between the two measures “Reseller Sales Amount” and “Reseller Total Product Cost” for subcategories of products. For this, fill in the fields as follows:

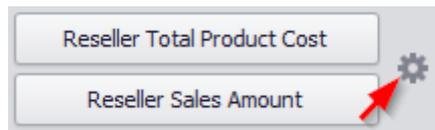


As a result, we received several cards that display:

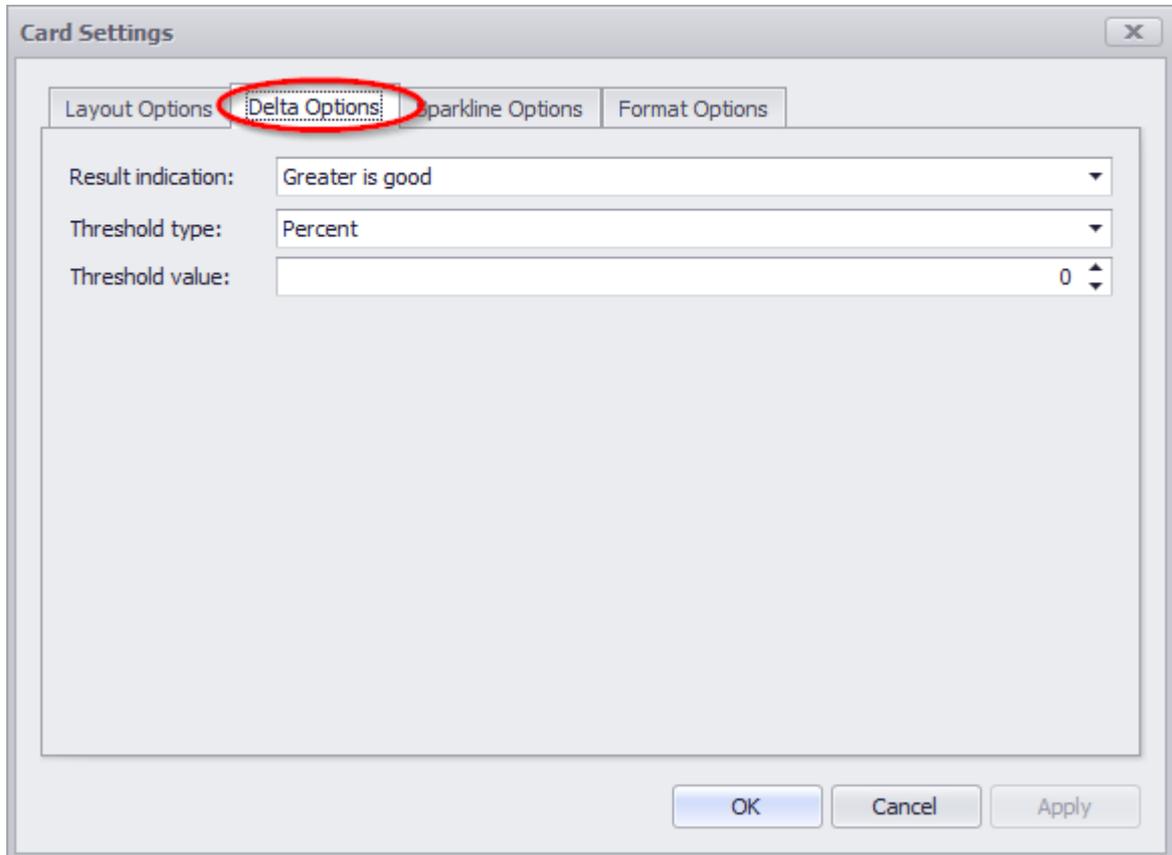


8.11.1 Delta

In order to set or change the delta value, you must click (the  icon):

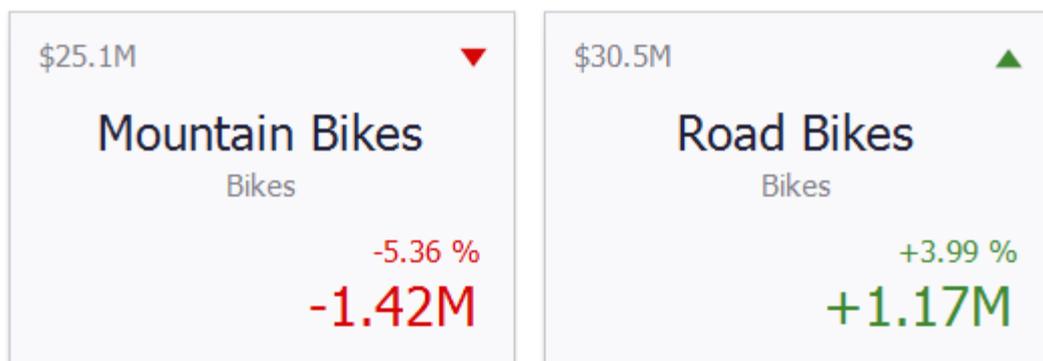


In the opened form “Card Settings” go to the “Delta Options” tab:

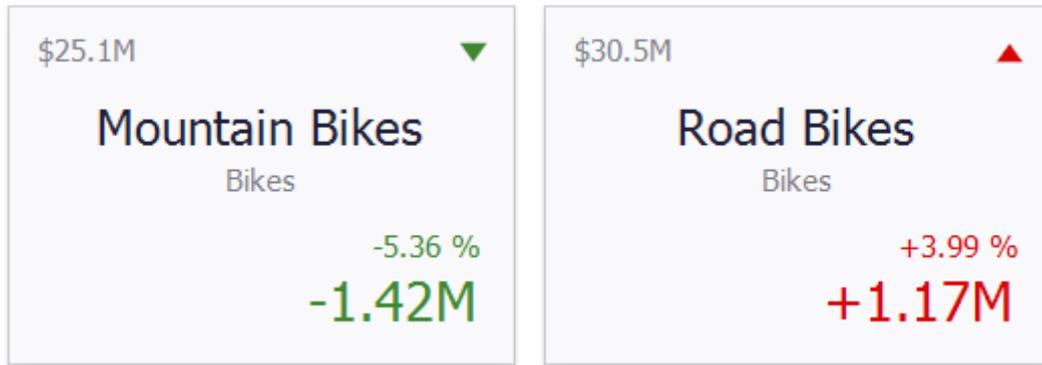


Then, specify the following settings:

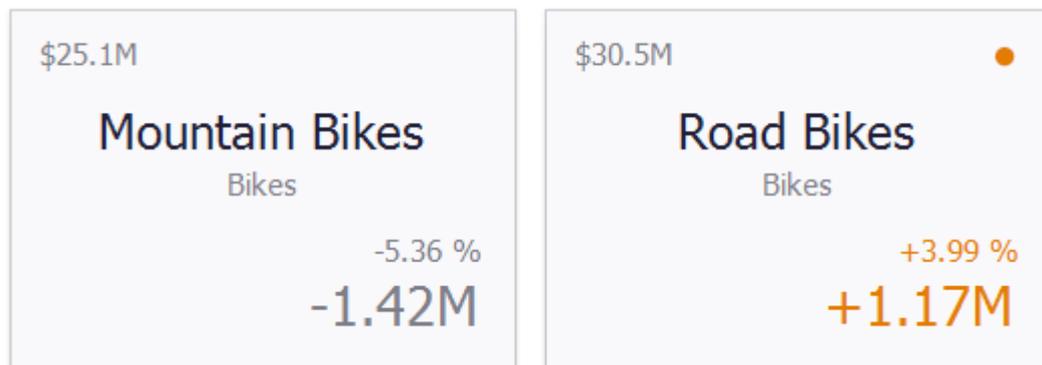
- ✓ Result indication:
 - Greater is good – the 'good' indication is displayed if the actual value exceeds the target value; if the target value exceeds the actual value, the 'bad' indication displays



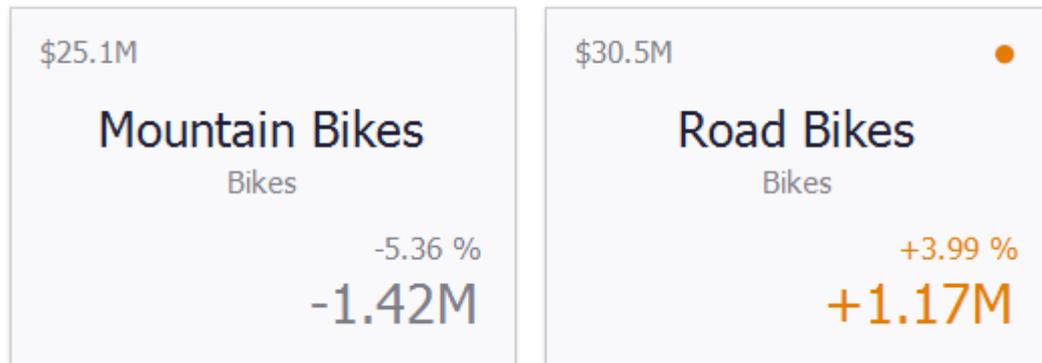
- Less is good – the 'bad' indication displays if the actual value exceeds the target value; if the target value exceeds the actual value, the 'good' indication displays



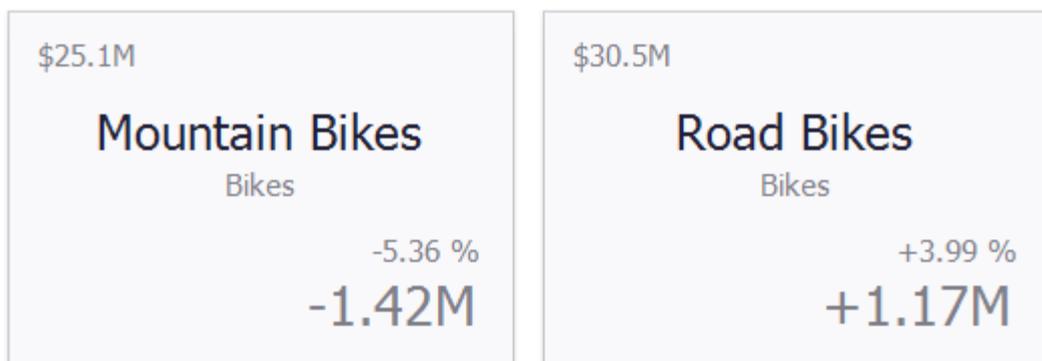
- Warning if greater – a warning is displays only if the actual value exceeds the target value



- Warning if less – a warning is displays only if the target value exceeds the actual value; otherwise, no indication is displayed



- No Indication – indication is not displayed.



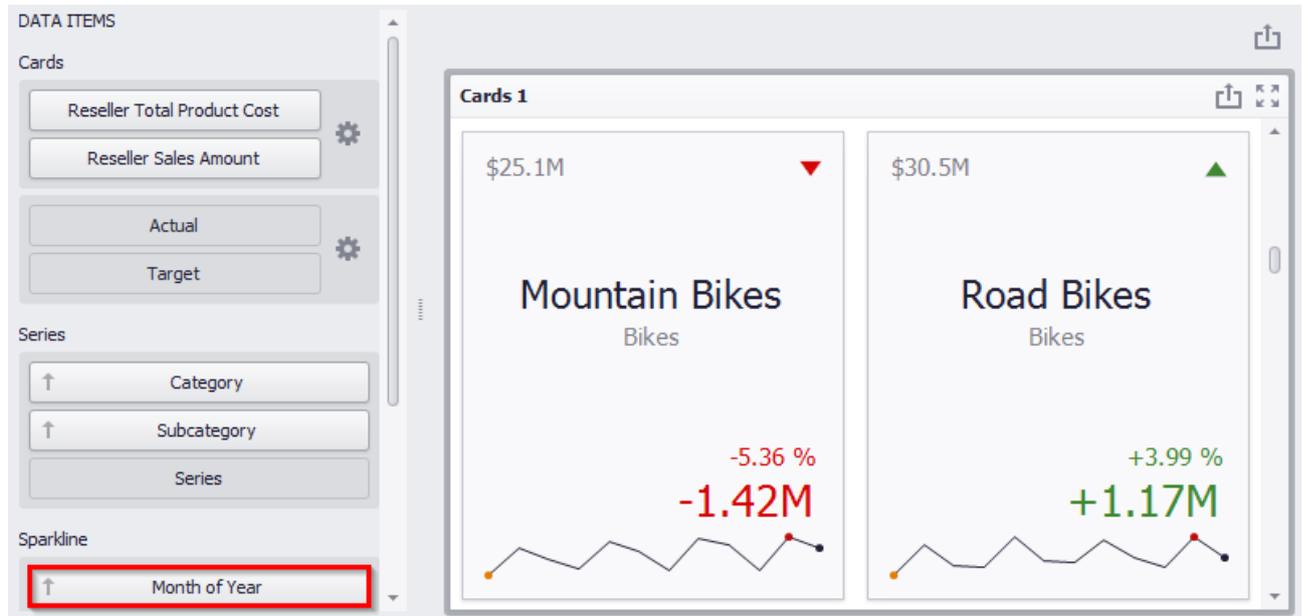
For the delta, you can set a threshold value, which will indicate an excess of an actual above a target.

The threshold type can be percent or absolute.

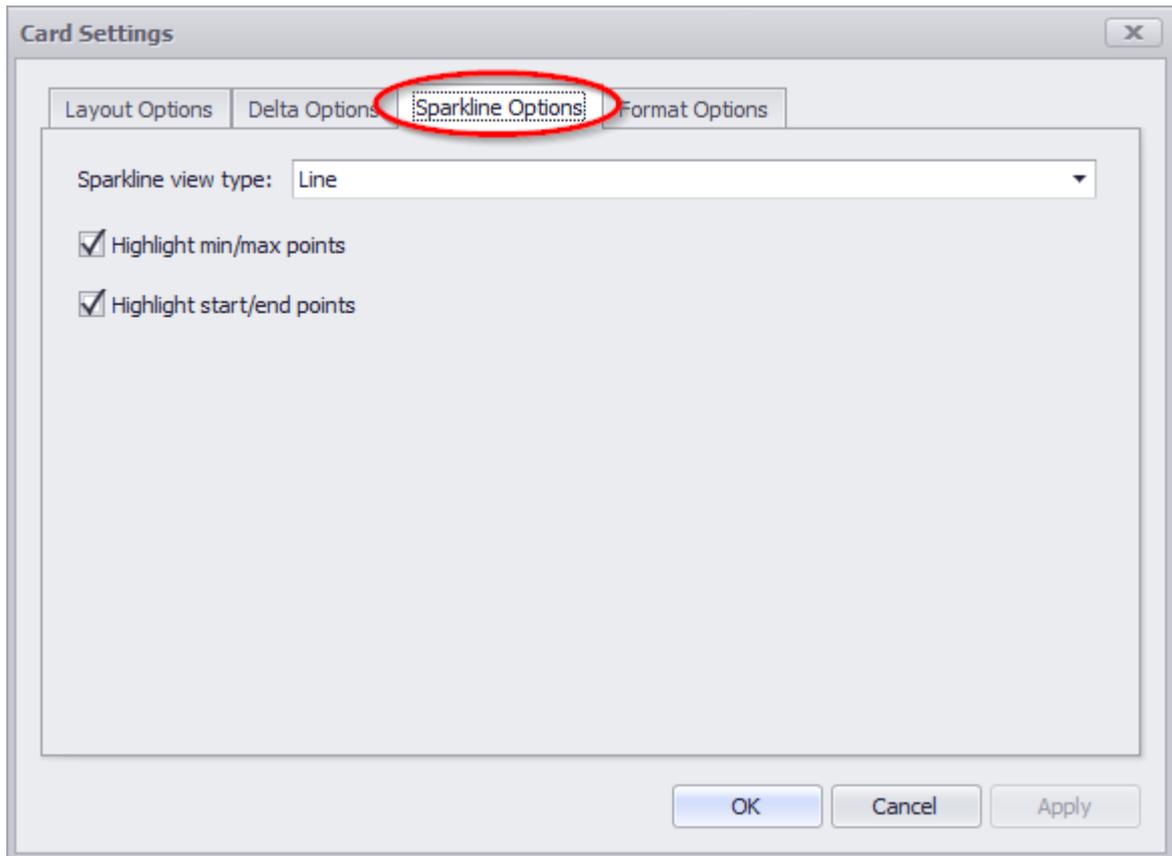
8.11.2 Sparkline

Sparklines can be used to visualize the variation of actual or target values (for instance, over time).

Let us analyze the change in actual value in terms of months of the year. For this, move the “Month of Year” hierarchy into the “Sparkline” field:



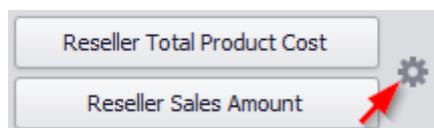
Sparkline itself has the following parameters:



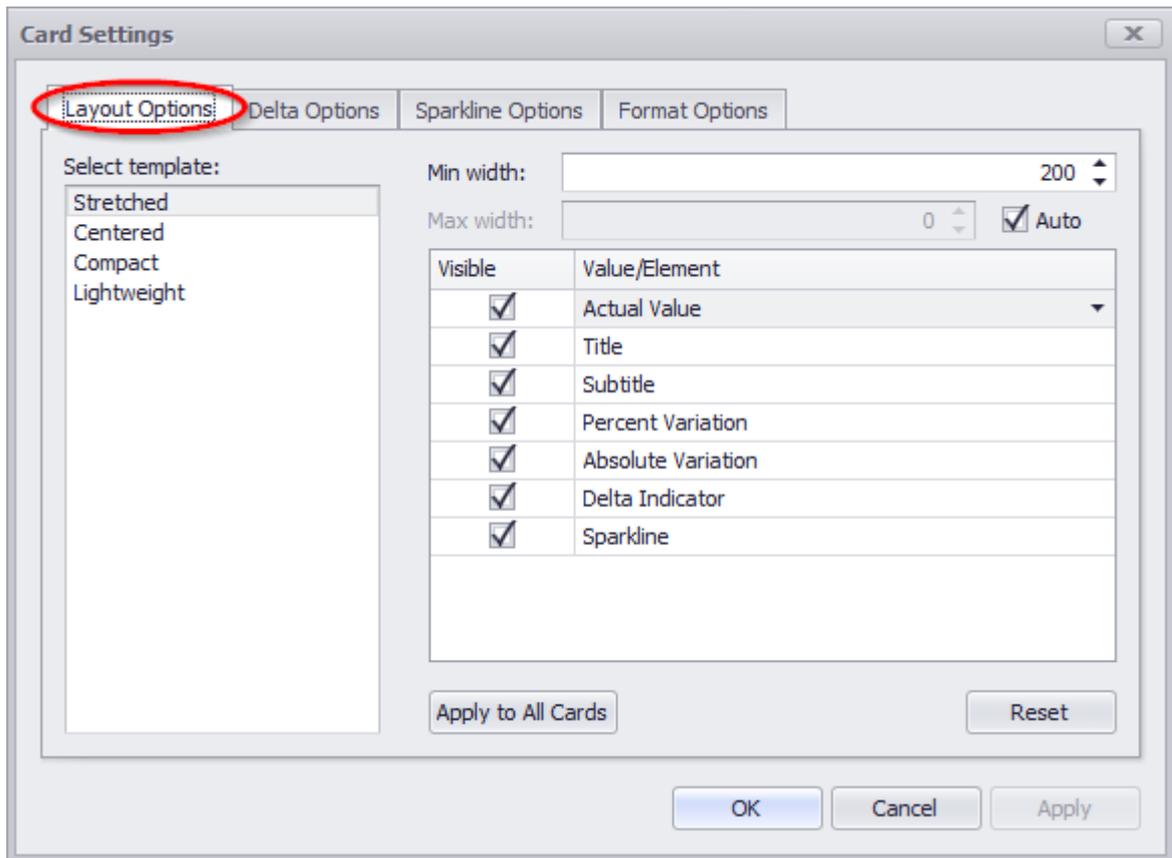
- ✓ Sparkline view type – defines the sparkline’s view type. Sparkline data points can be represented as area, line, bars, or win and loss squares.
- ✓ Highlight min/max points – specifies whether to highlight the minimum/maximum points of a sparkline;
- ✓ Highlight start/end points – specifies whether to highlight the start/end points of a sparkline.

8.11.3 Card Layouts

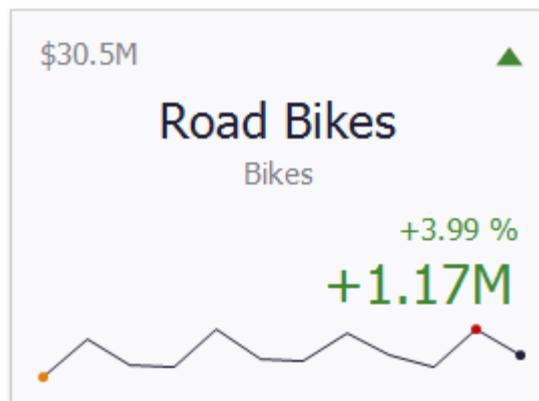
To change a card's layout, click the “Options” button (the  icon) displayed next to the data item container in the Cards section:



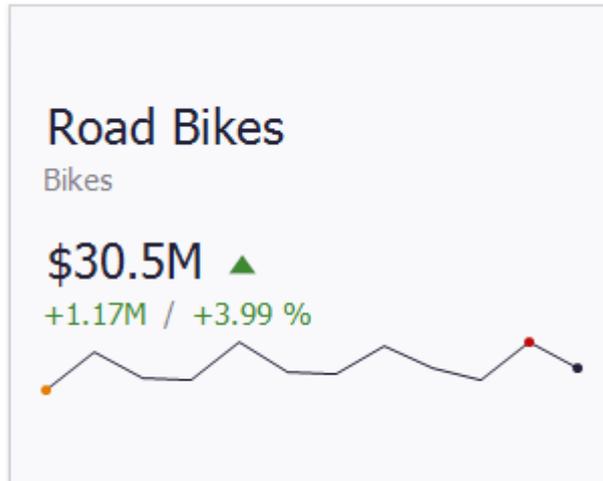
In the form that opens, the following layouts are available on the “Layout Options” tab:



- ✓ Stretched – the Stretched layout template arranges card elements so that they occupy an entire card area



- ✓ Centered – the Centered layout template is used to center card elements so that they occupy a specified width/height



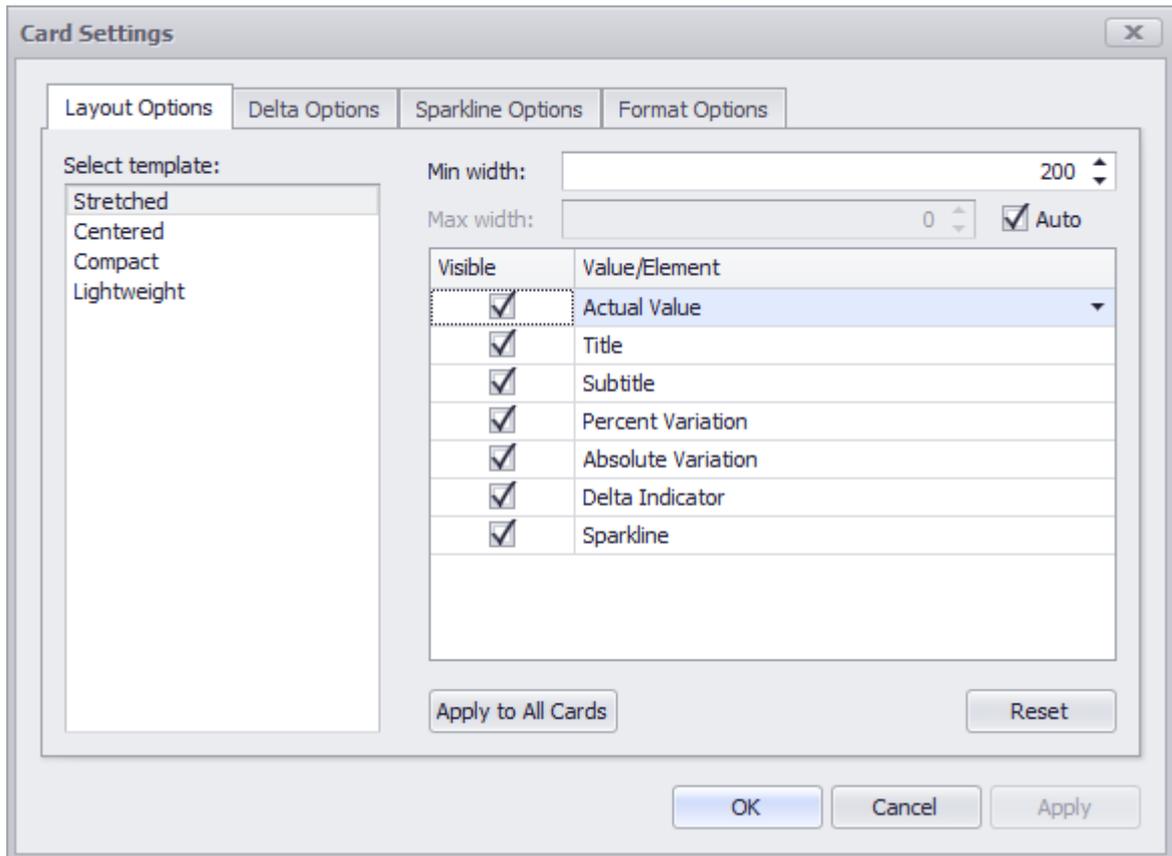
- ✓ Compact – the Compact layout template is used to arrange card elements so that they occupy the minimum area



- ✓ Lightweight – the Lightweight layout template displays the minimum set of elements within a card



For all layout types, you can change the visibility of its elements, or you can specify the display value type for data-bound elements:



On the “Layout Options” tab, select the required layout type in the “Select template” list and specify its settings:

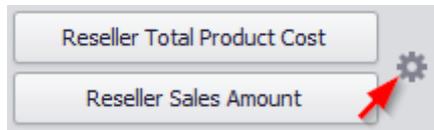
- Min width – specifies the minimum width of the card content;
- Max width – specifies the maximum width of the card content. Use the “Auto” option to determine the maximum width automatically;

You can show/hide the following values and visual elements within the card:

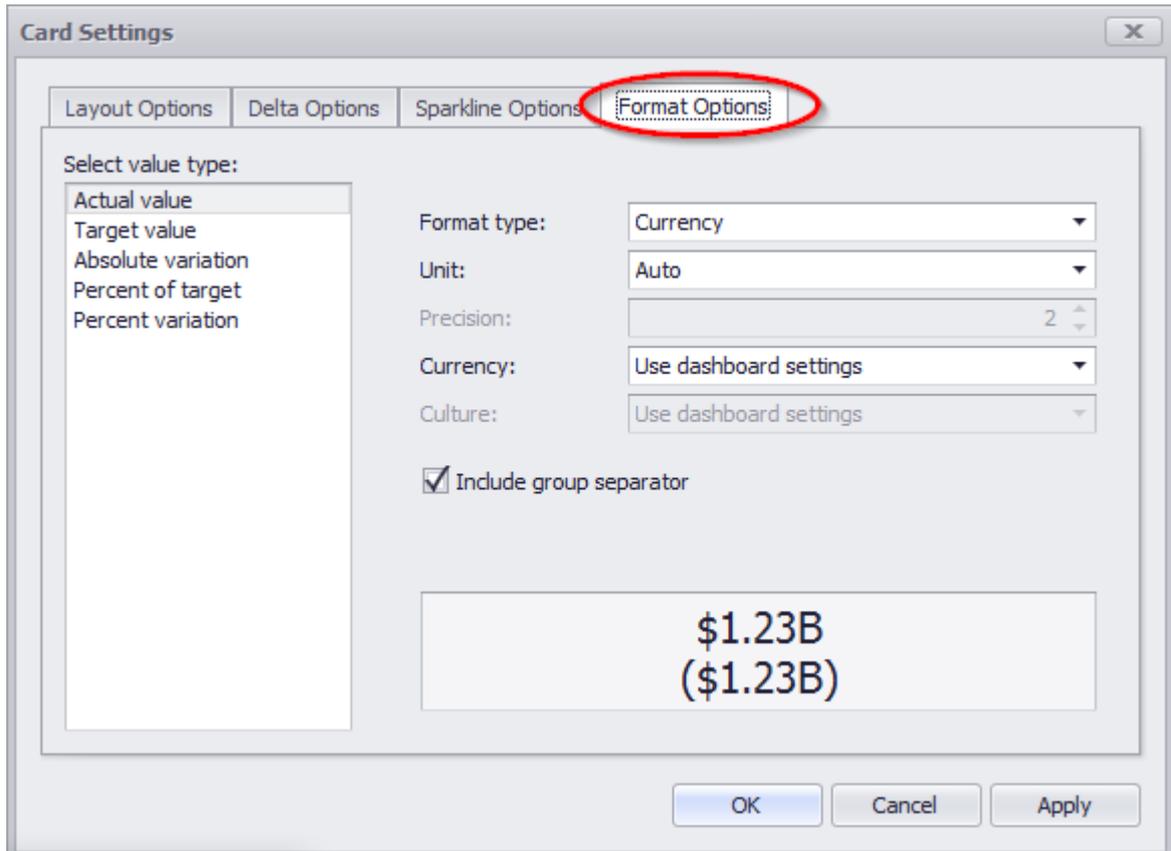
- ✓ Actual Value – a summary value for a measure placed in the Actual placeholder;
- ✓ Title – displays values of the last (bottommost) dimension placed in the Series section;
- ✓ Subtitle – displays combined values of all dimensions except the last (bottommost) dimension;
- ✓ Percent Variation – a percent difference between the actual and target value;
- ✓ Absolute Variation – an absolute difference between the actual and target value;
- ✓ Delta Indicator – indicates whether the actual value is less or greater than the target value
- ✓ Sparkline – visualizes the variation of actual or target values.

8.11.4 Format Options

The Card dashboard item formats the actual and target values displayed within cards using format settings specified for data items. Click the options buttons (the  icon) displayed next to the data item container in the Cards section to change format settings for other values:

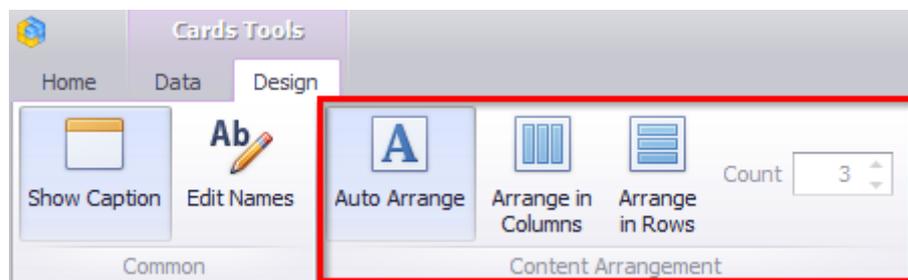


In the invoked “Card Settings” dialog, go to the “Format Options” tab and use the “Select value type” option to specify which values’ format settings should change:



8.11.5 Cards Arrangement

The following display methods are available for the cards in the “Design” tab:



The principle of functionality is similar to that of Pies – abstract 8.9.1

8.11.6 Drill Down

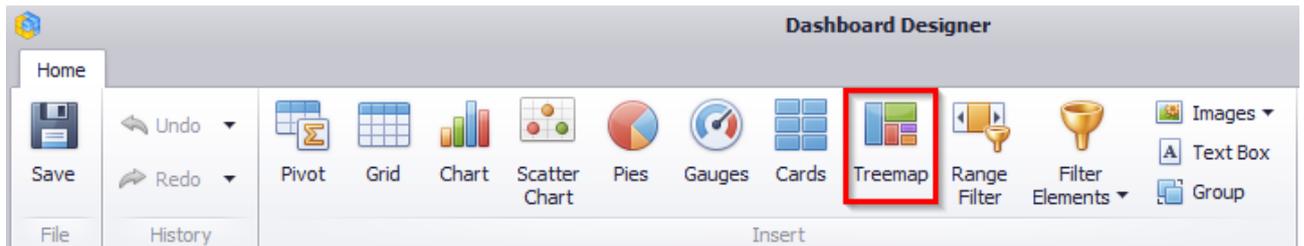
Such a function as Drill Down is available for Cards. The principle of this functional is described in abstract 8.6.5.

8.11.7 Export

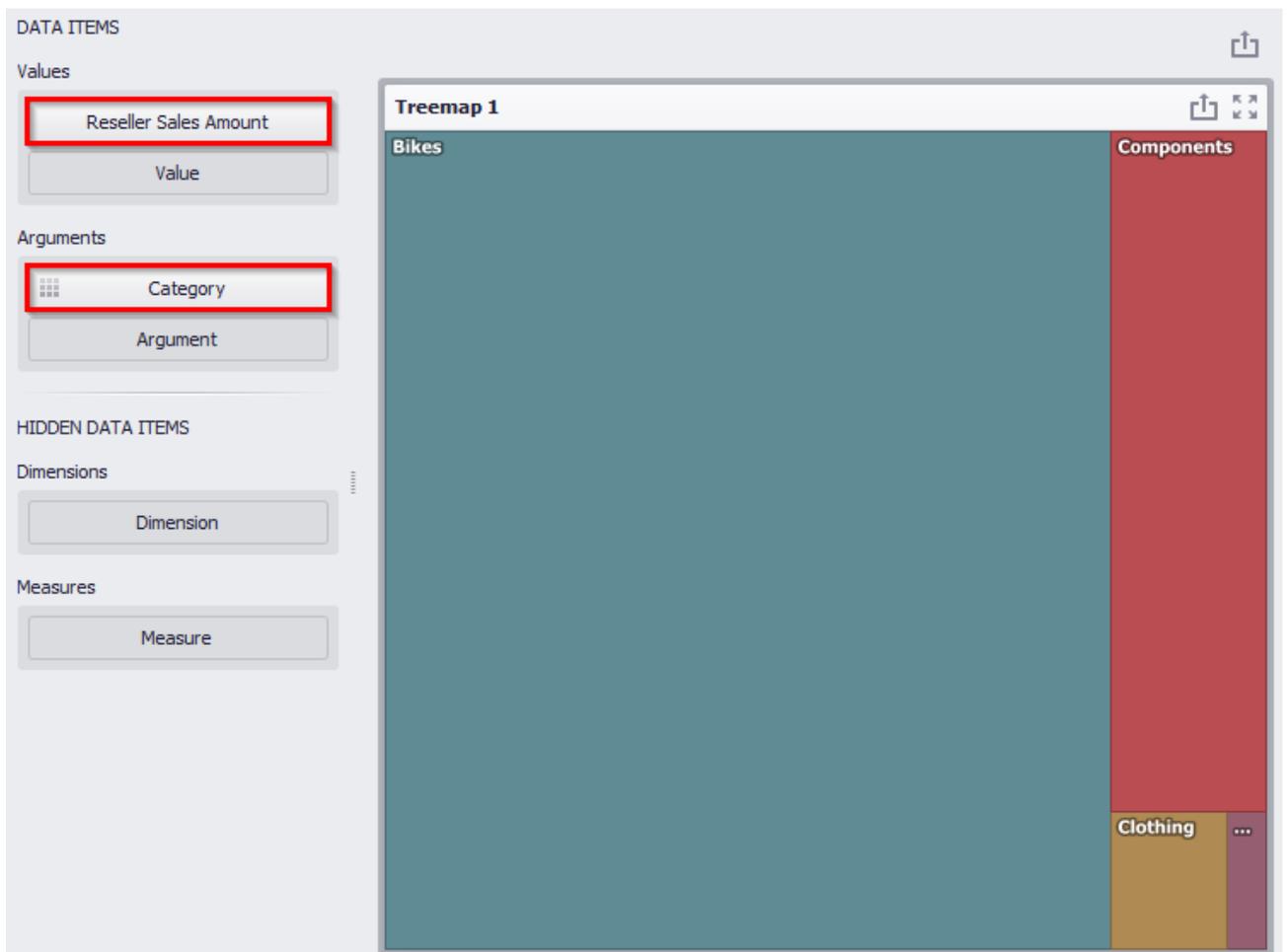
Cards may be exported into PDF, Excel or an image. Ways to do this are described in abstract 8.5.13

8.12 Treemap

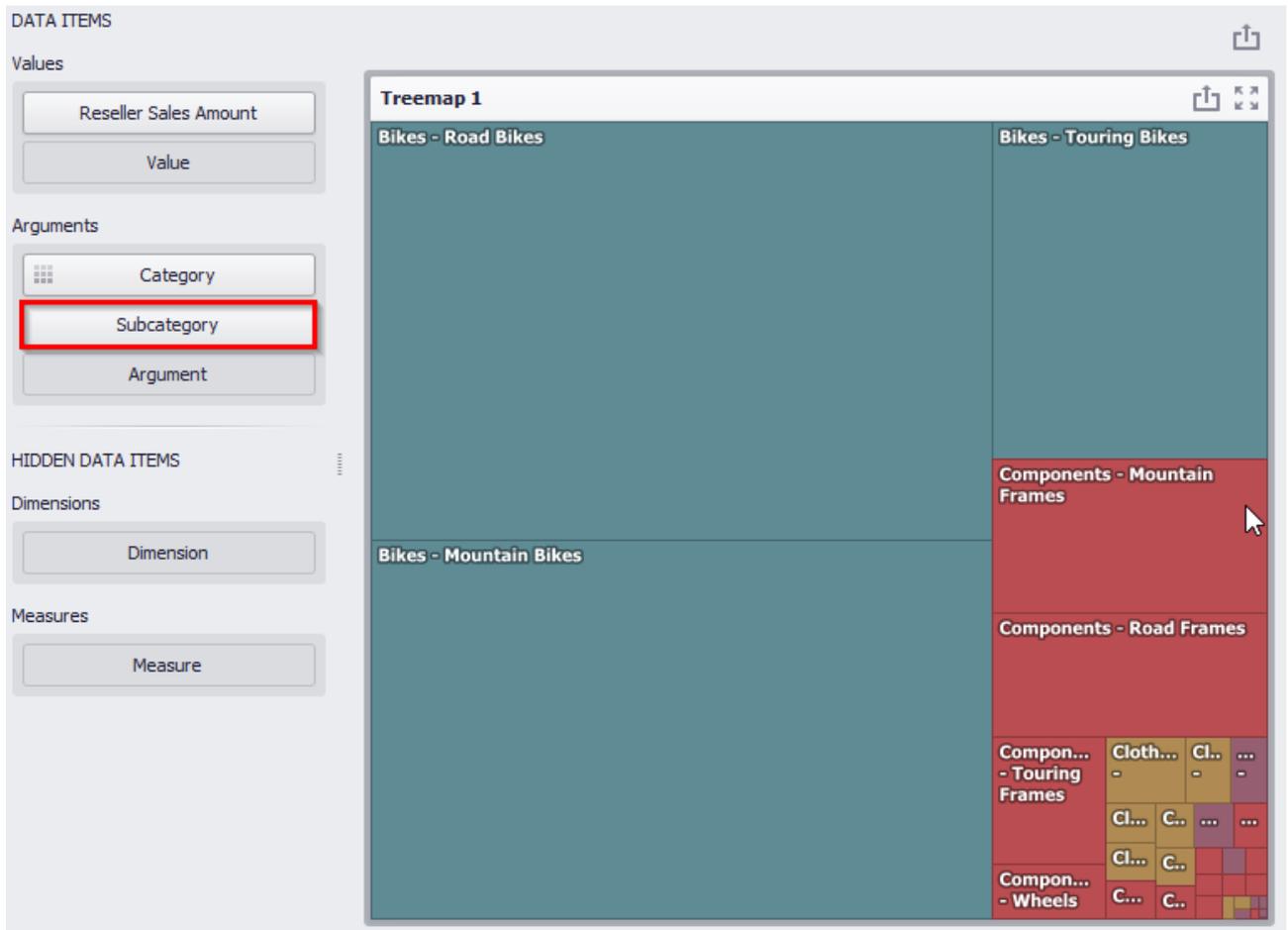
To create a Treemap, click the corresponding icon on the toolbar:



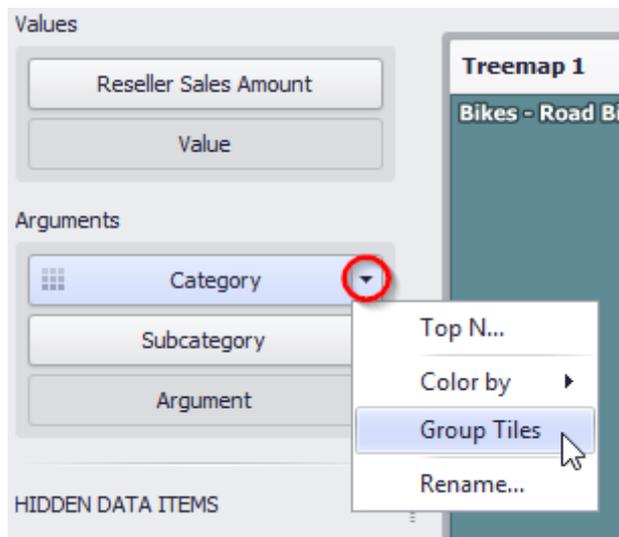
Let us display the volume of sales by product categories. Having filled in the fields as in the picture below, we get a treemap of the following view:



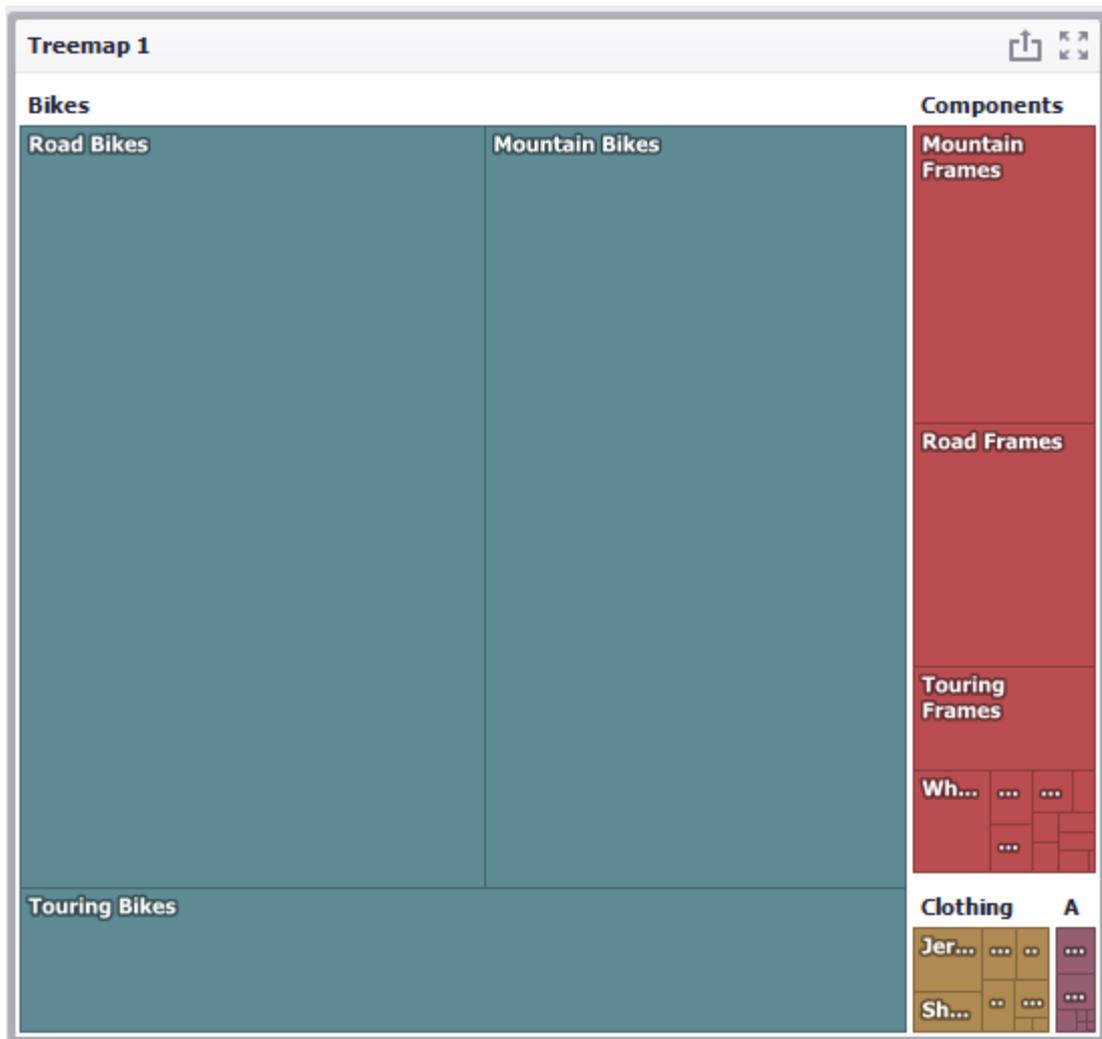
Now add a “Subcategory” hierarchy into an “Argument” fields:



Let us group the subcategories of one group of products:



As a result, a Treemap will look as follows:



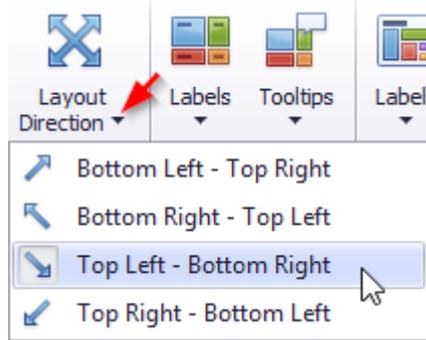
8.12.1 Layout

The following methods of displaying Treemap tiles are available on the “Design” tab:



- ✓ Slice and Dice - this layout algorithm divides the space between items, slicing it in the specified direction depending on item value;
- ✓ Squarified - the Squarified algorithm arranges tiles so that their width/height ratio will be closer to 1;
- ✓ Striped - this algorithm is a modified version of the Squarified algorithm. The difference here is that tiles are drawn side by side as columns or rows;

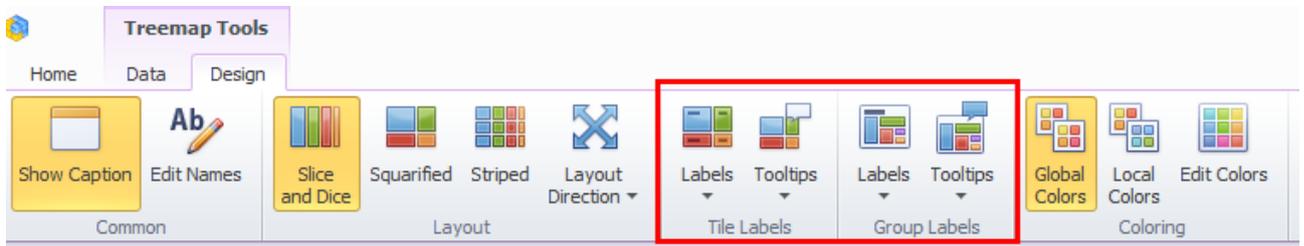
- ✓ Layout Direction - you can also set a layout direction to specify an arrangement of tiles depending on their sizes:



8.12.2 Labels

There are two types of labels in a Treemap:

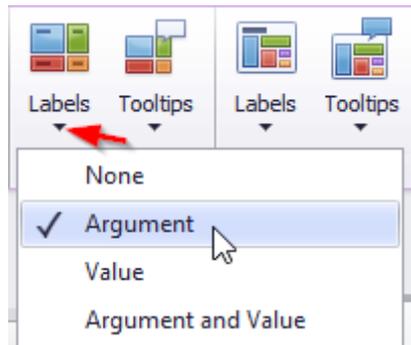
- ✓ Tiles Labels
- ✓ Group Labels



The Treemap displays labels that contain descriptions for tiles and groups, and provide tooltips with additional information:



Use buttons within the “Tile Labels” / “Group Labels” ribbon groups to manage tile and group labels, respectively. These buttons invoke the drop-down menu, which is similar for all buttons:



8.12.3 Edit Colors

For a treemap the Color Editor functionality is available. The principle of its functionality is described in abstract 8.7.4.

