

Filtering in SAP Lumira Discovery

Version 1.0

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Purpose

This document covers the concept of “Filtering in SAP Lumira Discovery”. This is high level document assumes resource has basic knowledge of SAP Lumira Discovery concepts.

What are Filters?

Filters are the type of “restrictions” imposed to limit the data displayed and show only the data which is desirable.

What is the use of Filters?

Filters help us to trim down the report until it displays the data that we want to show in that report by selecting values or range of values from a dimension or measure to include or exclude. These are quite useful in clarifying large number of data and only shows the restricted amount of data which is required by the viewer.

In SAP Lumira Discovery, we can filter data in a complete dataset or in a single visualization. Filters applied to entire dataset affect every component that uses the data. On the other hand, filters applied to a visualization affect only that component and not the complete dataset. We can also filter data in individual visualizations of a page or of the whole story. A **page filter** applies to all the visualizations existing at page level. A **visualization filter** applies to a specific visualization on a page and a **story filter** applies to all pages present in a story.

Types of Filters

SAP Lumira Discovery offers us different types of filters as listed below, to filter the data and these can be imposed to different layers.

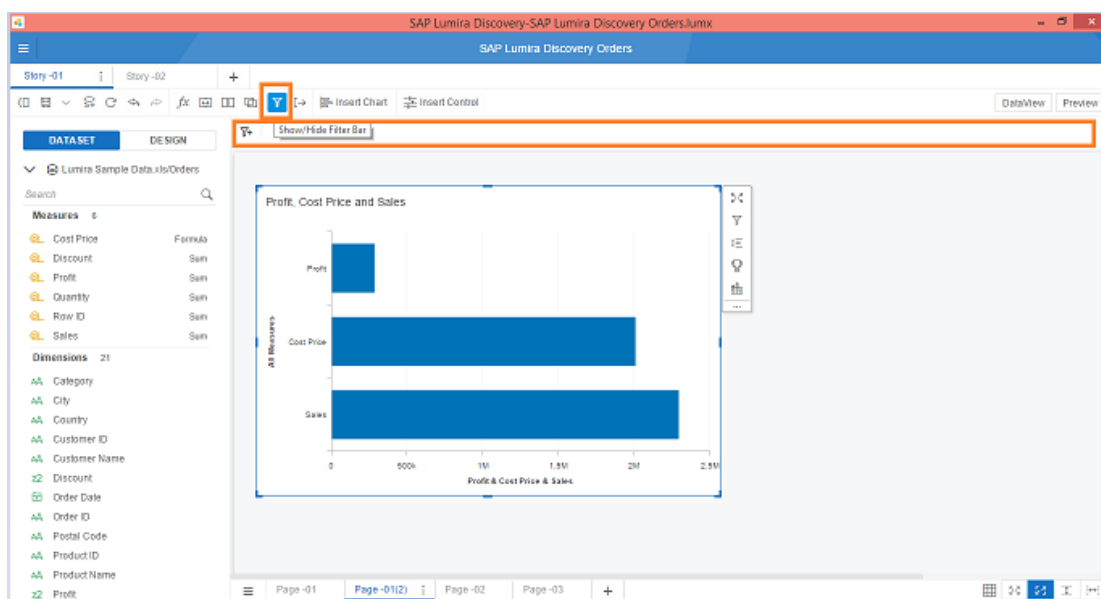
- **Dimension Filter**
- **Measure Filter**
- **Hierarchy Filter**
- **Controls**

Let's begin with their detailed description:

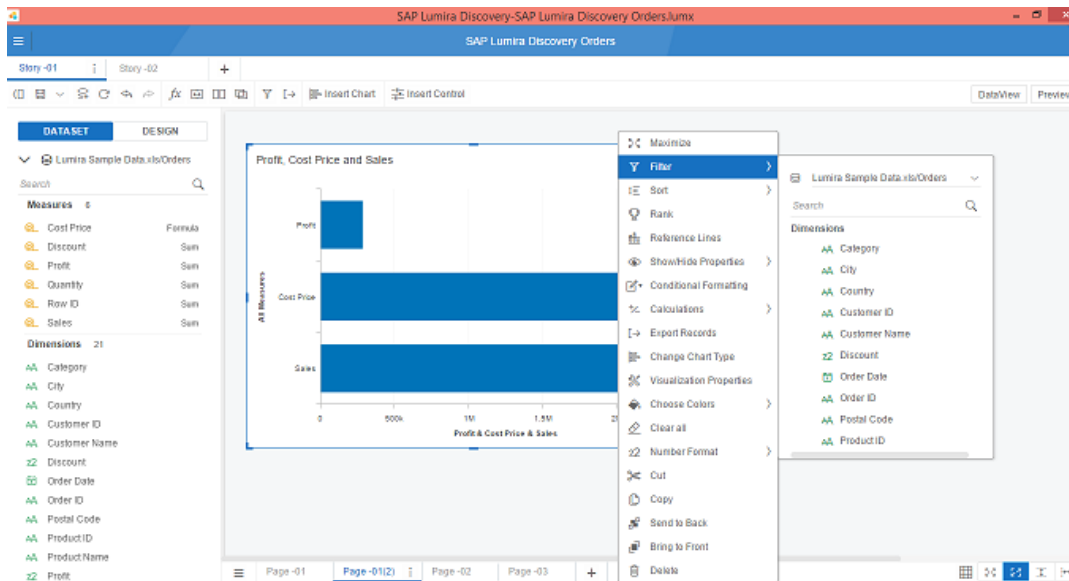
1. Dimension Filter

It is a type of **dataset filters** which allows us to easily filter a data list while working with large quantity of data. After retrieving data from an external data source, we can add a filter to a dataset to restrict the data in a report. When we add a filter to a dataset, all report components or data regions use only data that matches the filter conditions. We can use the filter dialog to define a filter on the dataset and all the visualizations based on it. We need to add a calculated measure or dimension to create a more complex filter as filter dialog does not support SAP Lumira Discovery formula language or regular expressions (regex).

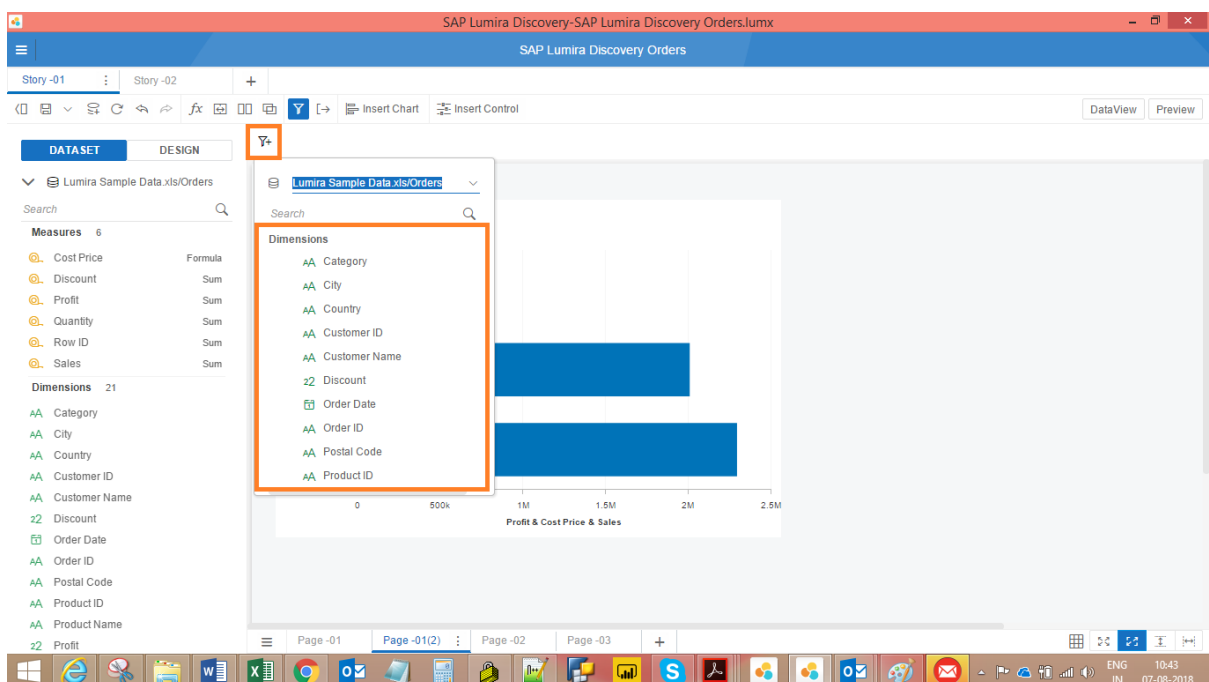
- Select visualization and click on **"Filter"** icon and a filter bar will be opened as highlighted below.



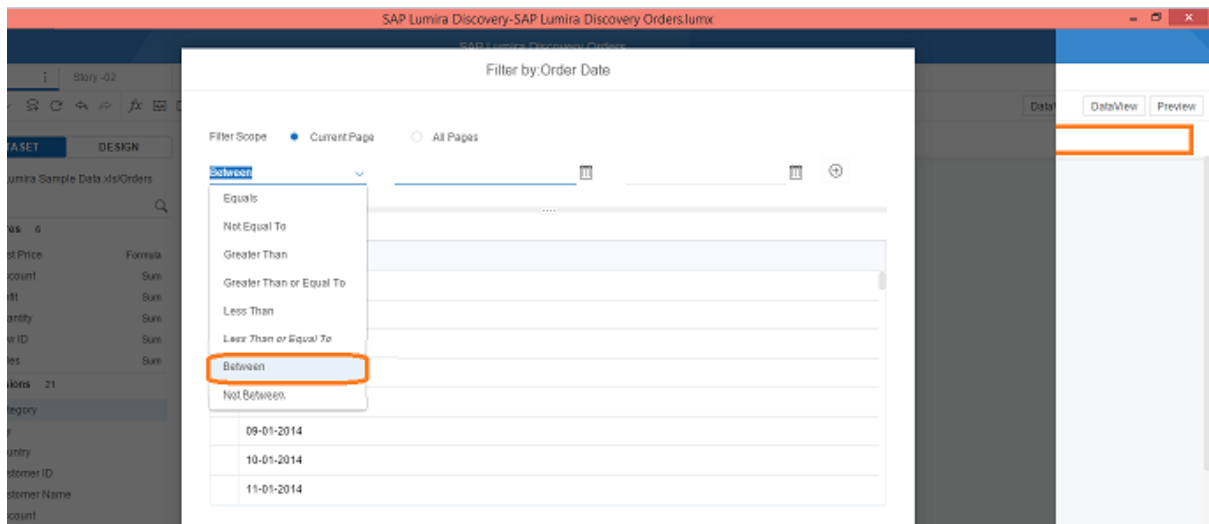
We can also choose filter by doing right click on the visualization as shown below:



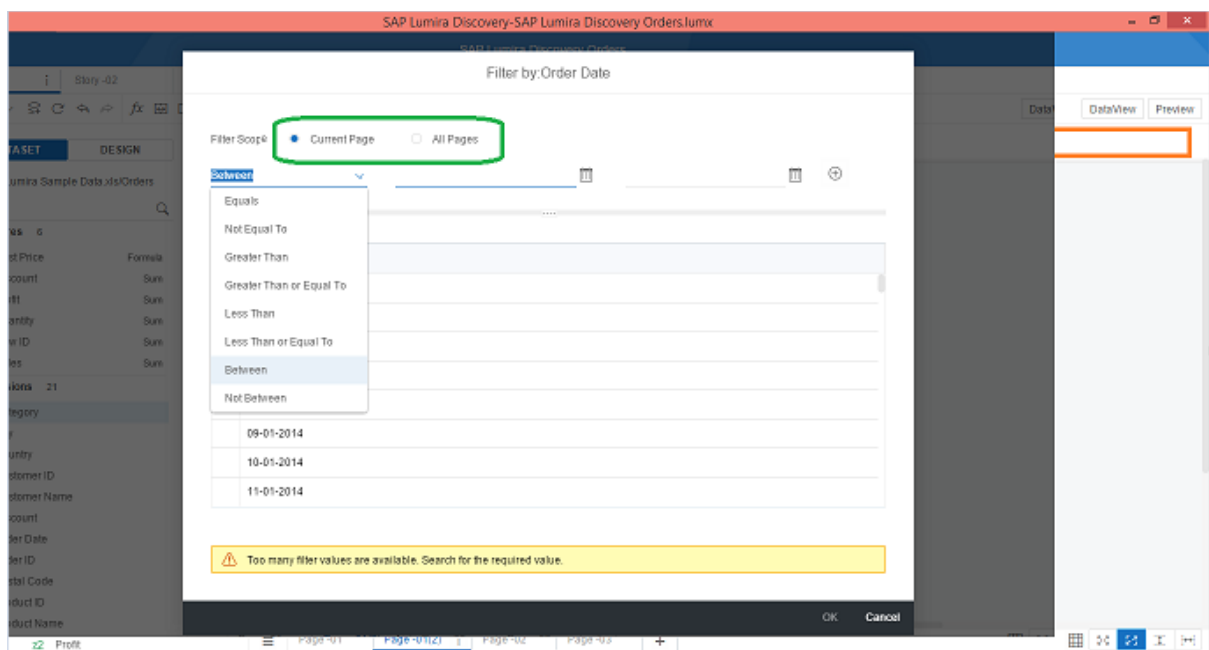
- Click on the **Filter** icon besides the filter bar to choose the desired dimension from the dropdown, which we want to filter. Here we will select “**Order Date**” dimension.



- After clicking on the desired dimension, filter dialog window will be popped up. Select operator from the list provided, based on which we will filter the data for the selected dimension. Here we have selected, “**Between**” operator.



- We can apply filter to the current page or across all the pages by clicking on one of the radio buttons from the “**Filter Scope**” as highlighted below.



Here we have chosen “**Current Page**” option as we want to apply the filter only to the visualization i.e. chart, on which we are working. If we want to apply filter to all visualizations in a story, then we will choose “**All Pages**” option.

- Select suitable filter range according to which data will be filtered in the visualization and click on OK.

Filter by: Order Date

Filter Scope: ☒ Current Page ☐ All Pages

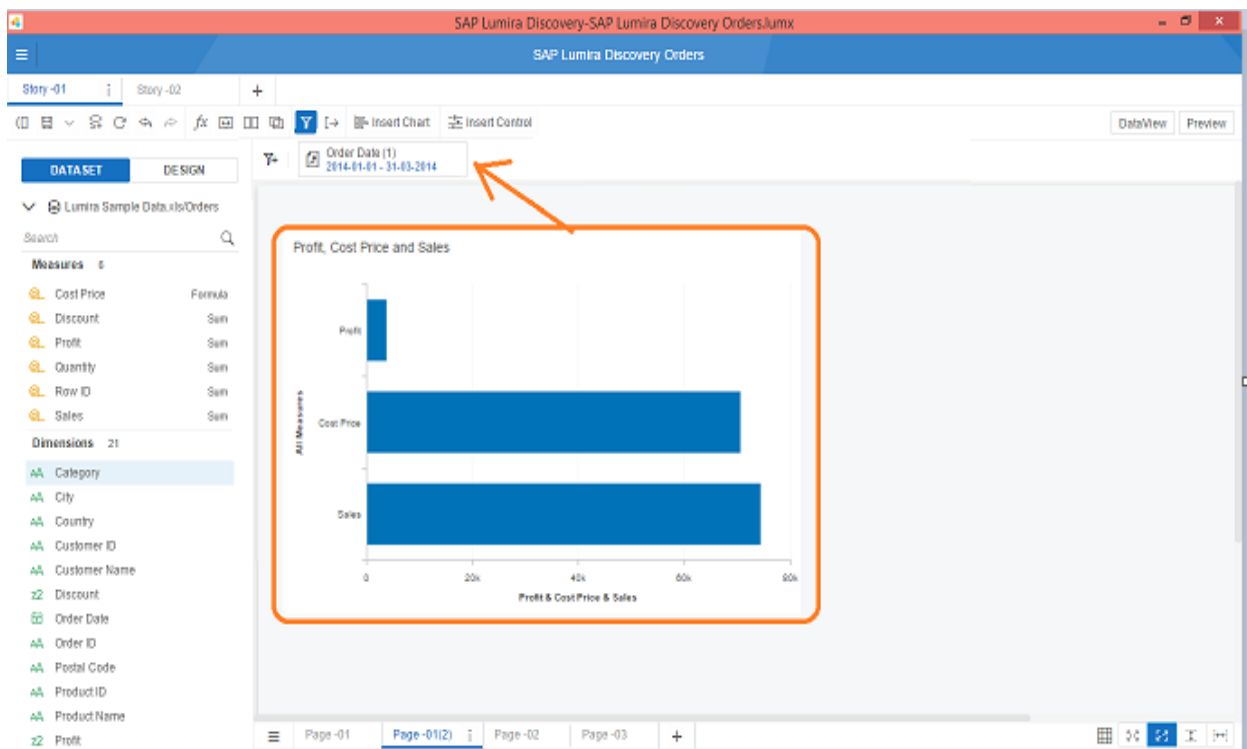
Between

Key
03-01-2014
04-01-2014
05-01-2014
06-01-2014
07-01-2014
09-01-2014
10-01-2014
11-01-2014

⚠ Too many filter values are available. Search for the required value.