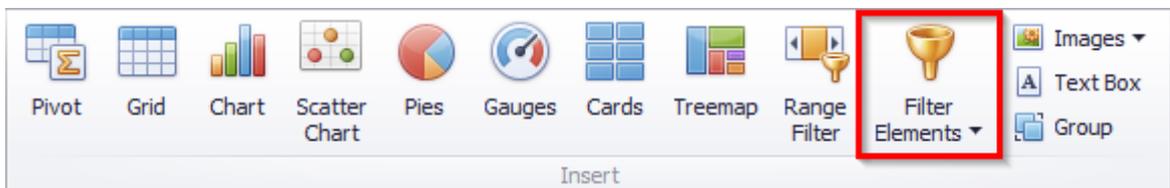
8.12.4 Export

Treemap may be exported into PDF, Excel or an image. The ways to do this are described in abstract 8.5.13

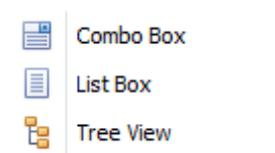
8.13 Filter Elements

Filter elements represent a special type of dashboard item that allows you to apply filtering to other dashboard items.

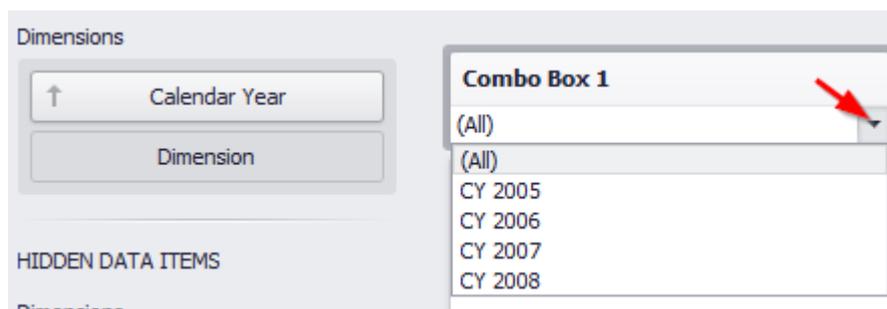
To create a Filter dashboard element, click the icon:



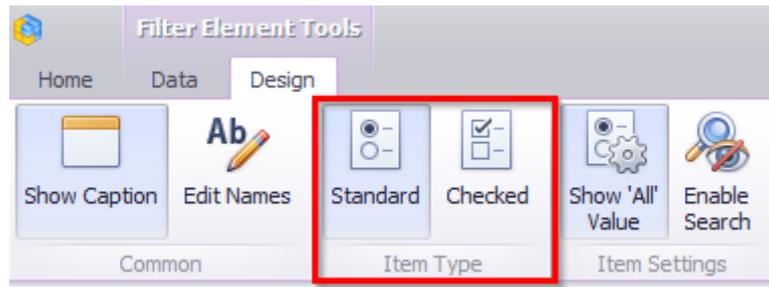
The following filters are available in the drop-down list:



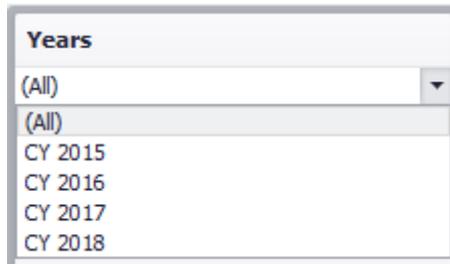
- ✓ Combo Box – the Combo Box dashboard item allows to select a value(s) from the drop-down list.



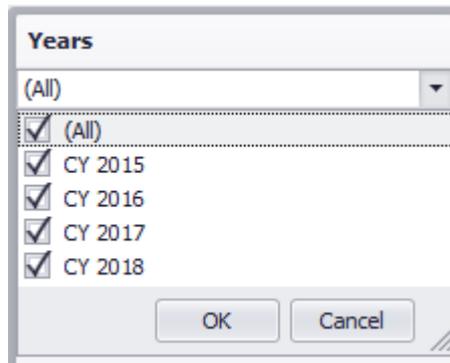
On the “Design” tab for this filter, there are two ways to select values:



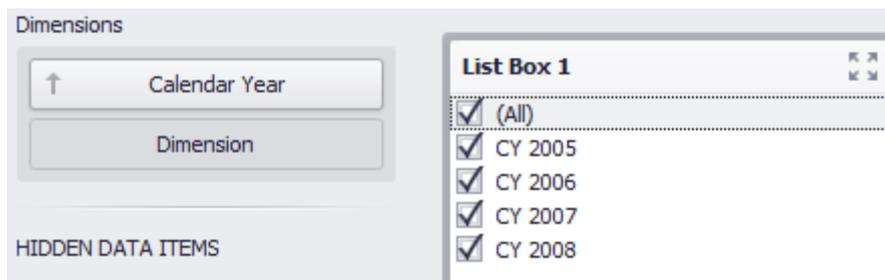
- Standard – allows to select only a single value:



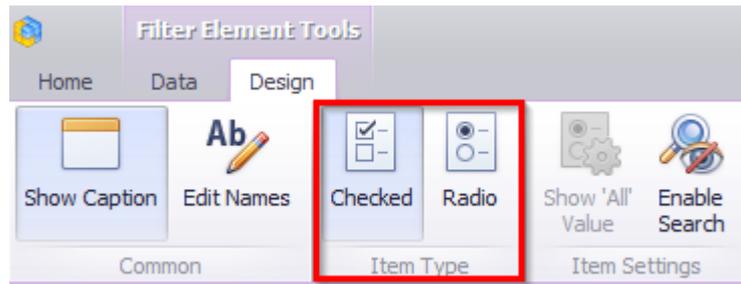
- Checked - allows to select multiple values in the invoked drop-down list:



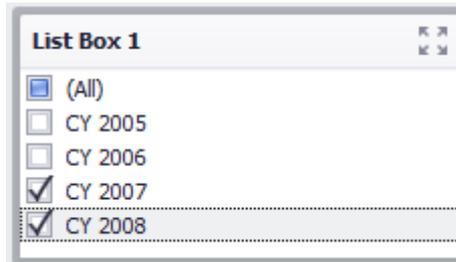
- ✓ List Box - the List Box dashboard item allows to select a value(s) from the list



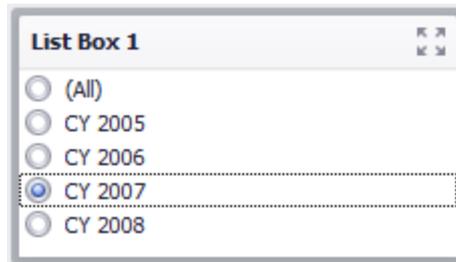
On the “Design” tab for this filter, there are two ways to select values:



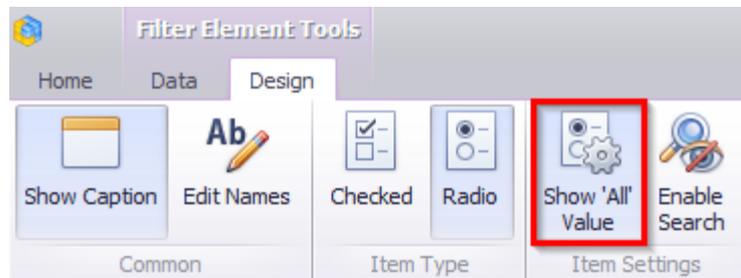
- Checked – allows to select multiple values in the list box



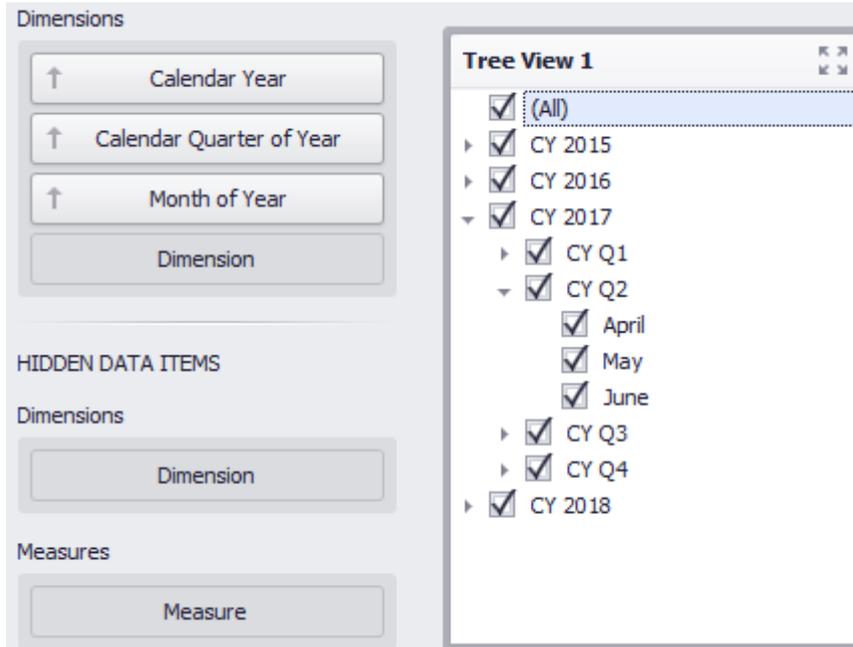
- Radio - allows to select only a single value in the radio group



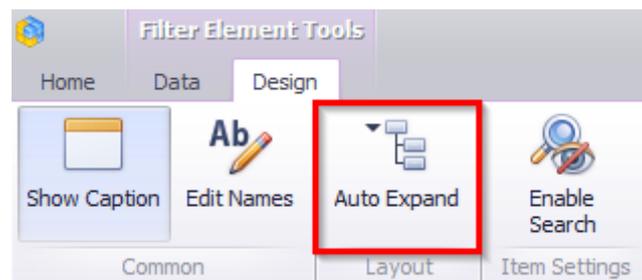
In addition, there is a possibility to enable filtering for all elements:



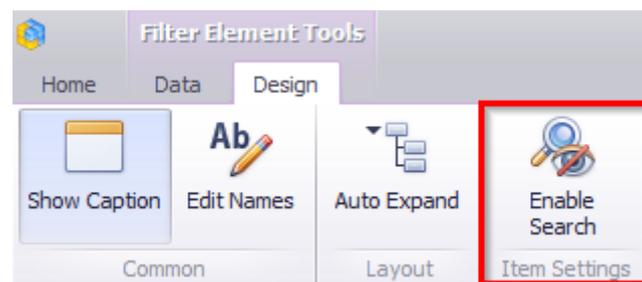
- ✓ Tree View - the “Tree View” dashboard item displays values in a hierarchical way and allows to expand/collapse nodes

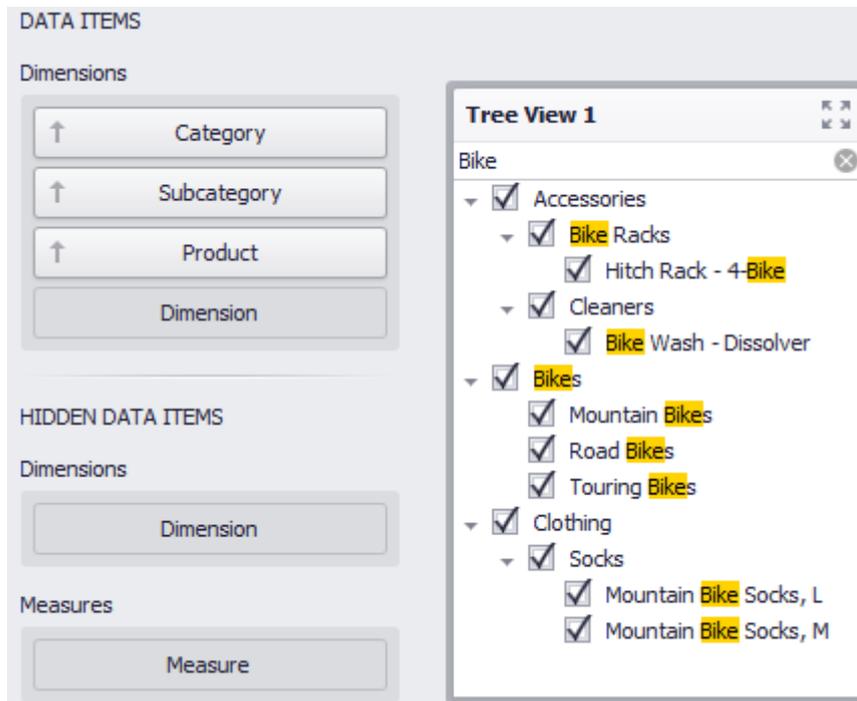


You can manage the initial expanded state of filter values using the “Auto Expand” button in the “Design” ribbon tab:



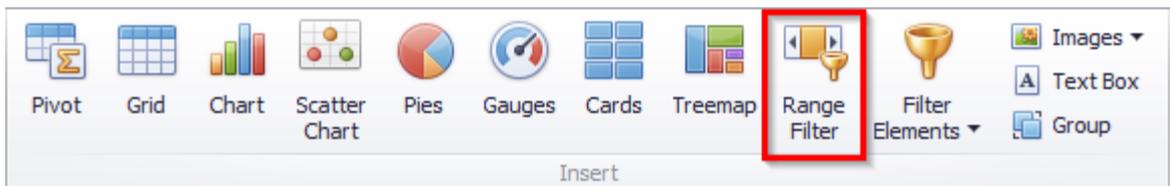
Auto Expansion – the tree will be in the expanded state.
For all types of filter available quick search:



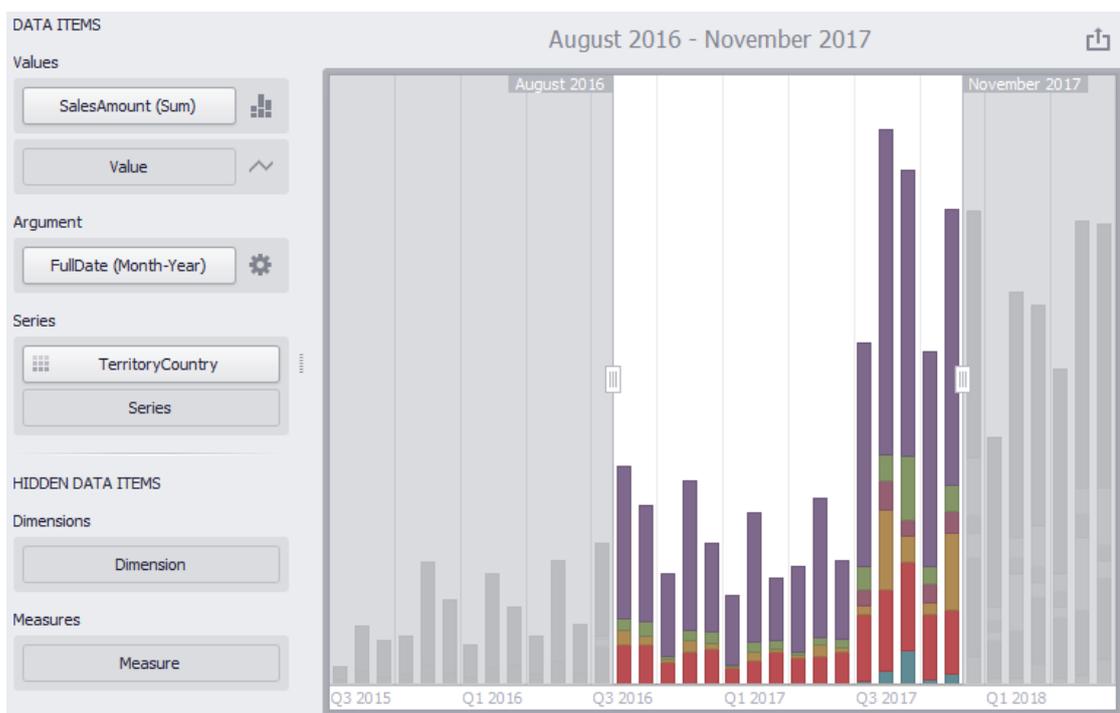


8.14 Range Filter

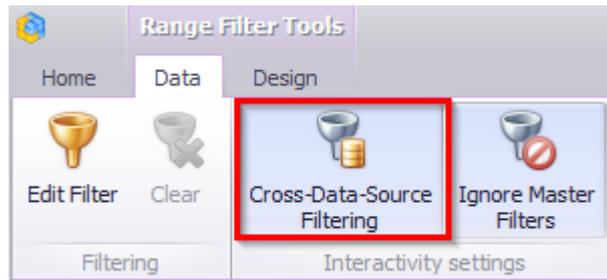
The “Range Filter” dashboard element as well as “Filtr” allows to apply filtering to other dashboard elements.



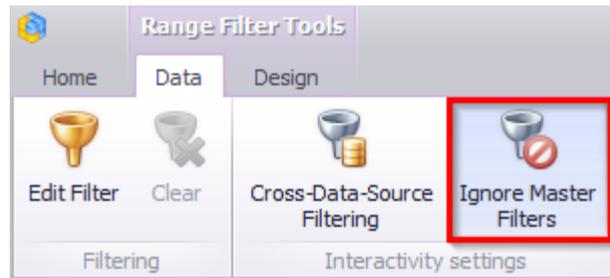
This element displays a chart with selection thumbs that allow you to filter out values displayed along the argument axis:



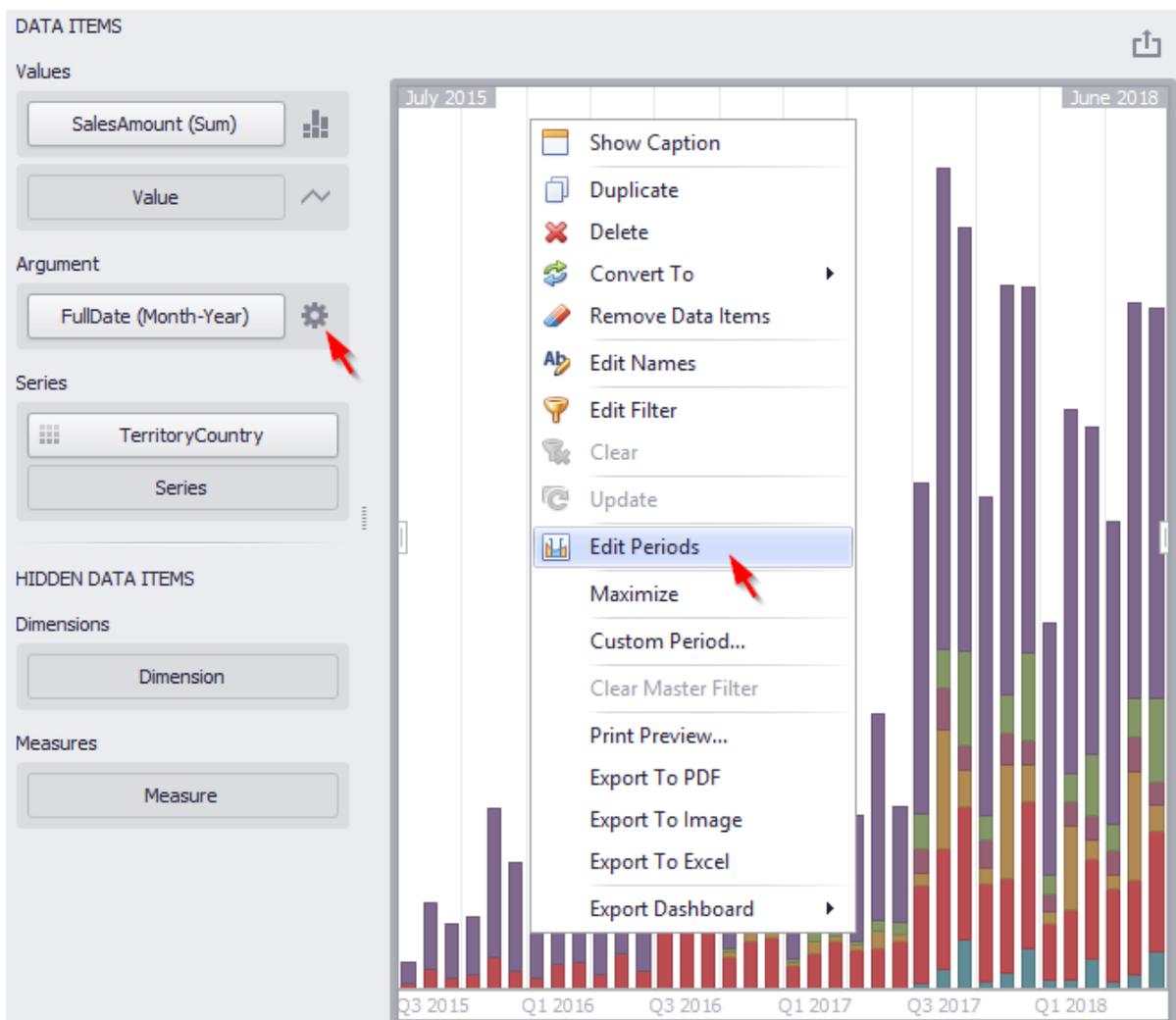
This filter can be used for cross-filter data sources. For this, use the “Cross-Data-Source-Filters” button on the “Data” tab:



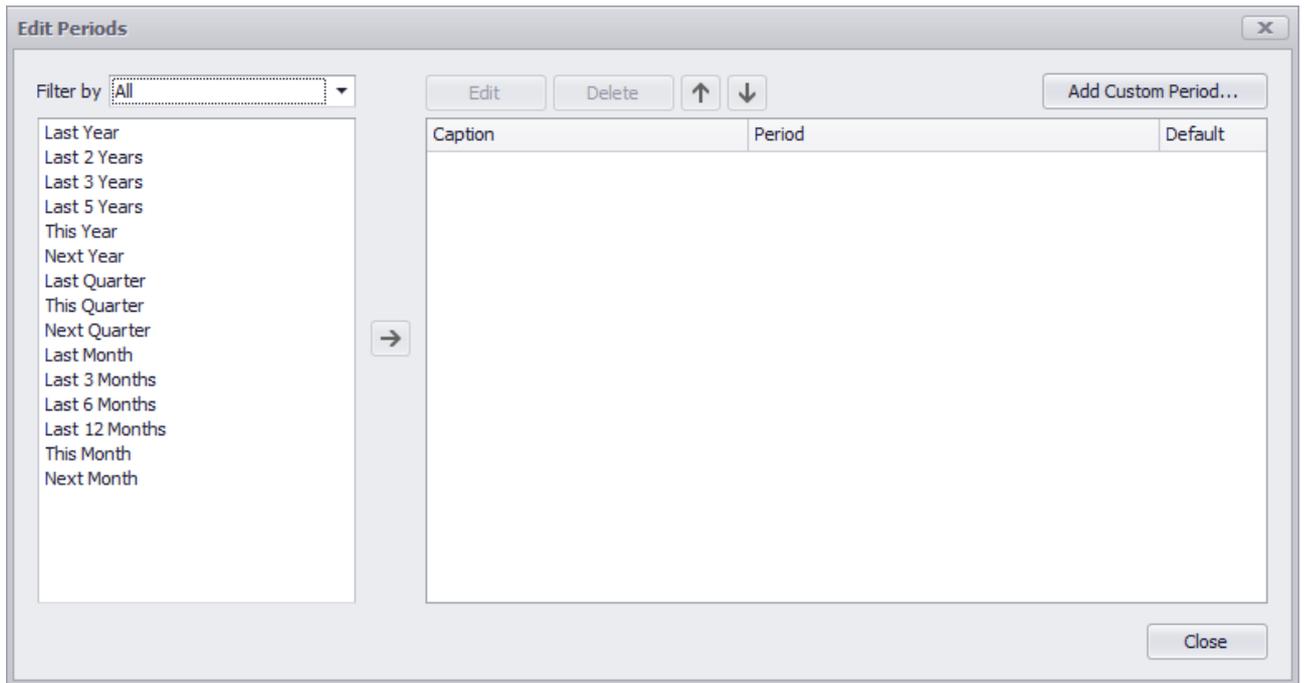
You also can not apply end-to-end filters to this element:



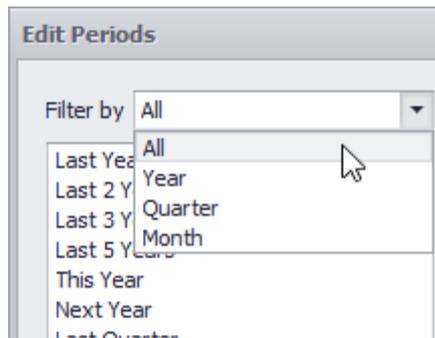
You can create your own ranges of data. To do this, use either the context menu (right mouse button) or click on the  icon in the “Argument” field:



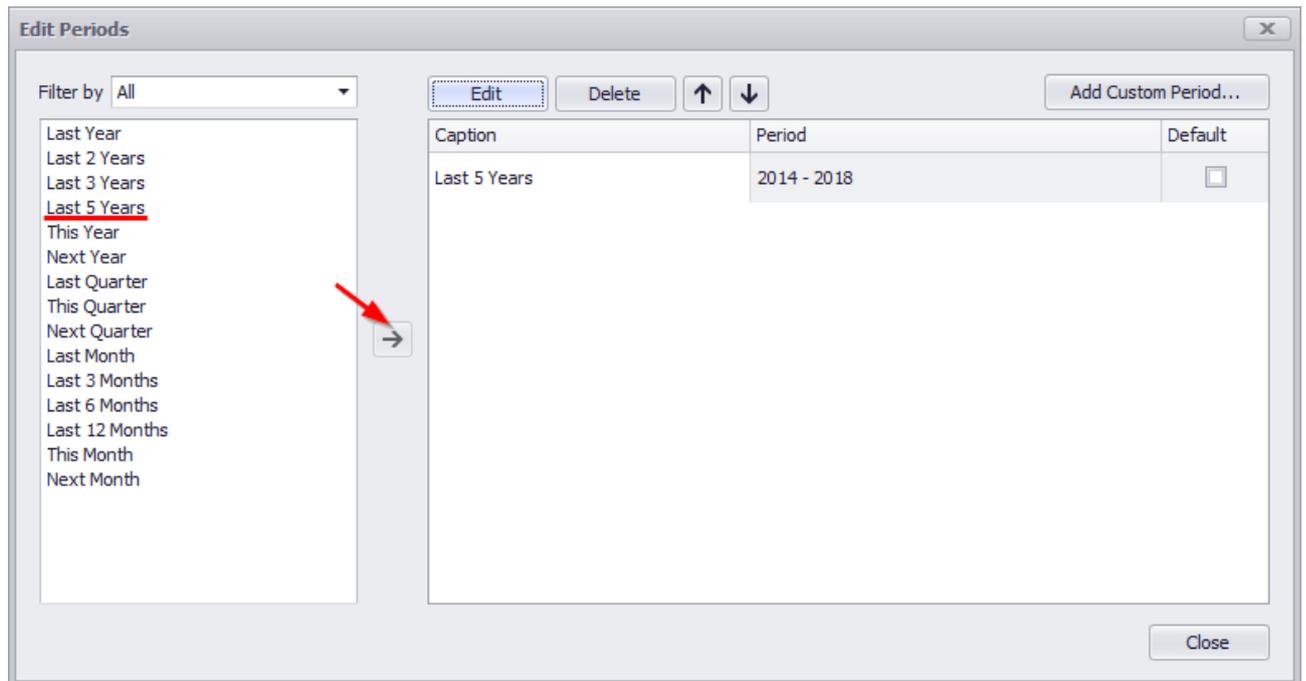
As a result, the “Edit Periods” window appears:



The list on the left shows the list of ready periods that you can filter:



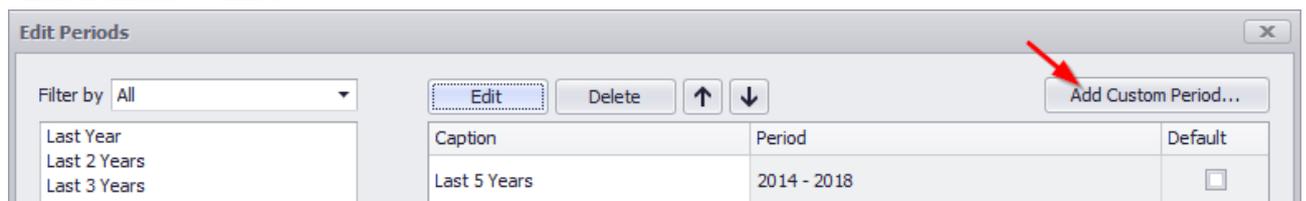
In order to add the selected period, use the  button or simply drag the period in the field on the right:



This period will be added to the right pane of the Edit Periods dialog. The following settings are available for the added period:

- Caption – title name for the period;
- Period - displays the time interval of the date corresponding to the period;
- Default - allows to use the selected period as the default value in the element of the Range Filter panel.

You can create your own period. To do this, use the “Add Custom Period ...” button in the “Edit Periods” window:



As a result, a window appears in which you can add the following periods:

The image shows a dialog box titled "Period" with a close button (X) in the top right corner. On the left side, there are four radio buttons: "Year" (selected), "Quarter", "Month", and "Custom". On the right side, there are five radio buttons: "Previous Year", "This Year" (selected), "Next Year", "Last" (with a spinner box containing "1" and the text "years"), and "Next" (with a spinner box containing "1" and the text "years"). Below these is a checkbox labeled "Include current" which is unchecked. At the bottom center, there is a text box containing the year "2019". At the bottom right, there are two buttons: "OK" and "Cancel".

For the year, quarter and month it is possible to set to display:

- Previous Year/Quarter/Month;
- This Year/Quarter/Month;
- Next Year/Quarter/Month;
- Last Year/Quarter/Month;
- Next Year/Quarter/Month.

There is also a possibility to create a **Custom** period:

The screenshot shows a dialog box titled "Period" with a close button (X) in the top right corner. On the left side, there are four radio button options: "Year", "Quarter", "Month", and "Custom". The "Custom" option is selected and highlighted with a dashed border. On the right side, there are two sections: "Start point" and "End point". Each section has three radio button options: "None", "Fixed", and "Flow". Both "Start point" and "End point" are currently set to "None". Below these options is a large text box containing the text "Entire Range". At the bottom right of the dialog, there are two buttons: "OK" and "Cancel".

This period allows to specify a period with user boundaries (“Start” and “End” point):

The screenshot shows the same "Period" dialog box. On the left side, the "Custom" radio button is selected. On the right side, the "Start point" section has "Fixed" selected, and a dropdown menu below it shows "January 2019". The "End point" section has "Flow" selected. Below the "End point" section, there are two more controls: "Interval:" with a dropdown menu showing "Year", and "Offset:" with a text box containing "1" and up/down arrow buttons. Below these controls is a large text box containing the text "January 2019 - December 2019". At the bottom right of the dialog, there are two buttons: "OK" and "Cancel".

For start and end points, you can set the following parameters:

- None – the start and end points will be equal to the start and end values from the visible range;
- Fixed – possibility to select a specific value in the calendar;
- Flow – allows to specify a floating period with interval and offset. “Interval” – indicates the interval between the current date and the required date, “Offset” – the number of such intervals:

The screenshot shows a dialog box titled "Period" with a close button (X) in the top right corner. On the left side, there are four radio buttons: "Year", "Quarter", "Month", and "Custom". The "Custom" radio button is selected. On the right side, there are two sections: "Start point" and "End point".

Start point: It has three radio buttons: "None", "Fixed", and "Flow". The "Fixed" radio button is selected. Below it is a dropdown menu showing "January 2019".

End point: It has three radio buttons: "None", "Fixed", and "Flow". The "Flow" radio button is selected. Below it are two fields: "Interval:" with a dropdown menu showing "Month", and "Offset:" with a spinner box showing the number "2".

At the bottom of the dialog, there is a large text box displaying "January 2019 - June 2019". At the very bottom right, there are two buttons: "OK" and "Cancel".

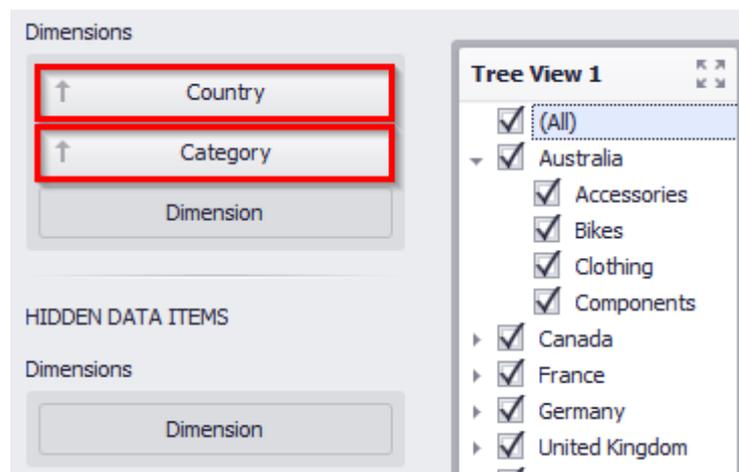
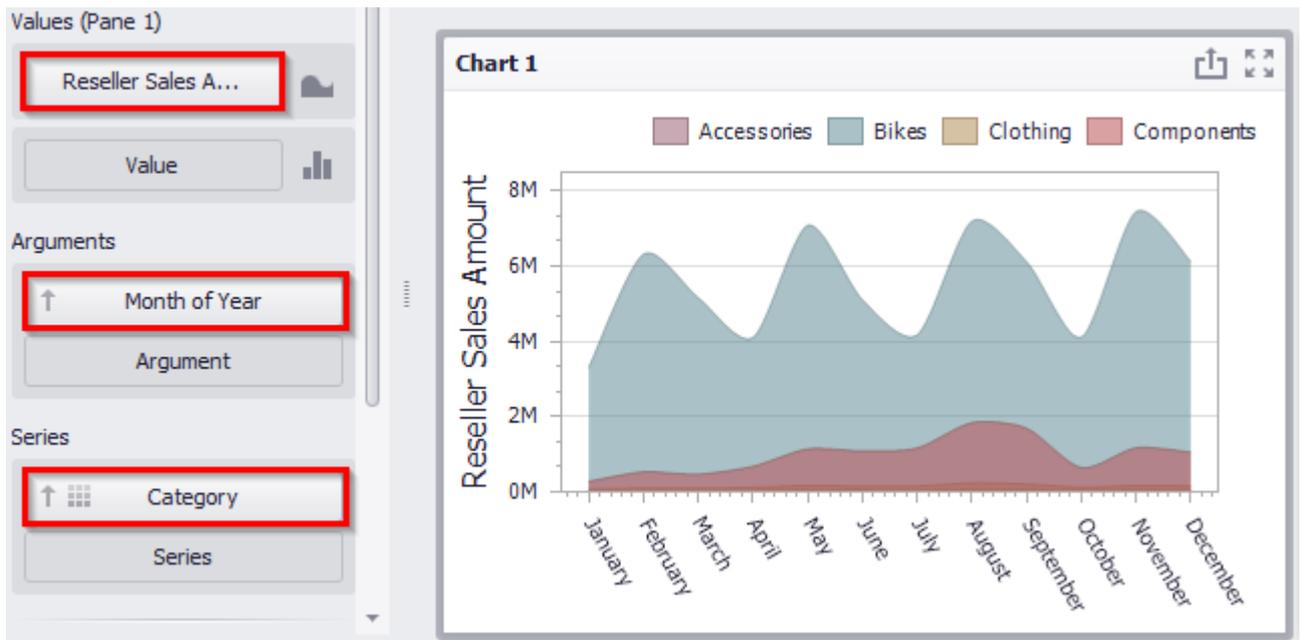
8.15 Group

The “Group” dashboard element allows you to merge several elements into a single group. To create a Group element, click the icon:

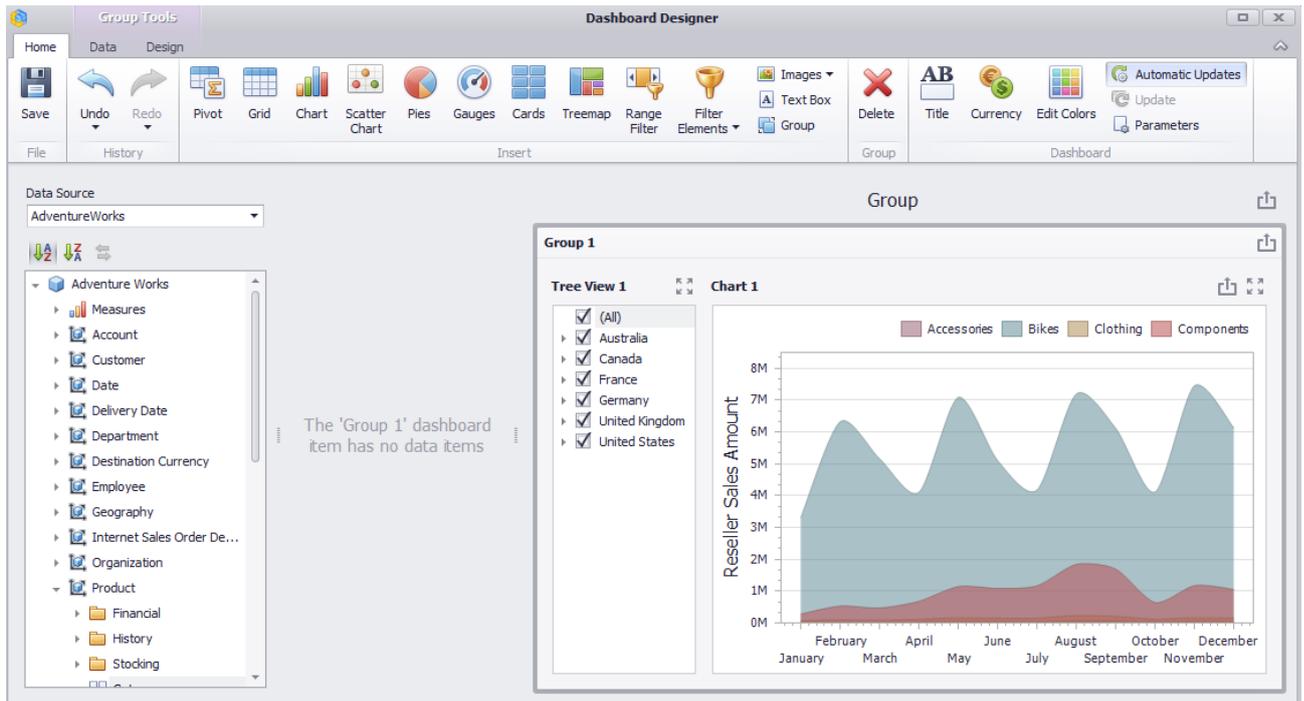


Let us have a look at the working principle of this element on the example of two groups.

First, we create two elements of the dashboard - a chart (of a “Spline Area” type) and a filter (of a “Tree View” type). For each of them, fill in fields with appropriate data:

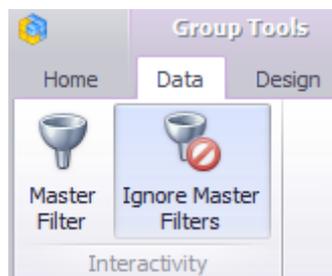


Now create the first group (click the icon of the same name in the toolbar) and drag the chart and filter into it:



Thus, we got a group, elements of which can interact with each other within this group and outside it.

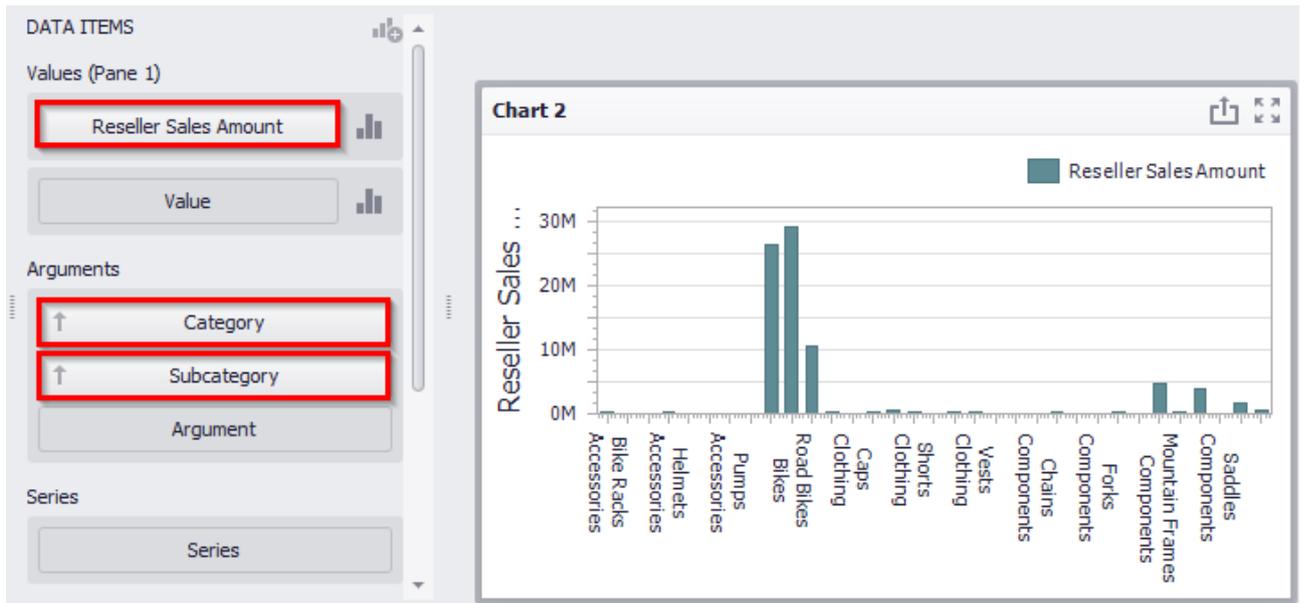
On the “Data” tab:



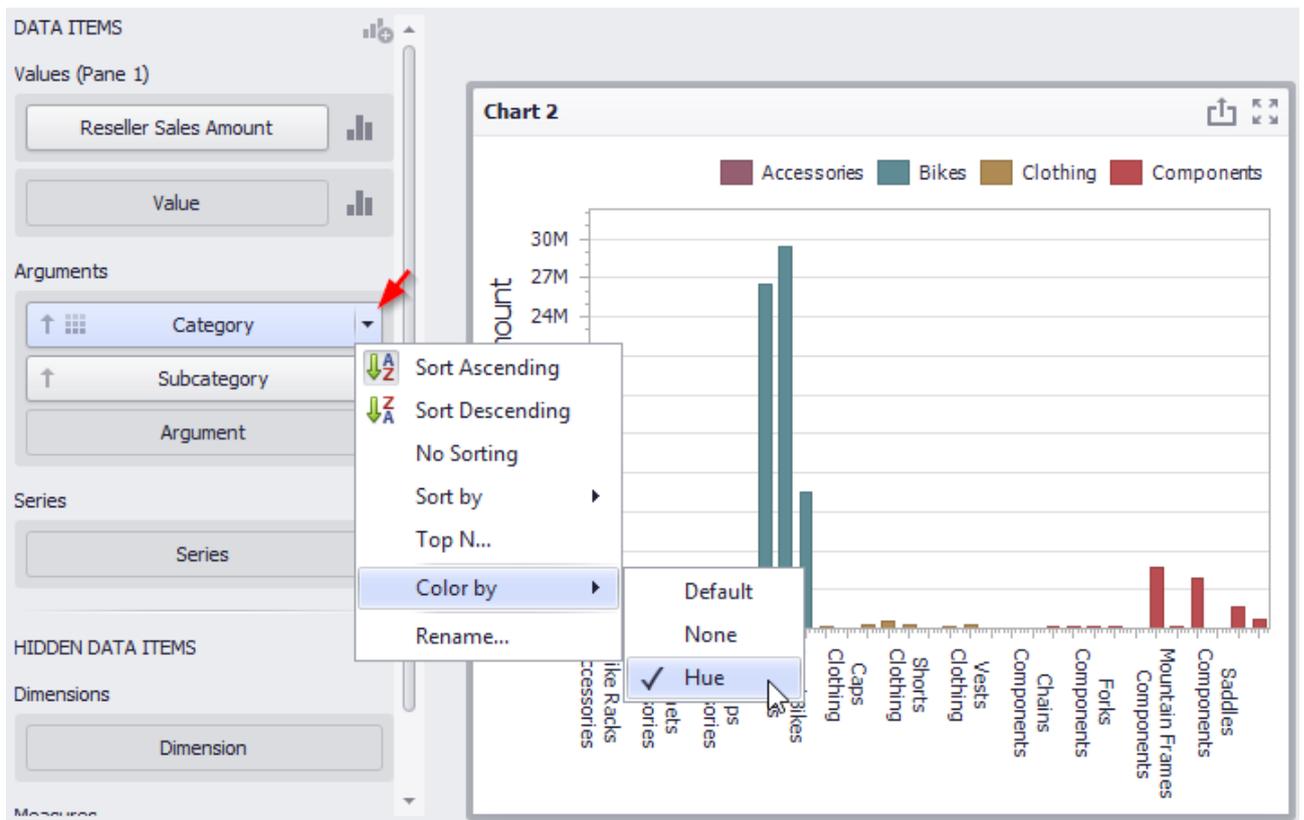
- ✓ The “Master Filter” button allows you to specify whether the current group allows you to filter external dashboard items using master filter items contained within the group. If this option is disabled, master filter items contained within the group can filter only dashboard items from this group;
- ✓ The “Ignore Master Filters” button allows you to isolate dashboard items contained within the group from being filtered using external master filter items.

For the first group, let us leave the filter on – “Ignore Master filters”.

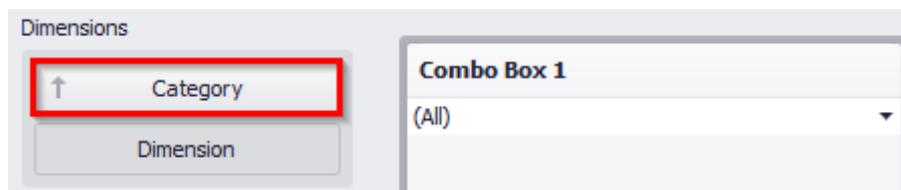
Now let us create the second group. It will consist of a chart and two filters (“List Box” and “Combo Box”):



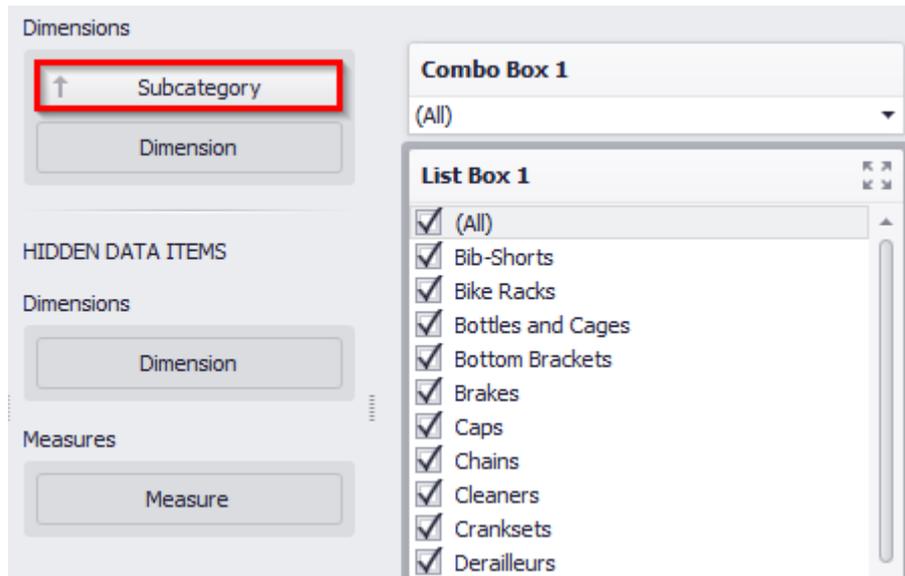
We paint subcategories of the same groups of products in the same color:



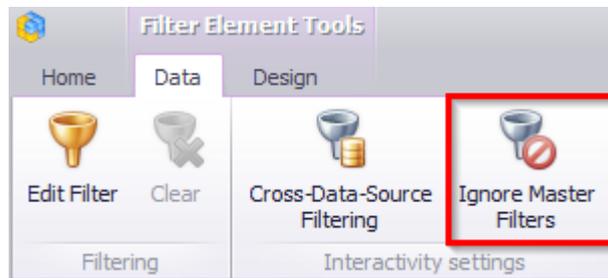
Now let us create a filter – “Combo box”:



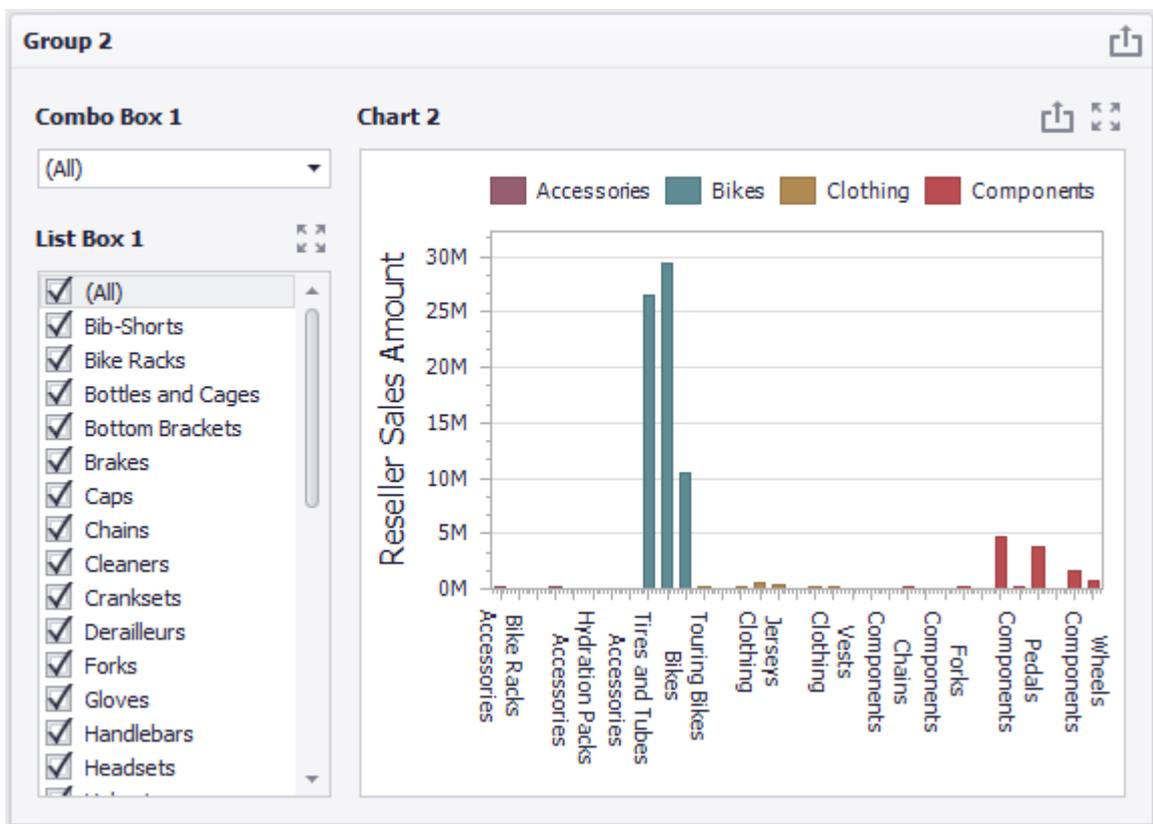
The second filter will be called “List Box”:



For a “List Box” on the “Data” tab disable “Ignore Master Filters” button:



Create a second group and drag the chart and filters into it:



For this group on the “Data” tab, we also leave an active “Ignore Master Filters” filter.

Thus, we got two independent groups:

Data Source
AdventureWorks

- ▶ Geography
- ▶ Internet Sales Order De...
- ▶ Organization
- ▶ Product
 - ▶ Financial
 - ▶ History
 - ▶ Stocking
 - ▶ Category
 - Category
 - Large Photo
 - Model Name
 - Product
 - Product Line
 - Style
 - Subcategory
 - Product Categories
 - Product Model Lines
- ▶ Promotion
- ▶ Reseller
- ▶ Reseller Sales Order Det...
- ▶ Sales Channel
- ▶ Sales Reason
- ▶ Sales Summary Order D...
- ▶ Sales Territory
- ▶ Scenario
- ▶ Ship Date
- ▶ Source Currency

Group

Group 2

Combo Box 1

(All)

List Box 1

- (All)
- Bib-Shorts
- Bike Racks
- Bottles and Cages
- Bottom Brackets
- Brakes
- Caps
- Chains
- Cleaners

Chart 2

Group 1

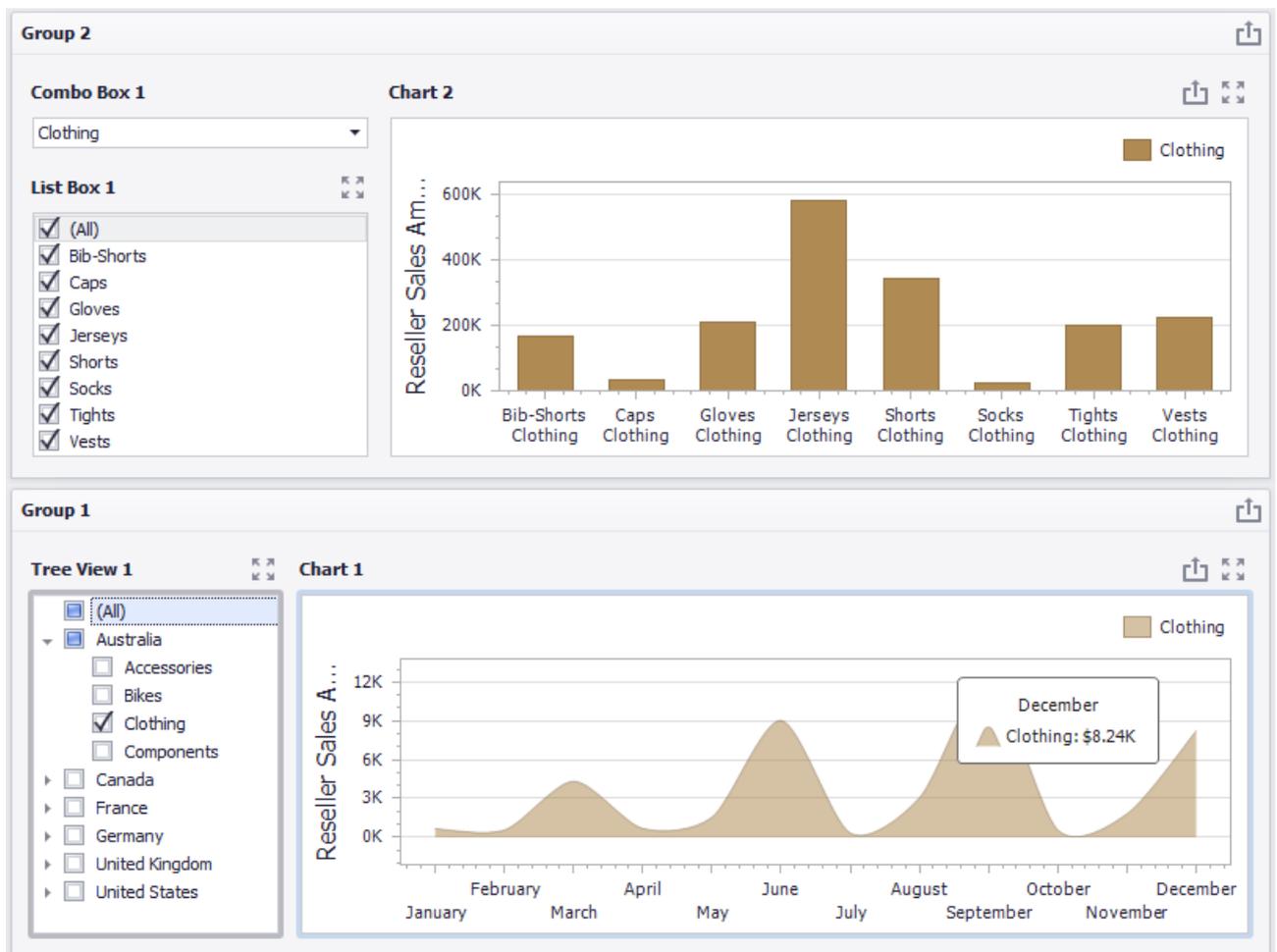
Tree View 1

- (All)
- ▶ Australia
- Canada
- ▶ France
- Germany
- ▶ United Kingdom
- United States

Chart 1

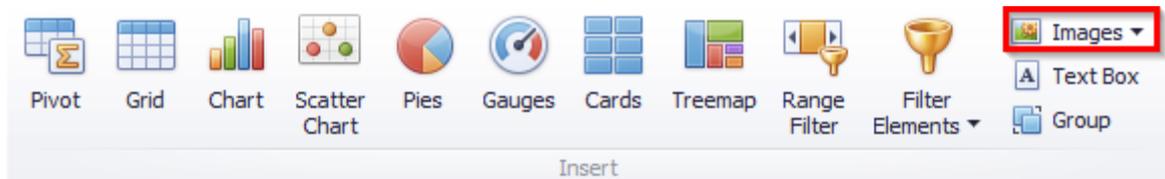
The 'Group 1' dashboard item has no data items

The first shows the sales volume of the groups of products depending on the month of the year and country, and the second shows the sales volume of a particular group of products by subcategories:

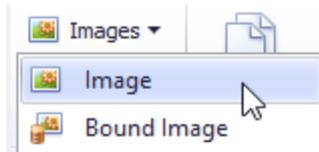


8.16 Images

An image can be one of the elements of a dashboard. To add an image, click the corresponding icon in the toolbar:



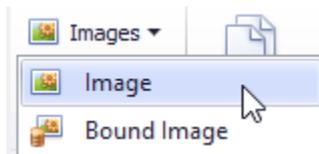
An «Interactive Dashboard» allows to create two types of image elements:



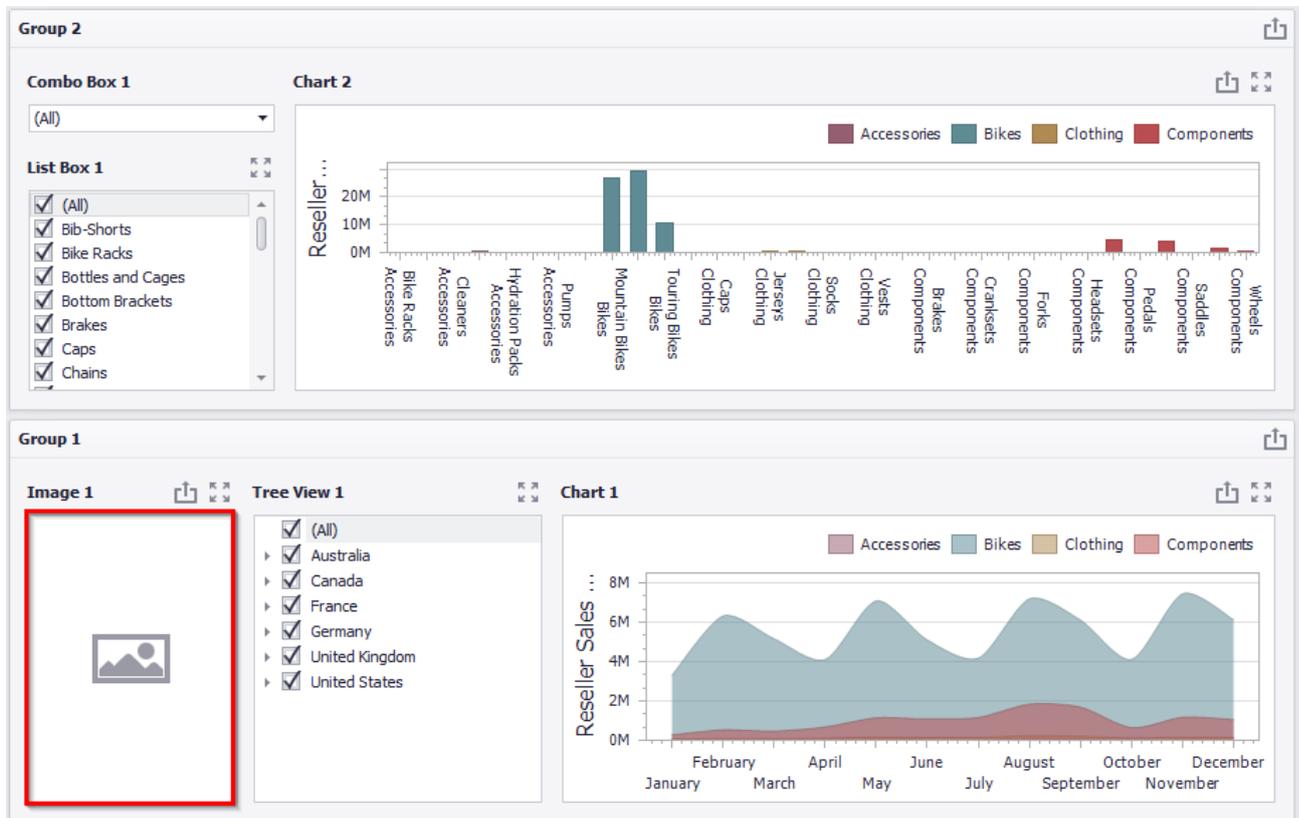
- ✓ Image
- ✓ Bound Image

8.16.1 Image

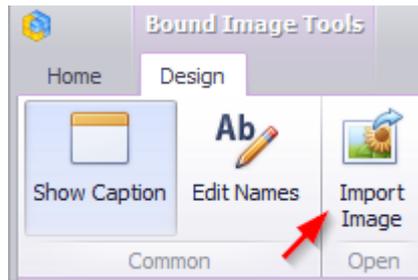
To add an “Image” element, choose the following sub-item:



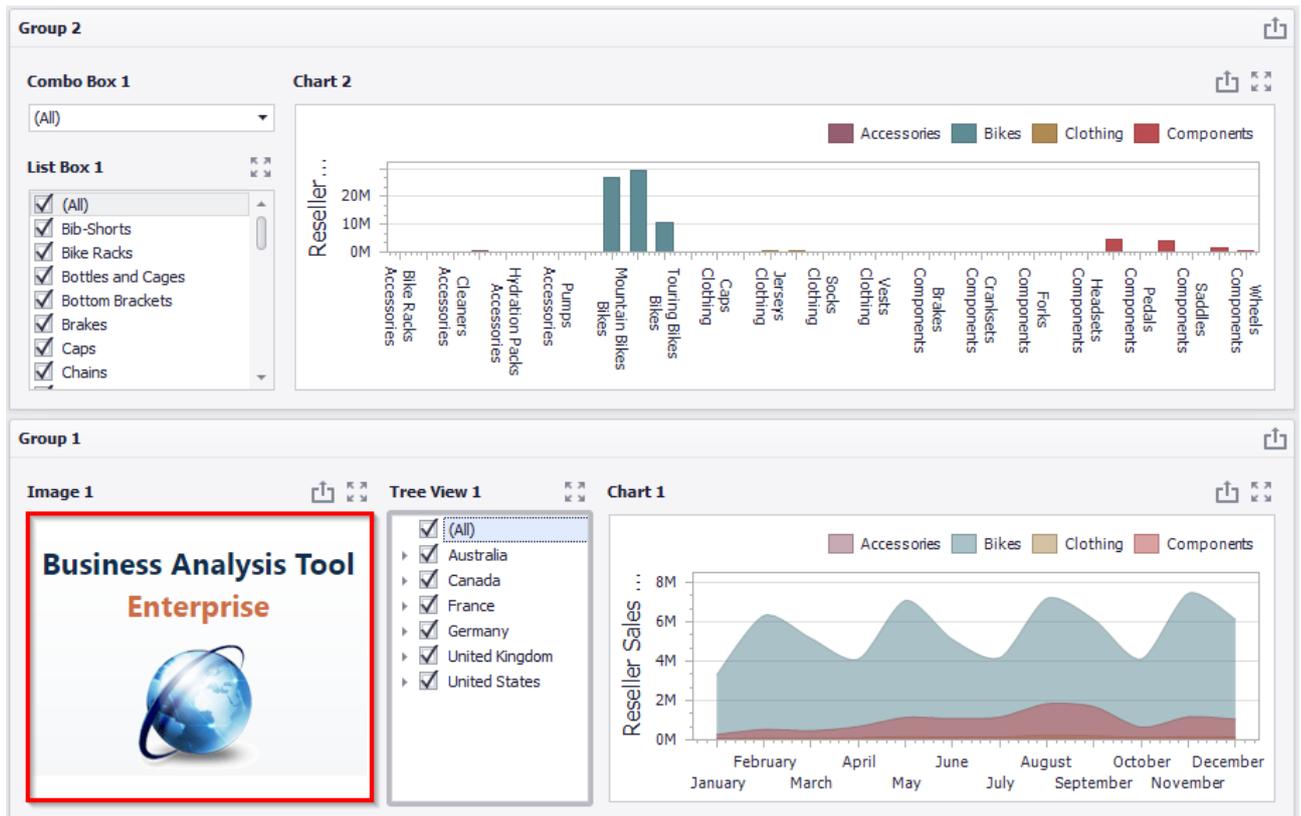
An empty field appears in the dashboard designer window:



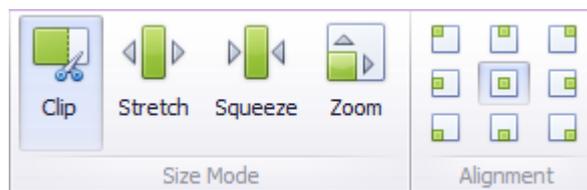
Now, to add an image, go to the “Design” tab and click an “Import Image” icon:



In the opened form, specify the location of the file and click an «OK» button. As a result, the dashboard will look the following:



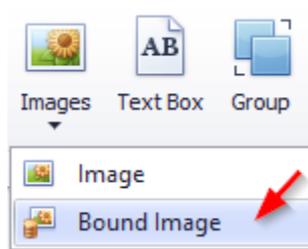
If necessary, the size and location of the image can be changed:



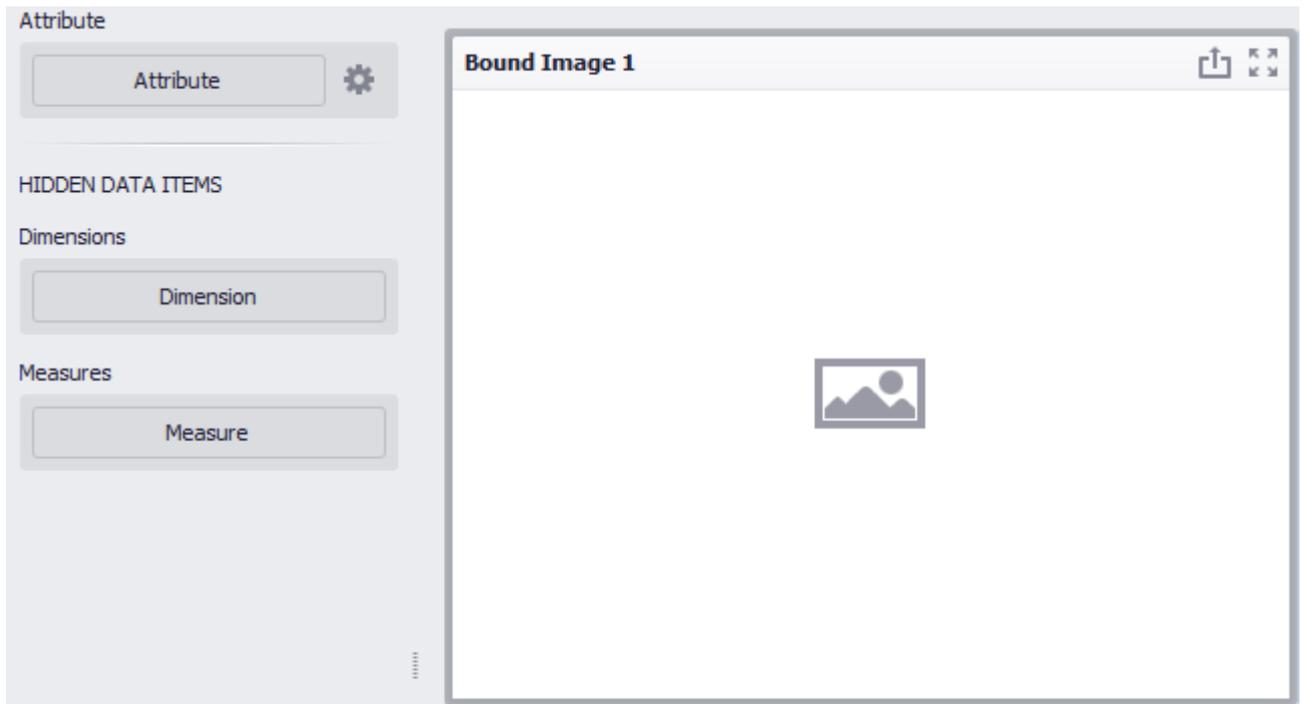
An image may be exported into PDF or an image. The ways to this are described in abstract 8.5.13.

8.16.2 Bound Image

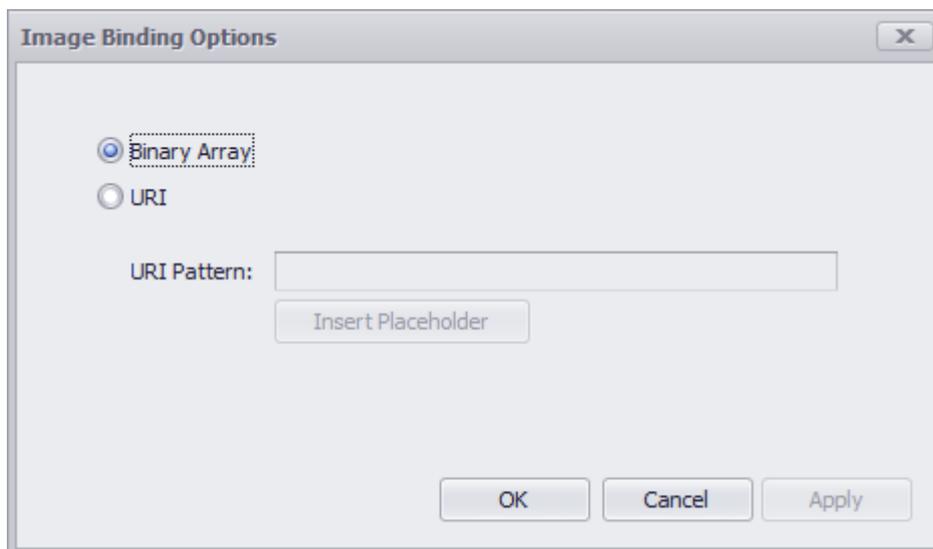
To add a “Bound Images” item, select the following sub-item:



A new element appears in the designer window:



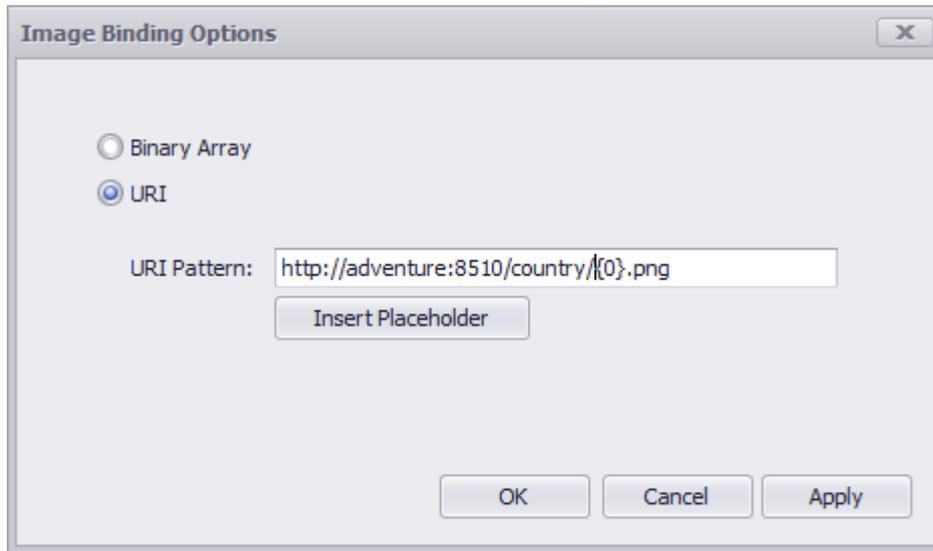
Next, you need to choose how to bind the data to the image by clicking the “Options”  button next to an attribute. The following options will be available in the opened window:



- ✓ Binary Array – use this mode if images are stored in the data source as byte arrays;

- ✓ URI – use this mode to locate images accessible by a predefined URI. In this case, the data source field should return strings that are parts of URIs to these images.

For instance, the URI pattern in the form below specifies the path to the folder containing the required images:



Data source field values will be inserted to the position of the {0} placeholder. Thus, the Bound Image maps the current dimension value with the image placed at the specified URI.

For example, let us display flags for each country for the following table:

Columns

- Country
- Reseller Sales A...
- Reseller Order C...
- Reseller Freight ...
- New Column

Sparkline

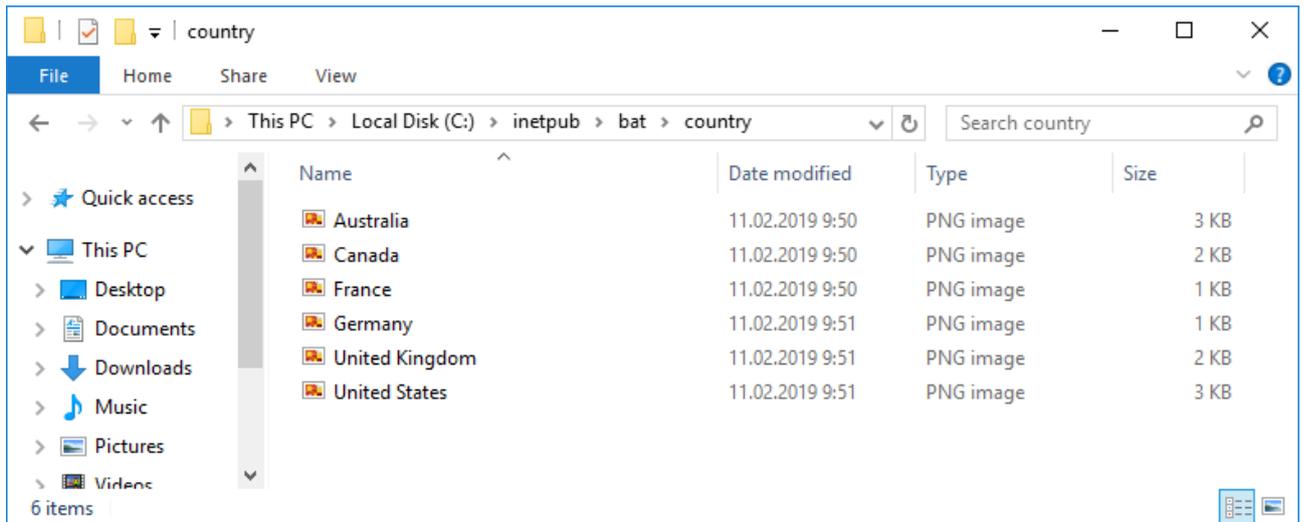
- Month of Year

HIDDEN DATA ITEMS

Dimensions

| Country | Reseller Sales Amount | Reseller Order Count | Reseller Freight Cost |
|----------------|-----------------------|----------------------|-----------------------|
| Australia | \$1.59M | | \$39.9K |
| Canada | \$14.4M | | \$359K |
| France | \$4.61M | | \$115K |
| Germany | \$1.98M | | \$49.6K |
| United Kingdom | \$4.28M | | \$107K |
| United States | \$53.6M | | \$1.34M |

To start with, we will place the files with the corresponding image and name in the folder:

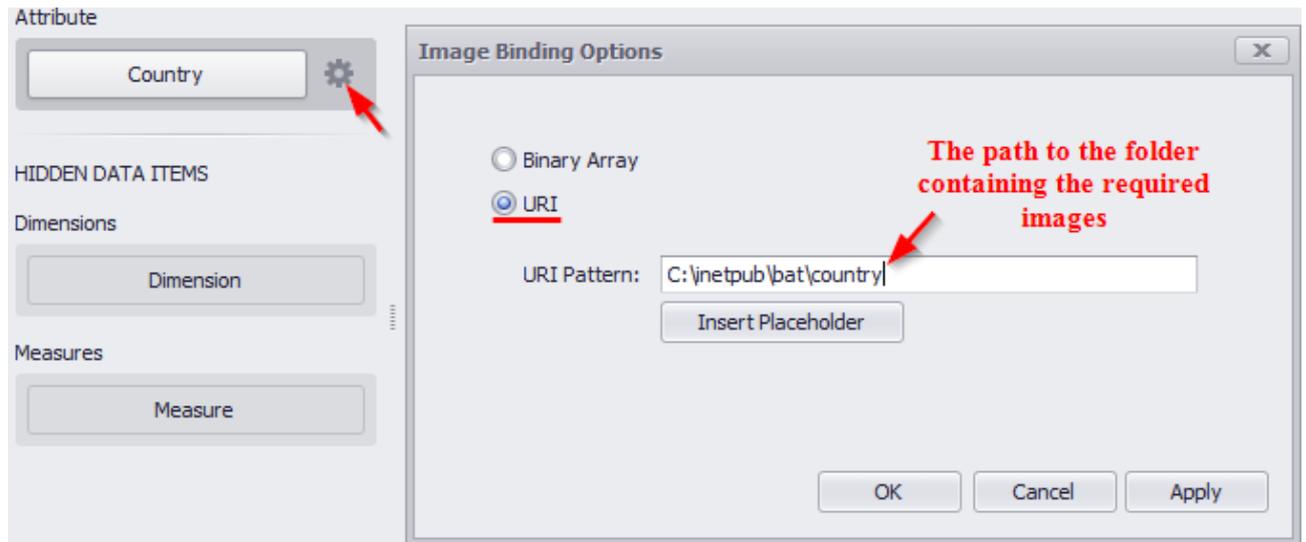


We will create a new “Bound Images” element with the “Country” attribute:

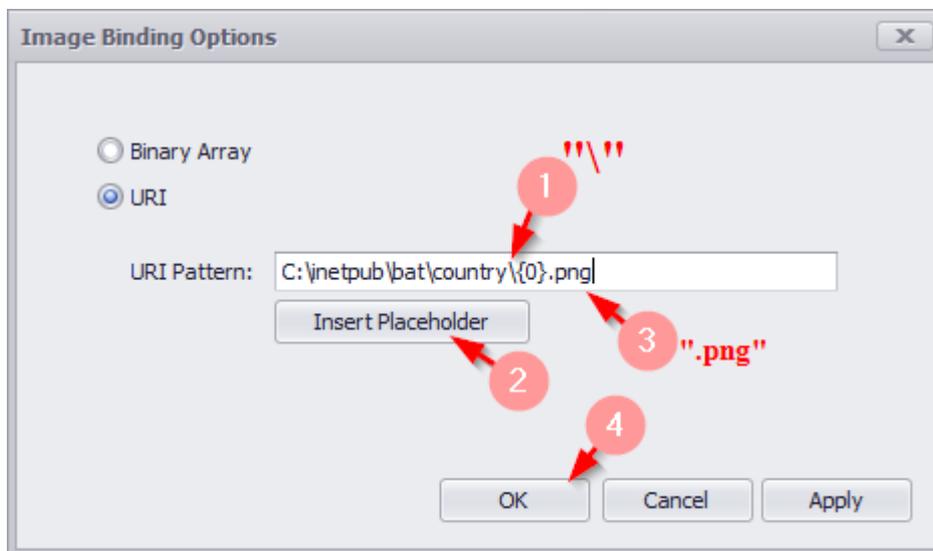
The screenshot shows a data visualization tool interface. On the left, under 'DATA ITEMS', the 'Country' attribute is selected and highlighted with a red box. Below it are sections for 'HIDDEN DATA ITEMS' with 'Dimension' and 'Measure' buttons. The main area displays a visualization titled 'Images Australia' with a red border around the 'Bound Image 1' element, which currently shows 'No image data'. Below this is a table titled 'Sales by Country' with the following data:

| Country | Reseller Sales Amount | Reseller Order Count | Reseller Freight Cost |
|----------------|-----------------------|----------------------|-----------------------|
| Australia | \$1.59M | | \$39.9K |
| Canada | \$14.4M | | \$359K |
| France | \$4.61M | | \$115K |
| Germany | \$1.98M | | \$49.6K |
| United Kingdom | \$4.28M | | \$107K |
| United States | \$53.6M | | \$1.34M |

The form of data binding will be filled with the following data:



Now, all is left is to insert the data source field values into the {0} placeholder position:

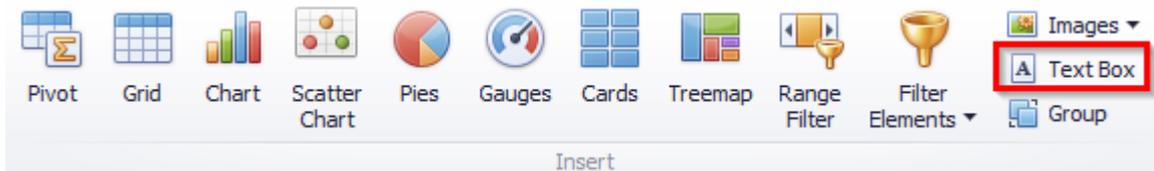


As a result, we will get an interactive dashboard in which the table with the “Country” hierarchy will be linked to the image:



8.17 Text Box

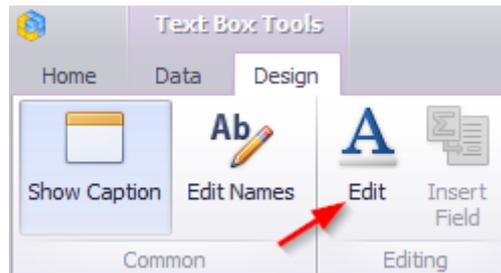
“Text Box” can be one of the elements of the dashboard. Click the corresponding icon on the toolbar:



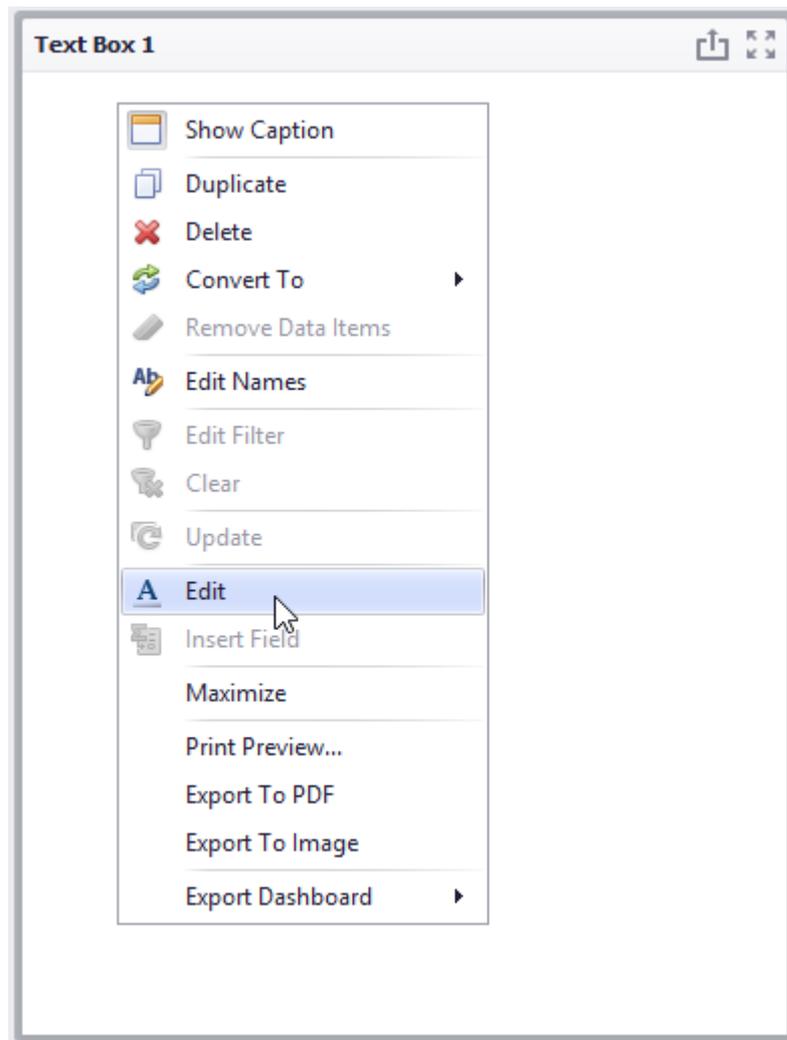
In the designer window, an empty text field appears:



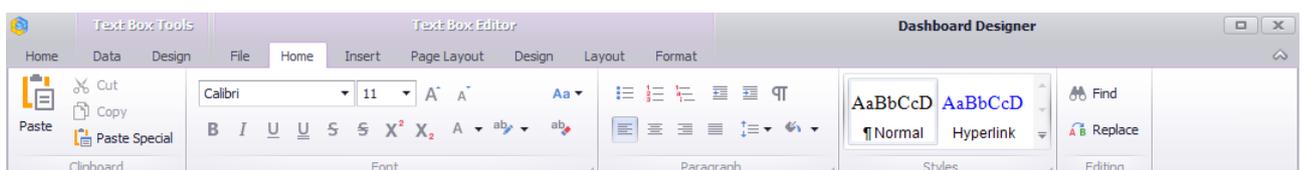
To insert or edit text, go to the “Design” menu tab and click an “Edit” icon:



Or use the corresponding item in the context menu:

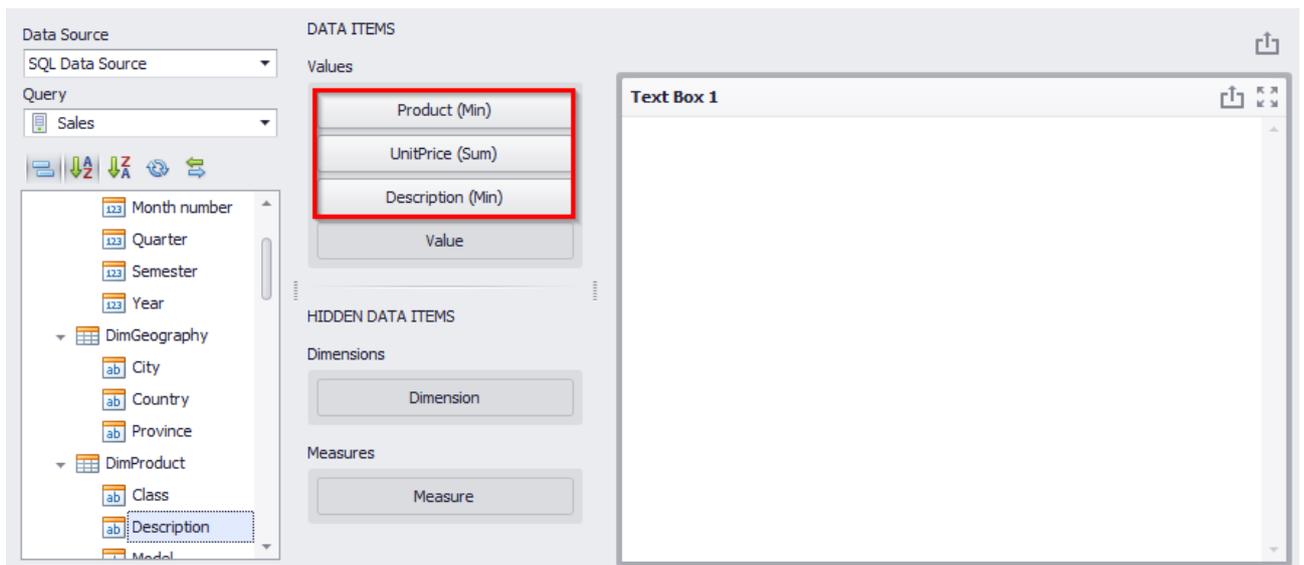


The text editing form with the following set of tools will appear:

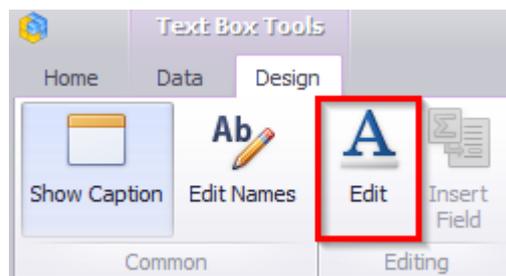


The **Text** can be exported into PDF or an image.