OK Cancel

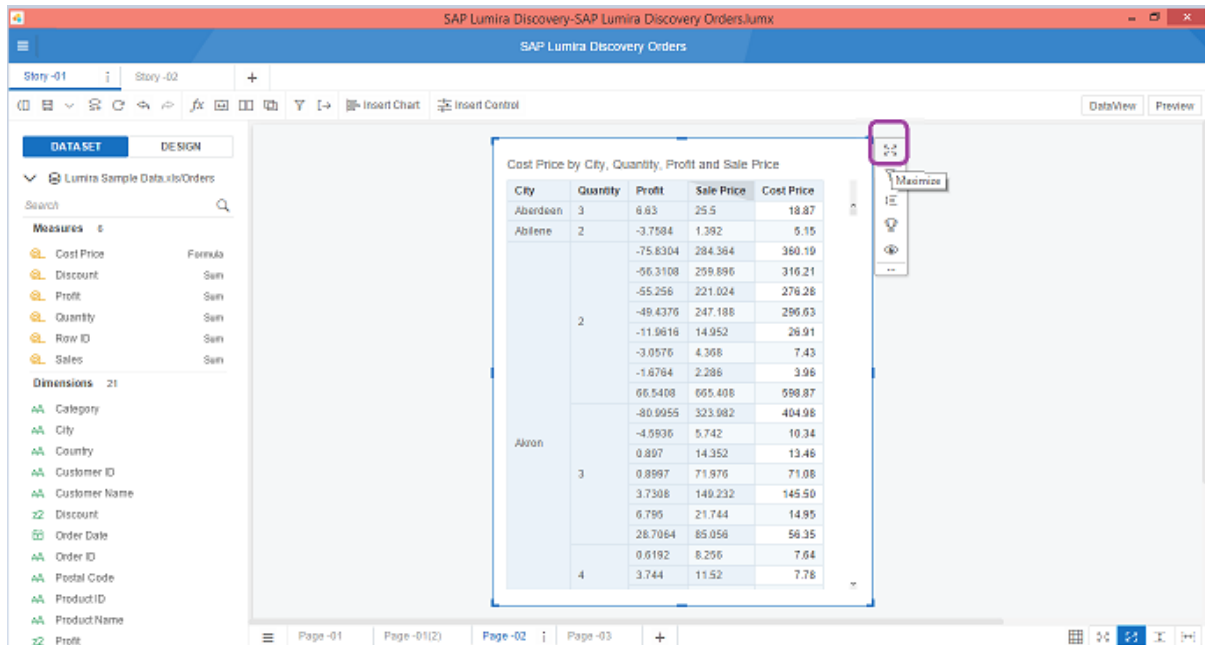
- In the following screenshot, we can see a token in the filter bar representing the filter is added and chart is displaying the values as per the given filter range.



2. Measure Filter

Like Dimensions, measures cannot be filtered so in SAP Lumira Discovery we can use measures in combination with dimensions on a visualization to provide filters based on range along with categorical values.

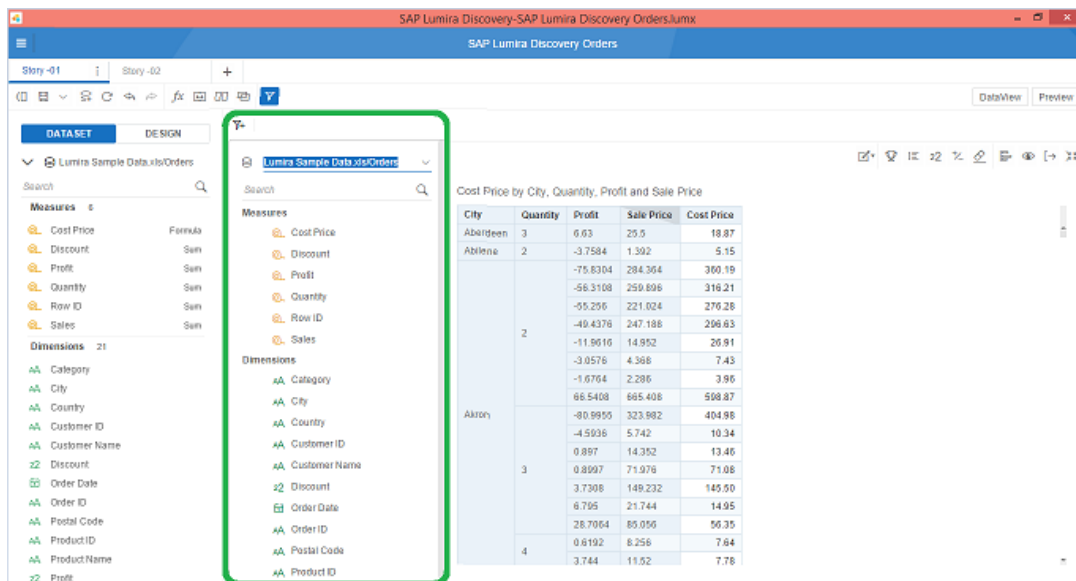
- Measure filter is possible only if the visualization is maximized. So, maximize the cross tab component on which we want to apply measure filter, by clicking on the “Maximize” option.



The screenshot shows the SAP Lumira Discovery interface. The main visualization is a cross-tab titled "Cost Price by City, Quantity, Profit and Sale Price". The table displays data for three cities: Aberdeen, Abilene, and Akron. The columns are City, Quantity, Profit, Sale Price, and Cost Price. The 'Maximize' button is highlighted with a red box in the top right corner of the visualization area.

City	Quantity	Profit	Sale Price	Cost Price
Aberdeen	3	6.63	25.5	18.87
Abilene	2	-3.7584	1.392	5.15
Akron	2	-75.8304	284.364	360.19
		-56.3108	259.896	316.21
		-55.256	221.024	276.28
		-49.4376	247.188	296.63
	3	-11.9616	14.952	26.91
		-3.0576	4.368	7.43
		-1.6764	2.286	3.96
		66.5408	665.408	598.87
	4	-80.9955	323.982	404.98
		-4.5936	5.742	10.34
		0.897	14.352	13.46
		0.8997	71.976	71.08

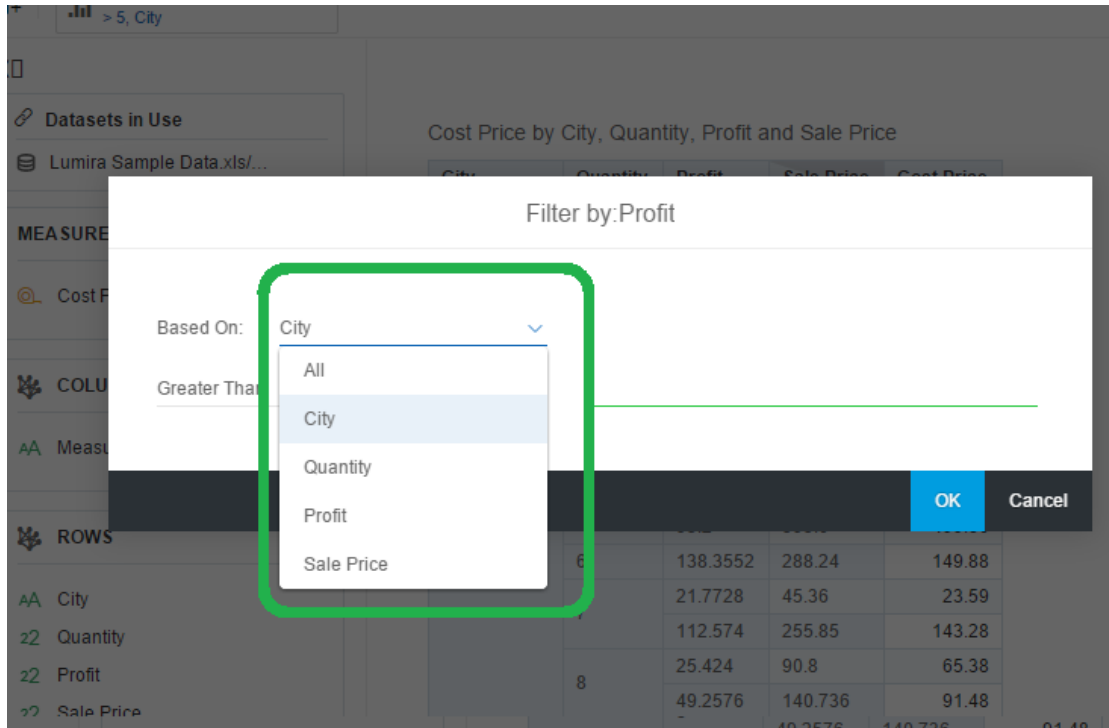
- Click on the “Filter” icon to filter the measures. Here we are going to select “Profit” measure.