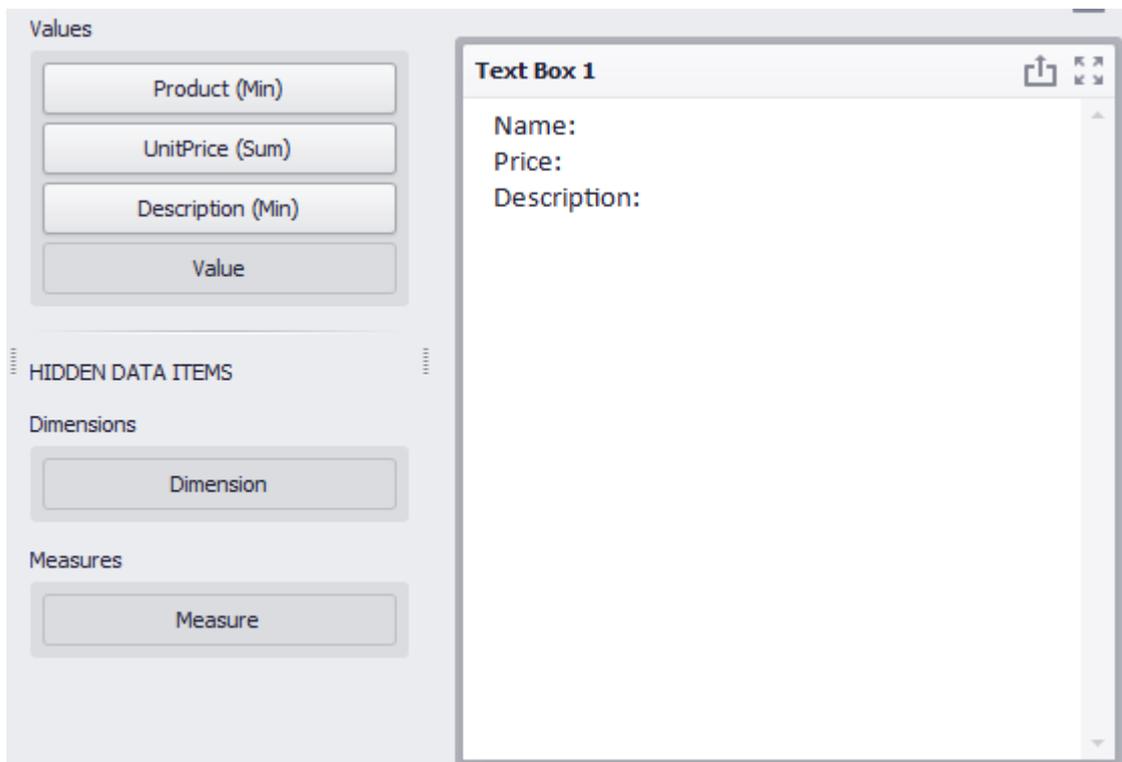
The “Text” element can be bound to the data of other dashboard elements. Let us add a “Text” element to the dashboard, and let’s alternately drop the following values of “Product”, “Unit Price” and “Description” in the value field:



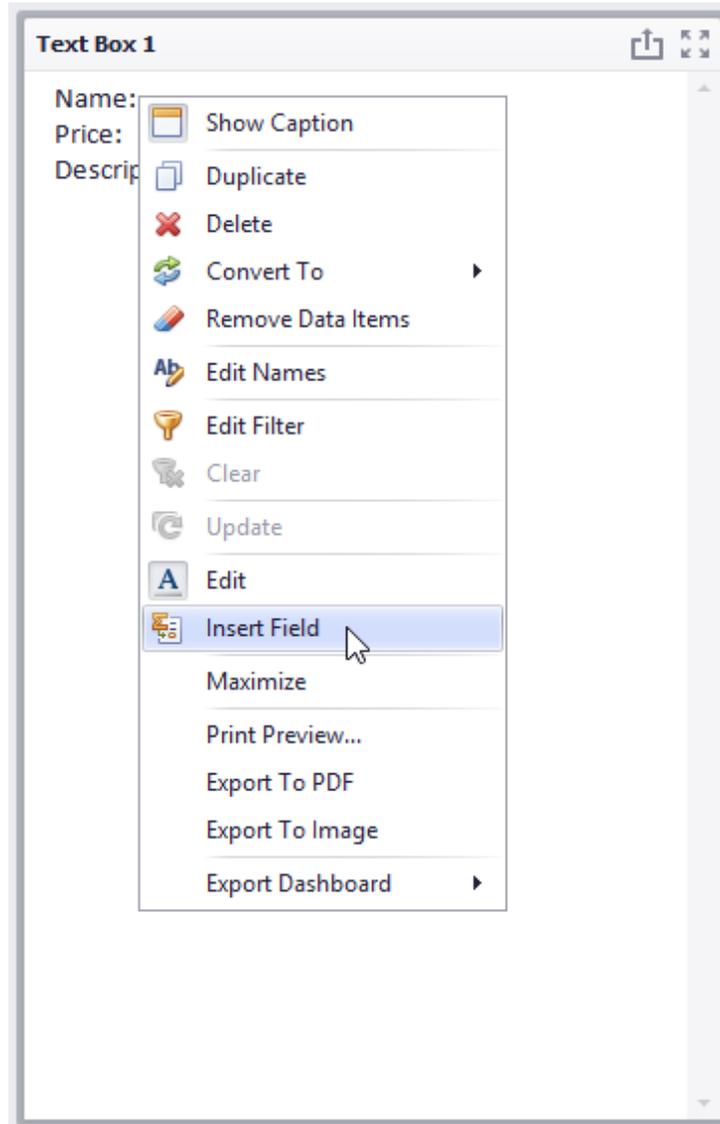
Now move to the “Design” tab and click an “Edit” button:



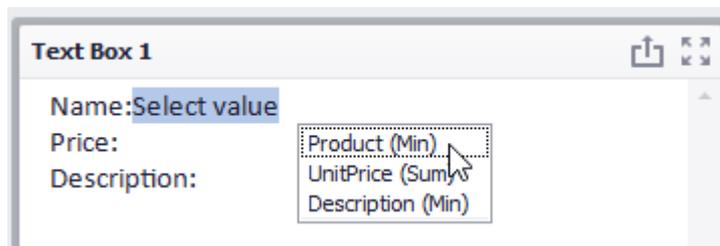
In the text field, insert the following data:



Then place the cursor at the end of the “Name” text and right-click on it. Select “Insert Field” from the context menu:



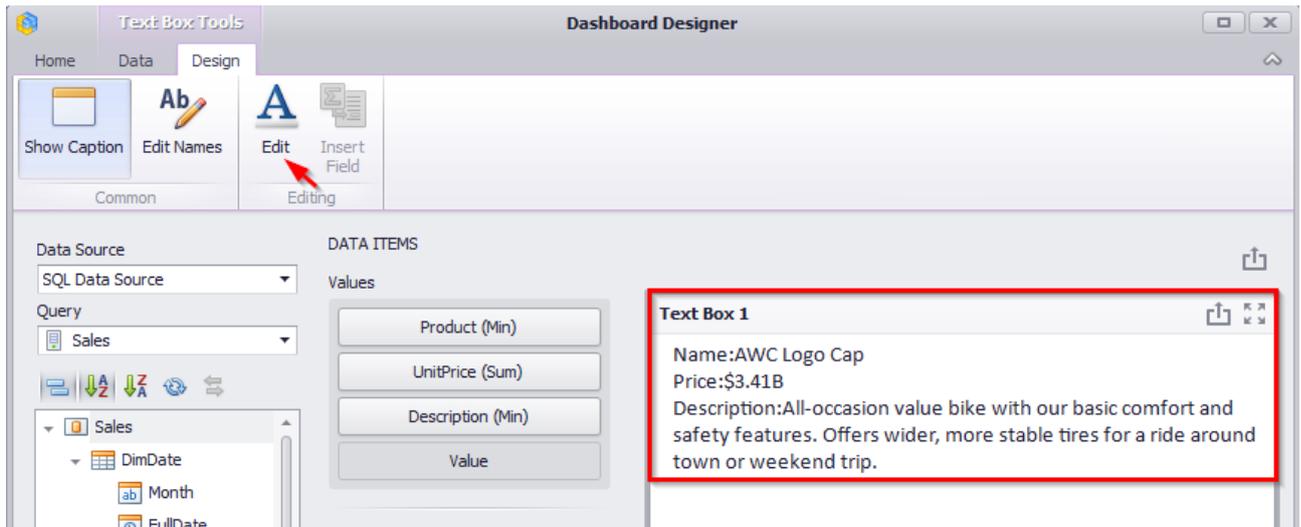
Now click on the “Select value” field and select the “Product” value:



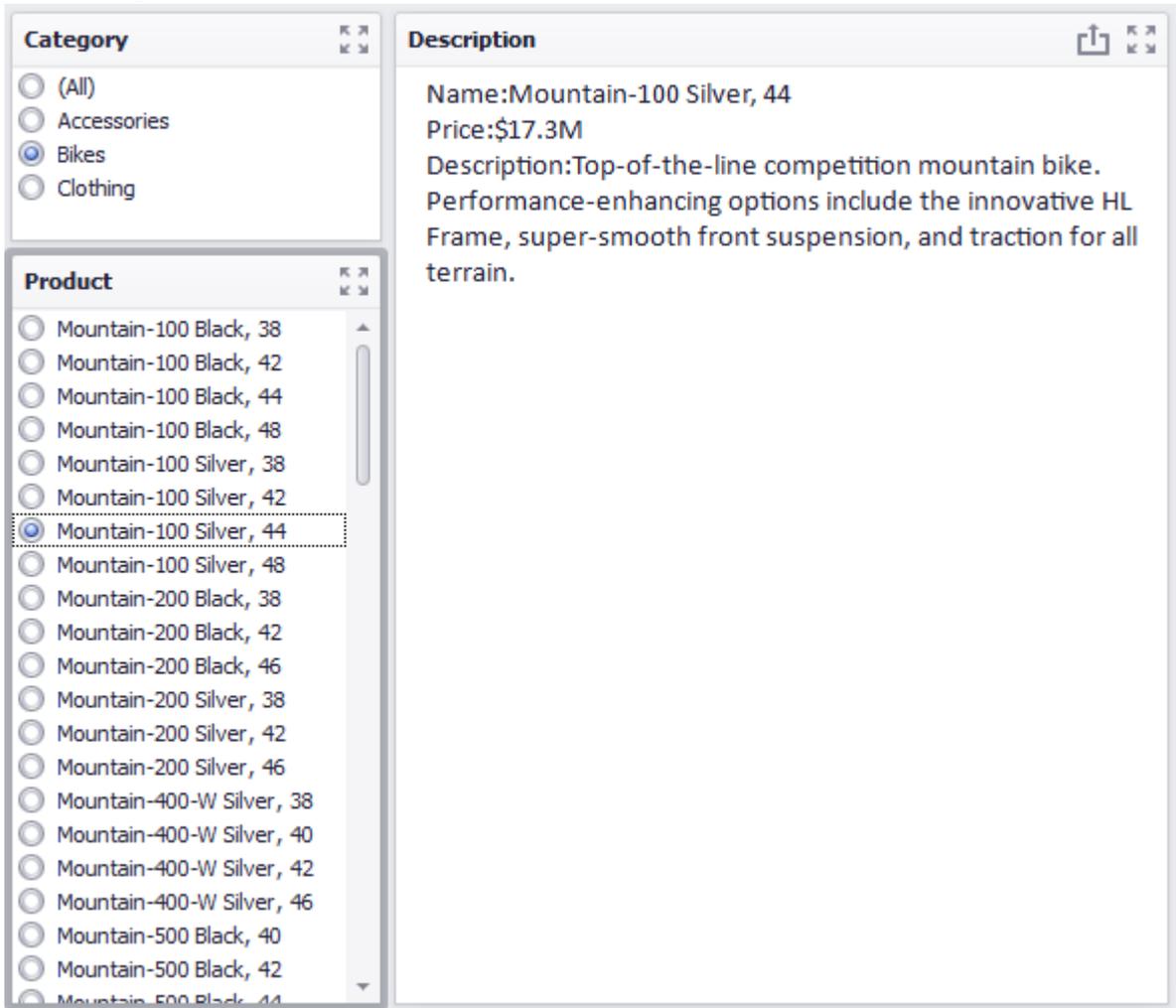
Repeat the same steps for the “Price” and “Description” fields:



Now click on the “Edit” button again to exit the edit mode. The following data will be displayed in the “Text Box”:



Let's use filters to make the “Text Box” field more dynamic. Add two filters of the List type with the following fields to the dashboard:



And, finally let's add the "Images" element with the data binding and we throw the "LargePhoto" in the value field:

Category

- (All)
- Accessories
- Bikes
- Clothing

Product

- Mountain-100 Black, 38
- Mountain-100 Black, 42
- Mountain-100 Black, 44
- Mountain-100 Black, 48
- Mountain-100 Silver, 38
- Mountain-100 Silver, 42
- Mountain-100 Silver, 44
- Mountain-100 Silver, 48
- Mountain-200 Black, 38
- Mountain-200 Black, 42
- Mountain-200 Black, 46
- Mountain-200 Silver, 38
- Mountain-200 Silver, 42
- Mountain-200 Silver, 46
- Mountain-400-W Silver, 38
- Mountain-400-W Silver, 40
- Mountain-400-W Silver, 42
- Mountain-400-W Silver, 46
- Mountain-500 Black, 40
- Mountain-500 Black, 42
- Mountain-500 Black, 44

Description**Photo**

8.18 Conditional Formatting

For “Grid” and “Pivot” dashboard elements, it is possible to set the format rules.

You can create a new format rule in two ways:

Way 1. Click an “Option” button next to the appropriate dimension/measure:

The screenshot shows a dashboard interface with a grid titled "Grid 1". The grid has columns for "Subcategory", "Sales Amount", and "Gross Profit". The "Sales Amount" column is highlighted, and a context menu is open over it. The menu options are: "Format...", "Add Format Rule", "Edit Rules...", "Clear Rules", and "Rename...". The "Add Format Rule" option is selected, and a sub-menu is displayed with the following options: "Value", "Top/Bottom", "Average", "Expression", "Icon Ranges", "Color Ranges", "Gradient Ranges", "Bar", "Bar Color Ranges", and "Bar Gradient Ranges".

| Subcategory | Sales Amount | Gross Profit |
|-------------------|--------------|--------------|
| Bib-Shorts | \$16.7K | \$51.3K |
| Bike Racks | \$23.7K | \$9.5K |
| Bike Stands | \$39.6K | \$24.8K |
| Bottles and Cages | \$64.3K | \$38.2K |
| Bottom Brackets | \$51.8K | \$13.5K |
| Brakes | \$66K | \$17.1K |
| Caps | \$51.2K | (\$1.2K) |
| Chains | \$9.38K | \$2.42K |
| Cleaners | \$18.4K | \$8.54K |
| Cranksets | \$20.4K | \$52.8K |
| Derailleurs | \$70.2K | \$18.1K |
| Fenders | \$46.6K | \$29.2K |
| Forks | \$77.9K | \$20.2K |
| Gloves | \$243K | \$83.4K |
| Handlebars | \$171K | \$44.2K |
| Headsets | \$60.9K | \$15.4K |
| Helmets | \$48.4K | \$22.6K |

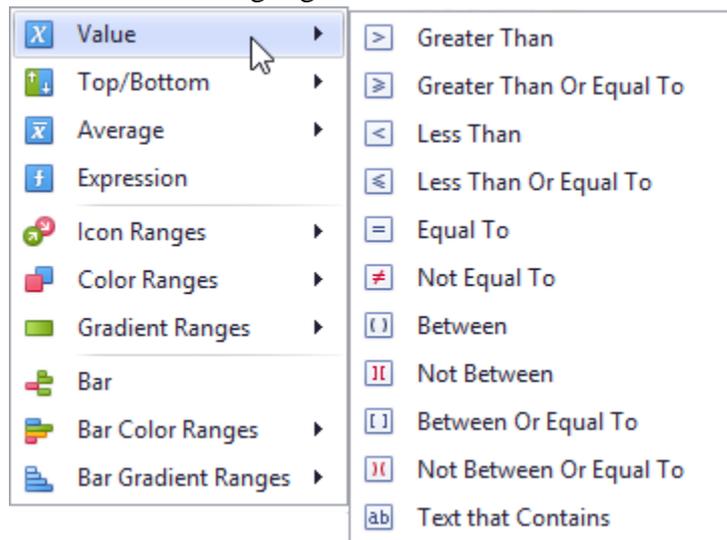
Way 2. Right-click on the table header:

The screenshot shows a dashboard interface with a grid titled "Grid 1". The grid has columns for "Subcategory", "Sales Amount", and "Gross Profit". The "Sales Amount" column header is right-clicked, and a context menu is open. The menu options are: "Fit to Content", "Fix Width", "Column Width...", "Add Format Rule", "Edit Rules...", "Clear Rules", "Add Total", and "Clear Totals". The "Add Format Rule" option is selected, and a sub-menu is displayed with the following options: "Value", "Top/Bottom", "Average", "Expression", "Icon Ranges", "Color Ranges", "Gradient Ranges", "Bar", "Bar Color Ranges", and "Bar Gradient Ranges".

| Subcategory | Sales Amount | Gross Profit |
|-------------------|--------------|--------------|
| Bib-Shorts | | \$51.3K |
| Bike Racks | | \$9.5K |
| Bike Stands | | \$24.8K |
| Bottles and Cages | | \$38.2K |
| Bottom Brackets | | \$13.5K |
| Brakes | | \$17.1K |
| Caps | | (\$1.2K) |
| Chains | | \$2.42K |
| Cleaners | | \$8.54K |
| Cranksets | | \$52.8K |
| Derailleurs | \$70.2K | \$18.1K |
| Fenders | \$46.6K | \$29.2K |
| Forks | \$77.9K | \$20.2K |
| Gloves | \$243K | \$83.4K |
| Handlebars | \$171K | \$44.2K |
| Headsets | \$60.9K | \$15.4K |
| Helmets | \$48.4K | \$22.6K |

8.18.1 Format Rule: Value

Value can be one of the highlight rules:



Let us have a look at it on an example of the pivot table:

| Pivot 1 | | | | | | | |
|-------------------|--------------|--------------|---------------|--------------|--------------|--------------|--|
| | Europe | | North America | | Pacific | | |
| | Sales Amount | Gross Profit | Sales Amount | Gross Profit | Sales Amount | Gross Profit | |
| Accessories Total | \$328K | \$169K | \$78.1K | \$369K | \$163K | \$95.8K | |
| CY Q1 | \$68.2K | \$38.1K | \$143K | \$75K | \$37.9K | \$23K | |
| CY Q2 | \$91.8K | \$48.7K | \$213K | \$102K | \$46K | \$27.3K | |
| CY Q3 | \$85.6K | \$39.8K | \$222K | \$95.7K | \$37.5K | \$21.3K | |
| CY Q4 | \$82.3K | \$42.6K | \$203K | \$96.4K | \$41.3K | \$24.1K | |
| Bikes Total | \$17.2M | \$3.16M | \$67.3M | \$3.92M | \$10.2M | \$3.44M | |
| CY Q1 | \$3.95M | \$888K | \$15.4M | \$1.28M | \$2.66M | \$943K | |
| CY Q2 | \$4.74M | \$1.05M | \$17.5M | \$907K | \$2.89M | \$1.02M | |
| CY Q3 | \$4.12M | \$403K | \$16.7M | \$447K | \$2.08M | \$595K | |
| CY Q4 | \$4.34M | \$818K | \$17.7M | \$1.28M | \$2.55M | \$877K | |
| Clothing Total | \$401K | \$56.9K | \$1.6M | \$284K | \$113K | \$27.5K | |
| CY Q1 | \$71.2K | \$11.6K | \$260K | \$56.1K | \$24.3K | \$7.49K | |
| CY Q2 | \$100K | \$15.5K | \$413K | \$79K | \$30.7K | \$7.51K | |
| CY Q3 | \$129K | \$14.9K | \$523K | \$77K | \$30.5K | \$6K | |
| CY Q4 | \$102K | \$14.9K | \$407K | \$72.3K | \$27.7K | \$6.52K | |
| Components Total | \$1.92M | \$138K | \$9.68M | \$882K | \$204K | \$13.7K | |
| CY Q1 | \$235K | \$18K | \$1.03M | \$107K | \$24.5K | \$1.89K | |
| CY Q2 | \$446K | \$33.9K | \$2.42M | \$222K | \$54.1K | \$3.6K | |
| CY Q3 | \$796K | \$53.7K | \$3.83M | \$325K | \$83.9K | \$4.86K | |
| CY Q4 | \$440K | \$32.1K | \$2.4M | \$227K | \$41.2K | \$3.35K | |

Let us select the totals of those product categories for which the values of the “Sales Amount” measure are more than \$ 1 million:

The screenshot shows a PivotTable with the following structure:

| | Europe | | North America | | Pacific | |
|-----|--------------|--------------|---------------|--------------|--------------|--------------|
| | Sales Amount | Gross Profit | Sales Amount | Gross Profit | Sales Amount | Gross Profit |
| ... | \$328K | \$169K | \$781K | \$369K | \$163K | \$95.8K |
| ... | \$68.3K | \$38.2K | \$142K | \$74.6K | \$37.6K | \$22.9K |
| ... | \$91.5K | \$48.5K | \$213K | \$102K | \$46K | \$27.4K |
| ... | \$96.3K | \$40.3K | \$223K | \$96.3K | \$38K | \$21.6K |
| ... | | | | \$96.1K | \$41K | \$24K |
| ... | | | | \$3.92M | \$10.2M | \$3.44M |
| ... | | | | \$1.27M | \$2.66M | \$944K |
| ... | | | | \$913K | \$2.88M | \$1.02M |
| ... | | | | \$464K | \$2.08M | \$595K |
| ... | | | | \$1.27M | \$2.56M | \$880K |
| ... | | | | \$284K | \$113K | \$27.5K |
| ... | | | | \$56.1K | \$24.1K | \$7.46K |
| ... | | | | \$78.7K | \$30.7K | \$7.49K |
| ... | | | | \$77.4K | \$30.7K | \$6.08K |
| ... | | | | \$72.2K | \$27.7K | \$6.49K |
| ... | | | | \$882K | \$204K | \$13.7K |
| ... | | | | \$107K | \$24.5K | \$1.89K |
| ... | | | | \$222K | \$54.1K | \$3.6K |
| ... | | | | \$325K | \$83.9K | \$4.86K |
| ... | | | | \$227K | \$41.2K | \$3.35K |

The following form appears:

The 'Greater Than' dialog box contains the following elements:

- Title:** Greater Than
- Instruction:** Format *Sales Amount* values that are greater than
- Value Input:** A text box containing the placeholder text '<enter a value>'
- Appearance Tab:** A color palette with 16 color swatches and a font style section with buttons for Bold (B), Italic (I), Underline (U), Color (Gr), Background Color (R), Text Color (Y), and Border (B).
- Custom Appearance:** A row of eight empty square boxes for custom color selection.
- Intersection mode:** A dropdown menu set to '(Auto)'. Below it are two dropdown menus for 'Row dimension' and 'Column dimension', both set to '[Grand Total]'.
- Apply to:** A dropdown menu set to 'Sales Amount'.
- Options:** Two checkboxes: 'Apply to row' (unchecked) and 'Apply to column' (unchecked).
- Buttons:** OK, Cancel, and Apply buttons at the bottom.

This form contains the following parameters specific to Pivot:

- ✓ Format values that are greater than... – set value;
- ✓ Appearance/Icons – the “Appearance” tab allows you to choose the predefined background color/font, the “Icons” tab allows you to add the predefined icon;
- ✓ Intersection mode – the level at which the highlight will be applied. The levels can be as follows:
 - Auto – identifies the default level. For the Pivot dashboard item, auto identifies the “First Level”;
 - First level – first level values are used to apply conditional formatting;
 - Last level – the last level values are used to apply conditional formatting;
 - All levels – all pivot data cells are used to apply conditional formatting;
 - Specific level – values from the specific level are used to apply conditional formatting.
- ✓ Row/Column dimension –

if you specified the Intersection mode as “Specific Level”, use the “Row dimension” and “Column dimension” combo boxes to set the specific level;

- ✓ Apply to – to which element (measure, hierarchy) of the Pivot table the conditional formatting should be applied;
- ✓ Apply to row/column – apply to the entire row / to the entire column.

Fill out this form as follows:

Greater Than

Format *Sales Amount* values that are greater than

1000000

Appearance Icons

Intersection mode

First level

Row dimension [Grand Total]

Column dimension [Grand Total]

Apply to

Sales Amount

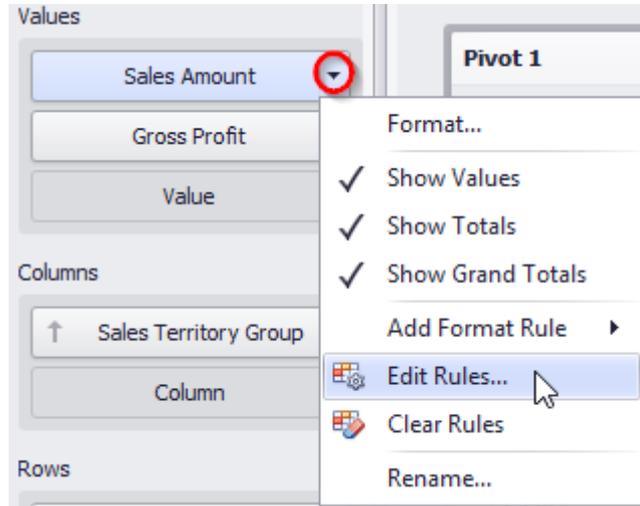
Apply to row Apply to column

OK Cancel Apply

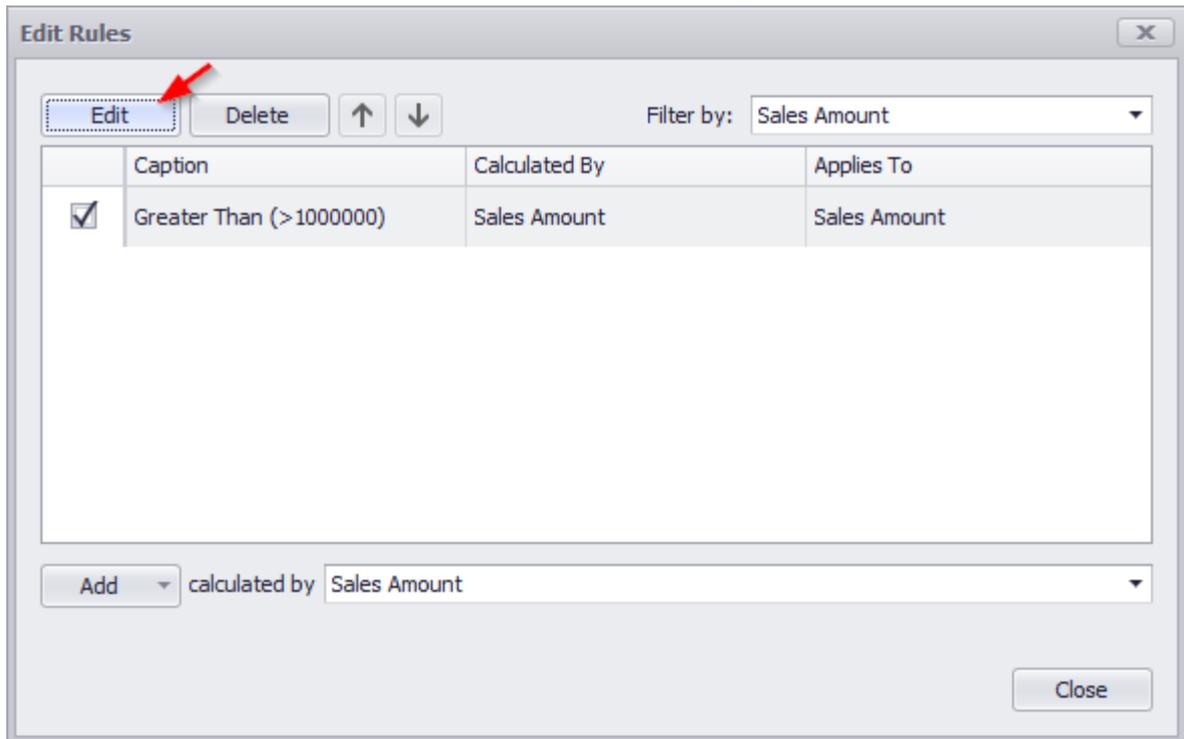
As a result, the “Pivot” table will look the following:

| Pivot 1 | | | | | | |
|---------------------|--------------|--------------|---------------|--------------|--------------|--------------|
| | Europe | | North America | | Pacific | |
| | Sales Amount | Gross Profit | Sales Amount | Gross Profit | Sales Amount | Gross Profit |
| ▼ Accessories Total | \$328K | \$169K | \$781K | \$369K | \$163K | \$95.8K |
| CY Q1 | \$68.2K | \$38.1K | \$143K | \$75K | \$37.9K | \$23K |
| CY Q2 | \$91.8K | \$48.7K | \$213K | \$102K | \$46K | \$27.3K |
| CY Q3 | \$85.6K | \$39.8K | \$222K | \$95.7K | \$37.5K | \$21.3K |
| CY Q4 | \$82.3K | \$42.6K | \$203K | \$96.4K | \$41.3K | \$24.1K |
| ▼ Bikes Total | ✓ \$17.2M | \$3.16M | ✓ \$67.3M | \$3.92M | ✓ \$10.2M | \$3.44M |
| CY Q1 | \$3.95M | \$888K | \$15.4M | \$1.28M | \$2.66M | \$943K |
| CY Q2 | \$4.74M | \$1.05M | \$17.5M | \$907K | \$2.89M | \$1.02M |
| CY Q3 | \$4.12M | \$403K | \$16.7M | \$447K | \$2.08M | \$595K |
| CY Q4 | \$4.34M | \$818K | \$17.7M | \$1.28M | \$2.55M | \$877K |
| ▼ Clothing Total | \$401K | \$56.9K | ✓ \$1.6M | \$284K | \$113K | \$27.5K |
| CY Q1 | \$71.2K | \$11.6K | \$260K | \$56.1K | \$24.3K | \$7.49K |
| CY Q2 | \$100K | \$15.5K | \$413K | \$79K | \$30.7K | \$7.51K |
| CY Q3 | \$129K | \$14.9K | \$523K | \$77K | \$30.5K | \$6K |
| CY Q4 | \$102K | \$14.9K | \$407K | \$72.3K | \$27.7K | \$6.52K |
| ▼ Components Total | ✓ \$1.92M | \$138K | ✓ \$9.68M | \$882K | \$204K | \$13.7K |
| CY Q1 | \$235K | \$18K | \$1.03M | \$107K | \$24.5K | \$1.89K |
| CY Q2 | \$446K | \$33.9K | \$2.42M | \$222K | \$54.1K | \$3.6K |
| CY Q3 | \$796K | \$53.7K | \$3.83M | \$325K | \$83.9K | \$4.86K |
| CY Q4 | \$440K | \$32.1K | \$2.4M | \$227K | \$41.2K | \$3.35K |

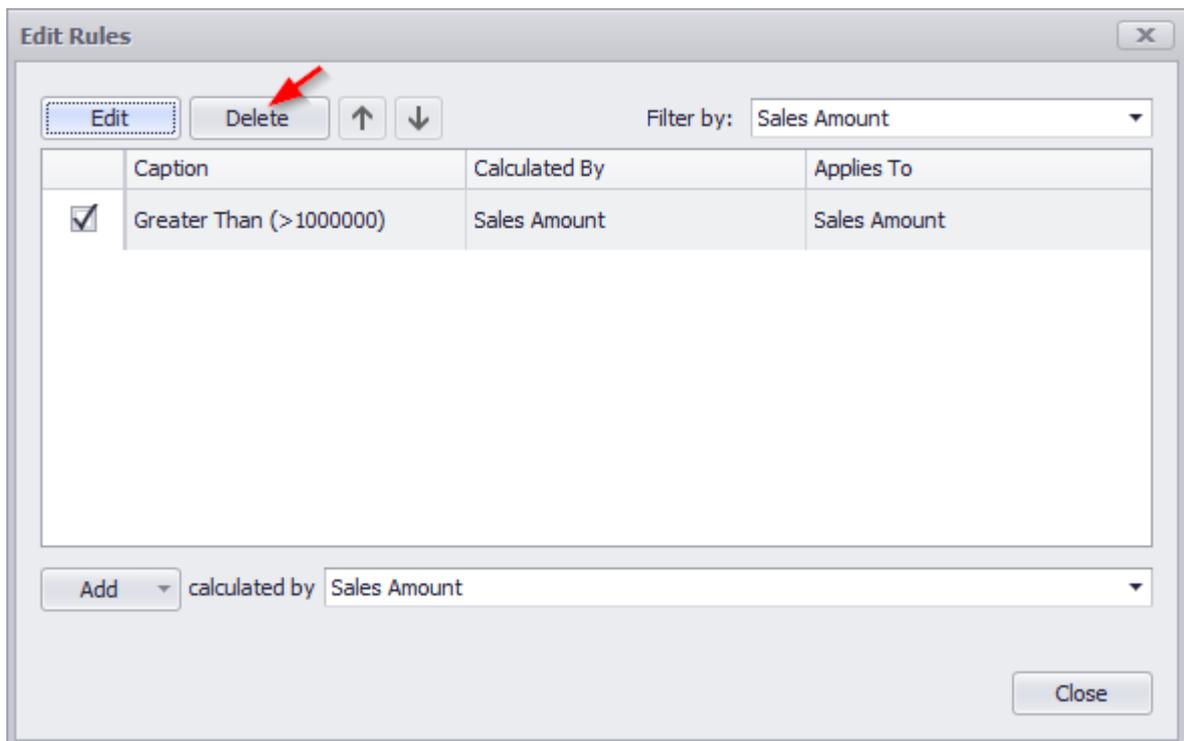
To edit an existing highlight rule, click the “Options” icon next to the measure:



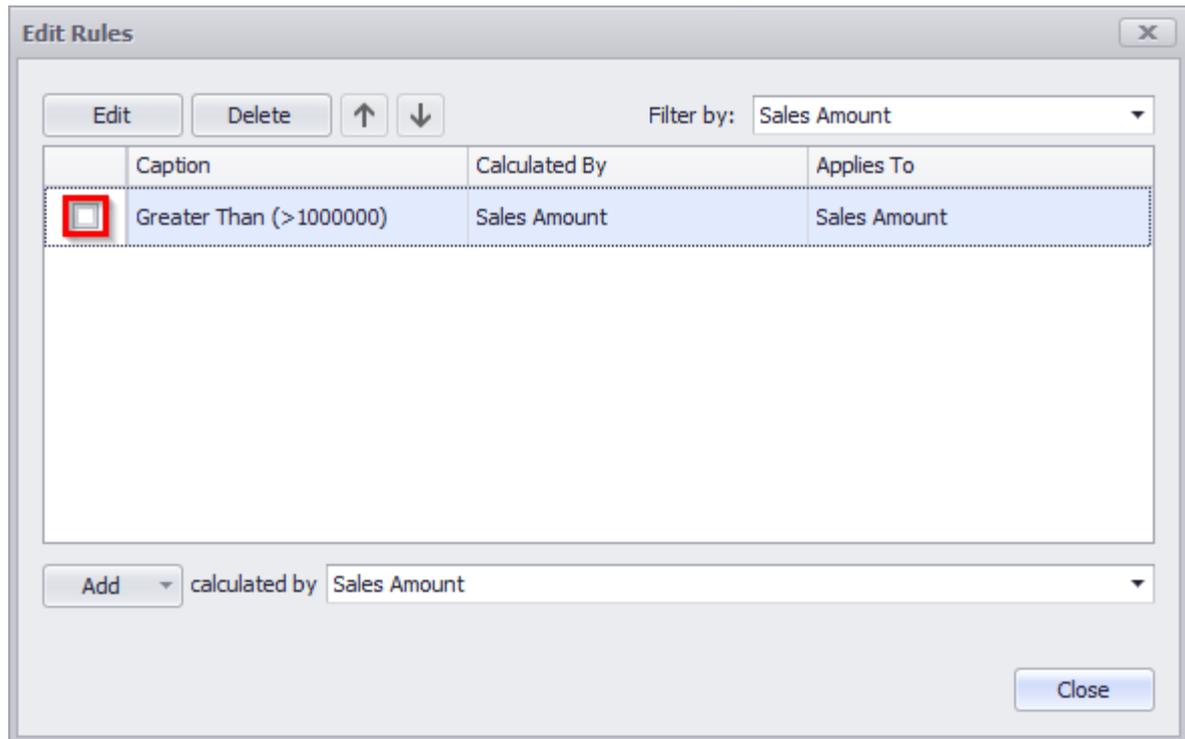
In the window that appears, double-click the rule or click an “Edit” button:



To delete the format rule, select the necessary format rule in the list in the “Edit Rules” window and click the “Delete” button:

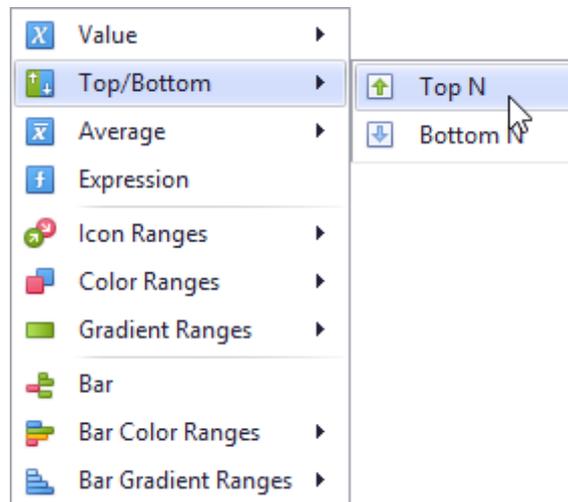


If necessary, the rule can be temporarily disabled by unchecking the corresponding rule:



8.18.2 Format Rule: Top N / Bottom N

The “Top-Bottom” format conditions allow you to highlight a specific number of topmost/bottommost values. You can specify this number as an absolute or percent value:



For example, let us select 4 quarters for which the “Sales Amount” measure values were the worst. Select the type of “Bottom N” highlight and fill out the form as follows:

Bottom N

Format *Sales Amount* values that rank in the bottom

N = % of all values

Appearance Icons

Intersection mode

Last level

Row dimension [Grand Total]

Column dimension [Grand Total]

Apply to

Calendar Quarter of Year

Apply to row Apply to column

OK Cancel Apply

Pivot will look like this:

| Pivot 1 | | | | | | | |
|---------------------|--------------|--------------|---------------|--------------|--------------|--------------|--|
| | Europe | | North America | | Pacific | | |
| | Sales Amount | Gross Profit | Sales Amount | Gross Profit | Sales Amount | Gross Profit | |
| ▼ Accessories Total | \$328K | \$169K | \$781K | \$369K | \$163K | \$95.8K | |
| CY Q1 | \$68.2K | \$38.1K | \$143K | \$75K | \$37.9K | \$23K | |
| CY Q2 | \$91.8K | \$48.7K | \$213K | \$102K | \$46K | \$27.3K | |
| CY Q3 | \$85.6K | \$39.8K | \$222K | \$95.7K | \$37.5K | \$21.3K | |
| CY Q4 | \$82.3K | \$42.6K | \$203K | \$96.4K | \$41.3K | \$24.1K | |
| ▼ Bikes Total | ✔ \$17.2M | \$3.16M | ✔ \$67.3M | \$3.92M | ✔ \$10.2M | \$3.44M | |
| CY Q1 | \$3.95M | \$888K | \$15.4M | \$1.28M | \$2.66M | \$943K | |
| CY Q2 | \$4.74M | \$1.05M | \$17.5M | \$907K | \$2.89M | \$1.02M | |
| CY Q3 | \$4.12M | \$403K | \$16.7M | \$447K | \$2.08M | \$595K | |
| CY Q4 | \$4.34M | \$818K | \$17.7M | \$1.28M | \$2.55M | \$877K | |
| ▼ Clothing Total | \$401K | \$56.9K | ✔ \$1.6M | \$284K | \$113K | \$27.5K | |
| CY Q1 | ● \$71.2K | \$11.6K | \$260K | \$56.1K | \$24.3K | \$7.49K | |
| CY Q2 | \$100K | \$15.5K | \$413K | \$79K | \$30.7K | \$7.51K | |
| CY Q3 | ● \$129K | \$14.9K | \$523K | \$77K | \$30.5K | \$6K | |
| CY Q4 | ● \$102K | \$14.9K | \$407K | \$72.3K | \$27.7K | \$6.52K | |
| ▼ Components Total | ✔ \$1.92M | \$138K | ✔ \$9.68M | \$882K | \$204K | \$13.7K | |
| CY Q1 | ● \$235K | \$18K | \$1.03M | \$107K | \$24.5K | \$1.89K | |
| CY Q2 | \$446K | \$33.9K | \$2.42M | \$222K | \$54.1K | \$3.6K | |
| CY Q3 | \$796K | \$53.7K | \$3.83M | \$325K | \$83.9K | \$4.86K | |
| CY Q4 | \$440K | \$32.1K | \$2.4M | \$227K | \$41.2K | \$3.35K | |

Now let us check those product categories, the profit from which amounted to 90% of the total profit. For this, select the “Top N” highlight type and fill out the form as follows:

Top N

Format *Sales Amount* values that rank in the top

N = % of all values

Appearance Icons

Intersection mode

(Auto)

Row dimension [Grand Total]

Column dimension [Grand Total]

Apply to

Category

Apply to row Apply to column

OK Cancel Apply

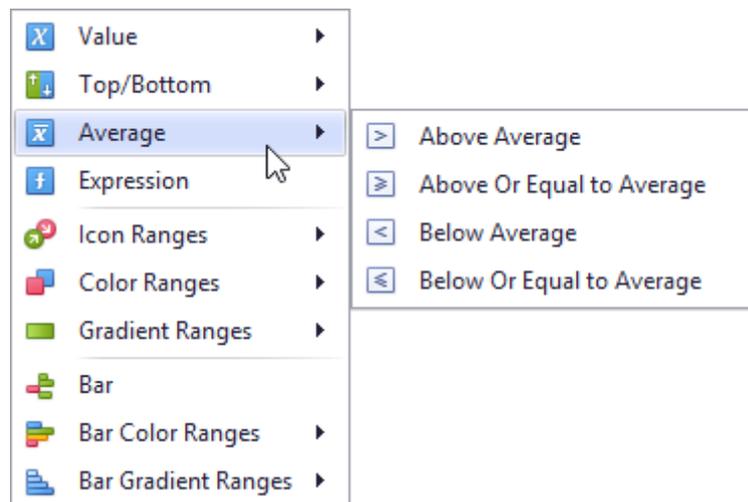
We get the following Pivot:

| Pivot 1 | | | | | | |
|----------------------|--------------|--------------|---------------|--------------|--------------|--------------|
| | Europe | | North America | | Pacific | |
| | Sales Amount | Gross Profit | Sales Amount | Gross Profit | Sales Amount | Gross Profit |
| ▼ Accessories Total | \$328K | \$169K | \$781K | \$369K | \$163K | \$95.8K |
| CY Q1 | \$68.2K | \$38.1K | \$143K | \$75K | \$37.9K | \$23K |
| CY Q2 | \$91.8K | \$48.7K | \$213K | \$102K | \$46K | \$27.3K |
| CY Q3 | \$85.6K | \$39.8K | \$222K | \$95.7K | \$37.5K | \$21.3K |
| CY Q4 | \$82.3K | \$42.6K | \$203K | \$96.4K | \$41.3K | \$24.1K |
| ▼ Bikes Total ★ ✓ | \$17.2M | \$3.16M | ✓ \$67.3M | \$3.92M | ✓ \$10.2M | \$3.44M |
| CY Q1 | \$3.95M | \$888K | \$15.4M | \$1.28M | \$2.66M | \$943K |
| CY Q2 | \$4.74M | \$1.05M | \$17.5M | \$907K | \$2.89M | \$1.02M |
| CY Q3 | \$4.12M | \$403K | \$16.7M | \$447K | \$2.08M | \$595K |
| CY Q4 | \$4.34M | \$818K | \$17.7M | \$1.28M | \$2.55M | \$877K |
| ▼ Clothing Total | \$401K | \$56.9K | ✓ \$1.6M | \$284K | \$113K | \$27.5K |
| CY Q1 ● | \$71.2K | \$11.6K | \$260K | \$56.1K | \$24.3K | \$7.49K |
| CY Q2 | \$100K | \$15.5K | \$413K | \$79K | \$30.7K | \$7.51K |
| CY Q3 ● | \$129K | \$14.9K | \$523K | \$77K | \$30.5K | \$6K |
| CY Q4 ● | \$102K | \$14.9K | \$407K | \$72.3K | \$27.7K | \$6.52K |
| ▼ Components ... ★ ✓ | \$1.92M | \$138K | ✓ \$9.68M | \$882K | \$204K | \$13.7K |
| CY Q1 ● | \$235K | \$18K | \$1.03M | \$107K | \$24.5K | \$1.89K |
| CY Q2 | \$446K | \$33.9K | \$2.42M | \$222K | \$54.1K | \$3.6K |
| CY Q3 | \$796K | \$53.7K | \$3.83M | \$325K | \$83.9K | \$4.86K |
| CY Q4 | \$440K | \$32.1K | \$2.4M | \$227K | \$41.2K | \$3.35K |

Two product categories – “Bikes” and “Components” - gave 90% out of all profits.

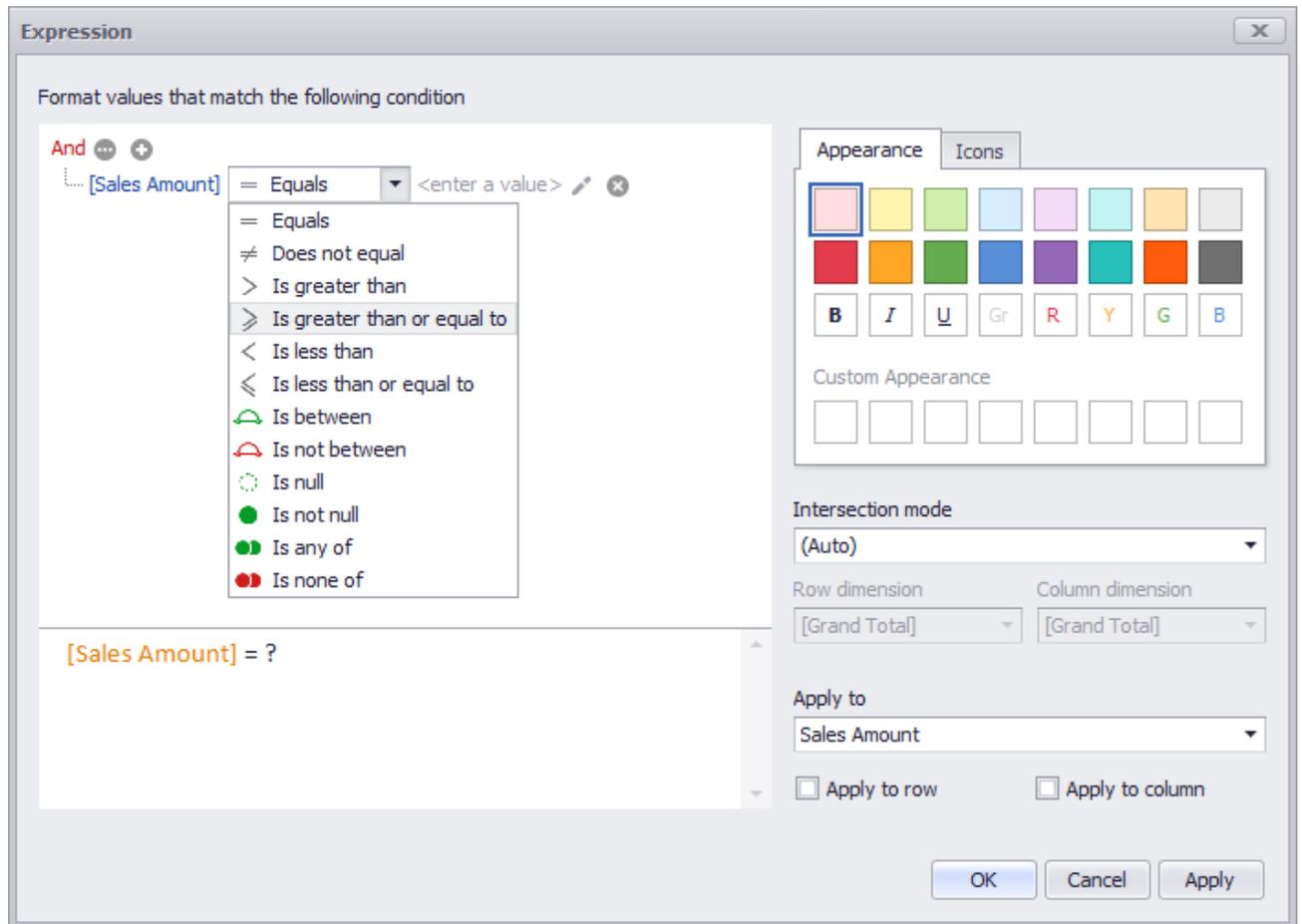
8.18.3 Format Rule: Average

The “Average” format conditions allow you to highlight values above or below an average value:



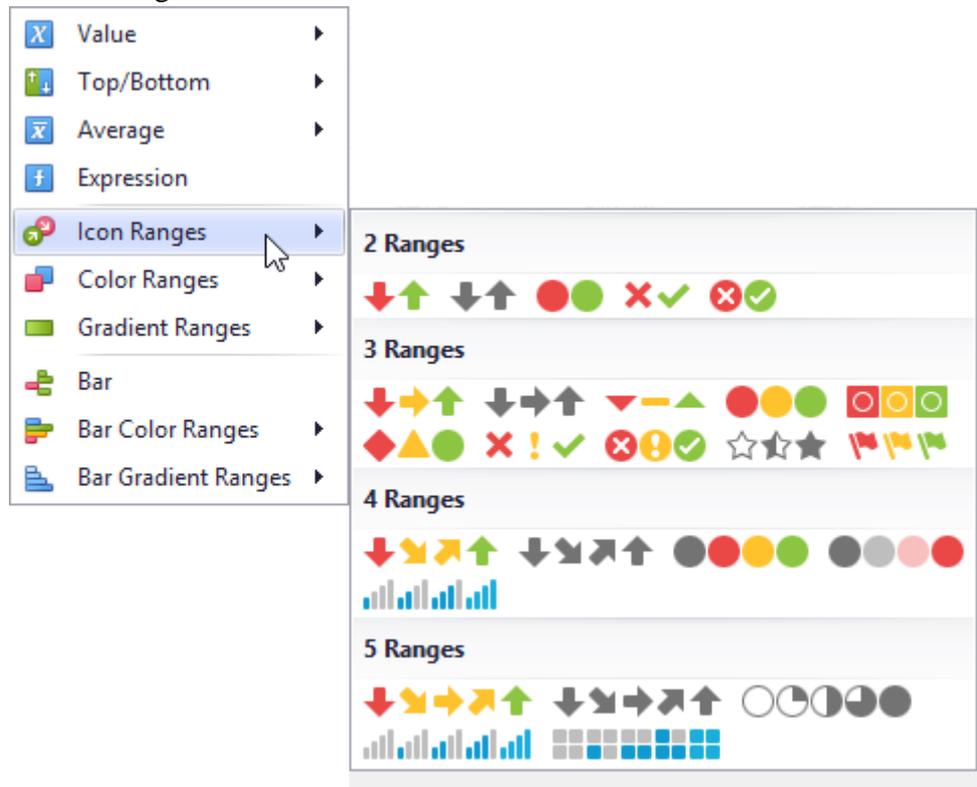
8.18.4 Format Rule: Expression

An “Expression” format condition allows you to use complex conditions to apply formatting:



8.18.5 Format Rule: Icon Ranges

Icon “Ranges” allow you to use predefined or custom sets of icons to apply conditional formatting to different ranges of values:



For example, let us select the 4-range highlight for the “Gross Profit” measure:

Values

Sales Amount

Gross Profit

Value

Columns

Sales Territory Group

Column

Rows

Category

Calendar Quarter of Year

Row

HIDDEN DATA ITEMS

Dimensions

Dimension

Measures

Measure

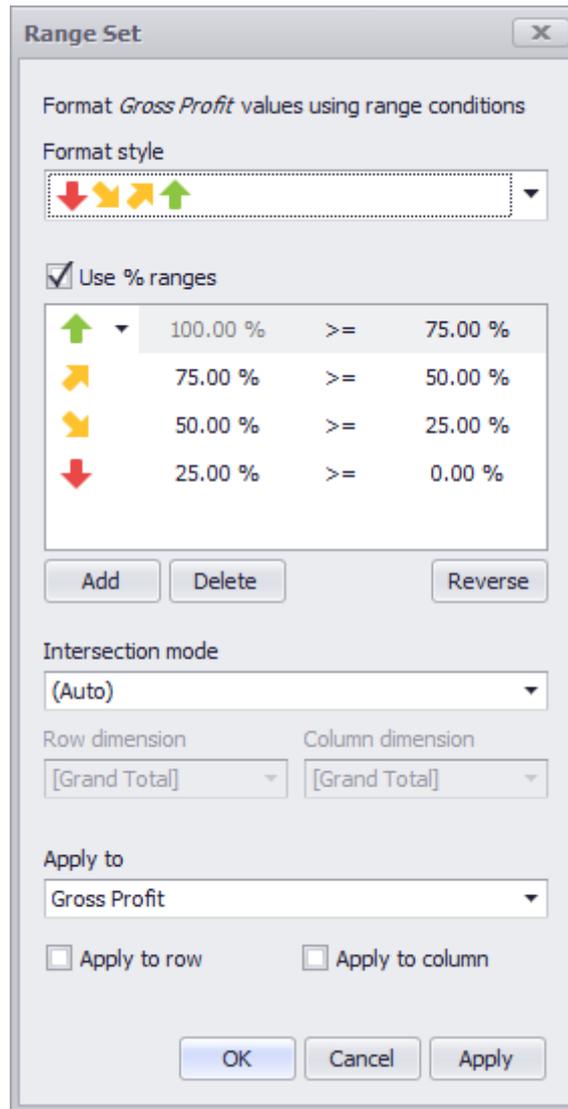
Pivot 1

| | Europe | | North America | | Pacific | |
|--|--------------|--------------|---------------|--------------|--------------|--------------|
| | Sales Amount | Gross Profit | Sales Amount | Gross Profit | Sales Amount | Gross Profit |
| | \$328K | \$169K | \$78.1K | \$369K | \$163K | \$95.8K |
| | \$68.2K | \$38.1K | \$143K | \$75K | \$37.9K | \$23K |
| | \$91.8K | \$48.7K | \$213K | \$102K | \$46K | \$27.3K |
| | \$85.6K | \$39.8K | \$222K | \$95.7K | \$37.5K | \$21.3K |
| | \$82.3K | \$42.6K | \$203K | \$96.4K | \$41.3K | \$24.1K |
| | \$3.16M | \$67.3M | \$3.92M | \$10.2M | \$3.44M | |
| | \$888K | \$15.4M | \$1.28M | \$2.66M | \$943K | |
| | \$1.05M | \$17.5M | \$907K | \$2.89M | \$1.02M | |
| | \$403K | \$16.7M | \$447K | \$2.08M | \$595K | |
| | \$818K | \$17.7M | \$1.28M | \$2.55M | \$877K | |
| | | | | | \$113K | \$27.5K |
| | | | | | \$4.3K | \$7.49K |
| | | | | | \$0.7K | \$7.51K |
| | | | | | \$0.5K | \$6K |
| | | | | | \$7.7K | \$6.52K |
| | | | | | \$204K | \$13.7K |
| | | | | | \$4.5K | \$1.89K |
| | | | | | \$4.1K | \$3.6K |
| | | | | | \$3.9K | \$4.86K |
| | | | | | \$1.2K | \$3.35K |

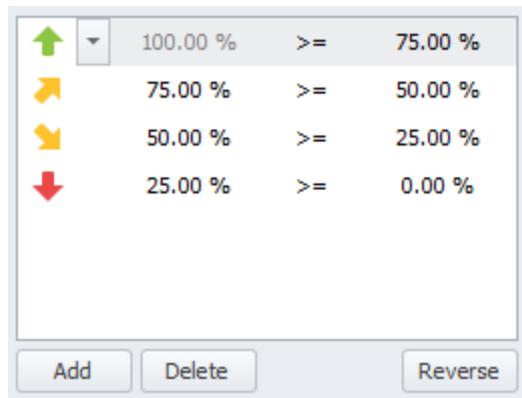
Format...

- Show Values
- Show Totals
- Show Grand Totals
- Add Format Rule
 - Value
 - Top/Bottom
 - Average
 - Expression
 - Icon Ranges
 - 2 Ranges
 - 3 Ranges
 - 4 Ranges
 - 5 Ranges
 - Color Ranges
 - Gradient Ranges
 - Bar
 - Bar Color Ranges
 - Bar Gradient Ranges
- Edit Rules...
- Clear Rules
- Rename...

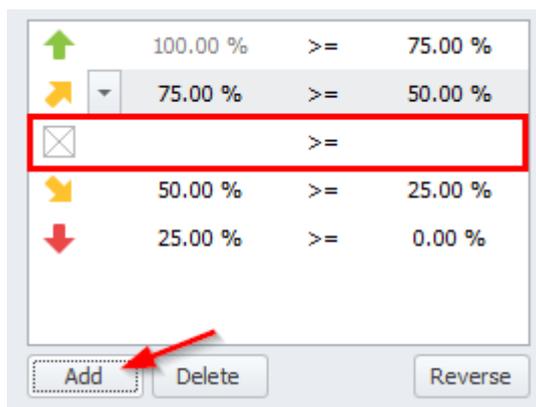
The following options are available in the appeared window:



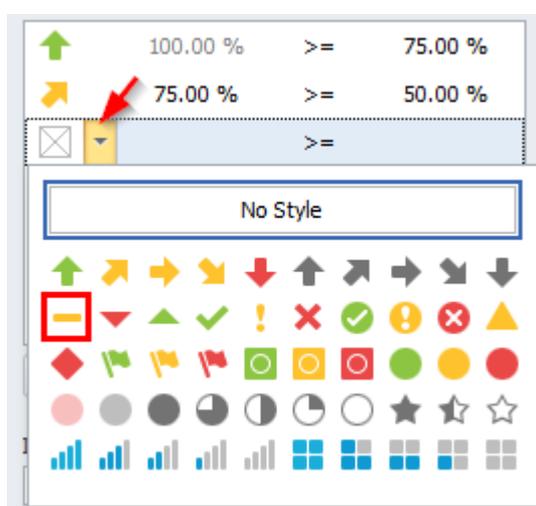
- ✓ Format style – the “Format Style” combo box allows you to change the icon set used to apply formatting;
- ✓ Use % ranges – the “Use % ranges” check box specifies whether the percent or absolute scale is used to generate ranges;
- ✓ Range field with set values:



Use the «Add» and «Delete» buttons to add new ranges or delete the selected range respectively. Note that new range is added below the selected range:



To change the icon displayed for values corresponding to the specified range, click the button next to the required icon and select a new icon:



- ✓ Intersection mode – the level at which the highlight will be applied. The levels can be as follows:
 - Auto – identifies the default level. For the Pivot dashboard item, “Auto” identifies the “First Level”;
 - First level – first level values are used to apply conditional formatting;
 - Last level – the last level values are used to apply conditional formatting;
 - All levels – all pivot data cells are used to apply conditional formatting;
 - Specific level – values from the specific level are used to apply conditional formatting.
- ✓ Row/Column dimension - if you specified the Intersection mode as “Specific Level”, use the “Row dimension” and “Column dimension” combo boxes to set the specific level;
- ✓ Apply to – to which element (measure, hierarchy) of the Pivot table the conditional formatting should be applied;
- ✓ Apply to row/column – apply to the entire row / to the entire column.

Fill in the form with the following data:

Range Set [X]

Format *Gross Profit* values using range conditions

Format style
[Red Down Arrow] [Yellow Right Arrow] [Yellow Left Arrow] [Green Up Arrow]

Use % ranges

| | | | |
|----------------------|------------|----|------------|
| [Green Up Arrow] | ∞ | >= | 800,000.00 |
| [Yellow Right Arrow] | 800,000.00 | >= | 100,000.00 |
| [Yellow Left Arrow] | 100,000.00 | >= | 5,000.00 |
| [Red Down Arrow] | 5,000.00 | >= | 0.00 |

[Add] [Delete] [Reverse]

Intersection mode
[Last level]

Row dimension [Grand Total] Column dimension [Grand Total]

Apply to
[Gross Profit]

Apply to row Apply to column

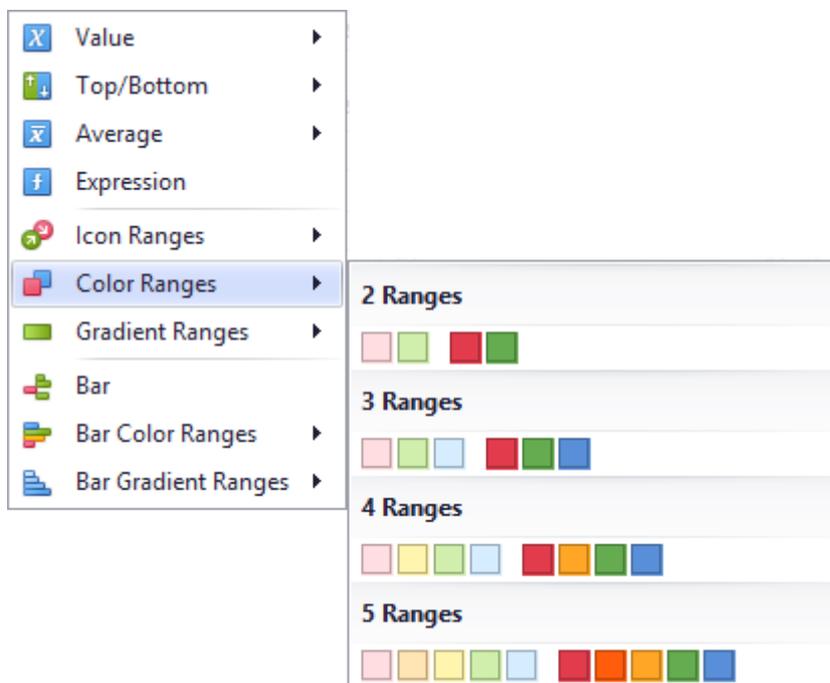
[OK] [Cancel] [Apply]

As a result, the pivot table will look the following:

| Pivot 1 | | | | | | | | | |
|---------------------|--------------|--------------|---------------|--------------|--------------|--------------|--|--|--|
| | Europe | | North America | | Pacific | | | | |
| | Sales Amount | Gross Profit | Sales Amount | Gross Profit | Sales Amount | Gross Profit | | | |
| ▼ Accessories Total | \$328K | \$169K | \$781K | \$369K | \$163K | \$95.8K | | | |
| CY Q1 | \$68.2K | \$38.1K | \$143K | \$75K | \$37.9K | \$23K | | | |
| CY Q2 | \$91.8K | \$48.7K | \$213K | \$102K | \$46K | \$27.3K | | | |
| CY Q3 | \$85.6K | \$39.8K | \$222K | \$95.7K | \$37.5K | \$21.3K | | | |
| CY Q4 | \$82.3K | \$42.6K | \$203K | \$96.4K | \$41.3K | \$24.1K | | | |
| ▼ Bikes Total ★ | ✓ \$17.2M | \$3.16M | ✓ \$67.3M | \$3.92M | ✓ \$10.2M | \$3.44M | | | |
| CY Q1 | \$3.95M | \$888K | \$15.4M | \$1.28M | \$2.66M | \$943K | | | |
| CY Q2 | \$4.74M | \$1.05M | \$17.5M | \$907K | \$2.89M | \$1.02M | | | |
| CY Q3 | \$4.12M | \$403K | \$16.7M | \$447K | \$2.08M | \$595K | | | |
| CY Q4 | \$4.34M | \$818K | \$17.7M | \$1.28M | \$2.55M | \$877K | | | |
| ▼ Clothing Total | \$401K | \$56.9K | ✓ \$1.6M | \$284K | \$113K | \$27.5K | | | |
| CY Q1 | \$71.2K | \$11.6K | \$260K | \$56.1K | \$24.3K | \$7.49K | | | |
| CY Q2 | \$100K | \$15.5K | \$413K | \$79K | \$30.7K | \$7.51K | | | |
| CY Q3 | \$129K | \$14.9K | \$523K | \$77K | \$30.5K | \$6K | | | |
| CY Q4 | \$102K | \$14.9K | \$407K | \$72.3K | \$27.7K | \$6.52K | | | |
| ▼ Components ... ★ | ✓ \$1.92M | \$138K | ✓ \$9.68M | \$882K | \$204K | \$13.7K | | | |
| CY Q1 | \$235K | \$18K | \$1.03M | \$107K | \$24.5K | \$1.89K | | | |
| CY Q2 | \$446K | \$33.9K | \$2.42M | \$222K | \$54.1K | \$3.6K | | | |
| CY Q3 | \$796K | \$53.7K | \$3.83M | \$325K | \$83.9K | \$4.86K | | | |
| CY Q4 | \$440K | \$32.1K | \$2.4M | \$227K | \$41.2K | \$3.35K | | | |

8.18.6 Format Rule: Color Ranges

To format values according to the required condition, click the data item menu button, select “Add Format Rule” | “Color Ranges” and choose the required color set:



The working principle is the same as for the “Format Rule: Icon Ranges” highlight rule (abstract 8.18.5):

Pivot 1

| | Europe | | North America | | Pacific | |
|-------------------|--------------|--------------|---------------|--------------|--------------|--------------|
| | Sales Amount | Gross Profit | Sales Amount | Gross Profit | Sales Amount | Gross Profit |
| Accessories Total | \$328K | \$169K | \$781K | \$369K | \$163K | \$95.8K |
| CY Q1 | \$68.2K | \$38.1K | \$143K | \$75K | \$37.9K | \$23K |
| CY Q2 | \$91.8K | \$48.7K | \$213K | \$102K | \$46K | \$27.3K |
| CY Q3 | \$85.6K | \$39.8K | \$222K | \$95.7K | \$37.5K | \$21.3K |
| CY Q4 | \$82.3K | \$42.6K | \$203K | \$96.4K | \$41.3K | \$24.1K |
| Bikes Total | \$17.2M | \$3.16M | \$67.3M | \$3.92M | \$10.2M | \$3.44M |
| CY Q1 | \$3.95M | \$888K | \$15.4M | \$1.28M | \$2.66M | \$943K |
| CY Q2 | \$4.74M | \$1.05M | \$17.5M | \$907K | \$2.89M | \$1.02M |
| CY Q3 | \$4.12M | \$403K | \$16.7M | \$447K | \$2.08M | \$595K |
| CY Q4 | \$4.34M | \$818K | \$17.7M | \$1.28M | \$2.55M | \$877K |
| Clothing Total | \$401K | \$56.9K | \$1.6M | \$284K | \$113K | \$27.5K |
| CY Q1 | \$71.2K | \$11.6K | \$260K | \$56.1K | \$24.3K | \$7.49K |
| CY Q2 | \$100K | \$15.5K | \$413K | \$79K | \$30.7K | \$7.51K |
| CY Q3 | \$129K | \$14.9K | \$523K | \$77K | \$30.5K | \$6K |
| CY Q4 | \$102K | \$14.9K | \$407K | \$72.3K | \$27.7K | \$6.52K |
| Components ... | \$1.92M | \$138K | \$9.68M | \$882K | \$204K | \$13.7K |
| CY Q1 | \$235K | \$18K | \$1.03M | \$107K | \$24.5K | \$1.89K |
| CY Q2 | \$446K | \$33.9K | \$2.42M | \$222K | \$54.1K | \$3.6K |
| CY Q3 | \$796K | \$53.7K | \$3.83M | \$325K | \$83.9K | \$4.86K |
| CY Q4 | \$440K | \$32.1K | \$2.4M | \$227K | \$41.2K | \$3.35K |

Range Set ΣΣ

Format *Gross Profit* values using range conditions

Format style ▼

Use % ranges

| | | | |
|--|------------|----|------------|
| | ∞ | >= | 800,000.00 |
| | 800,000.00 | >= | 100,000.00 |
| | 100,000.00 | >= | 5,000.00 |
| | 5,000.00 | >= | 0.00 |

Intersection mode ▼

Last level ▼

Row dimension Column dimension

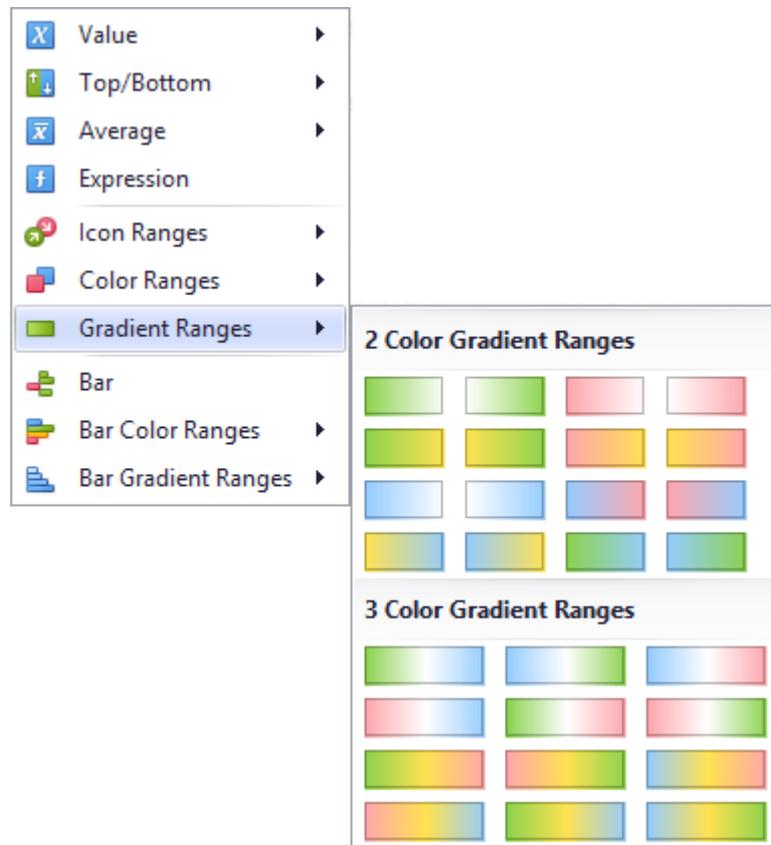
[Grand Total] [Grand Total]

Apply to ▼

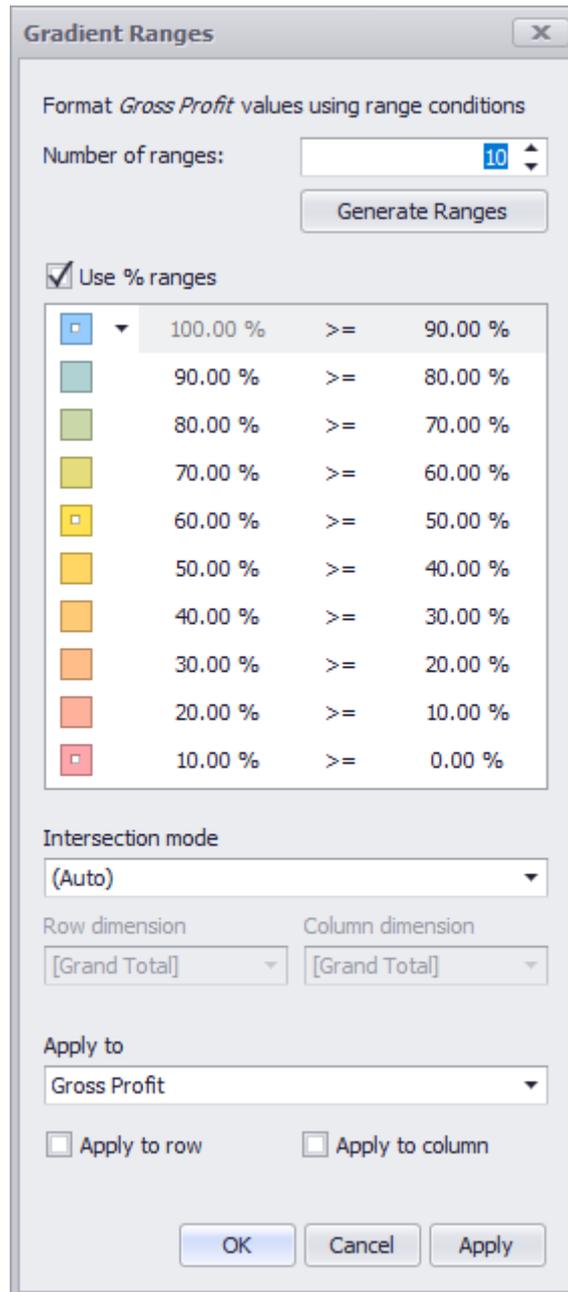
Apply to row Apply to column

8.18.7 Format Rule: Gradient Ranges

“Gradient Ranges” allow you to use predefined color gradients to apply conditional formatting to different ranges of values. You can also use specific colors to generate custom gradients.:



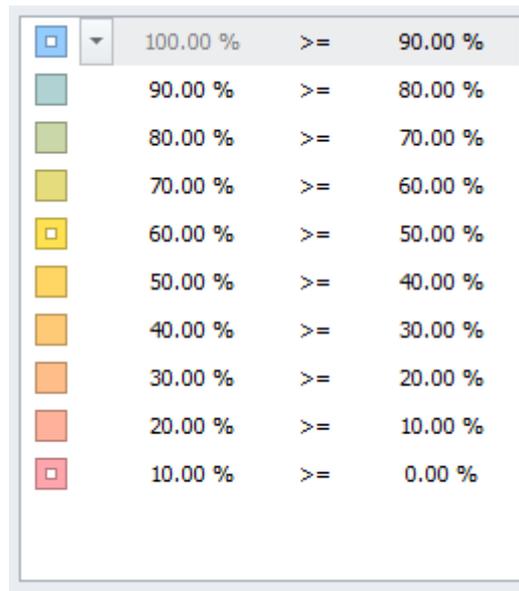
The form of the gradient highlight looks the following



The following options will be available in the appeared window:

- ✓ Number of ranges – “Number of ranges” allows you to specify the number of ranges used to classify values. Click the “Generate Ranges” button to generate a new gradient scale according to the specified number of ranges;
- ✓ Use % ranges – the “Use % ranges” check box specifies whether the percent or absolute scale is used to generate ranges;

- ✓ Range field with specified ranges:

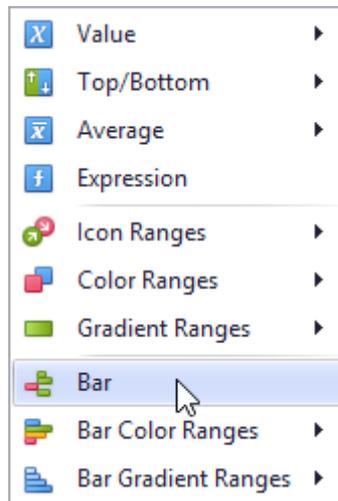


| | | | |
|--------------------------|----------|----|---------|
| <input type="checkbox"/> | 100.00 % | >= | 90.00 % |
| <input type="checkbox"/> | 90.00 % | >= | 80.00 % |
| <input type="checkbox"/> | 80.00 % | >= | 70.00 % |
| <input type="checkbox"/> | 70.00 % | >= | 60.00 % |
| <input type="checkbox"/> | 60.00 % | >= | 50.00 % |
| <input type="checkbox"/> | 50.00 % | >= | 40.00 % |
| <input type="checkbox"/> | 40.00 % | >= | 30.00 % |
| <input type="checkbox"/> | 30.00 % | >= | 20.00 % |
| <input type="checkbox"/> | 20.00 % | >= | 10.00 % |
| <input type="checkbox"/> | 10.00 % | >= | 0.00 % |

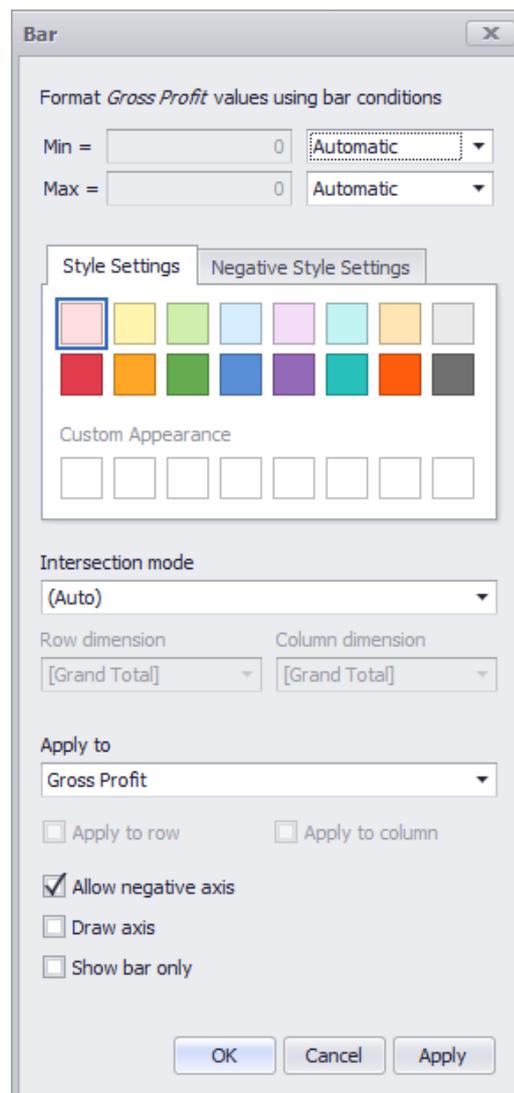
- ✓ Intersection mode – the level at which the highlight will be applied. The levels can be as follows:
 - Auto – identifies the default level. For the Pivot dashboard item, Auto identifies the “First Level”;
 - First level – first level values are used to apply conditional formatting;
 - Last level – the last level values are used to apply conditional formatting;
 - All levels – all pivot data cells are used to apply conditional formatting;
 - Specific level – values from the specific level are used to apply conditional formatting.
- ✓ Row/Column dimension - if you specified the Intersection mode as “Specific Level”, use the “Row dimension” and “Column dimension” combo boxes to set the specific level;
- ✓ Apply to – to which element (measure, hierarchy) of the Pivot table the conditional formatting should be applied;
- ✓ Apply to row/column – apply to the entire row / to the entire column.

8.18.8 Format Rule: Bar

The “Bar” format condition allows you to visualize numeric values using bars. You can also paint bars corresponding to positive and negative values using different colors:



This dialog allows you to change the following options specific to the “Bar” format condition:



- ✓ Min/Max – by default, lengths of the shortest and longest bars correspond to minimum and maximum values, respectively. If necessary, you can specify values corresponding to the shortest and longest bars manually. To do this, change the type of minimum/maximum value from “Automatic” to “Number or Percent”, and specify the required values;
- ✓ Style Settings – “Style Settings” and “Negative Style Settings” allow you to specify style settings used to color data bars corresponding to positive and negative values, respectively;
- ✓ Intersection mode – the level at which the highlight will be applied. The levels can be as follows:
 - Auto – identifies the default level. For the Pivot dashboard item, Auto identifies the “First Level”;
 - First level – first level values are used to apply conditional formatting;
 - Last level – the last level values are used to apply conditional formatting;
 - All levels – all pivot data cells are used to apply conditional formatting;
 - Specific level – values from the specific level are used to apply conditional formatting.
- ✓ Row/Column dimension - if you specified the Intersection mode as Specific Level, use the “Row dimension” and “Column dimension” combo boxes to set the specific level;
- ✓ Apply to – to which element (measure, hierarchy) of the Pivot table the conditional formatting should be applied;
- ✓ Apply to row/column – apply to the entire row / to the entire column;
- ✓ Allow negative axis – the “Allow negative axis” option allows you to specify whether negative data bars are displayed in the direction opposite to the positive data bars;
- ✓ Draw axis – the “Draw axis” option specifies whether to draw the vertical axis between positive and negative data bars;
- ✓ Show bar only – the “Show bar only” option specifies whether to show bars without corresponding values.

Let us look at this type of highlight on the example of the “Pivot” table:

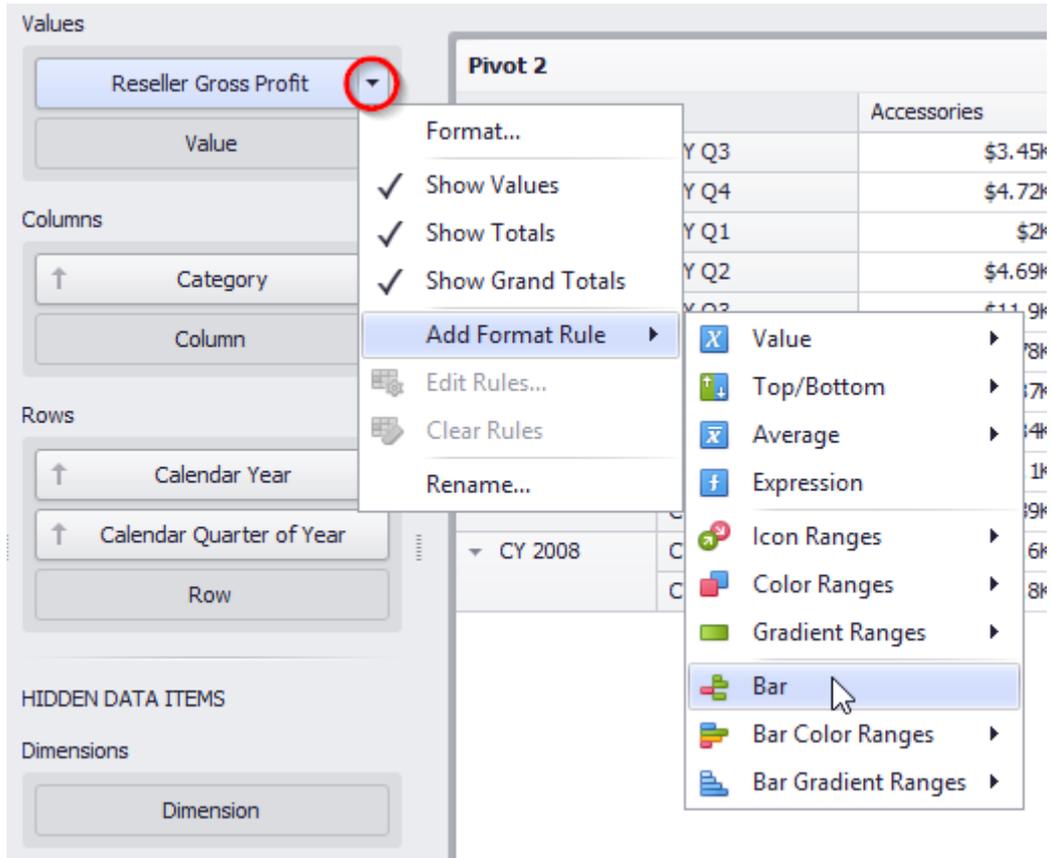
The screenshot shows a Pivot table interface with the following structure:

- Values:** Reseller Gross Profit (Value)
- Columns:** Category (Column)
- Rows:** Calendar Year, Calendar Quarter of Year (Row)

The Pivot table data is as follows:

| | | Accessories | Bikes | Clothing | Components |
|---------|-------|-------------|-----------|-----------|------------|
| CY 2005 | CY Q3 | \$3.45K | \$118K | (\$813) | \$22.7K |
| | CY Q4 | \$4.72K | \$151K | (\$1.1K) | \$31.3K |
| CY 2006 | CY Q1 | \$2K | \$132K | (\$549) | \$18.1K |
| | CY Q2 | \$4.69K | (\$525K) | (\$1.24K) | \$32.3K |
| | CY Q3 | \$11.9K | \$32.8K | \$58.8K | \$234K |
| | CY Q4 | \$9.78K | \$128K | \$45.1K | \$142K |
| CY 2007 | CY Q1 | \$4.87K | \$103K | \$25.9K | \$59.8K |
| | CY Q2 | \$9.84K | \$104K | \$46.4K | \$138K |
| | CY Q3 | \$46.1K | (\$893K) | \$10.2K | \$127K |
| | CY Q4 | \$39K | (\$95.5K) | \$16.6K | \$90.1K |
| CY 2008 | CY Q1 | \$20.6K | (\$62.3K) | \$15.6K | \$49K |
| | CY Q2 | \$38.8K | (\$182K) | \$17.6K | \$89.1K |

Let us add a highlight rule for the “Reseller Gross Profit” measure:



Fill out the form as follows:

The image displays two side-by-side screenshots of the 'Bar' dialog box, used for formatting 'Reseller Gross Profit' values. Both screenshots show the 'Min' and 'Max' values set to 0 and 'Automatic' for the dropdowns. The 'Apply to' dropdown is set to 'Reseller Gross Profit'. The 'Allow negative axis' checkbox is checked, while 'Draw axis' and 'Show bar only' are unchecked. The 'Intersection mode' is set to 'Last level', and both 'Row dimension' and 'Column dimension' are set to '[Grand Total]'. The 'OK' button is highlighted with a red arrow in both screenshots.

Left Screenshot (Style Settings):

- Tab: **Style Settings** (circled in red)
- Color palette: A grid of 16 color swatches. A red arrow points to the green swatch in the second row, third column.
- Buttons: OK, Cancel, Apply

Right Screenshot (Negative Style Settings):

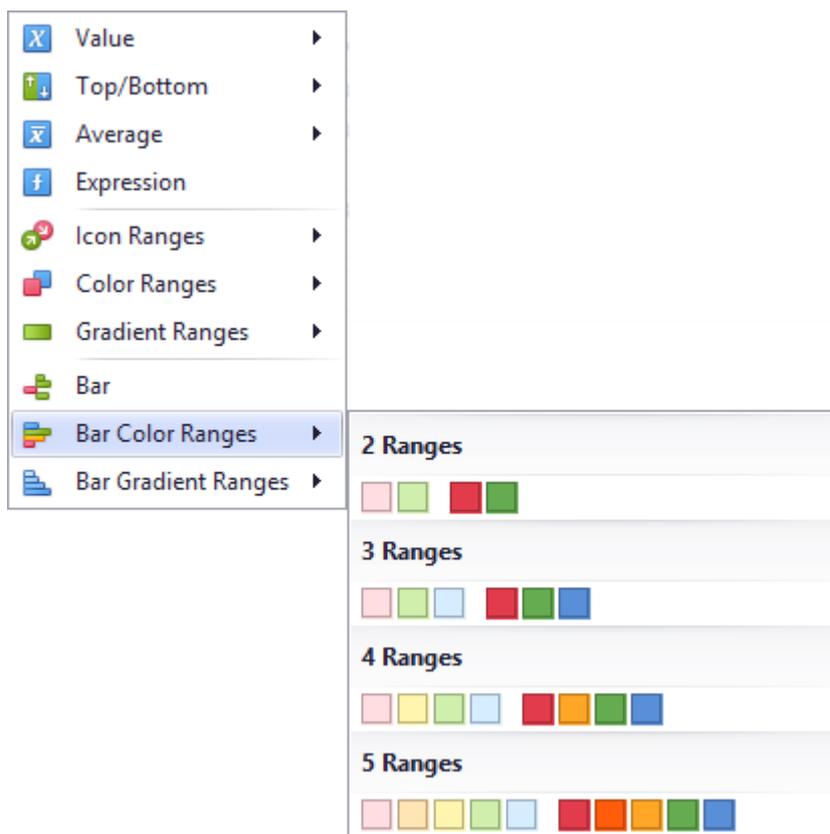
- Tab: **Negative Style Settings** (circled in red)
- Color palette: A grid of 16 color swatches. A red arrow points to the purple swatch in the second row, fifth column.
- Buttons: OK, Cancel, Apply

As a result, we will get the following table:

| Pivot 2 | | Accessories | Bikes | Clothing | Components |
|---------|-------|-------------|-----------|-----------|------------|
| CY 2005 | CY Q3 | \$3.45K | \$118K | (\$813) | \$22.7K |
| | CY Q4 | \$4.72K | \$15.1K | (\$1.1K) | \$31.3K |
| CY 2006 | CY Q1 | \$2K | \$132K | (\$549) | \$18.1K |
| | CY Q2 | \$4.69K | (\$525K) | (\$1.24K) | \$32.3K |
| | CY Q3 | \$11.9K | \$32.8K | \$58.8K | \$23.4K |
| | CY Q4 | \$9.78K | \$128K | \$45.1K | \$142K |
| CY 2007 | CY Q1 | \$4.87K | \$103K | \$25.9K | \$59.8K |
| | CY Q2 | \$9.84K | \$10.4K | \$46.4K | \$138K |
| | CY Q3 | \$46.1K | (\$893K) | \$10.2K | \$127K |
| | CY Q4 | \$39K | (\$95.5K) | \$16.6K | \$90.1K |
| CY 2008 | CY Q1 | \$20.6K | (\$62.3K) | \$15.6K | \$49K |
| | CY Q2 | \$38.8K | (\$182K) | \$17.6K | \$89.1K |

8.18.9 Format Rule: Bar Color Range

“Bar Color Ranges” allow you to visualize numeric values using bars whose colors are contained in the specified color set:



This dialog allows you to change the following options specific to “Bar Color Ranges”:

| Color | Upper Bound | Operator | Lower Bound |
|--------|-------------|----------|-------------|
| Blue | 100.00 % | >= | 75.00 % |
| Green | 75.00 % | >= | 50.00 % |
| Yellow | 50.00 % | >= | 25.00 % |
| Pink | 25.00 % | >= | 0.00 % |

The following options will be available in the appeared window:

- ✓ Format style – the “Format Style” combo box allows you to change the color set used to apply formatting;
- ✓ Use % ranges – the “Use % ranges” check box specifies whether the percent or absolute scale is used to generate ranges;

- ✓ Range field with specifies values:

| | | | |
|---|----------|----|---------|
|  | 100.00 % | >= | 75.00 % |
|  | 75.00 % | >= | 50.00 % |
|  | 50.00 % | >= | 25.00 % |
|  | 25.00 % | >= | 0.00 % |

Use the «Add» and «Delete» buttons to add new ranges or delete the selected range respectively. Note that new range is added below the selected range:

| | | | |
|---|----------|----|---------|
|  | 100.00 % | >= | 75.00 % |
|  | 75.00 % | >= | 50.00 % |
|  | | >= | |
|  | 50.00 % | >= | 25.00 % |
|  | 25.00 % | >= | 0.00 % |

To change the icon displayed for values corresponding to the specified range, click the button next to the required icon and select a new icon:

| | | | |
|---|----------|----|---------|
|  | 100.00 % | >= | 75.00 % |
|  | 75.00 % | >= | 50.00 % |
|  | | >= | |

No Style

| | | | | | | | |
|---|---|---|---|---|---|---|--|
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

Custom Appearance

| | | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|

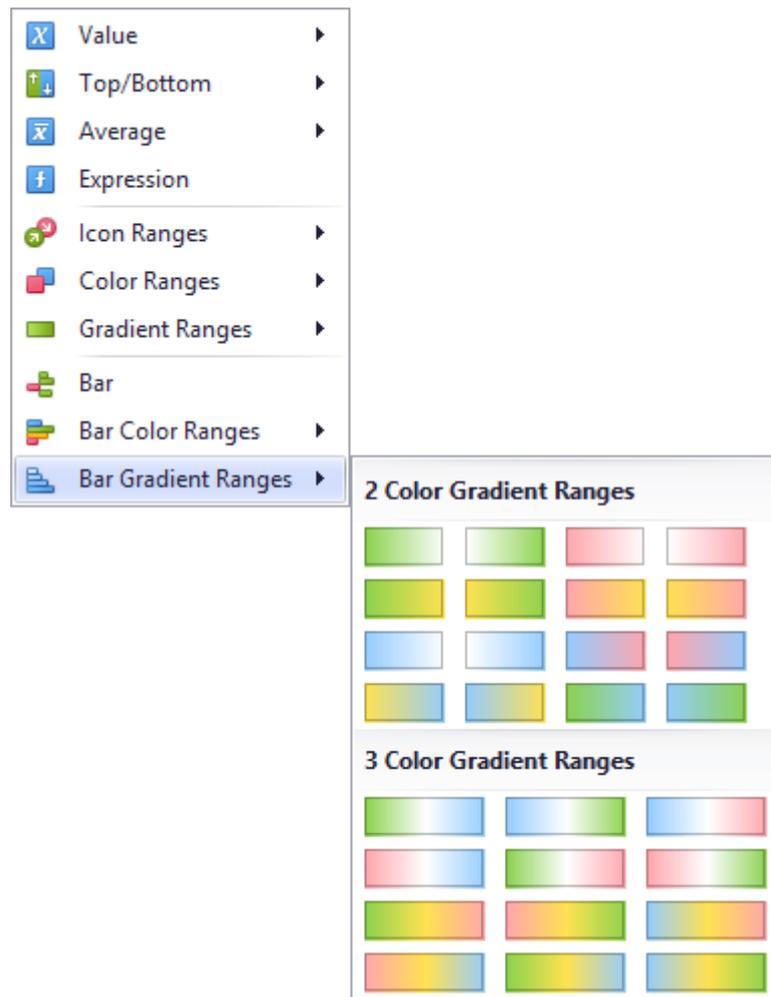
(Auto)

- ✓ Intersection mode – the level at which the highlight will be applied. The levels can be as follows:
 - Auto – identifies the default level. For the Pivot dashboard item, Auto identifies the “First Level”;
 - First level – first level values are used to apply conditional formatting;
 - Last level – the last level values are used to apply conditional formatting;
 - All levels – all pivot data cells are used to apply conditional formatting;

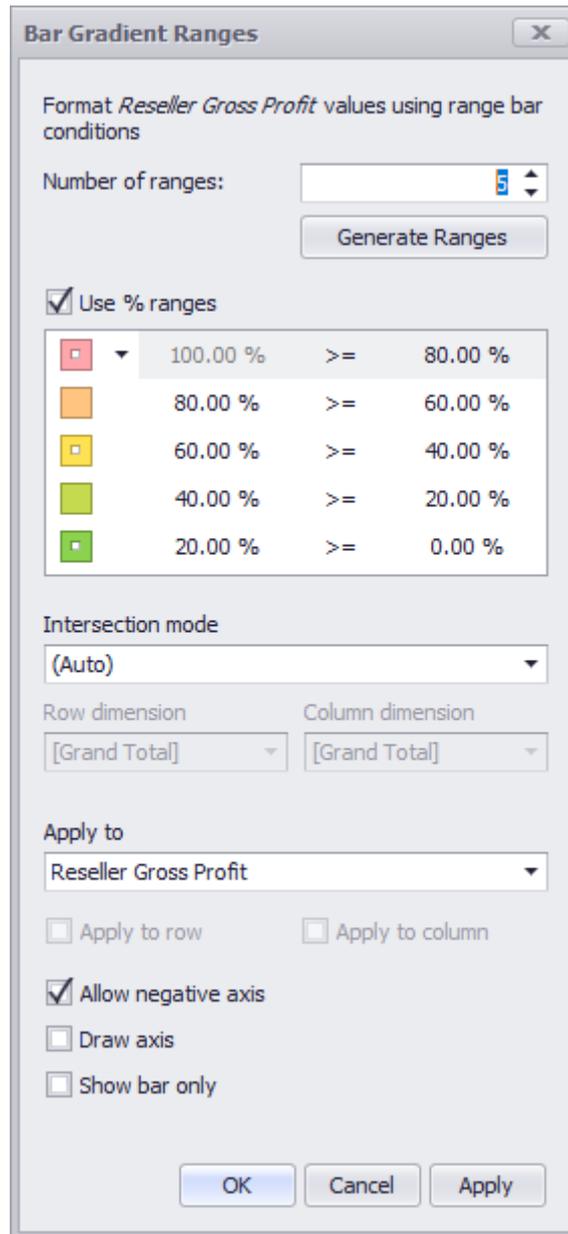
- Specific level – values from the specific level are used to apply conditional formatting.
- ✓ Row/Column dimension - if you specified the Intersection mode as “Specific Level”, use the “Row dimension” and “Column dimension” combo boxes to set the specific level;
 - ✓ Apply to – to which element (measure, hierarchy) of the Pivot table the conditional formatting should be applied;
 - ✓ Apply to row/column – apply to the entire row / to the entire column;
 - ✓ Allow negative axis – the “Allow negative axis” option allows you to specify whether negative data bars are displayed in the direction opposite to the positive data bars;
 - ✓ Draw axis – the “Draw axis” option specifies whether to draw the vertical axis between positive and negative data bars;
 - ✓ Show bar only – the “Show bar” only option specifies whether to show bars without corresponding values.