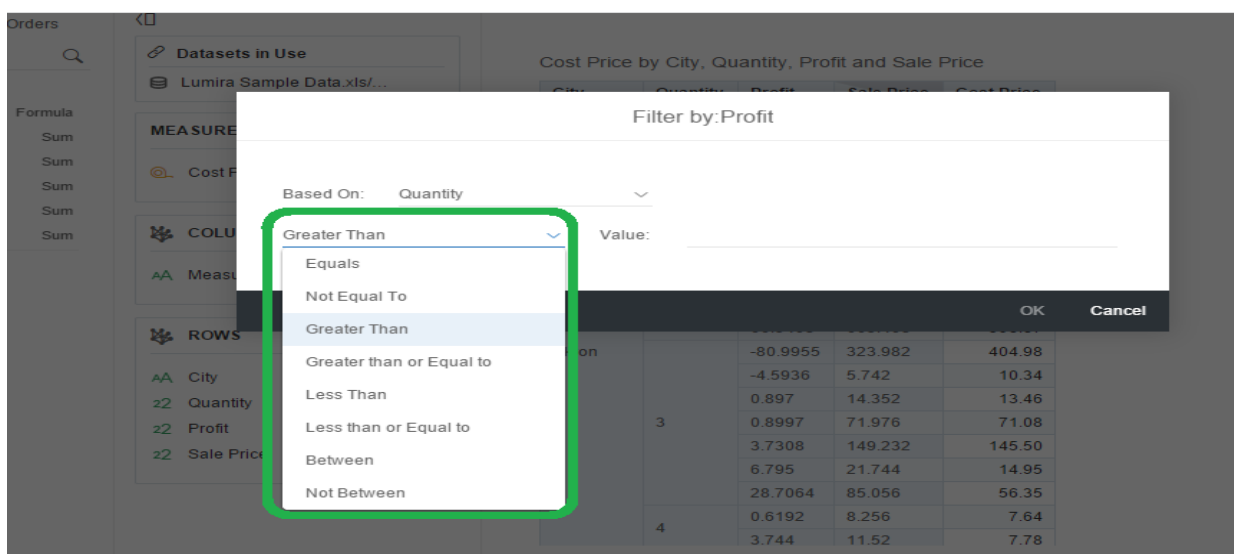
The screenshot shows the SAP Lumira Discovery interface. The 'Filter' icon is highlighted with a red box in the top left corner of the visualization area. The left pane shows the 'Measures' and 'Dimensions' lists. The right pane shows the data table.

City	Quantity	Profit	Sale Price	Cost Price
Aberdeen	3	6.63	25.5	18.87
Abilene	2	-3.7584	1.392	5.15
Akron	2	-75.8304	284.364	360.19
		-56.3108	259.896	316.21
		-55.256	221.024	276.28
		-49.4376	247.188	296.63
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		66.5408	665.408	598.87
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		-4.5936	5.742	10.34
		0.897	14.352	13.46
		0.8997	71.976	71.08

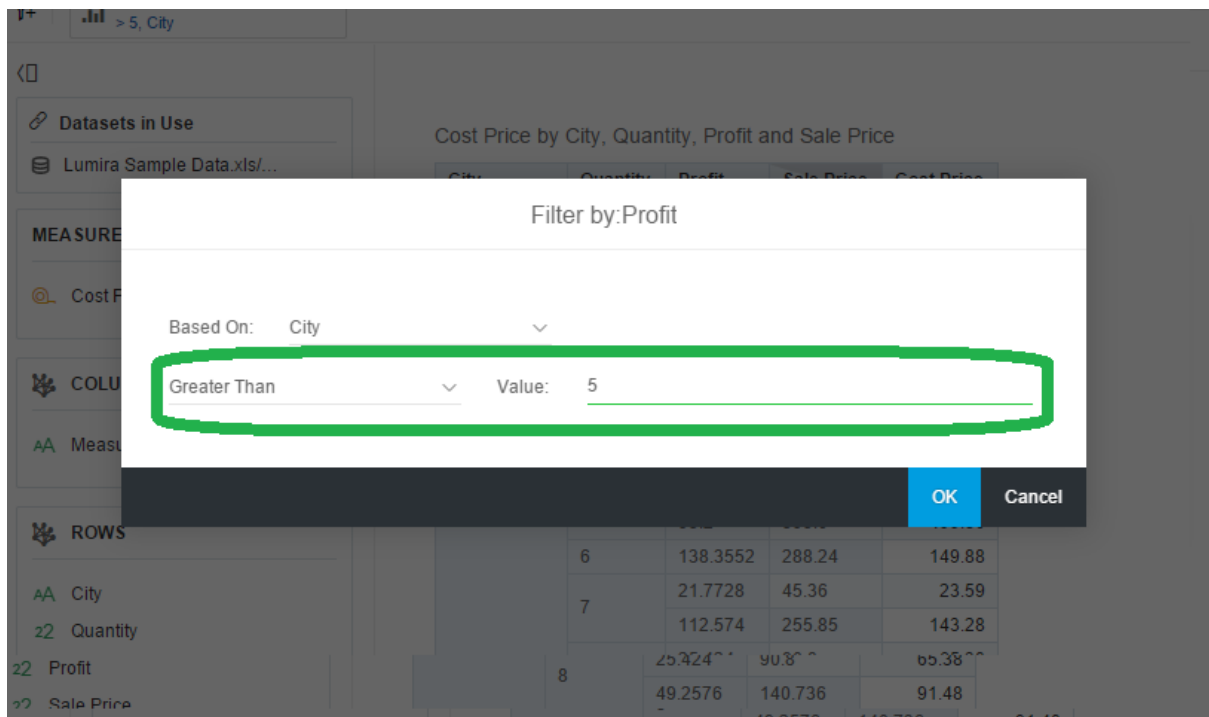
- After this, below screen will be appeared. “**Based On**” option contains the dimensions available in the selected component. We can filter the “**Profit**” measure based on a single dimension or all independently. Here we are choosing “**City**” dimension.



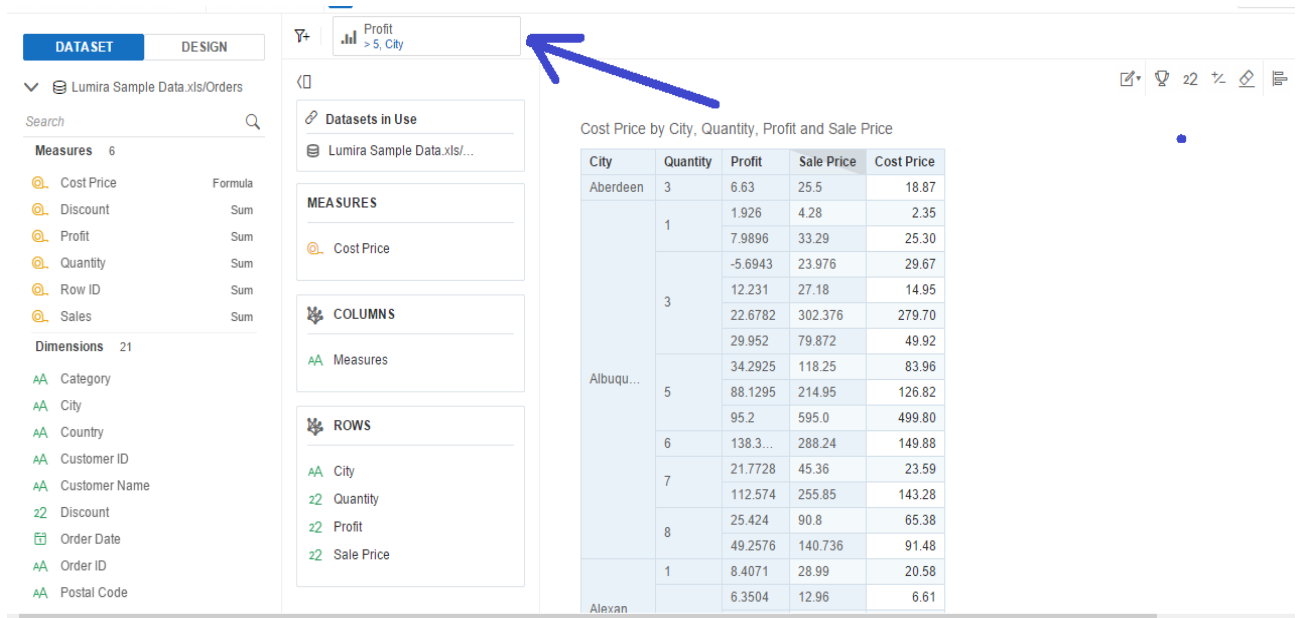
- Select “**Operator**” from the provided list based on which we will filter the data for the selected measure. Please note, filter can be applied only for the selected component with a single or range of values.