8.18.10 Format Rule: Bar Gradient Ranges

Bar Gradient Ranges allow you to visualize numeric values using bars whose colors are contained in the specified color gradient:



This dialog allows you to change the following options specific to “Bar Gradient Ranges”:



- ✓ Number of ranges – “Number of ranges” allows you to specify the number of ranges used to classify values. Click the Generate Ranges button to generate a new gradient scale according to the specified number of ranges;
- ✓ Use % ranges - the “Use % ranges” check box specifies whether the percent or absolute scale is used to generate ranges;
- ✓ Range field with specified values:

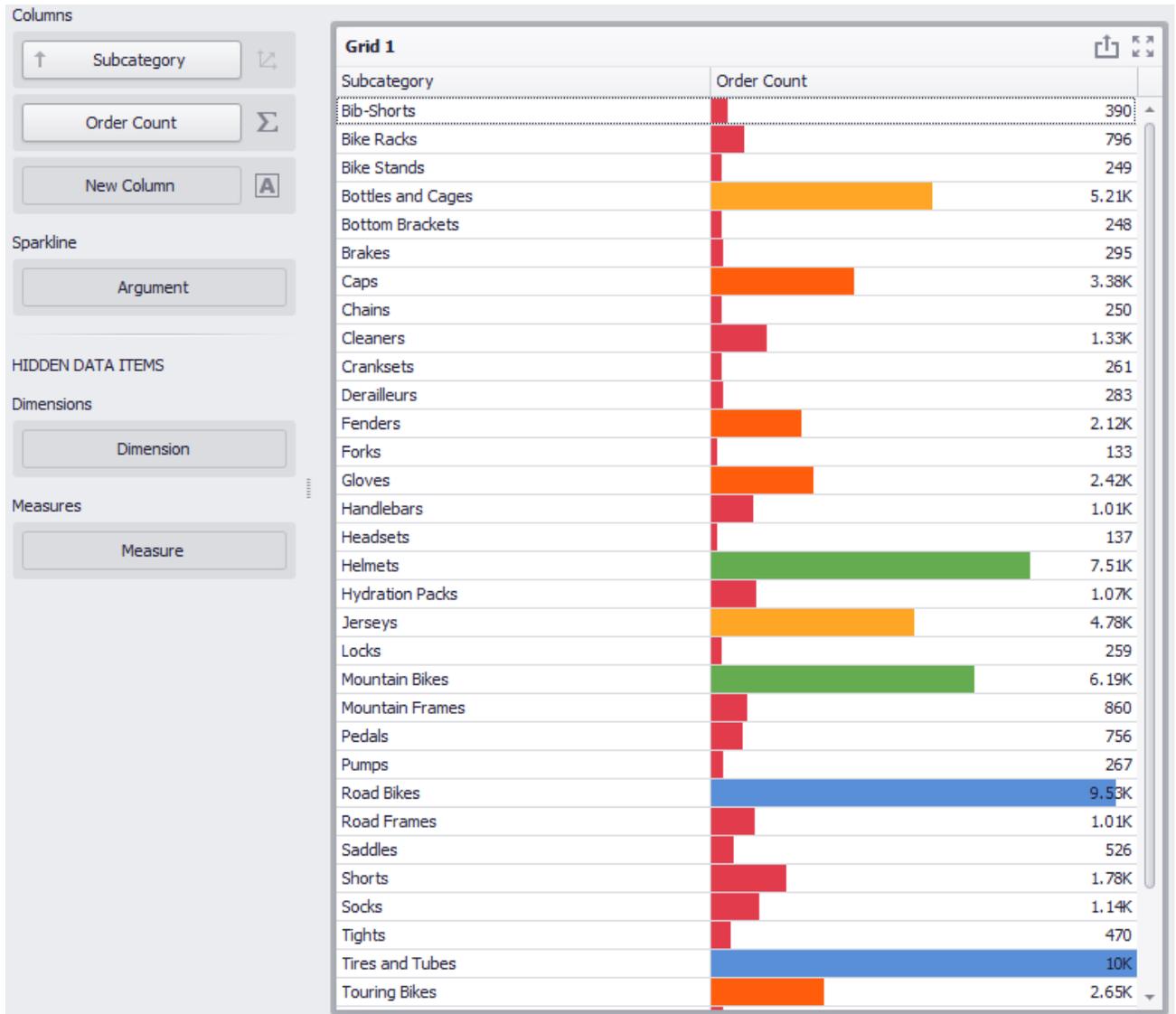
| | | | |
|--|----------|----|---------|
| | 100.00 % | >= | 80.00 % |
| | 80.00 % | >= | 60.00 % |
| | 60.00 % | >= | 40.00 % |
| | 40.00 % | >= | 20.00 % |
| | 20.00 % | >= | 0.00 % |

-
- ✓ Intersection mode – the level at which the highlight will be applied. The levels can be as follows:
 - Auto – identifies the default level. For the Pivot dashboard item, Auto identifies the “First Level”;
 - First level – first level values are used to apply conditional formatting;
 - Last level – the last level values are used to apply conditional formatting;
 - All levels – all pivot data cells are used to apply conditional formatting;
 - Specific level – values from the specific level are used to apply conditional formatting.
 - ✓ Row/Column dimension - if you specified the Intersection mode as “Specific Level”, use the “Row dimension” and “Column dimension” combo boxes to set the specific level;
 - ✓ Apply to – to which element (measure, hierarchy) of the Pivot table the conditional formatting should be applied;
 - ✓ Apply to row/column – apply to the entire row / to the entire column;
 - ✓ Allow negative axis – the “Allow negative axis” option allows you to specify whether negative data bars are displayed in the direction opposite to the positive data bars;
 - ✓ Draw axis – the “Draw axis” option specifies whether to draw the vertical axis between positive and negative data bars;
 - ✓ Show bar only – the “Show bar” only option specifies whether to show bars without corresponding values.

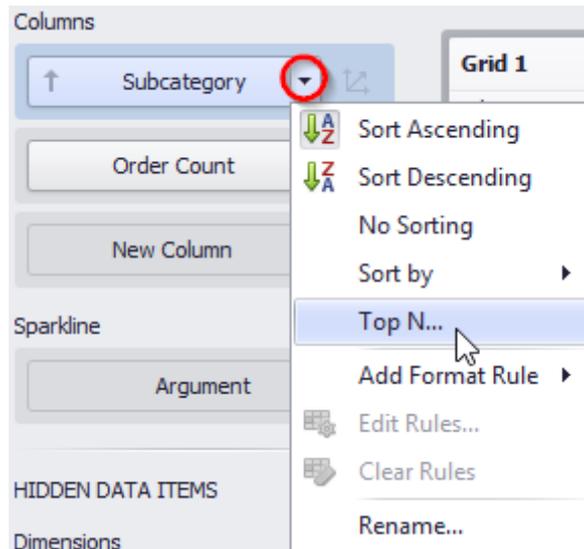
8.19 Top N

The “Top N” feature allows you to display only a limited number of values that correspond to the highest or lowest values of a particular measure

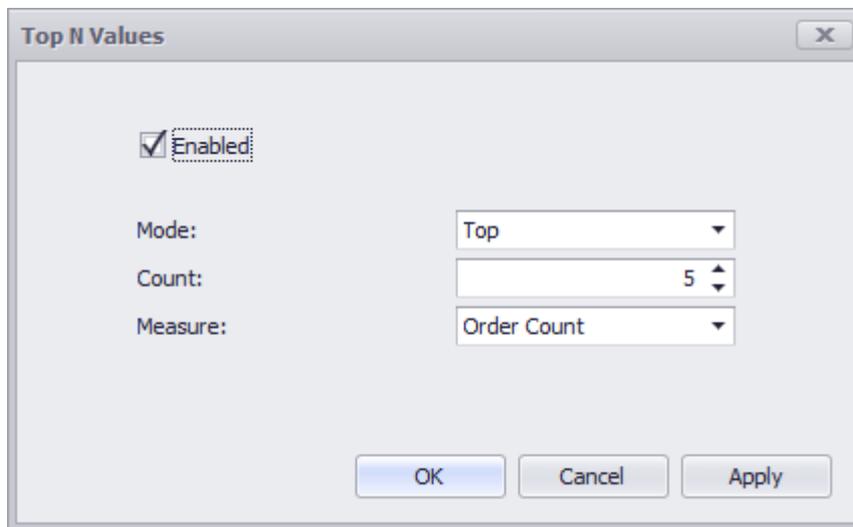
Let us consider the working principle of the given functionality on an example of a grid (the highlight rule - line color range):



We display only 7 subcategories with the best values of “Order Count” measure:



The following parameters are available in the form:



- ✓ Enabled – enables/disables this functionality;
- ✓ Mode – specifies whether top or bottom values should be displayed;
- ✓ Count – the number of values to be displayed;
- ✓ Measure – the parameter according to which the top or bottom values will be determined.

Fill out the form as follows:

The 'Top N Values' dialog box is shown with the following settings:

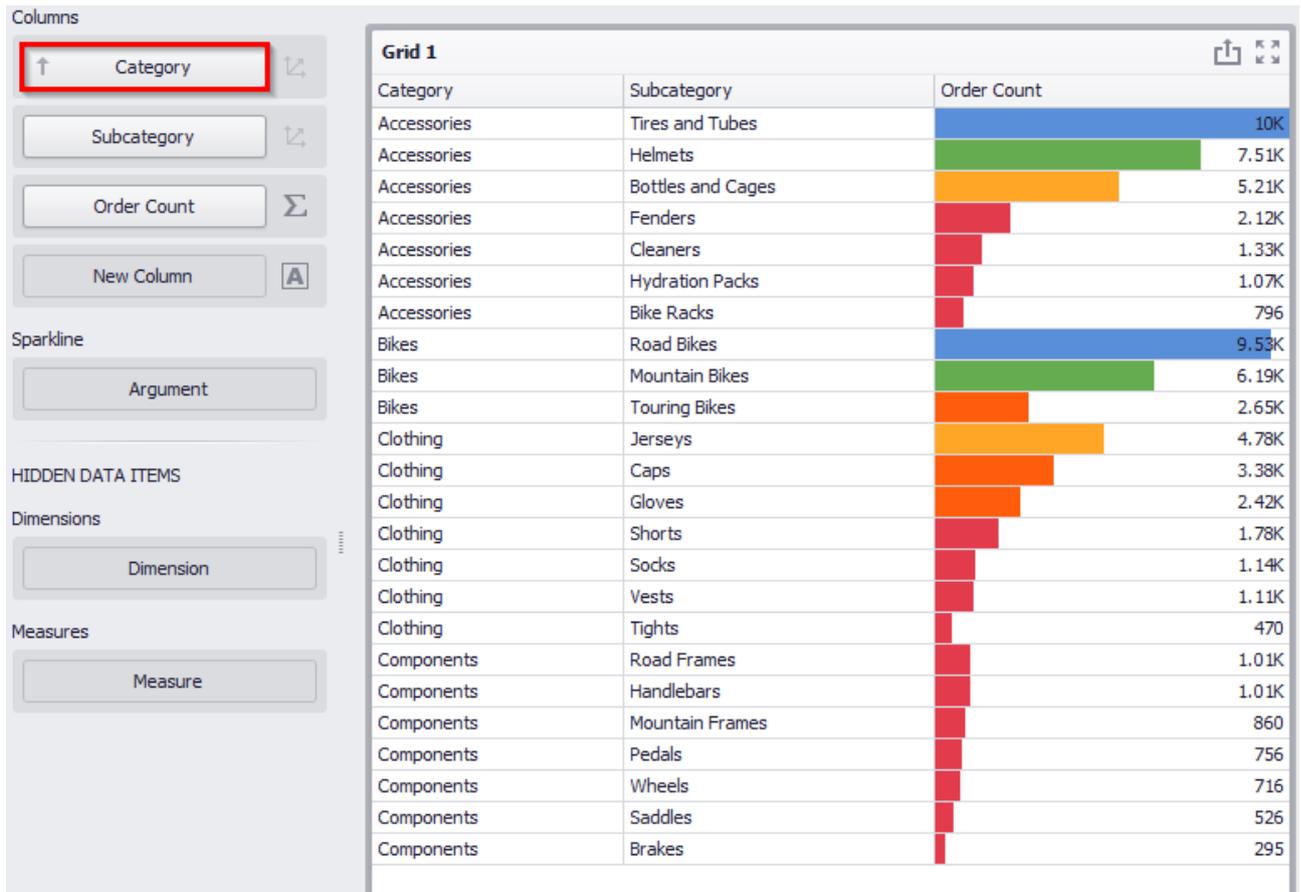
- Enabled:
- Mode: Top
- Count: 7
- Measure: Order Count

The 'OK' button is highlighted with a red arrow.

As a result, the table looks the following:

| Grid 1 | |
|-------------------|-------------|
| Subcategory | Order Count |
| Tires and Tubes | 10K |
| Road Bikes | 9.53K |
| Helmets | 7.51K |
| Mountain Bikes | 6.19K |
| Bottles and Cages | 5.21K |
| Jerseys | 4.78K |
| Caps | 3.38K |

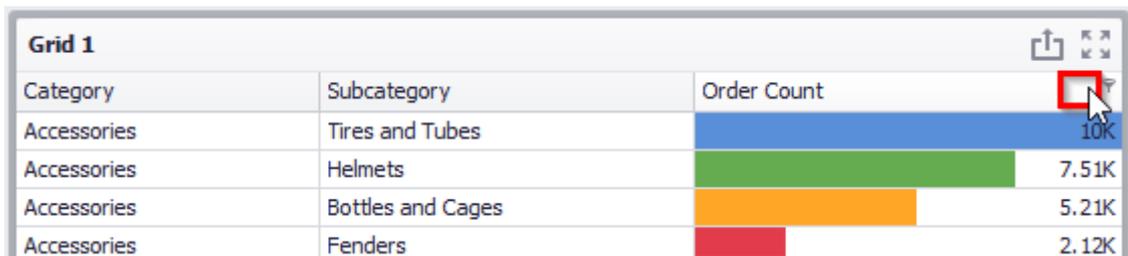
And now let us add the “Category” dimension to the columns and we get the following result:



Now we have 7 best “Order Count” measure indicators for each product category.

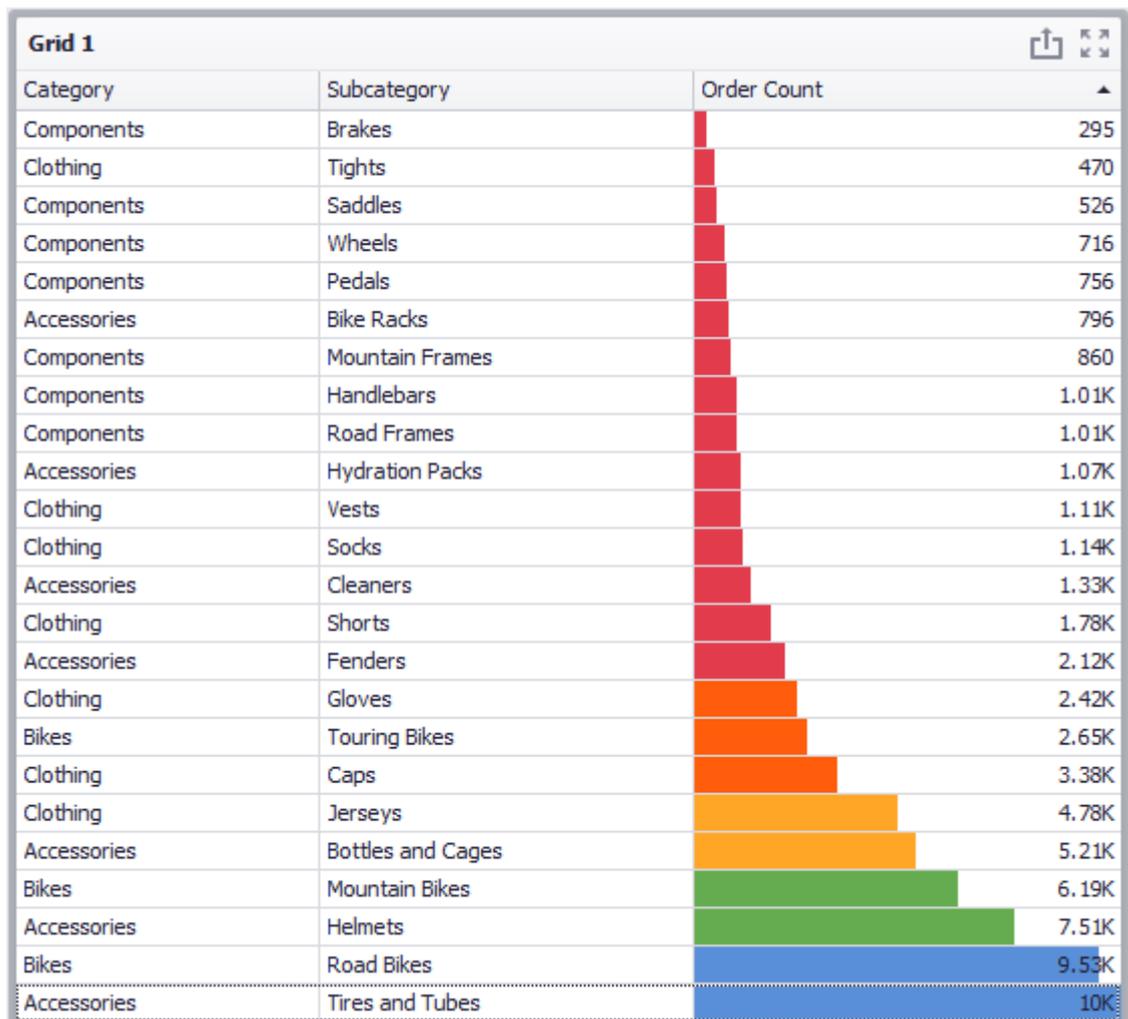
8.20 Sorting

Let us sort the table obtained earlier in the decreasing order of the “Order Count” measure. For this, click in the right corner of the table next to an icon:



| Category | Subcategory | Order Count |
|-------------|-------------------|-------------|
| Accessories | Tires and Tubes | 10K |
| Accessories | Helmets | 7.51K |
| Accessories | Bottles and Cages | 5.21K |
| Accessories | Fenders | 2.12K |

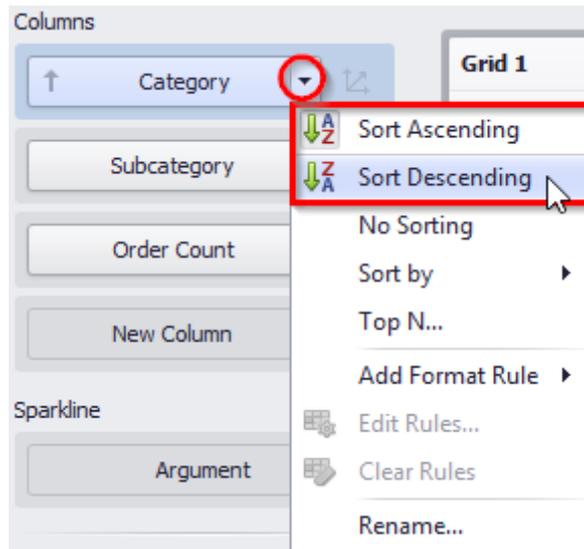
The column with the Order Count measure is sorted in a descending order:



| Category | Subcategory | Order Count |
|-------------|-------------------|-------------|
| Components | Brakes | 295 |
| Clothing | Tights | 470 |
| Components | Saddles | 526 |
| Components | Wheels | 716 |
| Components | Pedals | 756 |
| Accessories | Bike Racks | 796 |
| Components | Mountain Frames | 860 |
| Components | Handlebars | 1.01K |
| Components | Road Frames | 1.01K |
| Accessories | Hydration Packs | 1.07K |
| Clothing | Vests | 1.11K |
| Clothing | Socks | 1.14K |
| Accessories | Cleaners | 1.33K |
| Clothing | Shorts | 1.78K |
| Accessories | Fenders | 2.12K |
| Clothing | Gloves | 2.42K |
| Bikes | Touring Bikes | 2.65K |
| Clothing | Caps | 3.38K |
| Clothing | Jerseys | 4.78K |
| Accessories | Bottles and Cages | 5.21K |
| Bikes | Mountain Bikes | 6.19K |
| Accessories | Helmets | 7.51K |
| Bikes | Road Bikes | 9.53K |
| Accessories | Tires and Tubes | 10K |

Having clicked again, we get the opposite result (an increase of the “Order Count” measure).

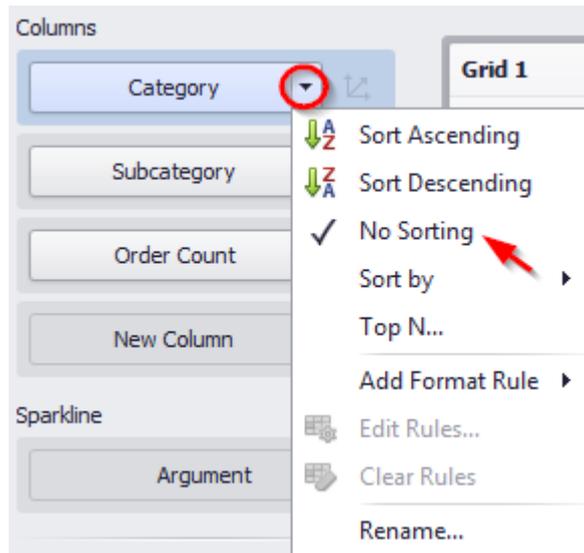
To sort the hierarchy alphabetically, you need to open the context menu:



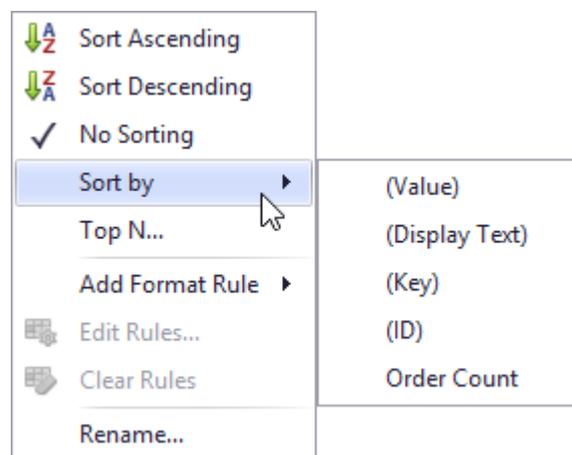
By selecting the “Sort Descending” method, we get a table with category names sorted in a descending order:

| Grid 1 | | |
|-------------|-------------------|-------------|
| Category | Subcategory | Order Count |
| Components | Road Frames | 1.01K |
| Components | Handlebars | 1.01K |
| Components | Mountain Frames | 860 |
| Components | Pedals | 756 |
| Components | Wheels | 716 |
| Components | Saddles | 526 |
| Components | Brakes | 295 |
| Clothing | Jerseys | 4.78K |
| Clothing | Caps | 3.38K |
| Clothing | Gloves | 2.42K |
| Clothing | Shorts | 1.78K |
| Clothing | Socks | 1.14K |
| Clothing | Vests | 1.11K |
| Clothing | Tights | 470 |
| Bikes | Road Bikes | 9.53K |
| Bikes | Mountain Bikes | 6.19K |
| Bikes | Touring Bikes | 2.65K |
| Accessories | Tires and Tubes | 10K |
| Accessories | Helmets | 7.51K |
| Accessories | Bottles and Cages | 5.21K |
| Accessories | Fenders | 2.12K |
| Accessories | Cleaners | 1.33K |
| Accessories | Hydration Packs | 1.07K |
| Accessories | Bike Racks | 796 |

If necessary, you can disable sorting:



OLAP Sorting specific:

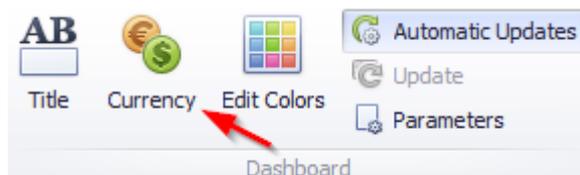


- ✓ (Value) – sorting is performed by member values;
- ✓ (Display Text) – sorting is performed by captions associated with members;
- ✓ (Key) – sorting is performed by member keys;
- ✓ (ID) – sorting is performed by member IDs.

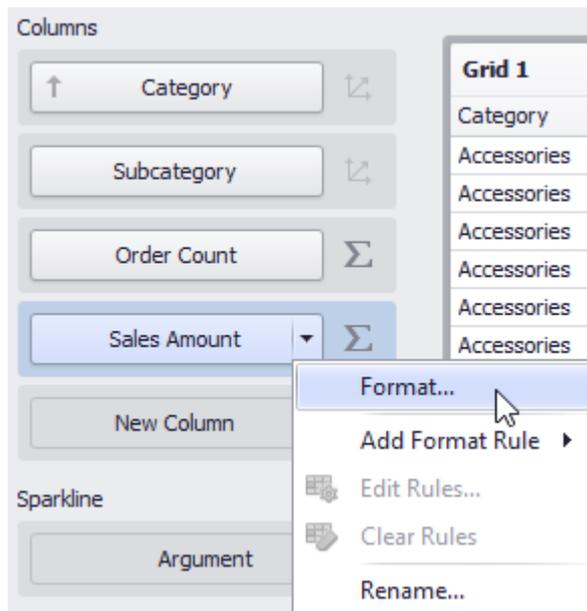
8.21 Formatting Data

8.21.1 Formatting Numeric Values

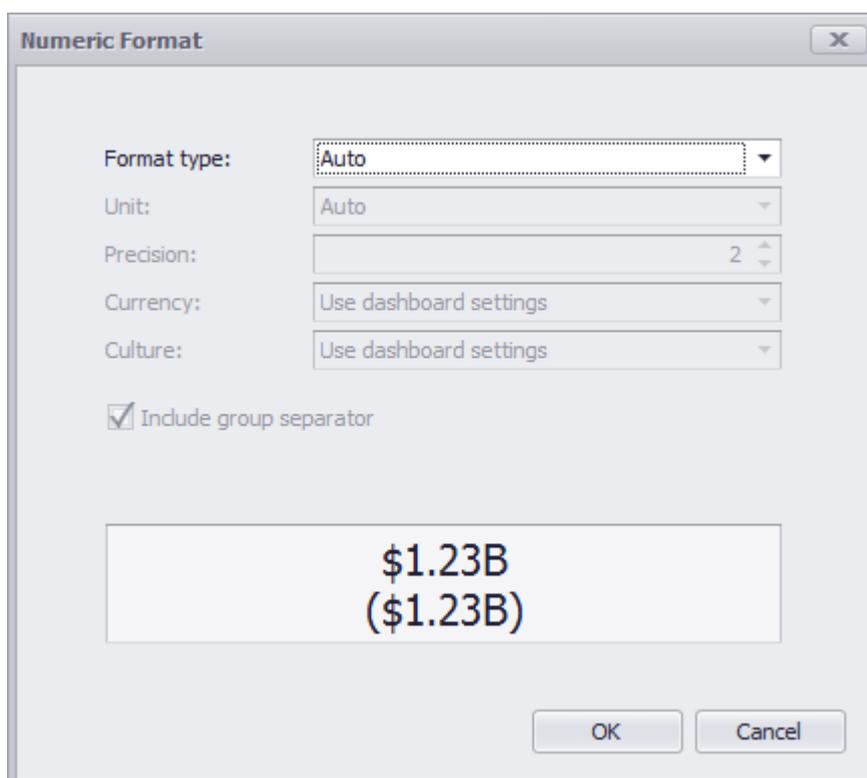
You can change the data format. This functionality is available on the “Dashboard Designer toolbar”:



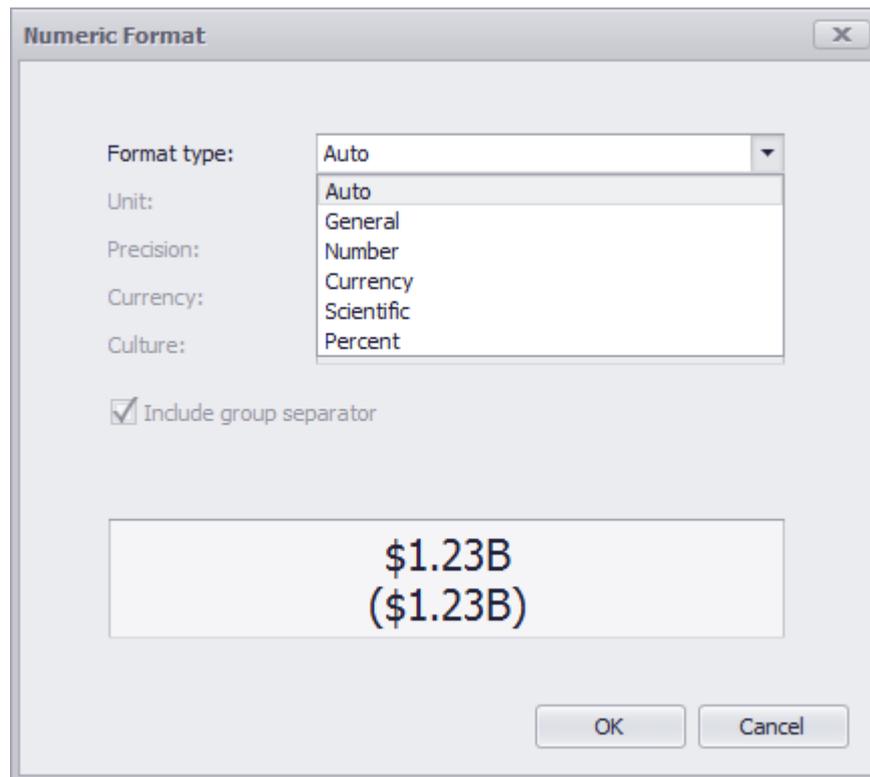
To specify a format for numeric values, select “Format” from the data item menu:



This invokes the “Numeric Format” window:



Types of formats can be as follows:

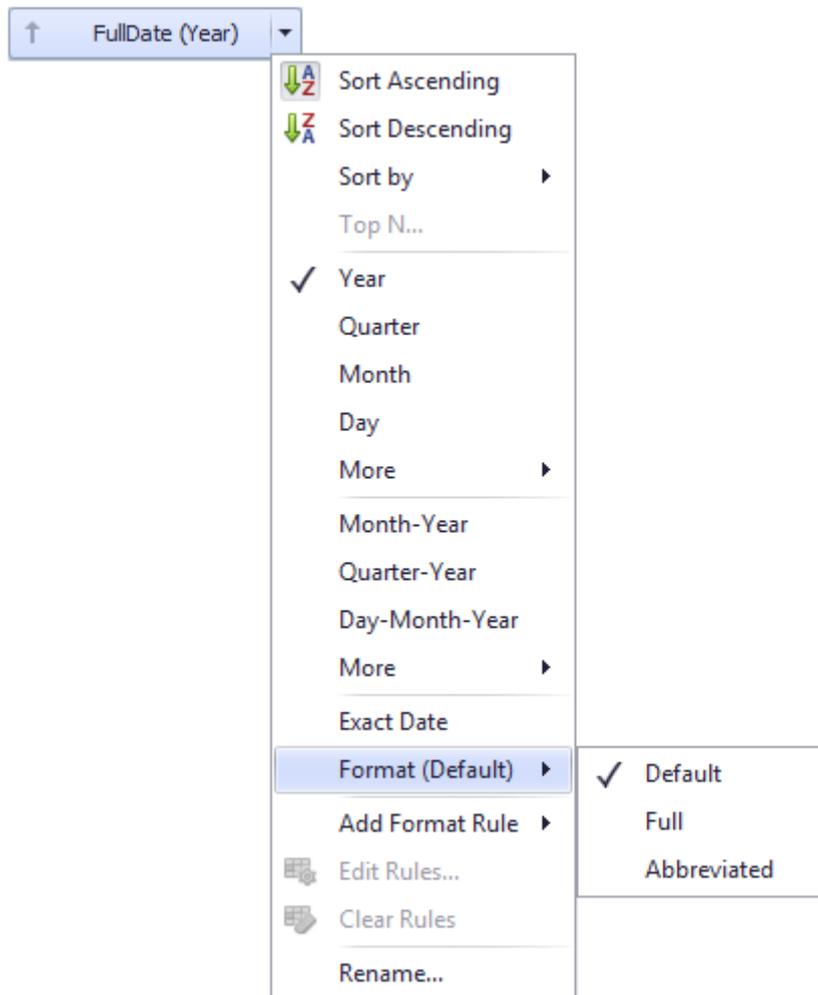


Other format settings are in effect for only specific format types:

- ✓ Unit – the unit to which values should be converted;
- ✓ Precision – the number of fractional digits that should be displayed;
- ✓ Currency – defines the currency sign and format settings that should be used to display currency values;
- ✓ Culture – for currencies used in a region with several cultures, specifies the culture that defines format settings
- ✓ Include group separator – specifies whether or not separators should be inserted between digit groups.

8.21.2 Formatting Date-Time Values

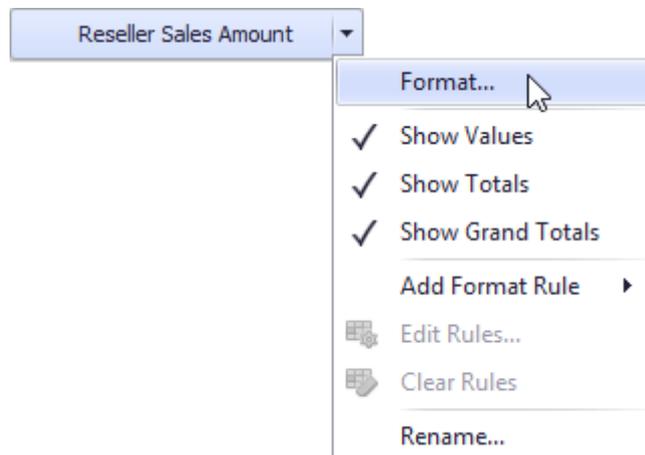
For date and time values, this functionality has the following parameters:



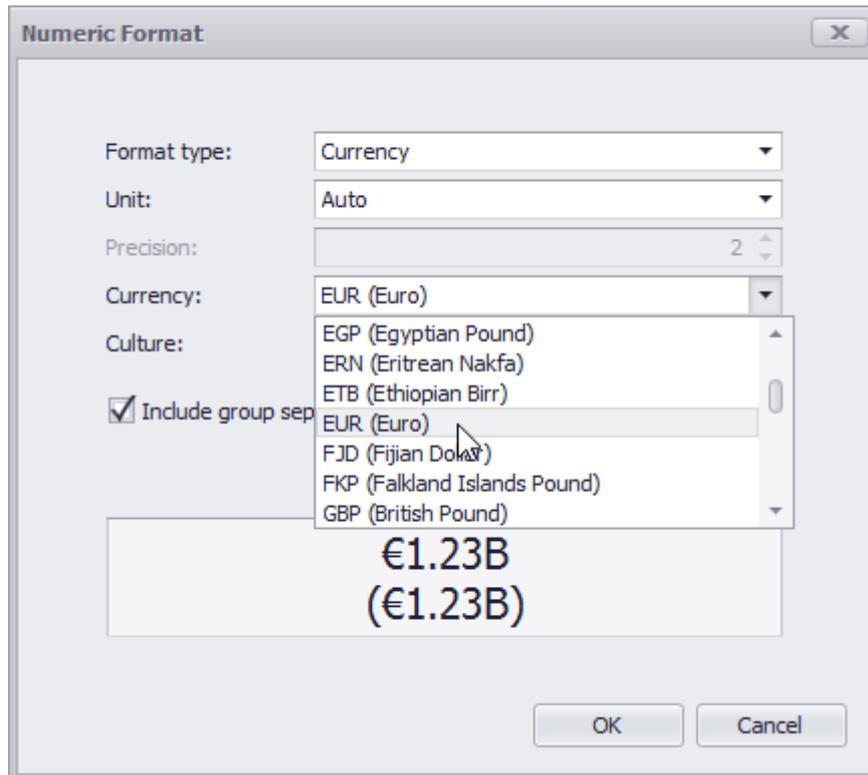
8.21.3 Currency Formatting Specifics

The «Interactive dashboard» allows you to specify a currency format at two levels: for the entire dashboard and for individual data items:

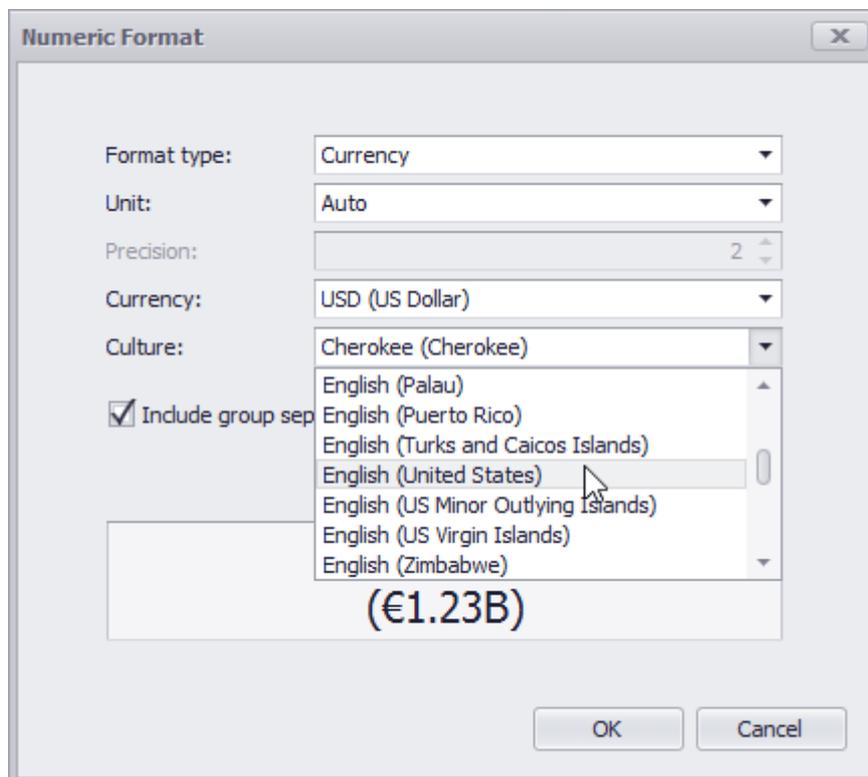
- ✓ Data Item Currency – to specify which currency to use for a particular data item, select “Format” from the data item menu:



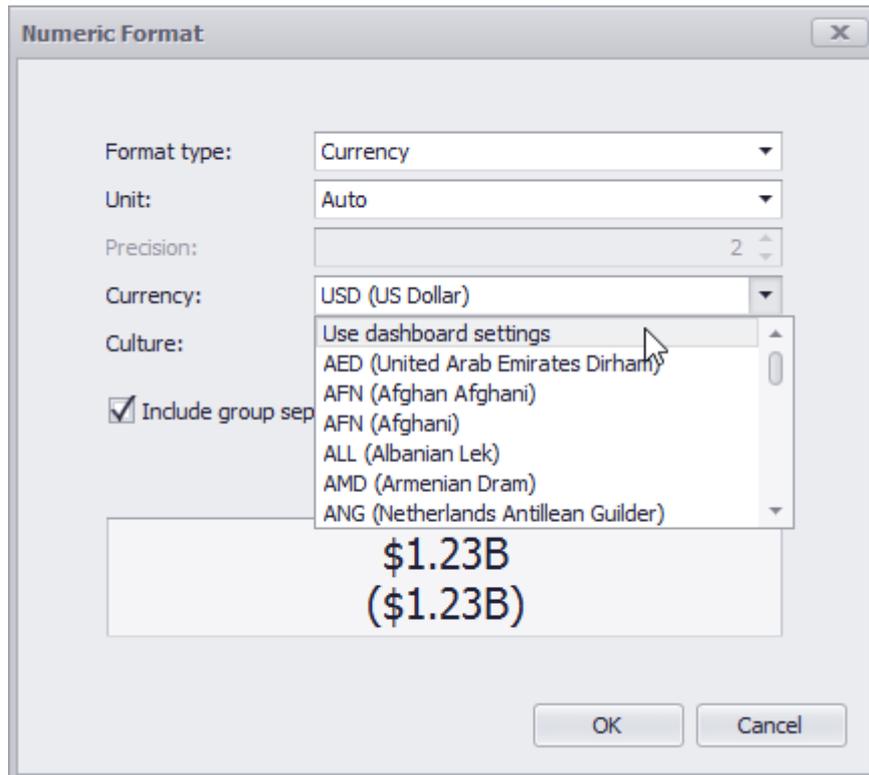
In the “Numeric Format” dialog, select “Currency” in the “Format type” field and use the “Currency” combo box to select the required currency:



For regions with several cultures, you can also select the culture that will be used to format currency values:



You can also apply the default dashboard currency by selecting «Use dashboard settings» in the “Currency” field:



✓ Dashboard Currency

You can also specify the default currency for the dashboard. This setting will be applied to dashboard items that have no currency defined.

To set the dashboard currency, click the “Currency” button on the toolbar:



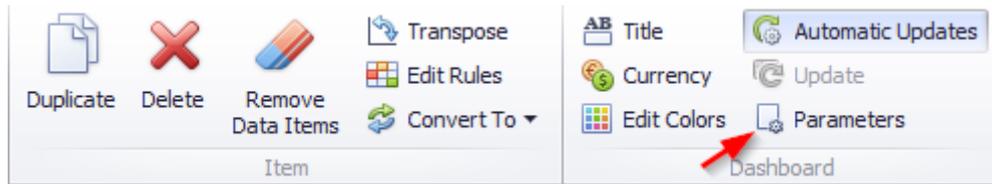
This invokes the Dashboard Currency window. In this window, select the required currency using the “Currency” combo box:



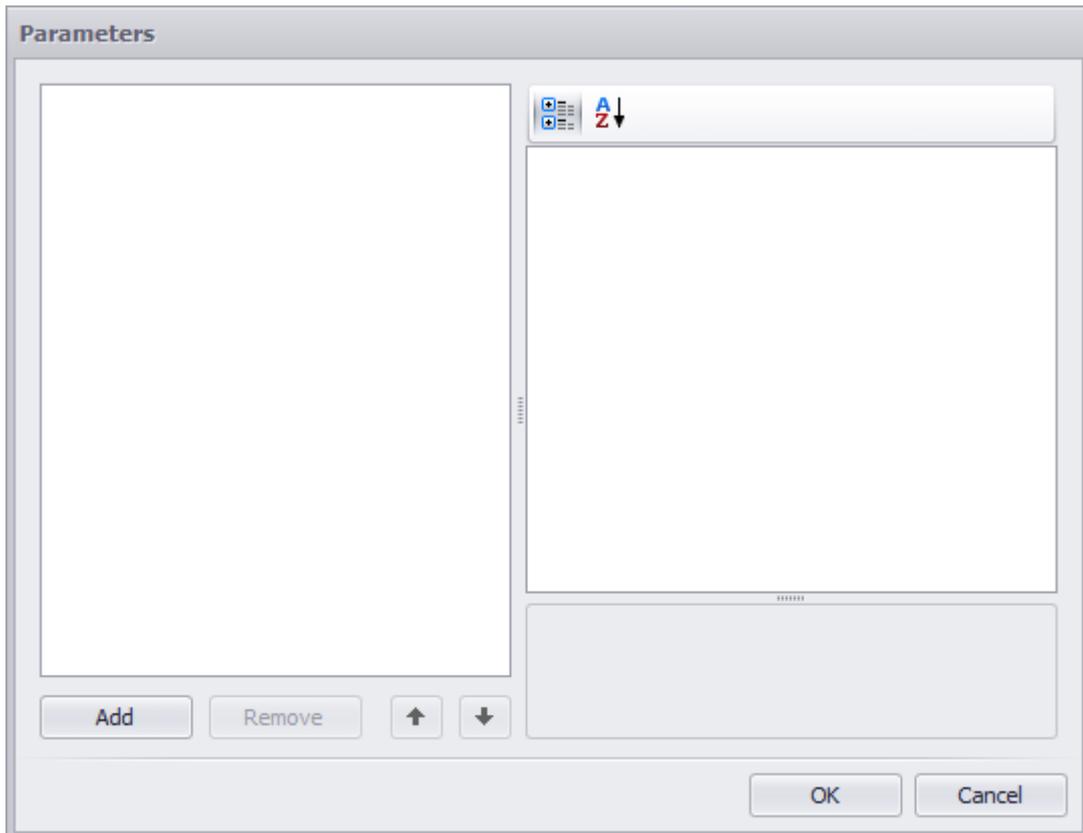
8.22 Parameters

The parameter is a dashboard element that allows to dynamically influence the “Expression” highlight rule.

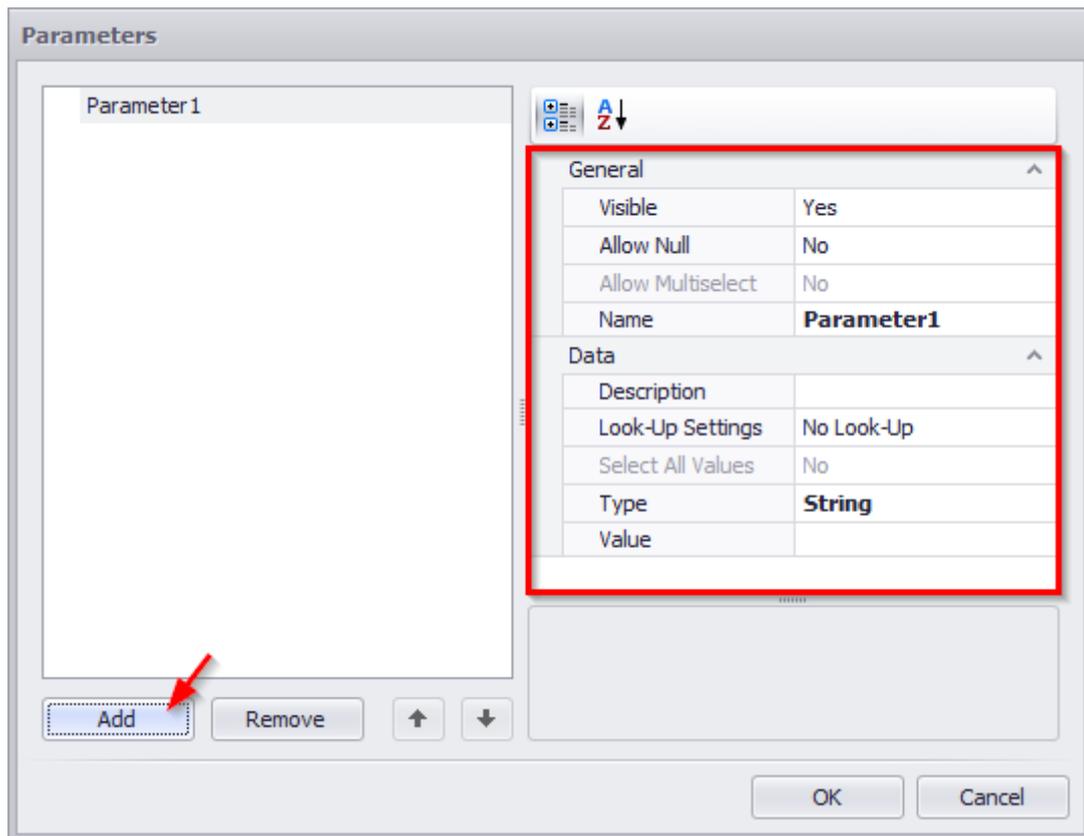
In order to create a parameter, click the toolbar icon:



The following window opens:



To add the parameter, click the «Add» button. The following parameters are displayed in the window:



- ✓ Visible – specifies whether or not the parameter editor is visible in the dashboard Parameters dialog;
- ✓ Allow Null – specifies whether or a not null value can be passed as a parameter value;
- ✓ Allow Multiselect – specifies whether or not multi-selection is enabled for the current parameter. The following limitations are applied to parameters with multi-selection enabled.
 - Use the “is any of” or “is none of” operators to pass a multi-select parameter to a filter criteria or to the Expression format condition.
 - Use the “In” or “Not In” operators to pass a multi-select parameter to a calculated field expression.
 - Custom SQL queries do not support multi-select parameters.
 - Stored procedures used in SQL and Entity Framework data sources do not support multi-select parameters.
- ✓ Name – Specifies the parameter name:
 - A name can contain letters, numbers and underscores.
 - A name cannot contain spaces.
 - A name cannot be an empty string.
 - The dashboard cannot contain parameters with the same name.
 - Names are case-sensitive. For example, you can create the names Parameter and PARAMETER.
- ✓ Description – specifies the parameter's description displayed;
- ✓ Look-Up Settings – specifies the parameter's look-up editor settings;
- ✓ Type – specifies the parameter type;

- ✓ Value – specifies the default parameter’s value(s).
Note that when “Allow Multiselect” is set to “true”, the “Value” option allows you to select multiple parameter values.