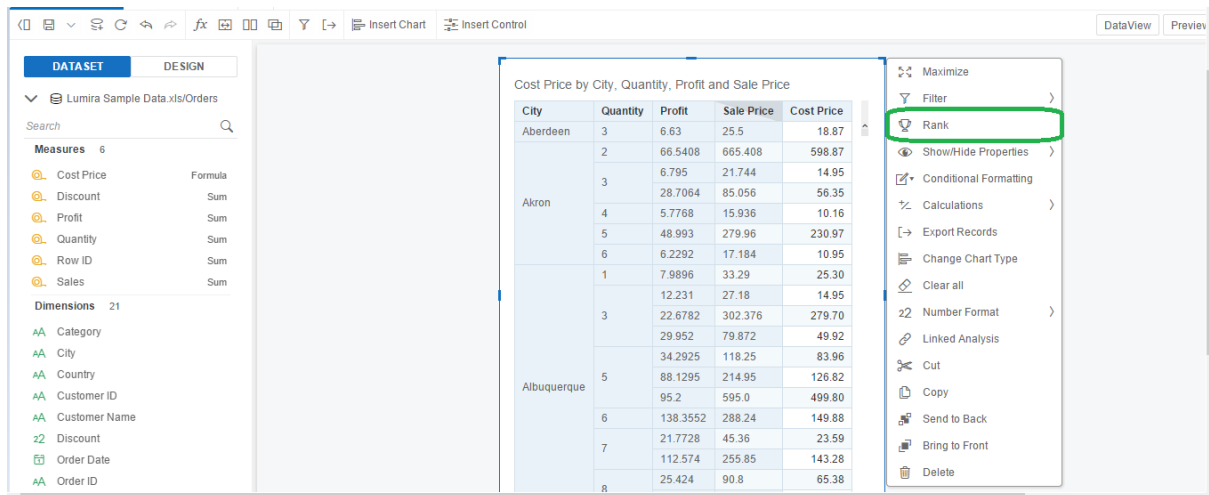
- Here we are selecting “**Greater Than**” operator with value “5”.



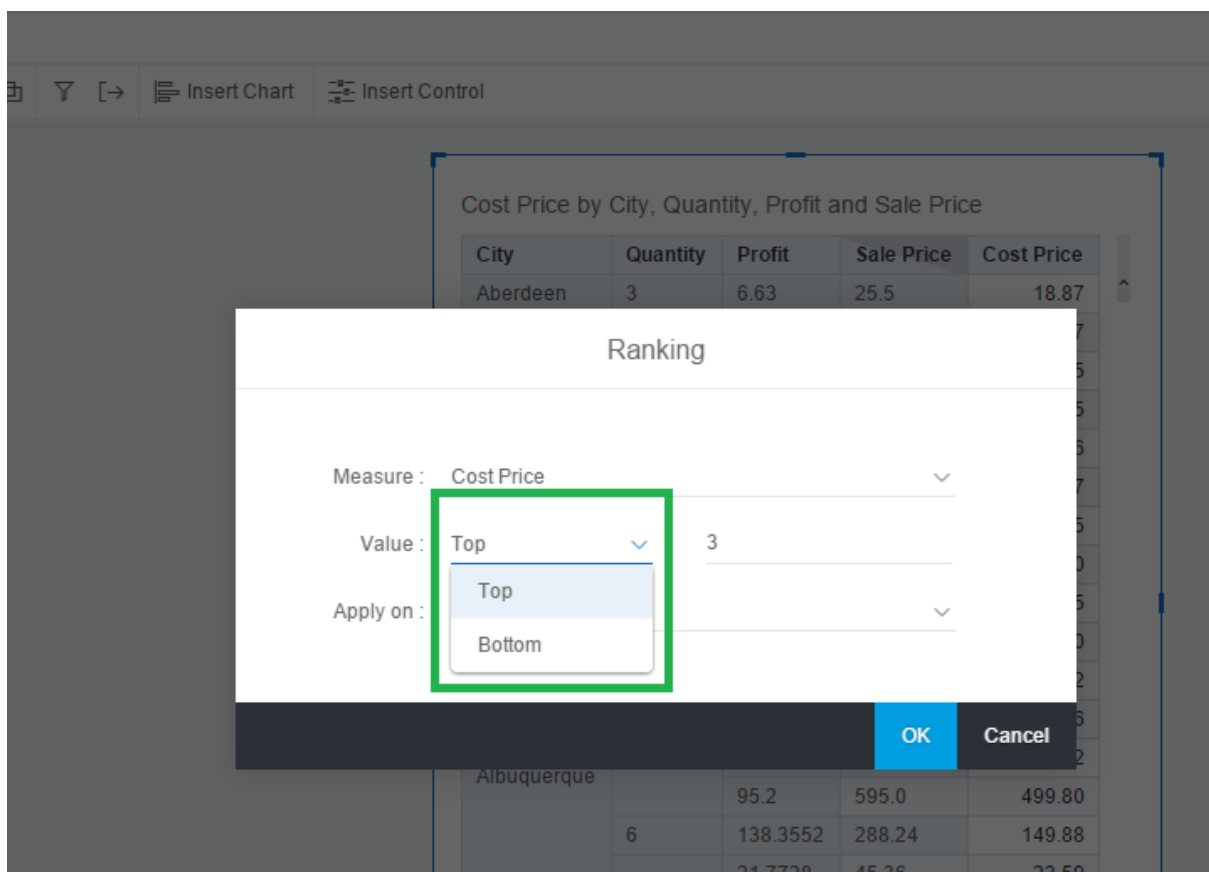
- In this way, the filter is added as represented by the token in the filter bar and data is also filtered in the cross tab based on the given condition.



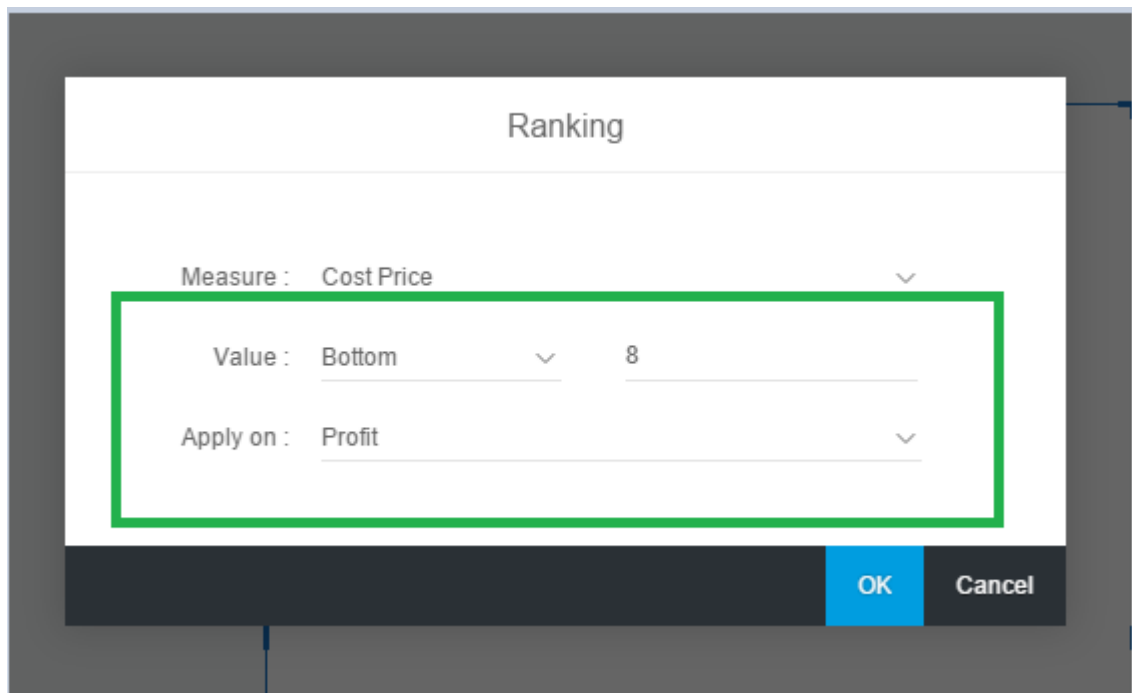
We can also filter the measures by using Rank, so to achieve this right click on the component and select “**Rank**” option as highlighted below.