Let us create a setting that highlights the “Reseller Sales Amount” value of more than \$500,000, but less than \$ 1 million for all product subcategories.

First, we add a table with the following values:

The screenshot shows a BI tool interface with a column selection pane on the left and a data grid on the right. The column selection pane has 'Subcategory' and 'Reseller Sales Amount' highlighted with red boxes. The data grid, titled 'Grid 1', contains the following data:

| Subcategory | Reseller Sales Amount |
|-------------------|-----------------------|
| Bib-Shorts | \$167K |
| Bike Racks | \$198K |
| Bottles and Cages | \$7.48K |
| Bottom Brackets | \$51.8K |
| Brakes | \$66K |
| Caps | \$31.5K |
| Chains | \$9.38K |
| Cleaners | \$11.2K |
| Cranksets | \$204K |
| Derailleurs | \$70.2K |
| Forks | \$77.9K |
| Gloves | \$208K |
| Handlebars | \$171K |
| Headsets | \$60.9K |
| Helmets | \$259K |
| Hydration Packs | \$65.5K |
| Jerseys | \$579K |
| Locks | \$16.2K |
| Mountain Bikes | \$26.5M |
| Mountain Frames | \$4.71M |
| Pedals | \$147K |
| Pumps | \$13.5K |
| Road Bikes | \$29.4M |
| Road Frames | \$3.85M |
| Saddles | \$55.8K |
| Shorts | \$342K |
| Socks | \$24.6K |
| Tights | \$202K |
| Tires and Tubes | \$925 |
| Touring Bikes | \$10.5M |
| Touring Frames | \$1.64M |

Create two parameters and fill in the fields as follows:

The screenshot shows the 'Parameters' dialog box with 'Sales1' selected in the list. The 'General' tab is active, showing the following settings:

| General | |
|-------------------|---------------|
| Visible | Yes |
| Allow Null | No |
| Allow Multiselect | No |
| Name | Sales1 |

The 'Data' tab is also active, showing the following settings:

| Data | |
|-------------------|-------------------------------|
| Description | Min value |
| Look-Up Settings | No Look-Up |
| Select All Values | No |
| Type | Number (64 bit inte... |
| Value | 500000 |

Buttons at the bottom include 'Add', 'Remove', up/down arrows, 'OK', and 'Cancel'.

The screenshot shows the 'Parameters' dialog box with 'Sales2' selected in the list. The 'General' tab is active, showing the following settings:

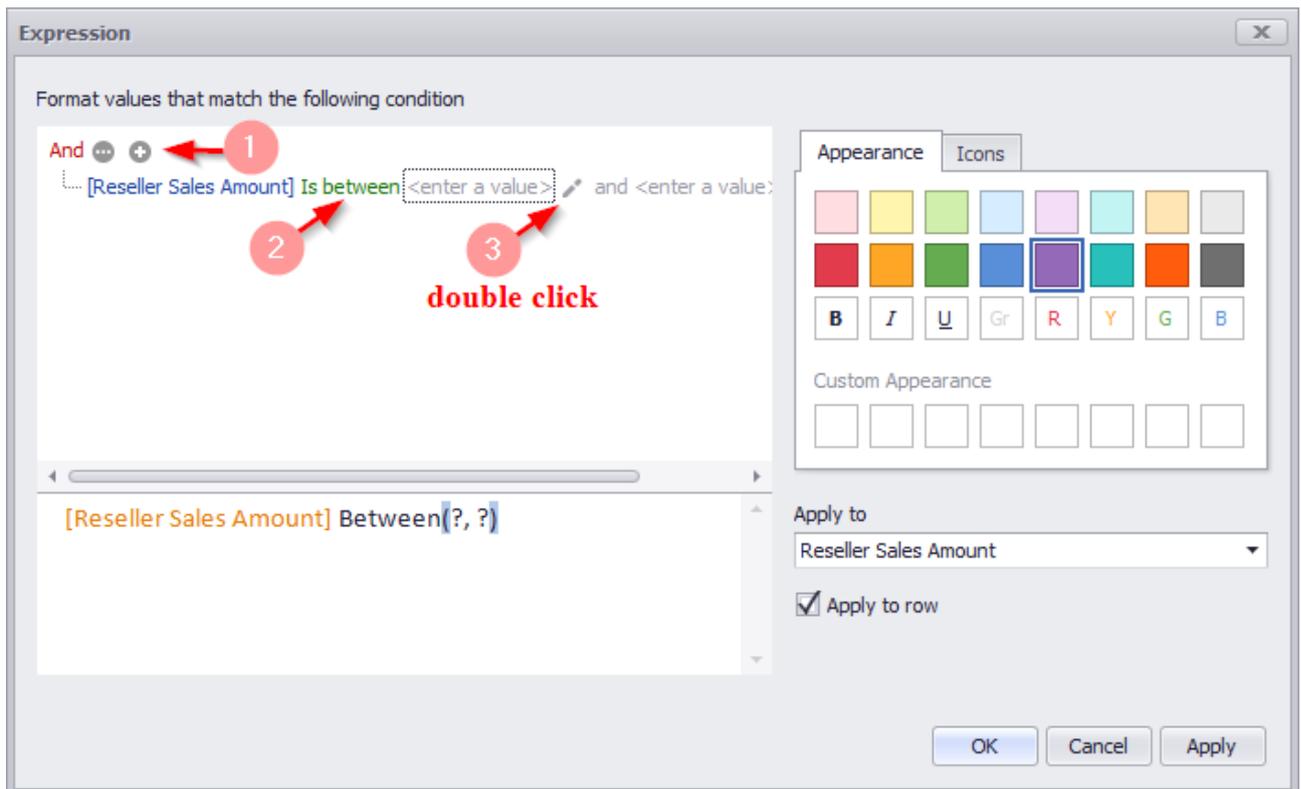
| General | |
|-------------------|---------------|
| Visible | Yes |
| Allow Null | No |
| Allow Multiselect | No |
| Name | Sales2 |

The 'Data' tab is also active, showing the following settings:

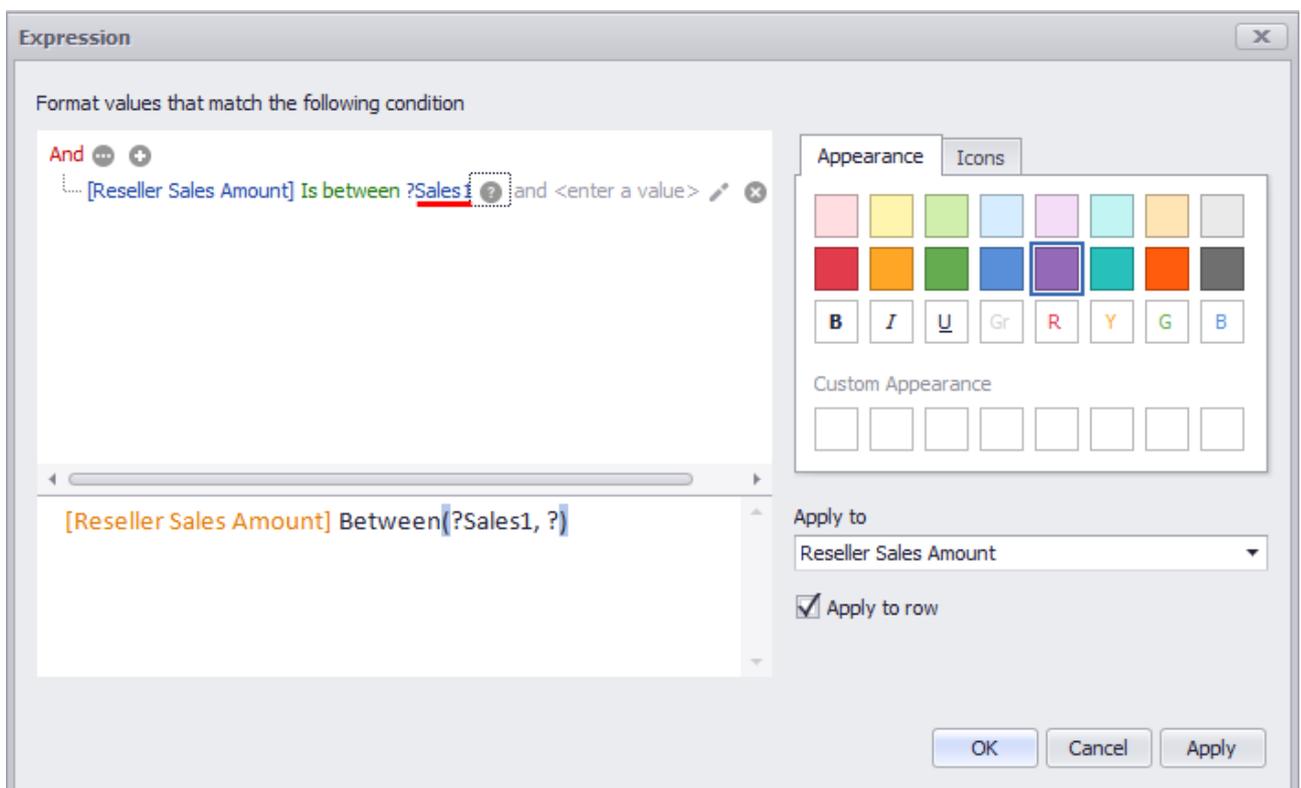
| Data | |
|-------------------|-------------------------------|
| Description | Max value |
| Look-Up Settings | No Look-Up |
| Select All Values | No |
| Type | Number (64 bit inte... |
| Value | 1000000 |

Buttons at the bottom include 'Add', 'Remove', up/down arrows, 'OK', and 'Cancel'.

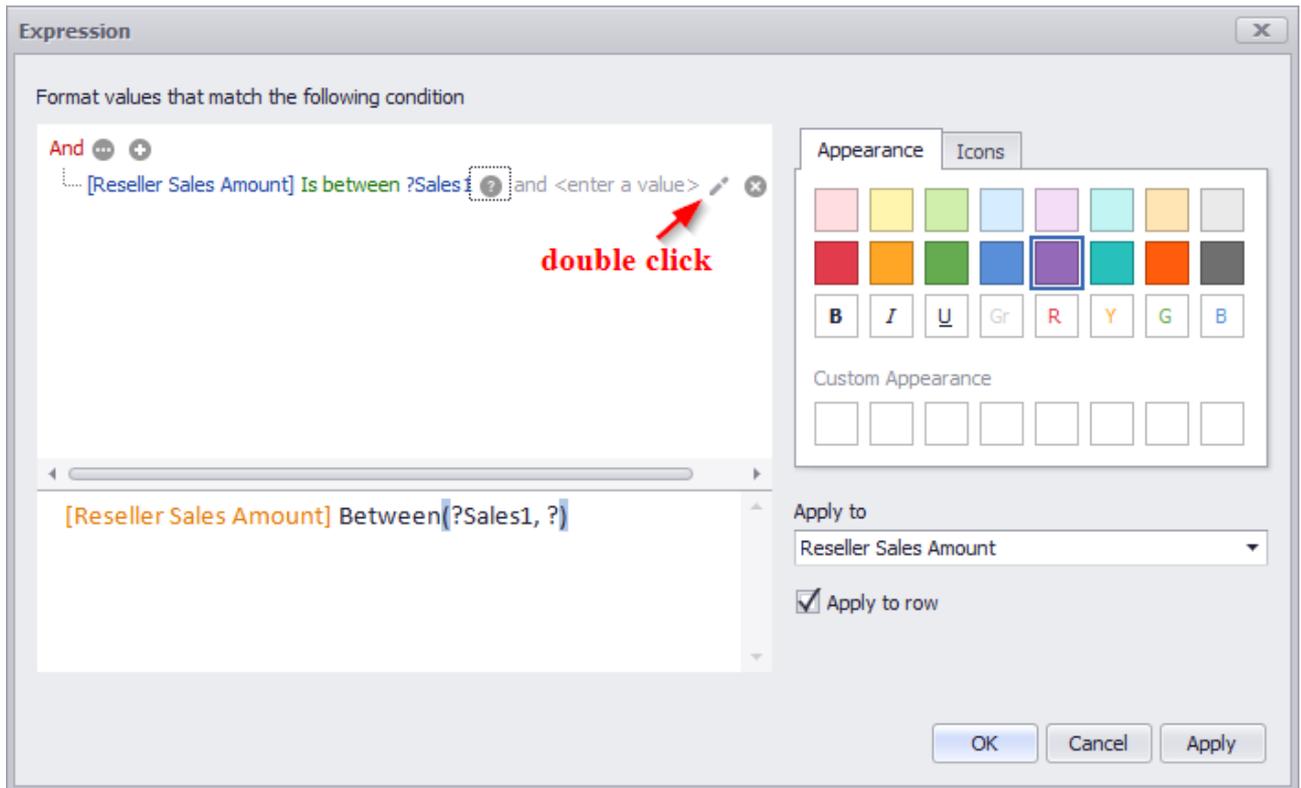
For “Reseller Sales Amount”, create an “Expression” highlight rule with the following parameters:



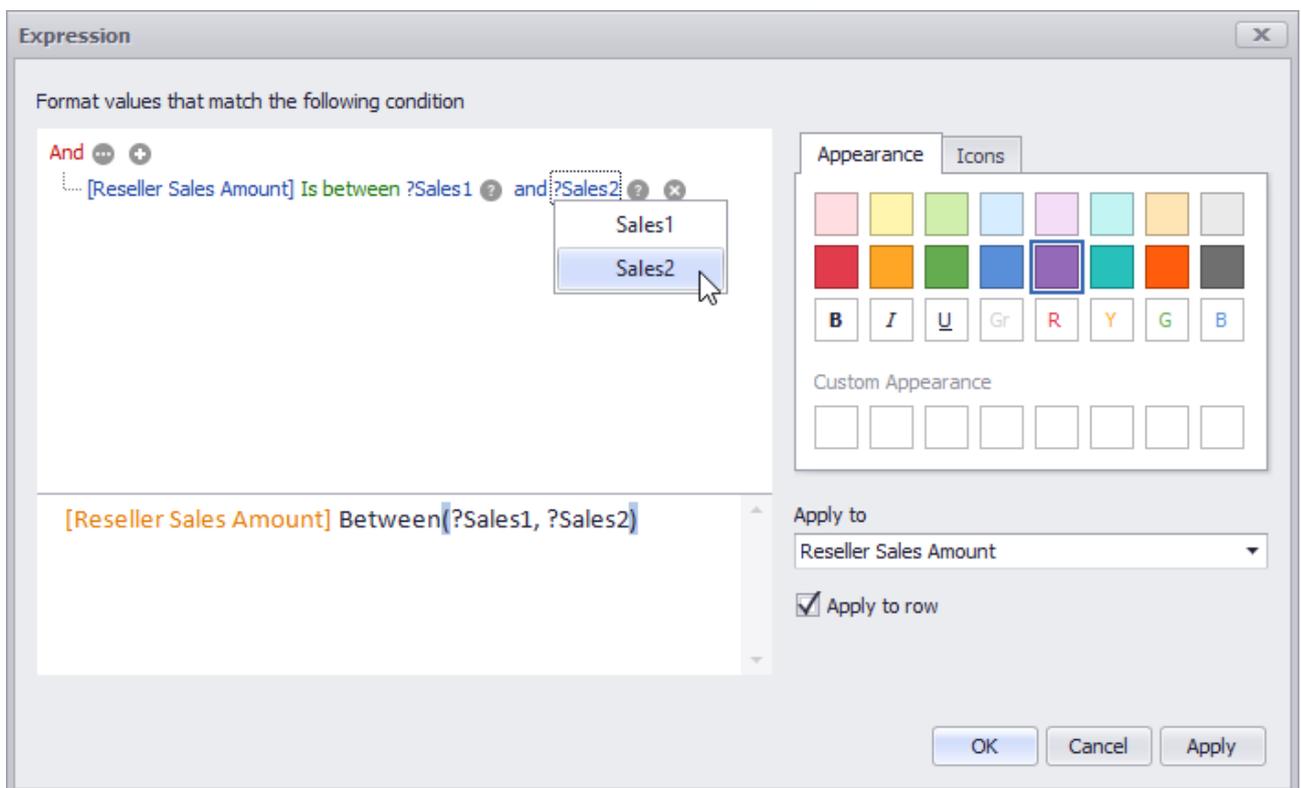
As a result, the first parameter from the list is displayed in the value field:



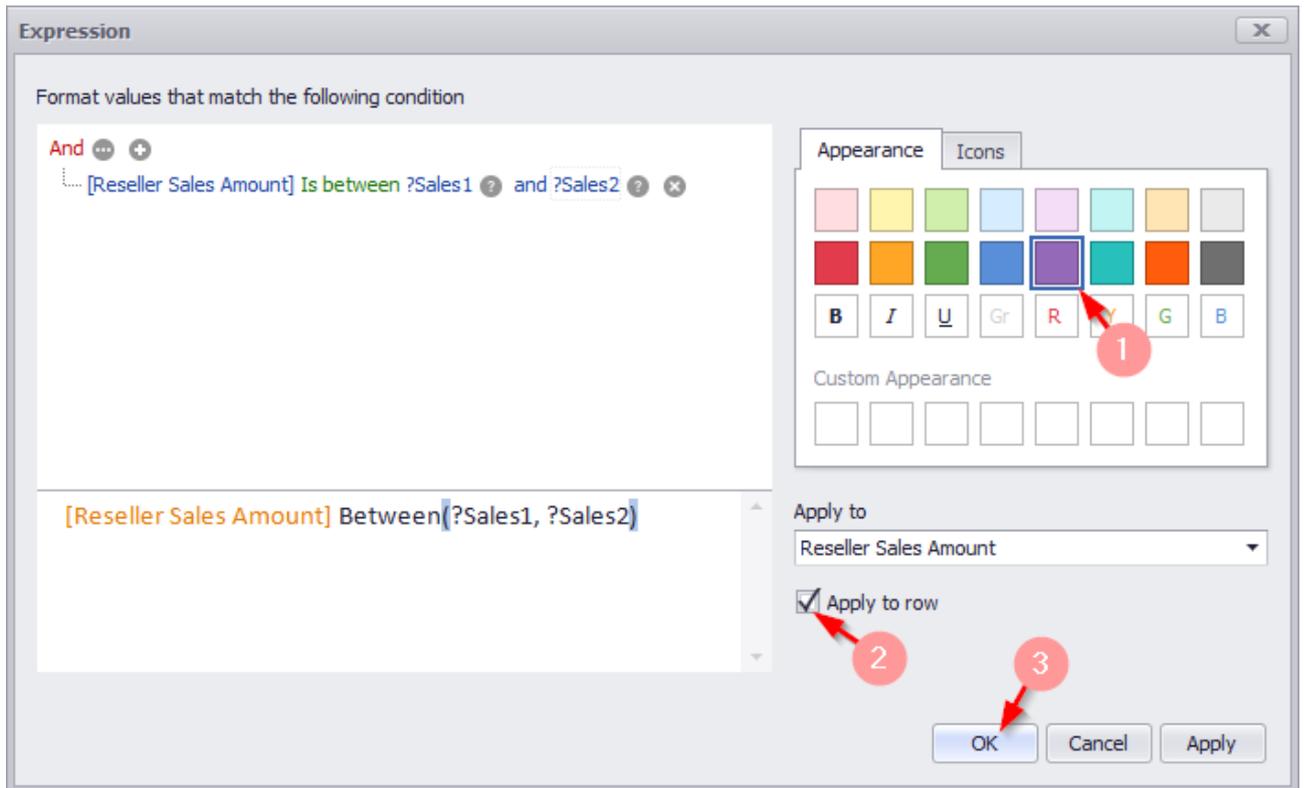
Similarly, double-click the second value field:



The first parameter will be displayed again, click it and select the “Sales2” parameter in the opened list:



It is only left to choose the color of highlight on the panel:



Now all the values of the “Reseller Sales Amount” measure that are higher than \$ 500 000 but lower than \$ 1 million for all product subcategories are highlighted in the table:

| Grid 1 | |
|-------------------|-----------------------|
| Subcategory | Reseller Sales Amount |
| Bib-Shorts | \$167K |
| Bike Racks | \$198K |
| Bottles and Cages | \$7.48K |
| Bottom Brackets | \$51.8K |
| Brakes | \$66K |
| Caps | \$31.5K |
| Chains | \$9.38K |
| Cleaners | \$11.2K |
| Cranksets | \$204K |
| Derailleurs | \$70.2K |
| Forks | \$77.9K |
| Gloves | \$208K |
| Handlebars | \$171K |
| Headsets | \$60.9K |
| Helmets | \$259K |
| Hydration Packs | \$65.5K |
| Jerseys | \$579K |
| Locks | \$16.2K |
| Mountain Bikes | \$26.5M |
| Mountain Frames | \$4.71M |
| Pedals | \$147K |
| Pumps | \$13.5K |
| Road Bikes | \$29.4M |
| Road Frames | \$3.85M |
| Saddles | \$55.8K |
| Shorts | \$342K |
| Socks | \$24.6K |
| Tights | \$202K |
| Tires and Tubes | \$925 |
| Touring Bikes | \$10.5M |
| Touring Frames | \$1.64M |
| Vests | \$224K |
| Wheels | \$679K |

Now let us change the range of values: Sales1 = \$ 200 000, and Sales2 = \$ 2 million.

For this, click the “Parameters” icon in the toolbar:

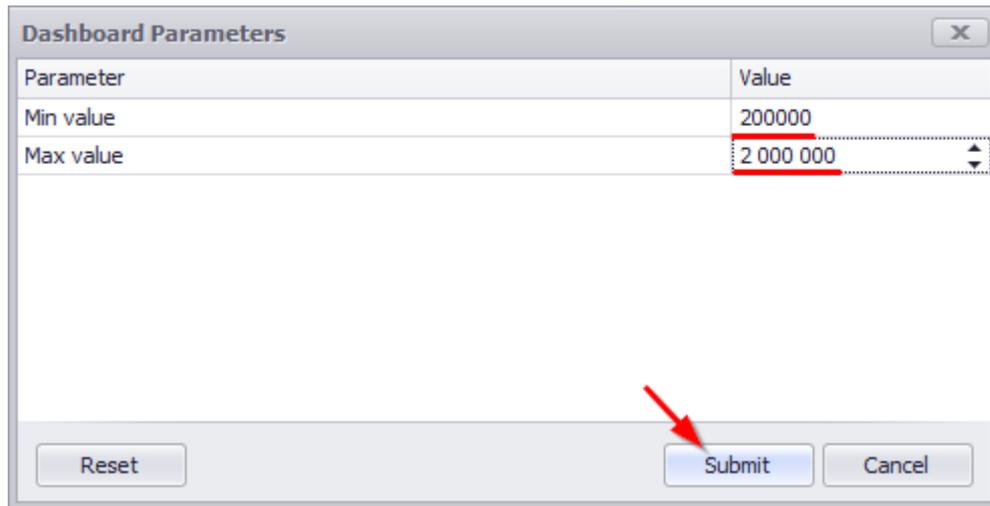


The screenshot shows a window titled "Parameters" containing a table labeled "Grid 1". The table has two columns: "Subcategory" and "Reseller Sales Amount". The data rows are:

| Subcategory | Reseller Sales Amount |
|-------------------|-----------------------|
| Bib-Shorts | \$167K |
| Bike Racks | \$198K |
| Bottles and Cages | \$7.48K |

A red arrow points to a gear icon in the top right corner of the window.

In the opened window enter the corresponding values for each parameter:



The screenshot shows a dialog box titled "Dashboard Parameters" with a close button (X) in the top right corner. It contains a table with two columns: "Parameter" and "Value".

| Parameter | Value |
|-----------|-----------|
| Min value | 200000 |
| Max value | 2 000 000 |

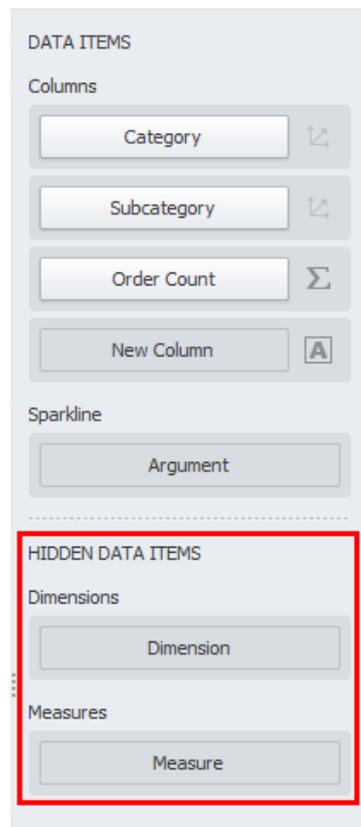
At the bottom of the dialog box, there are three buttons: "Reset", "Submit", and "Cancel". A red arrow points to the "Submit" button.

As a result, we get a table where all the values of “Reseller Sales Amount” measure for more than \$ 200 000 but less than \$ 1 million are highlighted:

| Grid 1 | |
|-------------------|-----------------------|
| Subcategory | Reseller Sales Amount |
| Bib-Shorts | \$167K |
| Bike Racks | \$198K |
| Bottles and Cages | \$7.48K |
| Bottom Brackets | \$51.8K |
| Brakes | \$66K |
| Caps | \$31.5K |
| Chains | \$9.38K |
| Cleaners | \$11.2K |
| Cranksets | \$204K |
| Derailleurs | \$70.2K |
| Forks | \$77.9K |
| Gloves | \$208K |
| Handlebars | \$171K |
| Headsets | \$60.9K |
| Helmets | \$259K |
| Hydration Packs | \$65.5K |
| Jerseys | \$579K |
| Locks | \$16.2K |
| Mountain Bikes | \$26.5M |
| Mountain Frames | \$4.71M |
| Pedals | \$147K |
| Pumps | \$13.5K |
| Road Bikes | \$29.4M |
| Road Frames | \$3.85M |
| Saddles | \$55.8K |
| Shorts | \$342K |
| Socks | \$24.6K |
| Tights | \$202K |
| Tires and Tubes | \$925 |
| Touring Bikes | \$10.5M |
| Touring Frames | \$1.64M |
| Vests | \$224K |
| Wheels | \$679K |

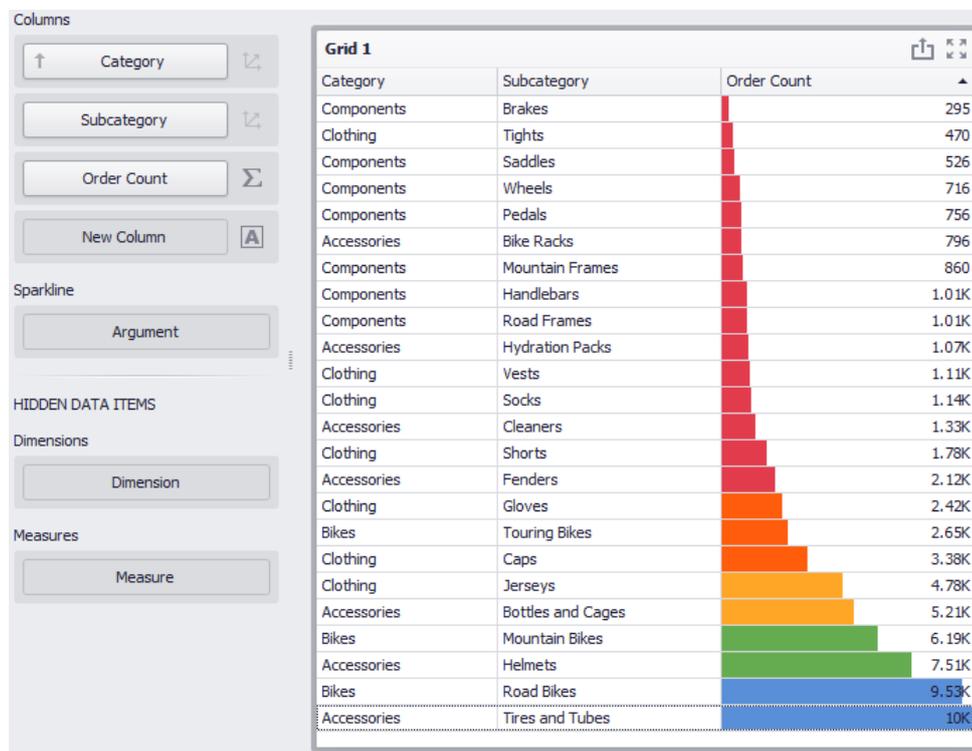
8.23 Hidden data items

Each dashboard element in the “Data Items” field contains an additional field – “Hidden Data Items”:

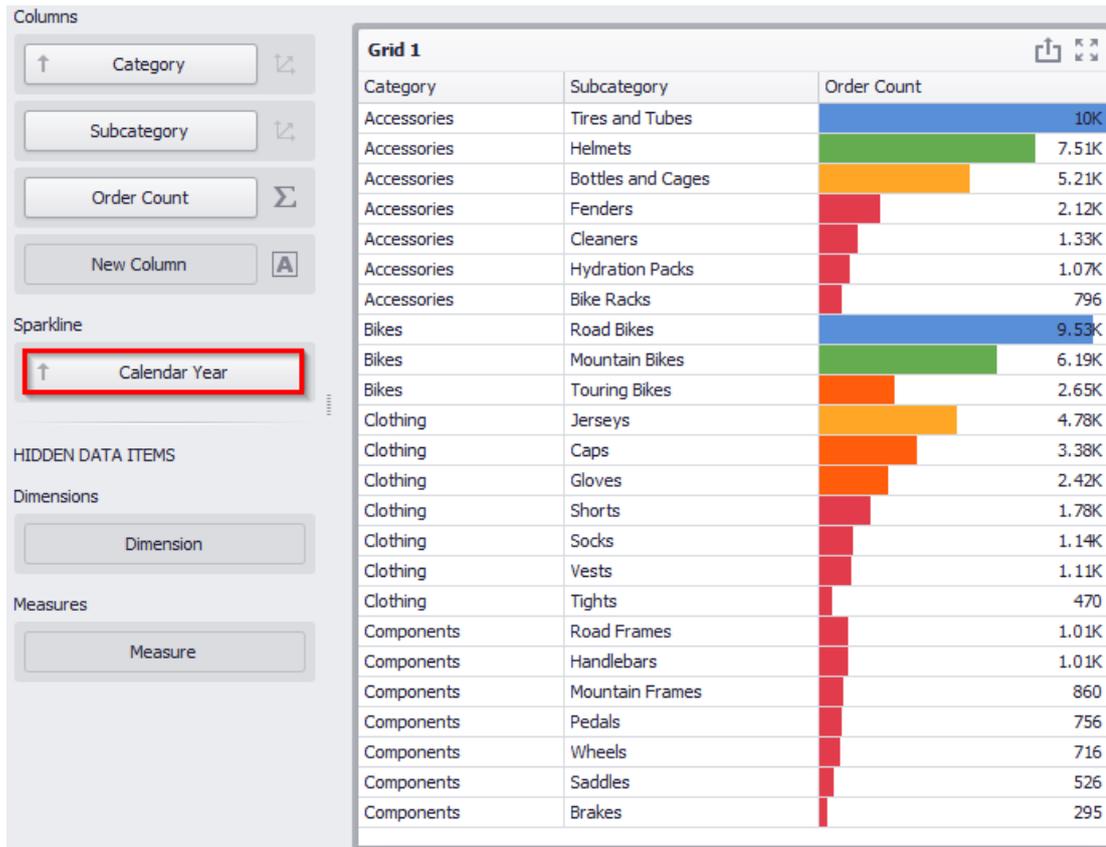


Elements of this field can be used as a context.

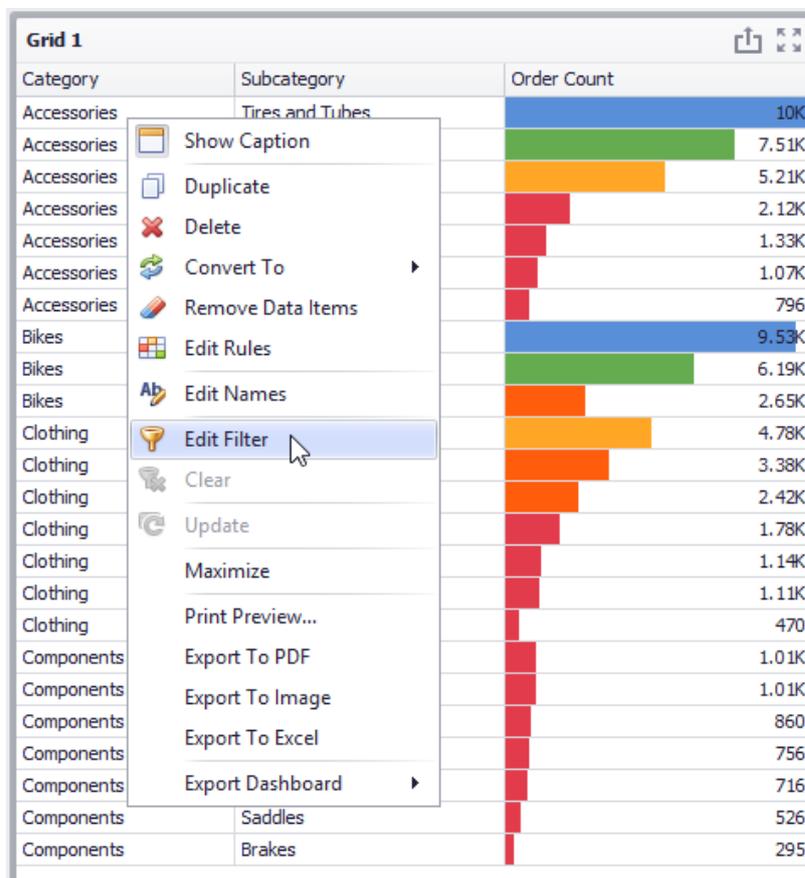
Let us consider it on an example of one of the previous tables:



We display the 7 best values of the “Order Count” measure for each product category only for year 2018. For this, drop the “Calendar Year” hierarchy into the “Hidden Data Items” field:



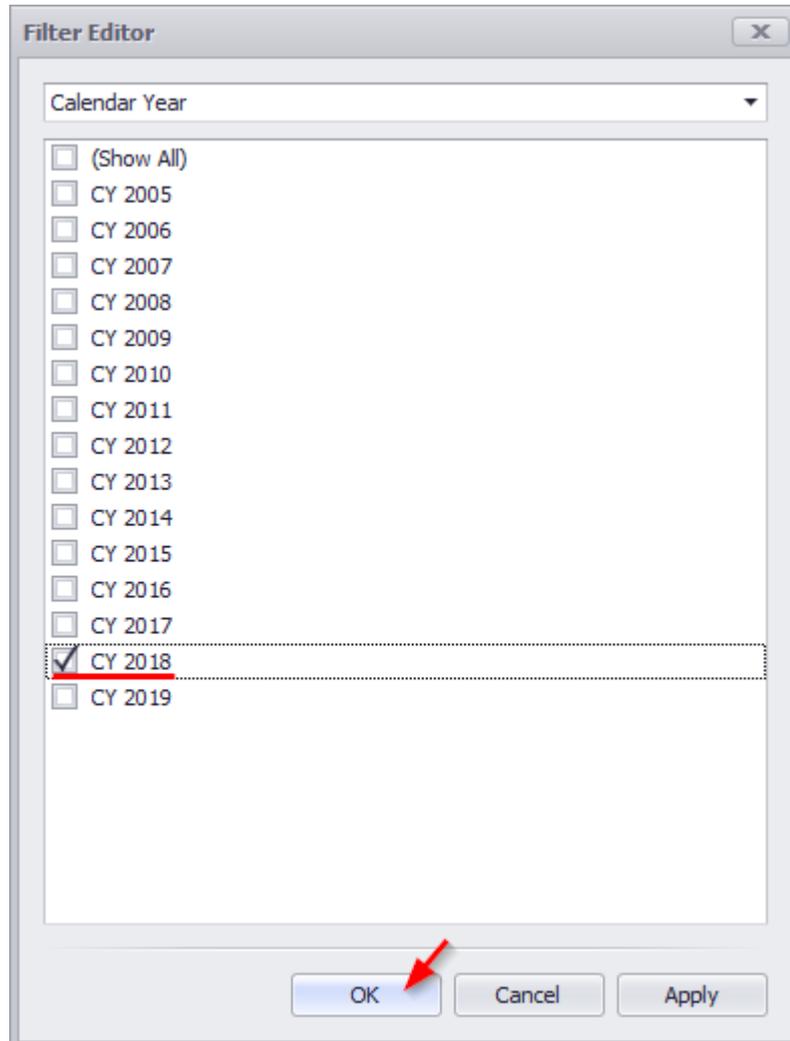
Now, from the context menu (by a right-click), select “Edit Filter” icon:



In the drop-down list, select the “Calendar Year” hierarchy:



And then specify the year:

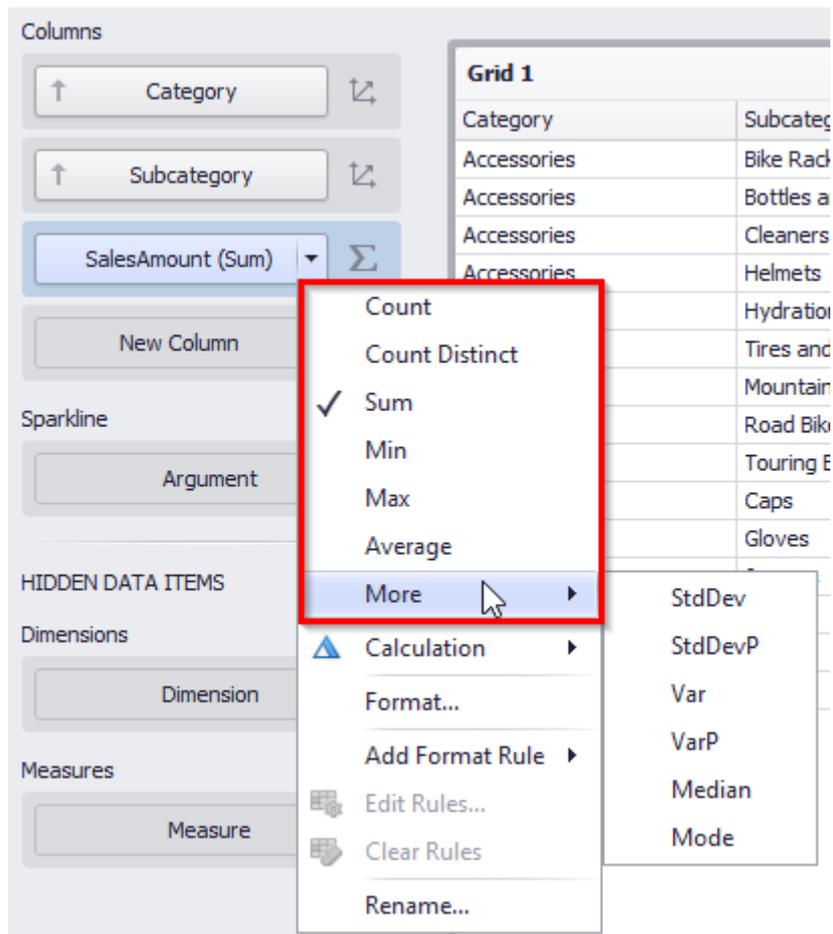


Now the table displays the 7 best values of the “Order Count” measure for each product category for year 2018 only:

| Grid 1 🔗 🔄 | | |
|---|-------------------|-------------|
| Category | Subcategory | Order Count |
| Accessories | Tires and Tubes | 10K |
| Accessories | Helmets | 7.51K |
| Accessories | Bottles and Cages | 5.21K |
| Accessories | Fenders | 2.12K |
| Accessories | Cleaners | 1.33K |
| Accessories | Hydration Packs | 1.07K |
| Accessories | Bike Racks | 796 |
| Bikes | Road Bikes | 9.53K |
| Bikes | Mountain Bikes | 6.19K |
| Bikes | Touring Bikes | 2.65K |
| Clothing | Jerseys | 4.78K |
| Clothing | Caps | 3.38K |
| Clothing | Gloves | 2.42K |
| Clothing | Shorts | 1.78K |
| Clothing | Socks | 1.14K |
| Clothing | Vests | 1.11K |
| Clothing | Tights | 470 |
| Components | Road Frames | 1.01K |
| Components | Handlebars | 1.01K |
| Components | Mountain Frames | 860 |
| Components | Pedals | 756 |
| Components | Wheels | 716 |
| Components | Saddles | 526 |
| Components | Brakes | 295 |

8.24 Aggregations

In the interactive dashboard, the following aggregate functions are available:



- Count – returns the number of values
- Count Distinct – returns the number of distinct values
- Sum – returns the sum of all values
- Min – returns the minimum value across all records
- Max – returns the maximum value across all records
- Average – Returns the average of all the values in the expression.
- StdDev – Mean Square Deviation
- StdDev P – dispersion
- Var – Non-shifted dispersion
- VarP – returns the variance of a population where the population is the entire data to be summarized.
- Median
- Mode

8.25 Calculated Members

The «Interactive Dashboard» allows to add the following calculated elements based on the ready-made measures:

The screenshot shows a data visualization interface with a pivot table and a context menu. The pivot table is titled "Pivot 1" and has columns for "Accessories", "Bikes", and "Clothing". The values are displayed in a grid. A context menu is open over the pivot table, showing various calculation options. The "Calculation" option is selected, and a sub-menu is displayed, listing various calculated member options. The sub-menu is highlighted with a red border.

| | Accessories | Bikes | Clothing |
|--|-------------|---------|----------|
| | | \$544M | |
| | | \$2.11B | |
| | \$260M | \$4.6B | \$21 |
| | \$170M | \$2.98B | \$13 |
| | \$430M | \$10.2B | \$35 |

Context Menu Options:

- Count
- Count Distinct
- Sum
- Min
- Max
- Average
- More
- Calculation
 - (None)
 - Percent of Column Grand Total
 - Percent of Row Grand Total
 - Percent of Grand Total
 - Running Summary along Columns
 - Running Summary along Rows
 - Difference along Columns
 - Difference along Rows
 - Percentage Difference along Columns
 - Percentage Difference along Rows
 - Rank along Columns
 - Rank along Rows
 - Rank along Cells
 - Custom...
- Format...
- Show Values
- Show Totals
- Show Grand Totals
- Add Format Rule
- Edit Rules...
- Clear Rules
- Rename...

- Percent of Column Grand Total
- Percent of Row Grand Total
- Percent of Grand Total
- Running Summary along Columns
- Running Summary along Rows
- Difference along Columns
- Difference along Rows
- Percentage Difference along Columns
- Percentage Difference along Rows
- Rank along Columns

- Rank along Rows
- Rank along Cells

You can create your own computational element:

The screenshot displays the Excel PivotTable interface. The 'Values' task pane shows 'SalesAmount (Sum)' selected. The 'Columns' task pane shows 'Category' selected. The 'Rows' task pane shows 'Year' and 'Quarter' selected. The PivotTable data is as follows:

| | Accessories | Bikes | Clothing |
|--|-------------|---------|----------|
| | | \$544M | |
| | | \$2.11B | |
| | \$260M | \$4.6B | \$2.11B |
| | \$170M | \$2.98B | \$1.11B |
| | \$430M | \$10.2B | \$3.54B |

The context menu options are:

- Count
- Count Distinct
- Sum (checked)
- Min
- Max
- Average
- More
- Calculation (selected)
 - (None) (checked)
 - Percent of Column Grand Total
 - Percent of Row Grand Total
 - Percent of Grand Total
 - Running Summary along Columns
 - Running Summary along Rows
 - Difference along Columns
 - Difference along Rows
 - Percentage Difference along Columns
 - Percentage Difference along Rows
 - Rank along Columns
 - Rank along Rows
 - Rank along Cells
 - Custom... (highlighted by mouse cursor)
- Format...
- Show Values (checked)
- Show Totals (checked)
- Show Grand Totals (checked)
- Add Format Rule
- Edit Rules...
- Clear Rules
- Rename...

As a result, “Customize Calculation” form appears:

Customize Calculation

Calculation Type:

- None
- Running Total
- Moving Calculation
- Difference
- Percent Of Total
- Rank
- Expression

The current measure has no calculation applied

OK Cancel Apply

8.25.1 Running Total

The “Running Total” calculation can be used to compute a cumulative total for the specified measure:

Customize Calculation

Calculation Type:

- None
- Running Total
- Moving Calculation
- Difference
- Percent Of Total
- Rank
- Expression

Running along: Columns

Summary function: Sum

RunningSum(Sum([SalesAmount]))

Edit in Expression Editor

OK Cancel Apply

- Running along – the direction that is used to calculate running totals;
- Summary function – specifies a summary function used to apply calculation.