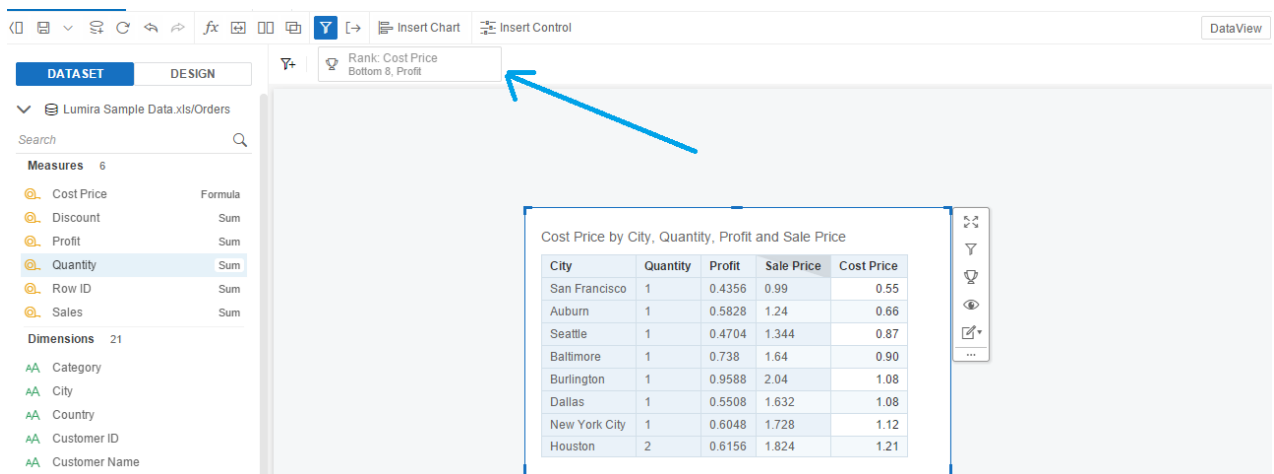
- The “**Ranking**” dialog box appears. Select the measure “**Cost Price**” for which we want to rank the values and select the order of ranking i.e. Top N or Bottom N to filter the measure accordingly.



- Enter the number of results to display and choose the dimension on which want to rank data. Here, we are applying ranking on “**Profit**” to filter the bottom 8 values for measure “**Cost Price**”.



- In this way, we can see that the data is filtered by rank and “**Bottom 8**” values are displayed in the cross tab for “**Cost Price**” and token in the filter bar is also representing that filter is added.



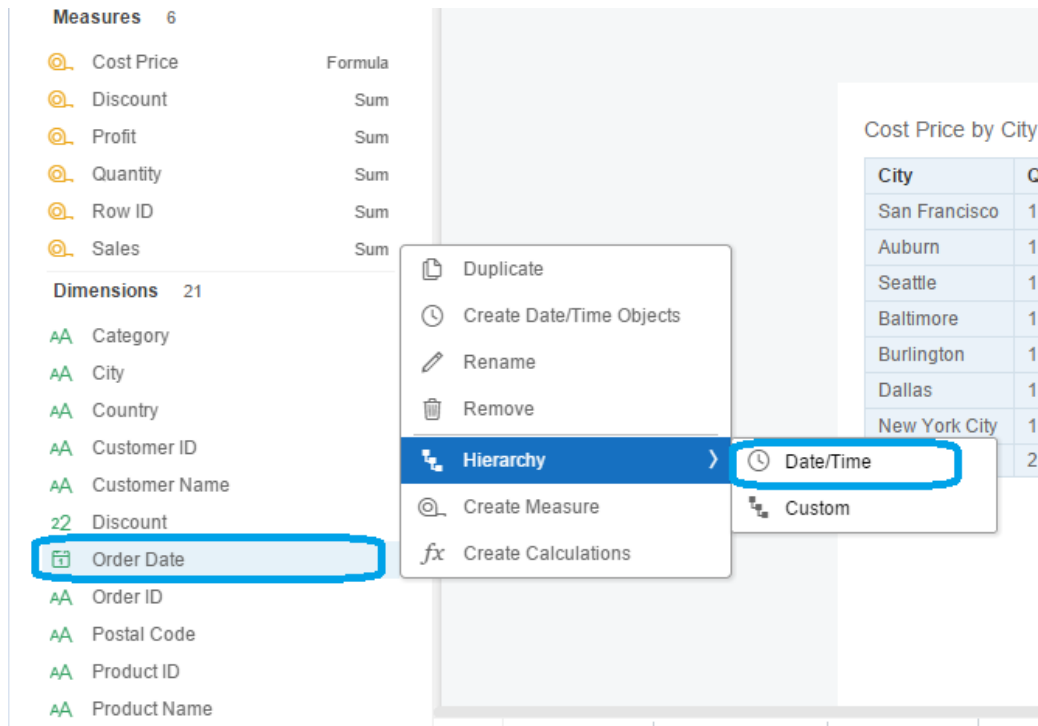
3. Hierarchy Filter

A hierarchy is an ordered sequence of linked dimensions which enable us to view data at different stages of granularity and is quite helpful for multi-dimensional analysis of data. In charts containing hierarchies, users can “drill up” or “drill down” on a hierarchy through the different levels of data to gain a deeper understanding of the relationship between the dimensions and measures.

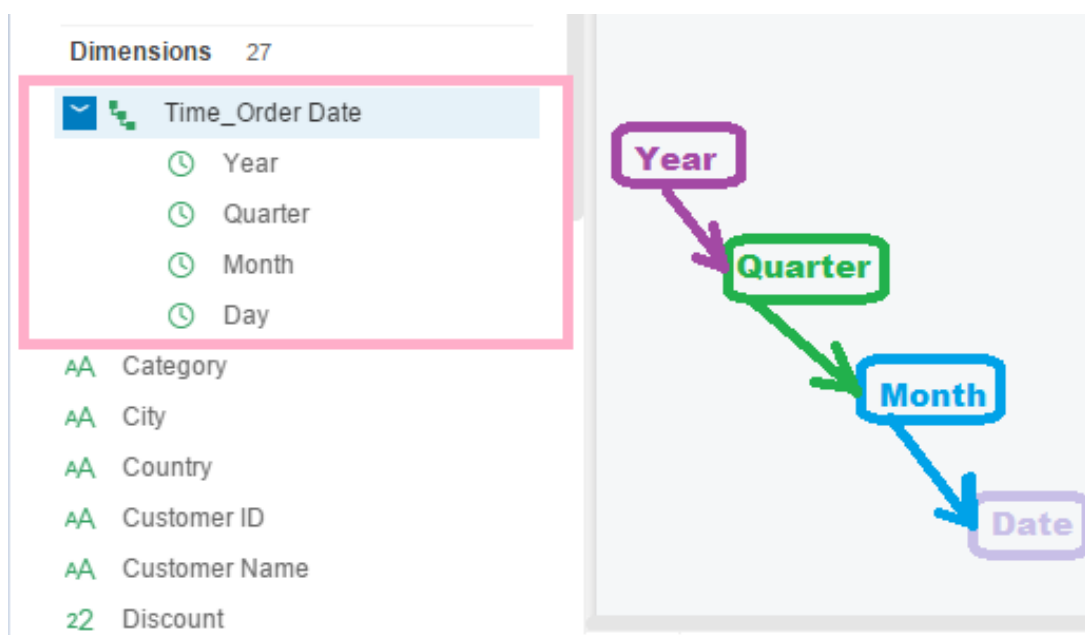
Below are the types of hierarchies which can be built in SAP Lumira Discovery: -

i) Date and Time Hierarchies

The Date/Time hierarchy offers the functionality to drill through different levels like Year-Quarter-Month-Day. In SAP Lumira Discovery, date field alone would not be enough to perform this trend analysis. So, Date/Time hierarchy provide this option with one click and we can find it by right clicking the suitable dimension as shown below:



On click, the hierarchy will be created automatically and can be seen on top of the dimension list as follows:



This created hierarchy can then be used into the visualizations for trend-based analysis as follows:

City	Quantity	Profit	Sale Price	Year	Quarter	Cost Price
Aberdeen	3	6.63	25.5	2017	2017/Q4	18.87
					Result	18.87
					Result	18.87
Abilene	2	-3.7584	1.392	2017	2017/Q4	5.15
					Result	5.15
					Result	5.15
		-75.8304	284.364	2017	2017/Q4	360.19
					Result	360.19
					Result	360.19
		-56.3108	259.896	2016	2016/Q3	316.21
					Result	316.21
					Result	316.21
Akron	2	-55.256	221.024	2017	2017/Q2	276.28
					Result	276.28
					Result	276.28
		-49.4376	247.188	2016	2016/Q3	296.63
					Result	296.63
					Result	296.63
		-11.9616	14.952	2015	2015/Q1	26.91

ii) Geo Hierarchies

SAP Lumira Discovery also enables us to control data for geospatial analysis. This helps us in performing location-based analytics on a geo map with the facility to drill through different stages of granularity. We can find this option by right clicking the suitable dimension as shown below:

Story-01 | Story-02 | +

Dataset | DESIGN

Month
Day
Category
City
Country
Customer ID
Customer Name
Discount
Order Date
Order Date (2)
Order ID
Postal Code
Product ID
Product Name
Profit
Quantity
Region

Right-click context menu for 'City':

- Duplicate
- Rename
- Remove
- Hierarchy**
 - Geo**
 - By Names
 - By Latitude / Lo...
- Create Measure
- Create Calculations
- Convert to

Cost Price by City

San Francisco
Baltimore
Burlington
Dallas
New York City
Houston

As we can see, there are two options available in SAP Lumira Discovery to create a Geo Hierarchy which are described below:

By Names: We will describe Country – Region – Sub-Region – City levels using suitable dimensions as shown below and SAP Lumira Discovery maps it by using “NAVTEQ” database.

Geographic Hierarchy

Show :

Geo dimensions

▼

Country :

Country

▼

Region :

State

▼

Sub-Region :

Region

▼

City :

City

▼

Confirm

Cancel

After this, we need to finalize the mapping of locations to complete the hierarchy.

Geographic Hierarchy

604 analyzed values

591 Solved

11 Unsolved

2 Not Found

Show:

Not Found

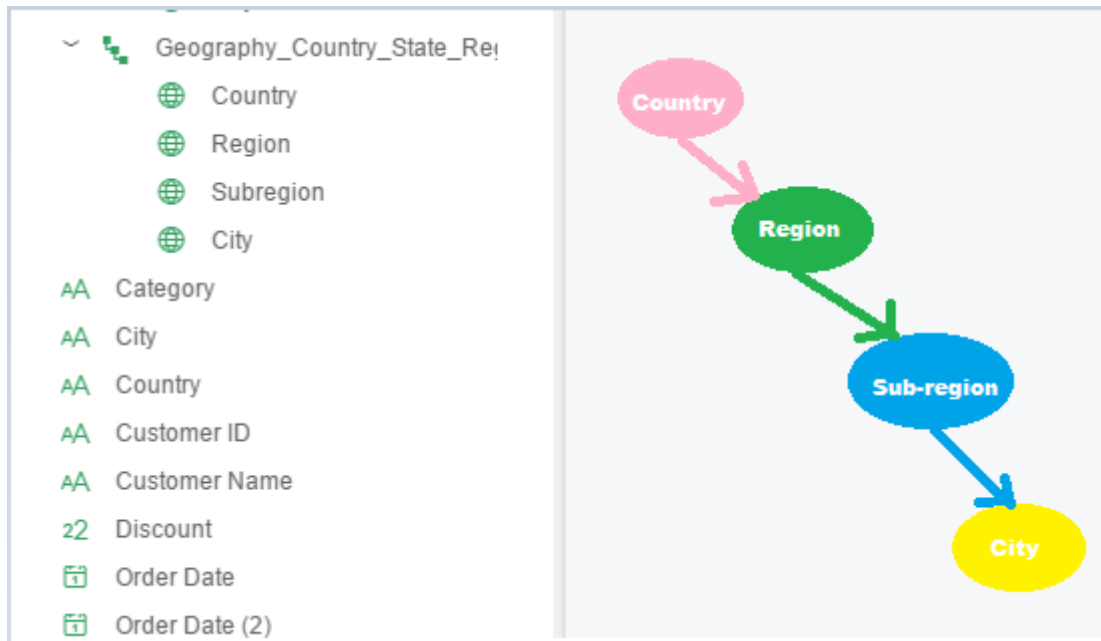
Edit original values in Grid to get better reconciliation.

Invalid entry	Recommendations	
Country / State / Region / City		
<div>United States / South Carolina / ...</div>	Not Found	
<div>United States / Wisconsin / Centr...</div>	Not Found	

Done

Cancel

In this way, the hierarchy is created and can be seen on top of the dimension list as shown below:



By Latitude and Longitude: “NAVTEQ” database has a limitation of showing only cities having population above 100k. To overcome this limitation, we can make use of latitude and longitude values with the corresponding dimension as per following steps:

The screenshot shows a dialog box titled 'Geographic Hierarchy'. It contains the following fields and options:

- Targeted Dimension: City
- Select associated coordinates for target dimension:
 - Latitude: Latitude 1
 - Longitude: Longitude 2
- Check if the target dimension corresponds to geographic level (Country, Region, Sub region, City, or Other):
 - Geographical level: City

At the bottom, there are four buttons: **Previous** (highlighted with a red box), **Next**, **Finish**, and **Cancel**.

Fig. (i)

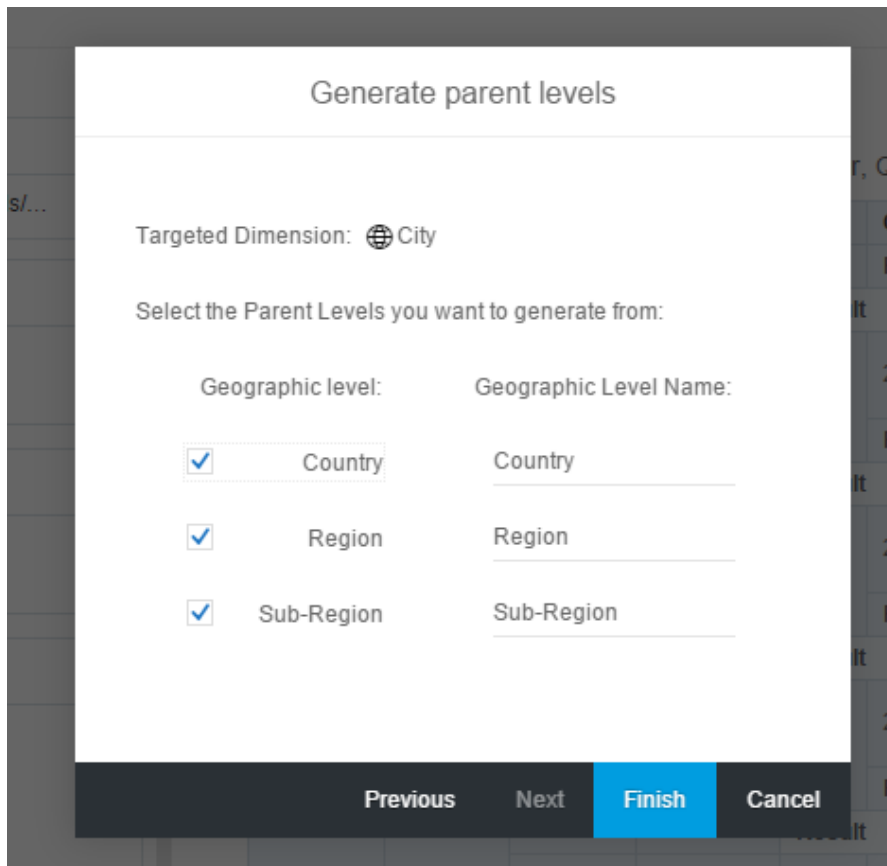
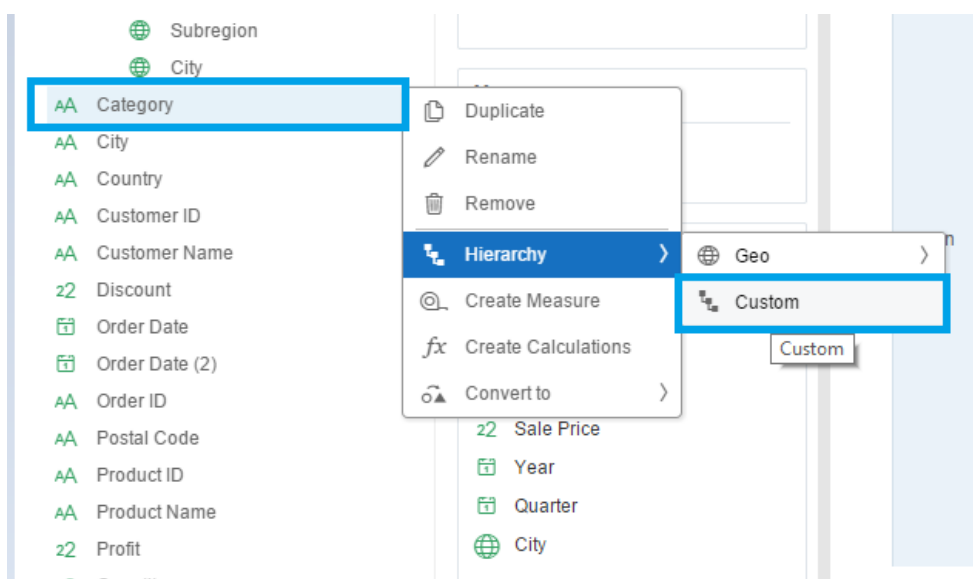