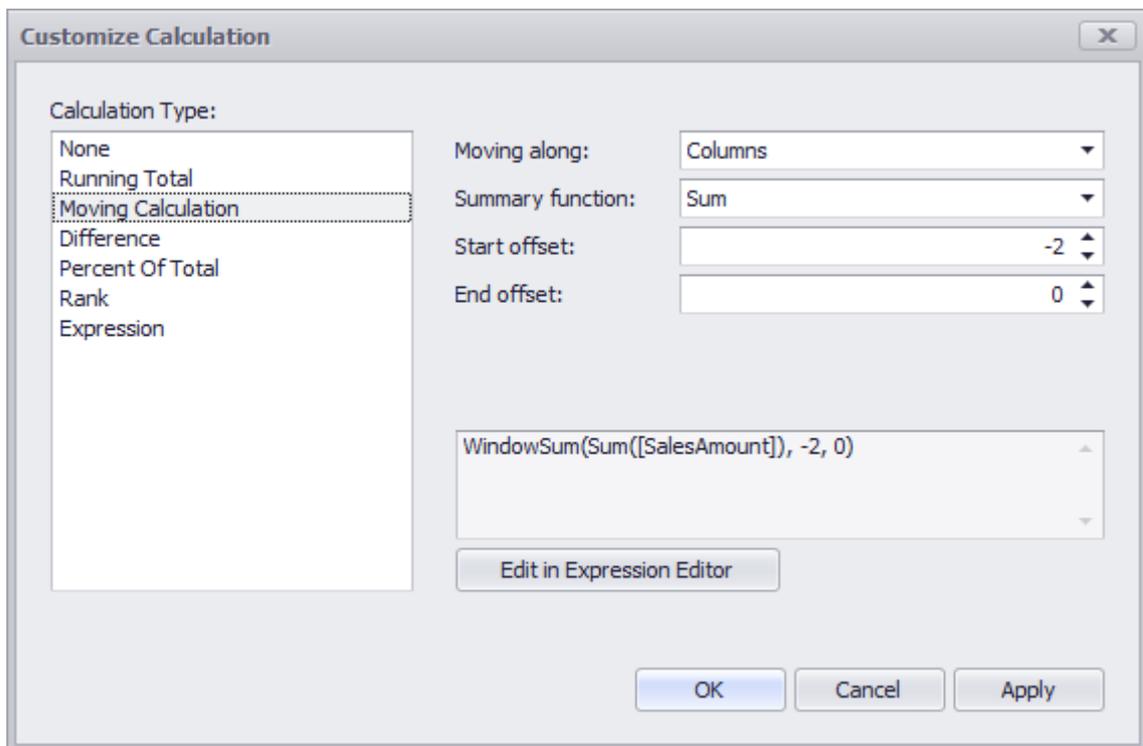
| Sales | Running Total | |
|-------|---------------|----------------|
| 10 | 10 | |
| 20 | 30 | 20+10 |
| 25 | 55 | 25+20+10 |
| 25 | 80 | 25+25+20+10 |
| 20 | 100 | 20+25+25+20+10 |

In the table below, we can see sub-total sales for all months:

| Year | Month | Sales | Running Total of Sales |
|------|-----------|---------|------------------------|
| 2015 | August | \$84.1M | \$84.1M |
| | December | \$123M | \$207M |
| | July | \$25.3M | \$233M |
| | November | \$177M | \$410M |
| | October | \$70.8M | \$481M |
| | September | \$63.3M | \$544M |

8.25.2 Moving Calculation

The “Moving calculation” uses neighboring values to calculate a total:



- Moving along – specifies a window and direction used to apply a calculation;
- Summary function – specifies a summary function used to apply calculation.

- Start/End offset – initial and final offsets from the current value in process:

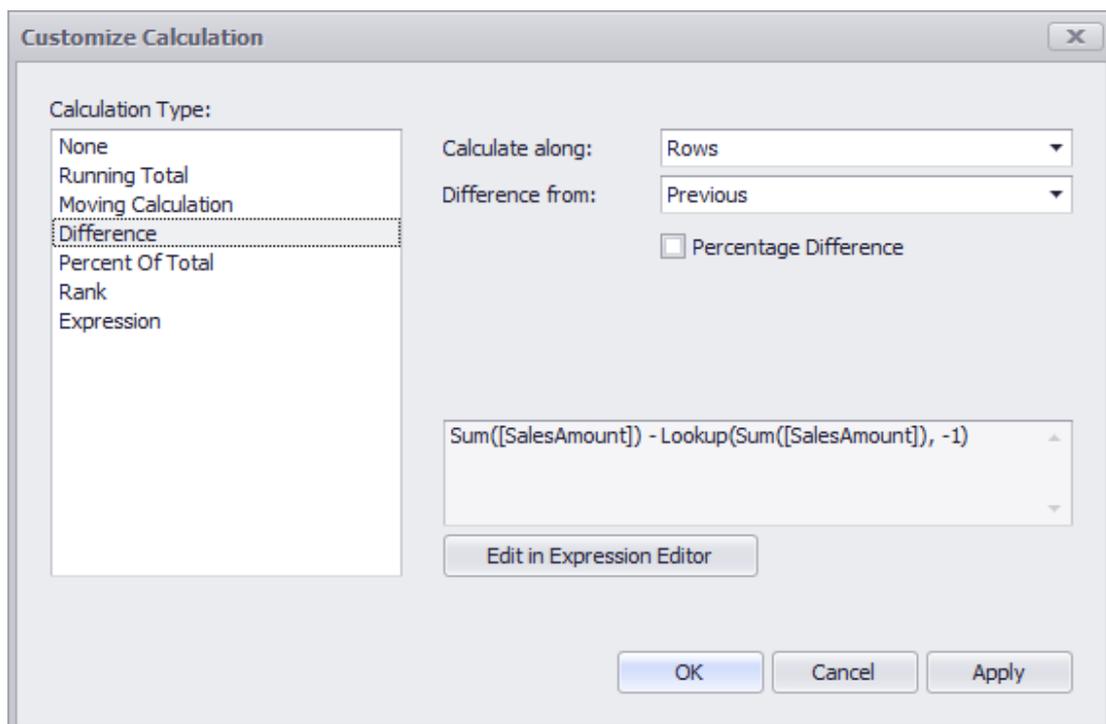
| Sales | Moving | StartOffset=-1; EndOffset=1 |
|-------|--------|-----------------------------|
| 10 | 30 | 0+10+20 |
| 20 | 55 | 10+20+25 |
| 25 | 70 | 20+25+25 |
| 25 | 70 | 25+25+20 |
| 20 | 45 | 25+20+0 |

In the table below, we can see the moving average for all months with an initial offset of -2 and a final offset of 0:

| Year | Month | SalesAmount (Sum) | Moving of SalesAmount (Sum) |
|------|-----------|-------------------|-----------------------------|
| 2015 | August | \$84.1M | \$84.1M |
| | December | \$123M | \$207M |
| | July | \$25.3M | \$233M |
| | November | \$177M | \$326M |
| | October | \$70.8M | \$273M |
| | Septem... | \$63.3M | \$311M |

8.25.3 Difference

The “Difference” calculation can be used to compute the difference between measure values:



- Calculate along – specifies a window and direction used to calculate differences;
- Difference from – select value
 - ✓ Previous
 - ✓ Next
 - ✓ First

✓ Last

- Percentage Difference – show the percentage difference.

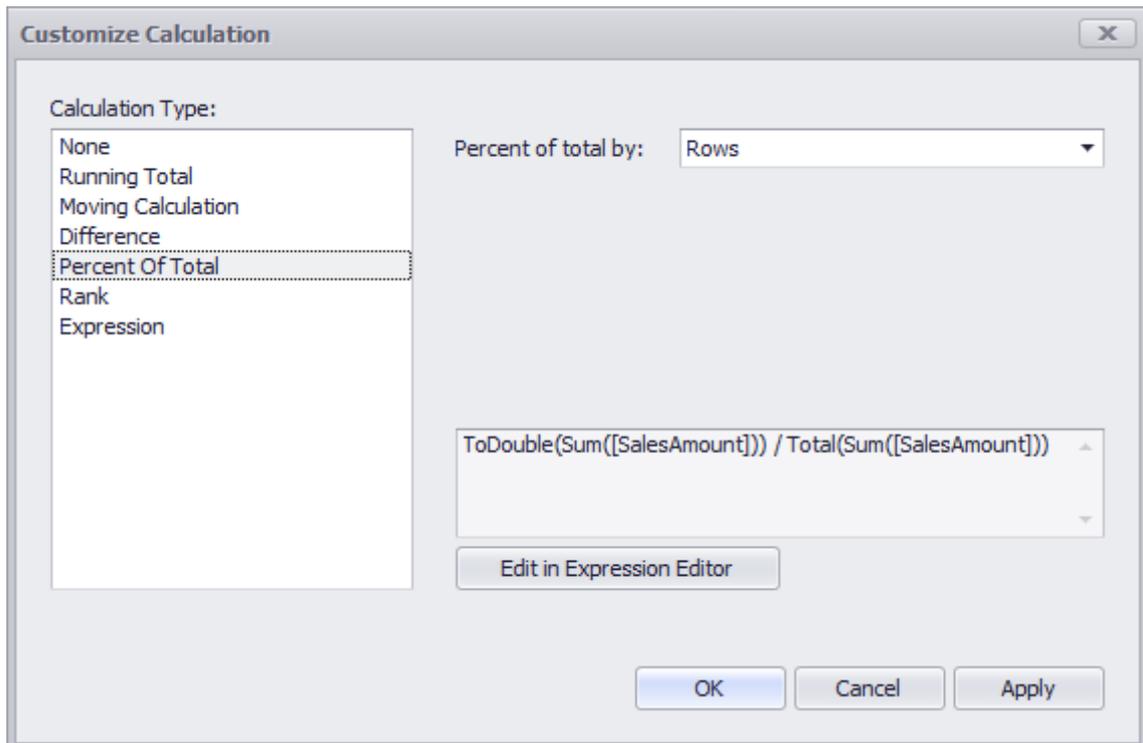
| Sales | | Difference | |
|-------|----|------------|-------|
| | 10 | | |
| | 20 | 10 | 20-10 |
| | 25 | 5 | 25-20 |
| | 25 | 0 | 25-25 |
| | 20 | -5 | 20-25 |

In the table below, we can see an absolute value of the difference between the months (Difference from - Previous):

| Year | Month | SalesAmount (Sum) | Difference of SalesAmount (Sum) |
|------|-----------|-------------------|---------------------------------|
| 2015 | August | \$84.1M | |
| | December | \$123M | \$39.2M |
| | July | \$25.3M | (\$98M) |
| | Novem... | \$177M | \$152M |
| | October | \$70.8M | (\$106M) |
| | Septem... | \$63.3M | (\$7.49M) |

8.25.4 Percent Of Total

A calculation is used to compute a percentage of the total for the specified measure:



- Percent of total – specifies a window and direction used to apply a Percent of Total calculation.

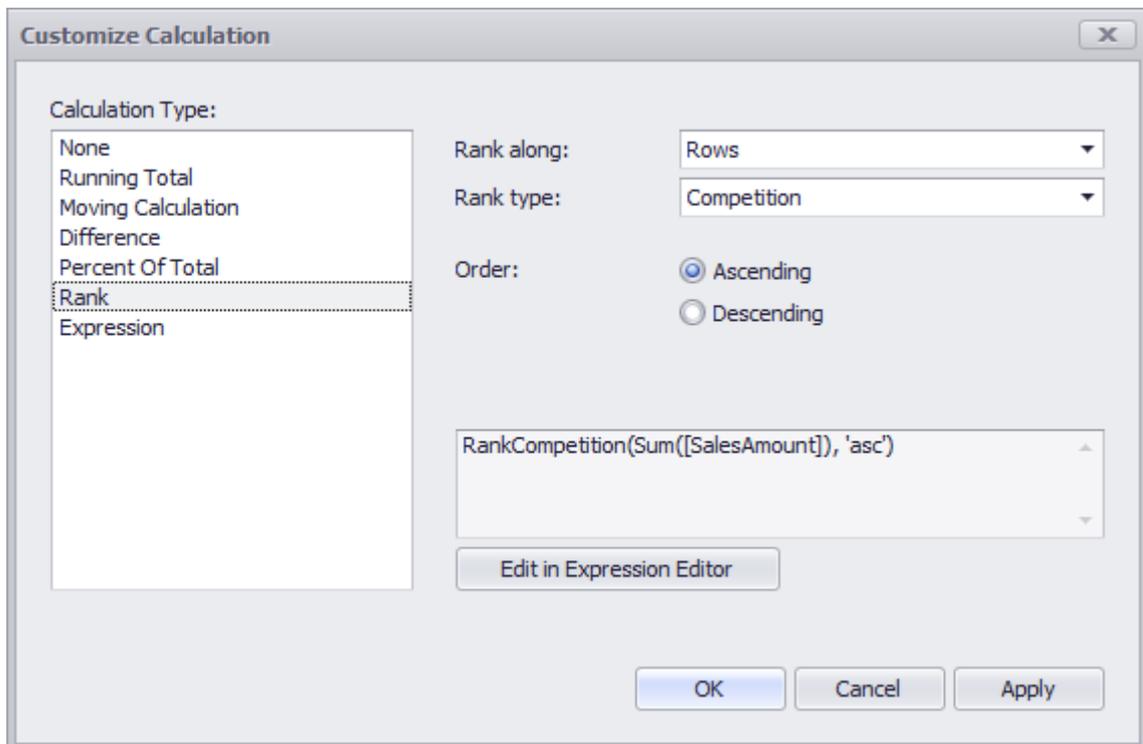
| Sales | Percent | |
|-------|---------|-------------|
| 10 | 10.00 % | 10/100*100% |
| 20 | 20.00 % | 20/100*100% |
| 25 | 25.00 % | 25/100*100% |
| 25 | 25.00 % | 25/100*100% |
| 20 | 20.00 % | 20/100*100% |

Below we can see the table that displays the contribution of individual monthly sales to total sales:

| Year | Month | SalesAmount (Sum) | Percent of SalesAmount (Sum) T... |
|------|----------|-------------------|-----------------------------------|
| 2015 | August | \$84.1M | 0.76 % |
| | Decem... | \$123M | 1.12 % |
| | July | \$25.3M | 0.23 % |
| | Novem... | \$177M | 1.61 % |
| | October | \$70.8M | 0.64 % |

8.25.5 Rank

Use the “Rank” calculation to compute rankings for the specified measure:



- Rank along – specifies a window and direction used to rank values;
- Rank type
 - ✓ Unique
 - ✓ Competition
 - ✓ Dense
 - ✓ Modified
 - ✓ Percentile

- Order – ranking order
 - ✓ Ascending
 - ✓ Descending

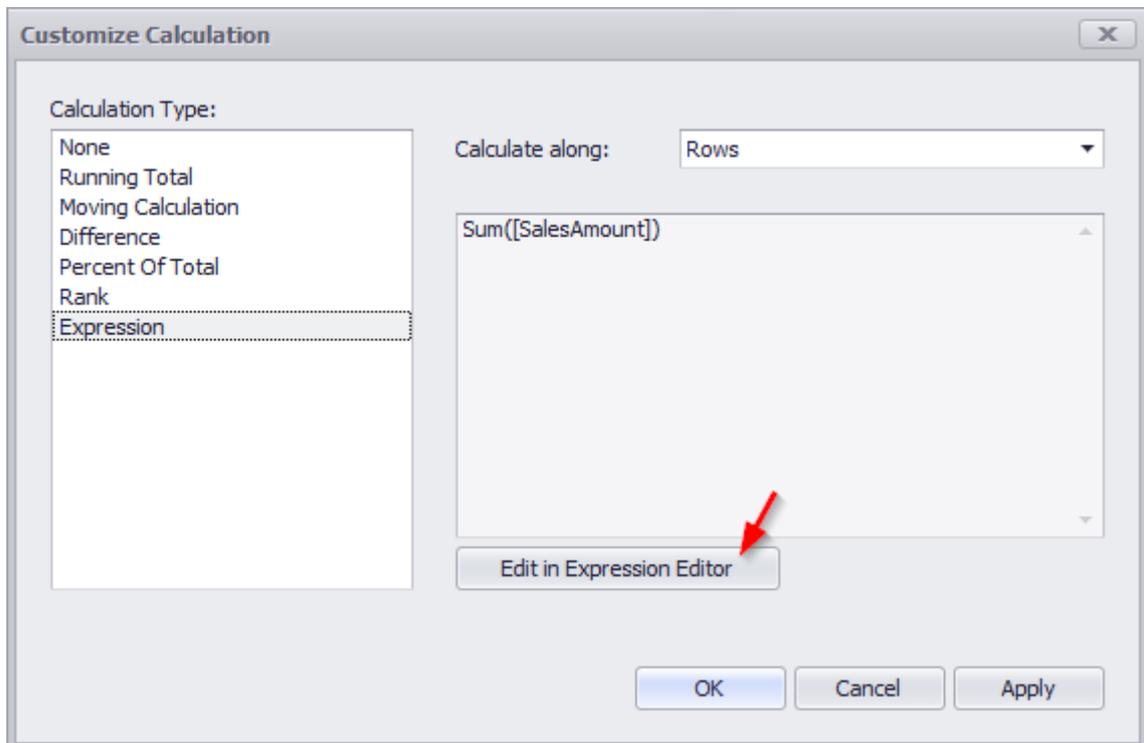
| Sales | Rank | Competition rank |
|-------|------|------------------|
| 10 | 1 | 10 20 20 25 25 |
| 20 | 2 | 1 2 2 4 4 |
| 25 | 4 | |
| 25 | 4 | |
| 20 | 2 | |

Below we can see the table that displays the ranking of sales for particular years in descending order:

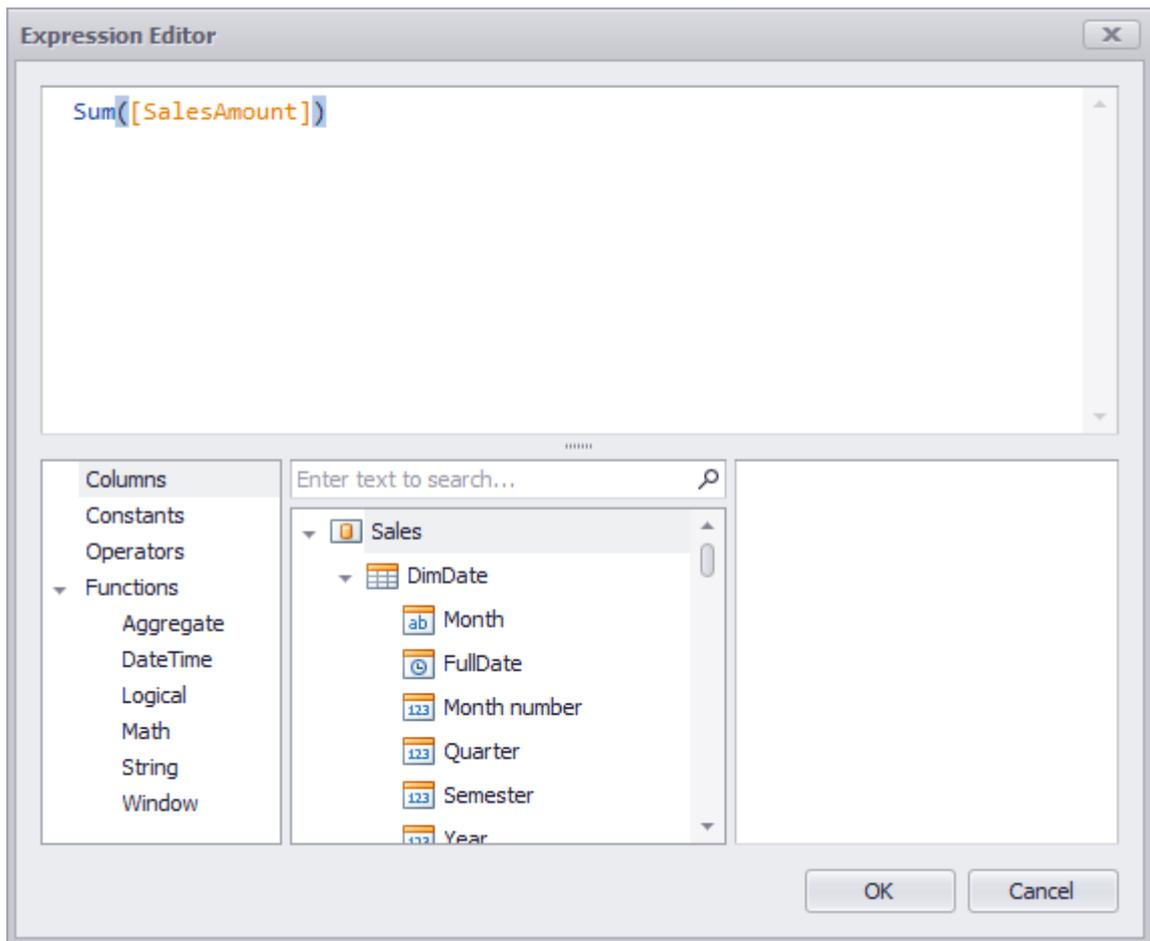
| Year | SalesAmount (Sum) | Rank of SalesAmount (Sum) |
|------|-------------------|---------------------------|
| 2015 | \$544M | 1 |
| 2016 | \$2.11B | 2 |
| 2017 | \$5.08B | 4 |
| 2018 | \$3.29B | 3 |

8.25.6 Expression

With such choice, you can create your own expression using the necessary functions. To do this, click the “Edit in Expression Editor” button:

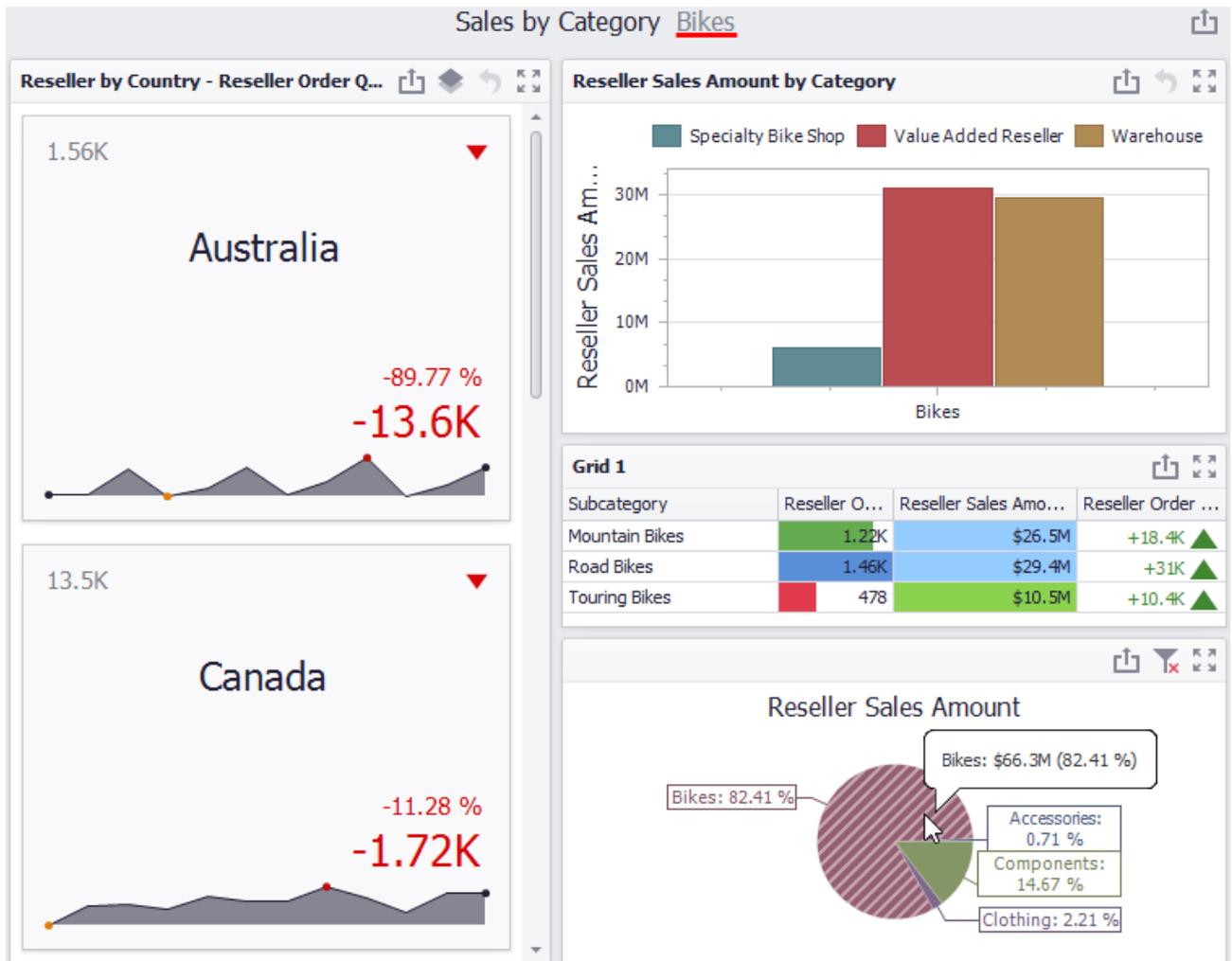


In the window that appears, write the appropriate expression:



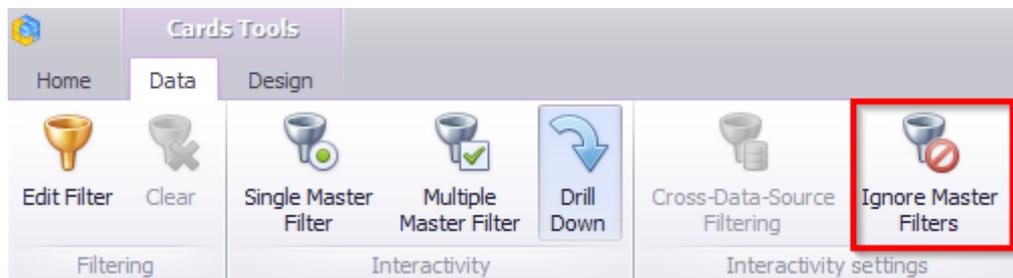
8.26 Interactive Dashboard Filtering

The «Interactive Dashboard» allows you to use any data aware dashboard item as a filter for other dashboard items:



To reset filtering, use the “Clear Master Filter” button (the  icon).

You can prevent specific dashboard items from being affected by “Master Filters”. To do this, use the “Ignore Master Filters” button:



8.27 Dashboard Title

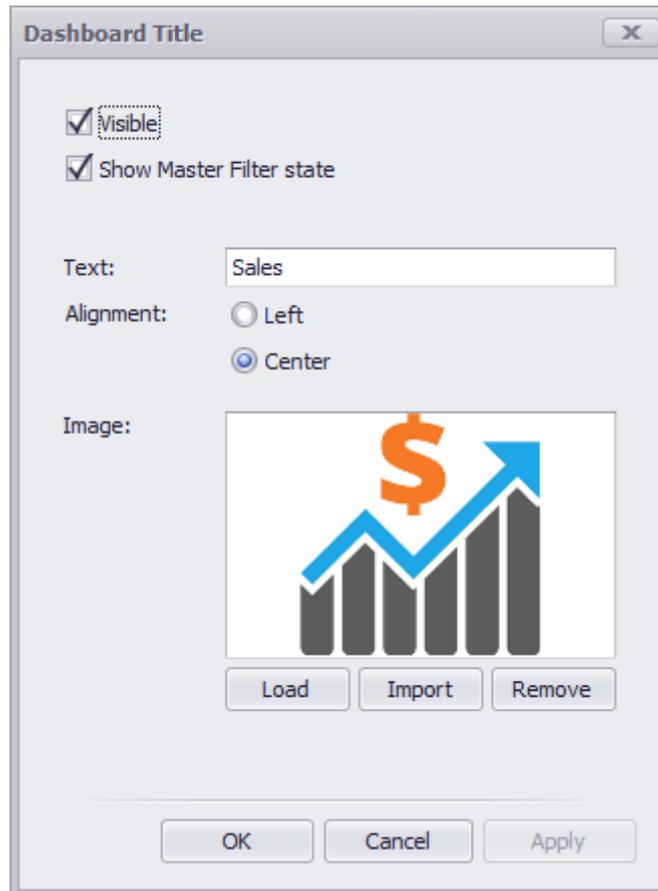
The “Dashboard Title” is located at the top of the dashboard surface. It can contain text or image content:



You can change title settings by clicking the “Title” button:



This dialog allows you to specify the following options:



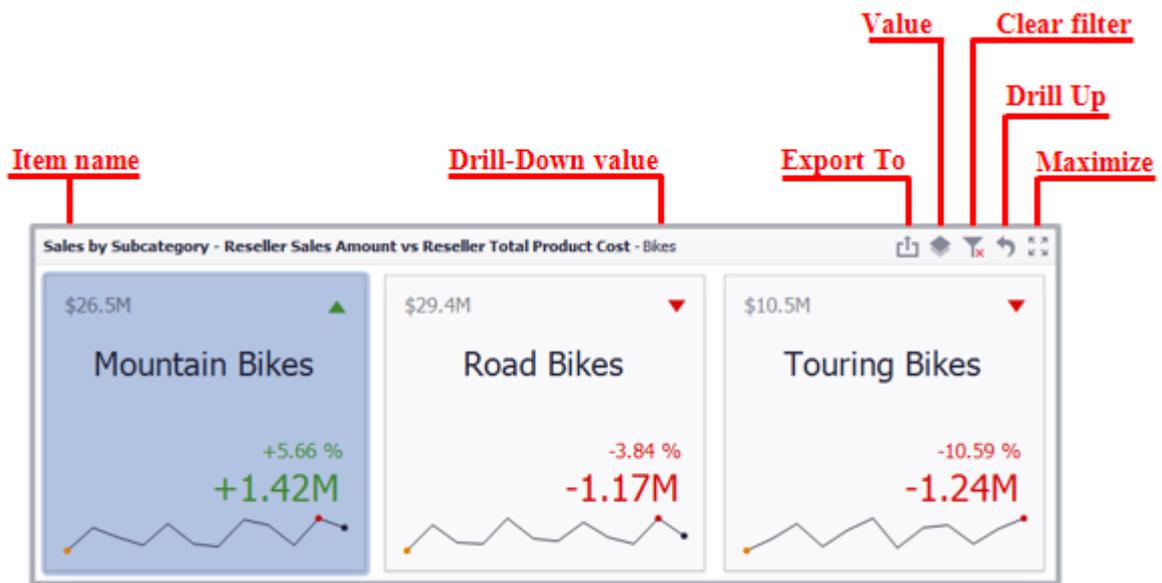
- ✓ Visible – specifies whether or not the dashboard title is visible;
- ✓ Show Master Filter state – specifies whether or not to show the state of master filter items in the dashboard title;
- ✓ Text – title text;
- ✓ Alignment – specifies the alignment of the dashboard title;
- ✓ Images – allows you to specify the image displayed within the dashboard title;

When you hover over the filter icon (🔍), all master filters applied to the dashboard are displayed in the invoked popup:

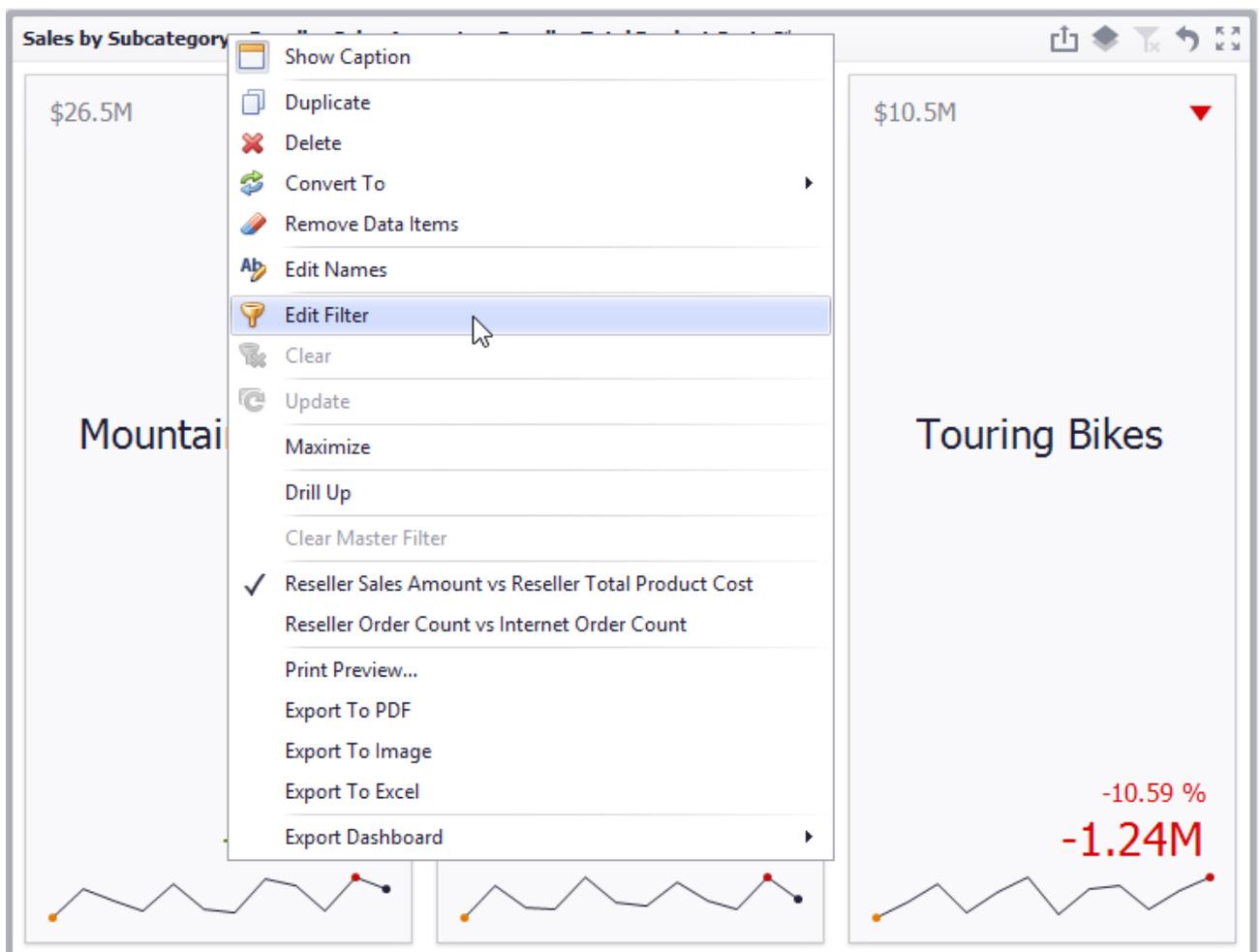


8.28 Dashboard Item Caption

The title of the dashboard element is located at the top of the dashboard and contains the following information:

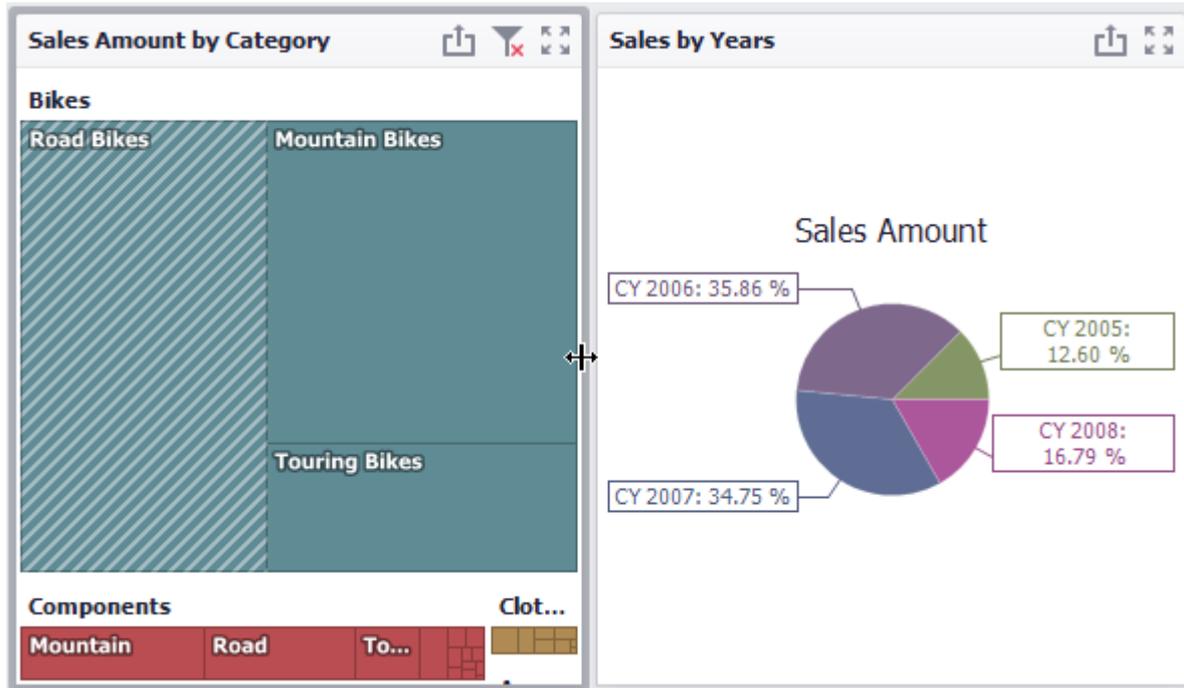


To edit the title of the dashboard element, select the **Edit Names** item in the context menu of the element:

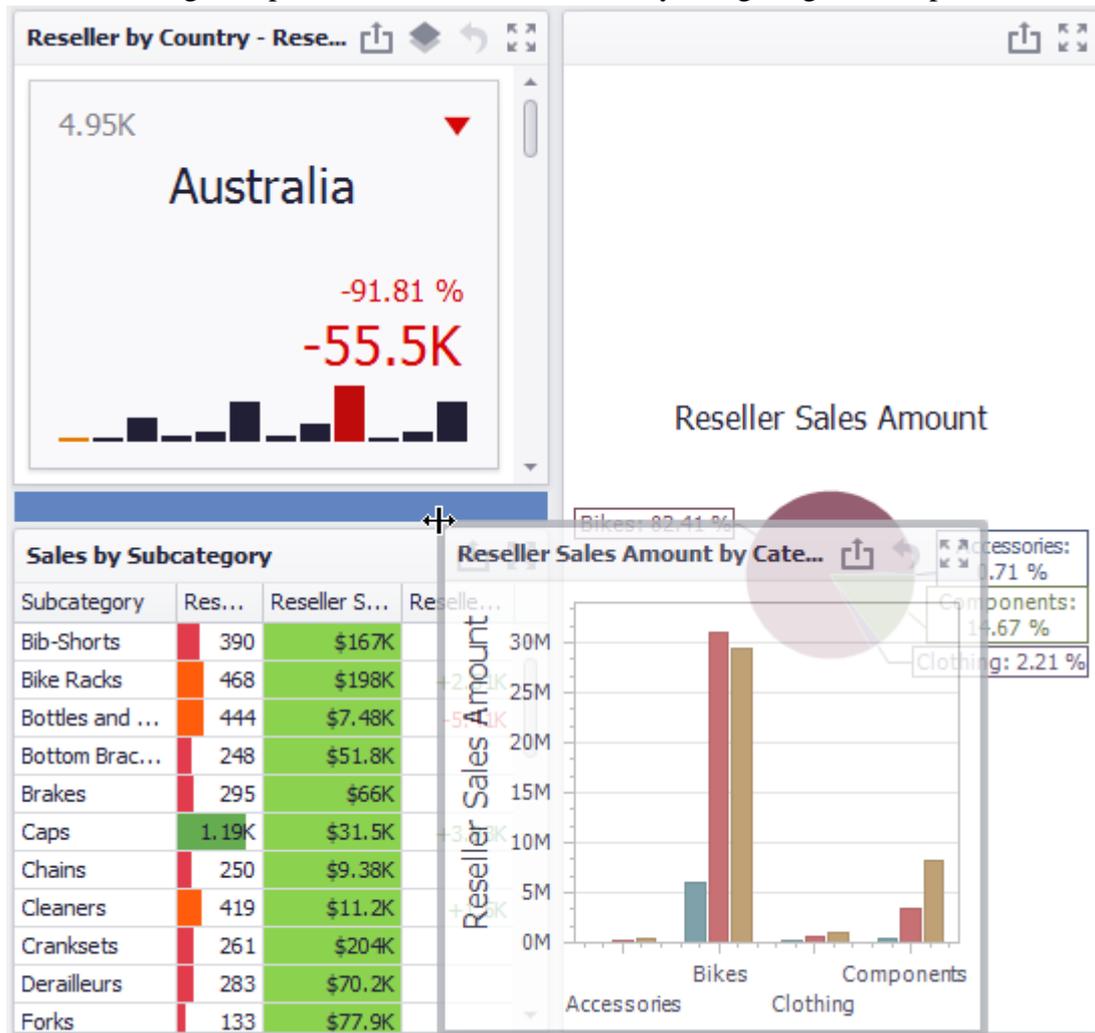


8.29 Dashboard Items Layout

The “Dashboard Designer” provides the capability to arrange and resize dashboard items and groups in various ways, using simple drag-and-drop operations:

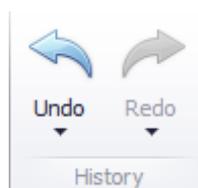


You can change the position of a dashboard item by using drag-and-drop:

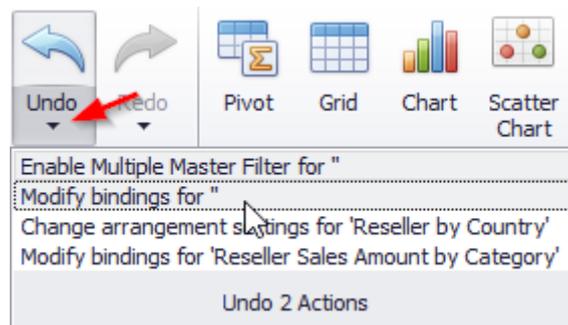


8.30 Undo and Redo Operations

In the «Interactive Dashboard» it is possible to undo and redo the actions performed on the dashboard. To undo/redo the last action, use the following buttons:

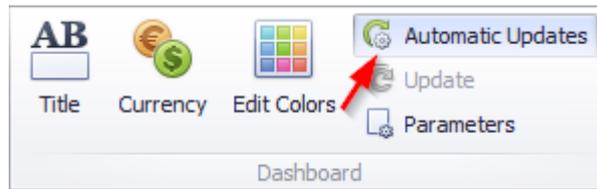


To undo/redo several actions at once, click the arrow next to “Undo” / “Redo” button and select the actions in the list that you want to undo/redo

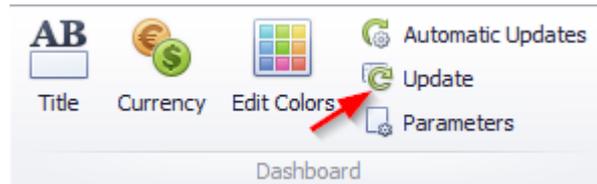


8.31 Automatic and Manual Updates

The option “Automatic Updates” is available on the toolbar of the «Interactive Dashboard»:

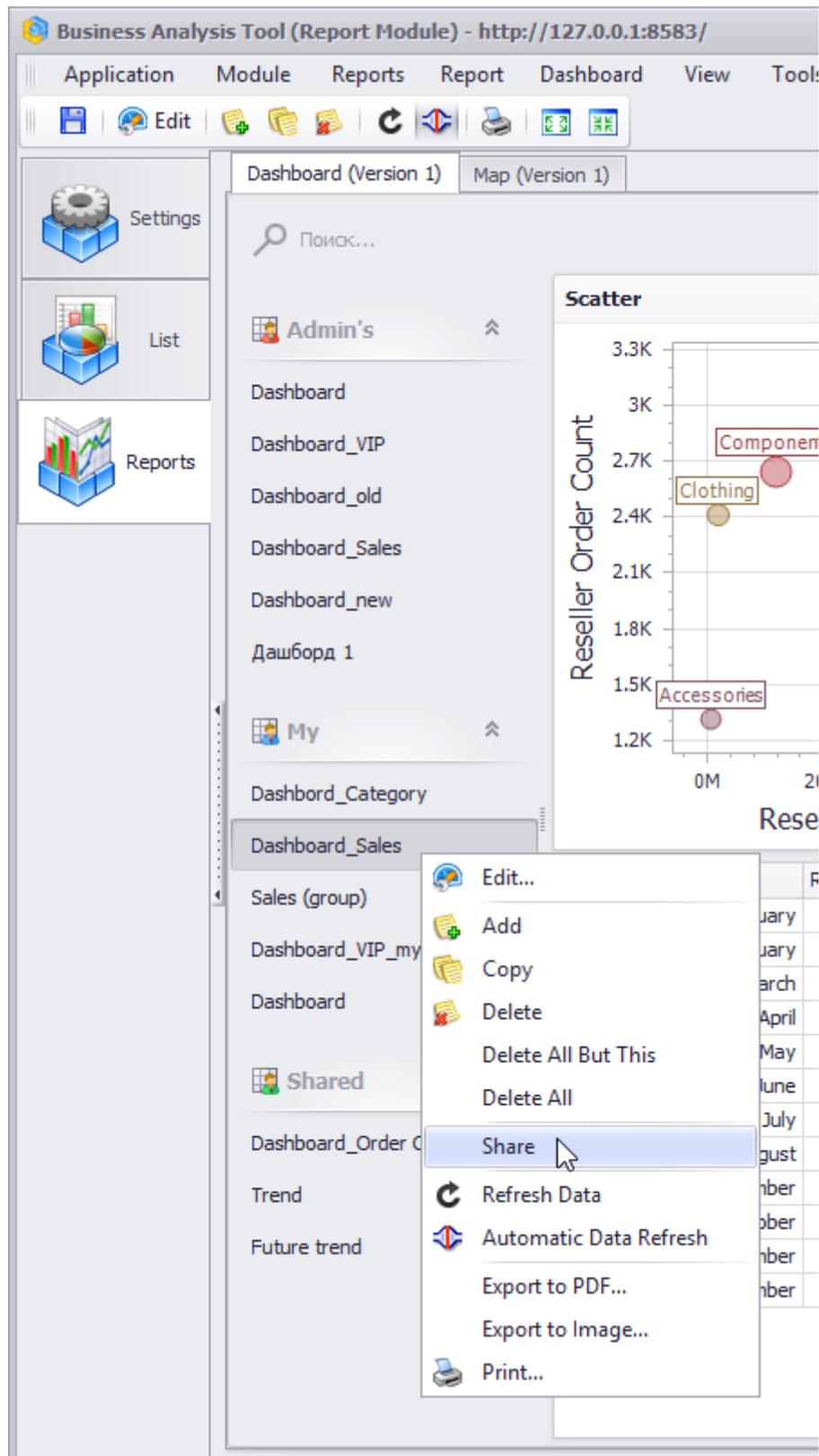


If this option is enabled, then all changes to the page structure will immediately display updated data. If this option is disabled, you can first modify the page as you like, and then click the button on the Button toolbar to send a request to the server for data:



8.32 Interactive shared dashboards

After you created a number of dashboards, you can share them. To do this, right-click on the name of the dashboard and select an appropriate menu item:



After that, other users and administrator will see your page in the list of shared dashboards.