Fig. (ii)

iii) Custom Hierarchies

“**Custom Hierarchy**” option help us to create hierarchies based on customisation on set of dimensions. Right click on the appropriate dimension and find this option as seen below:



“Create Hierarchy” dialog box appears. Select the dimensions in correct order from the list displayed for which we want to create the custom hierarchy and then click on **“Create”**.

Create Hierarchy

Hierarchy name: Custom Hierarchy

Dimensions

Search

AA	Postal Code
AA	Region
AA	Product ID
AA	Category
AA	Sub-Category
AA	Product Name
22	Sale Price
22	Quantity
22	Discount
22	Profit

Hierarchy Dimensions

Search

AA	Category
AA	Sub-Category
AA	Product Name

»

«

⌵

⬆

⬇

⌴

Create

Cancel

Now, we can see in below screenshot that custom hierarchy is created and listed in the dimension list.

Custom Hierarchy

AA

Category (2)

AA

Sub-Category (2)

AA

Product Name (2)

AA

Category

AA

City

AA

Country

AA

Customer ID

AA

Customer Name

22

Discount

Brands

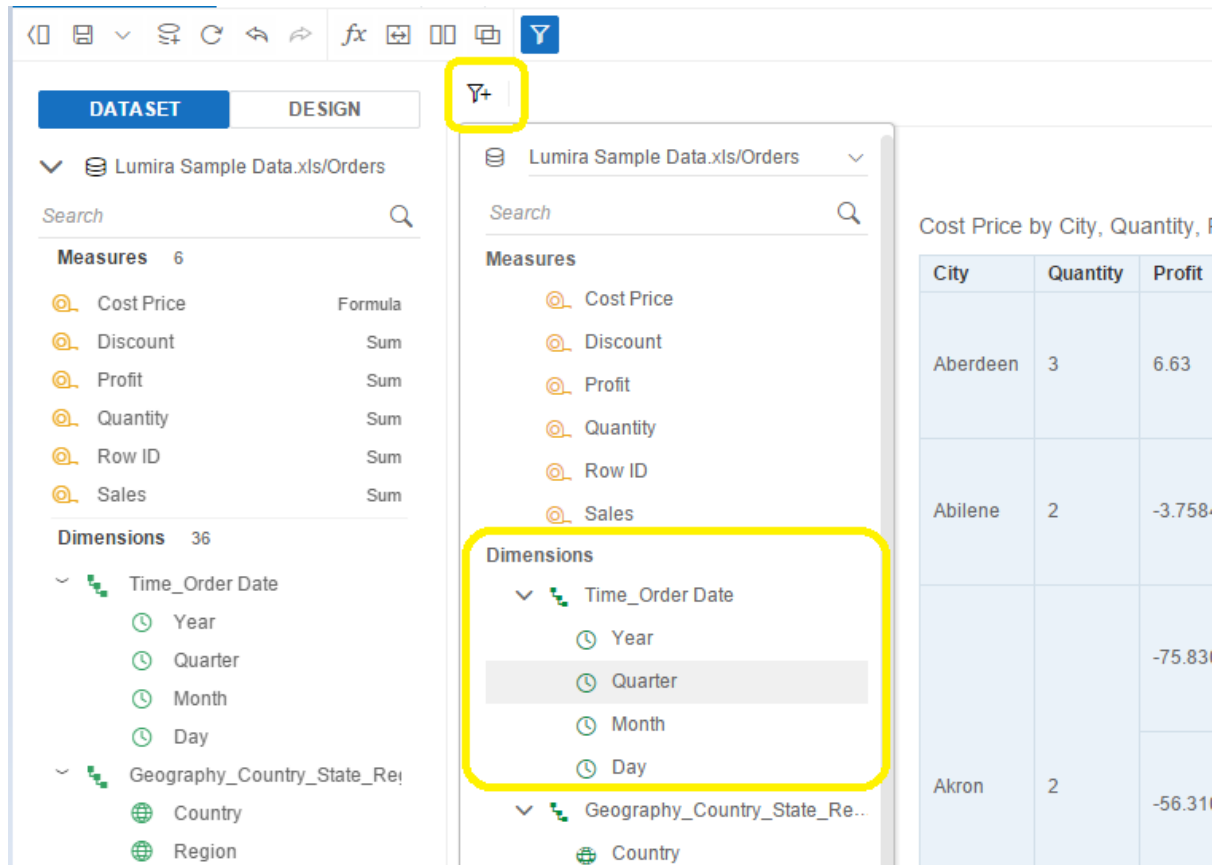
Product Type

Product Name

Please note, we cannot edit the hierarchies once these are created and can only be deleted or renamed.

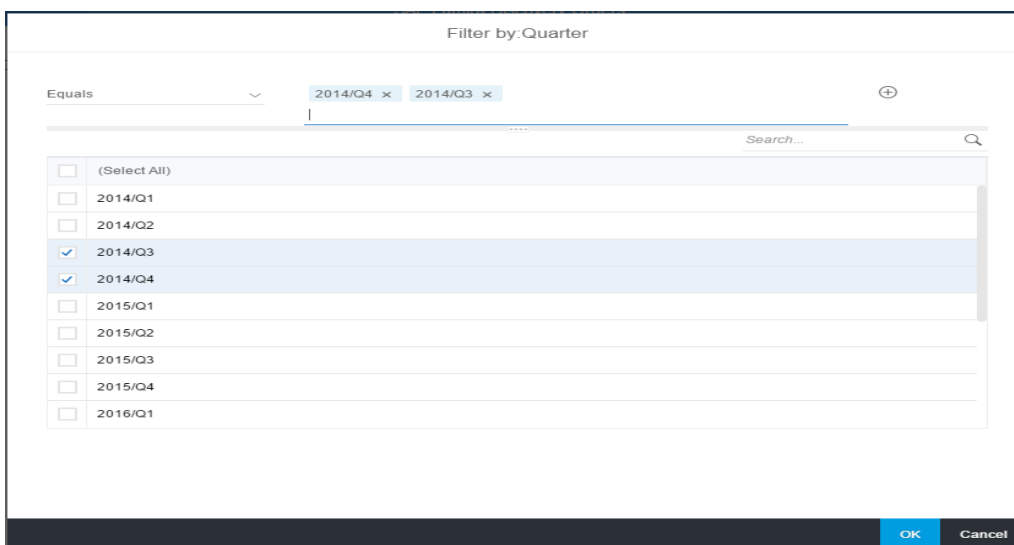
In SAP Lumira Discovery, we can maintain hierarchy structure within a filter, enabling ease of navigation through hierarchical levels of detail as define below:

- Click on “Filter icon” and to filter the hierarchical dimension by selecting the required level of hierarchy.



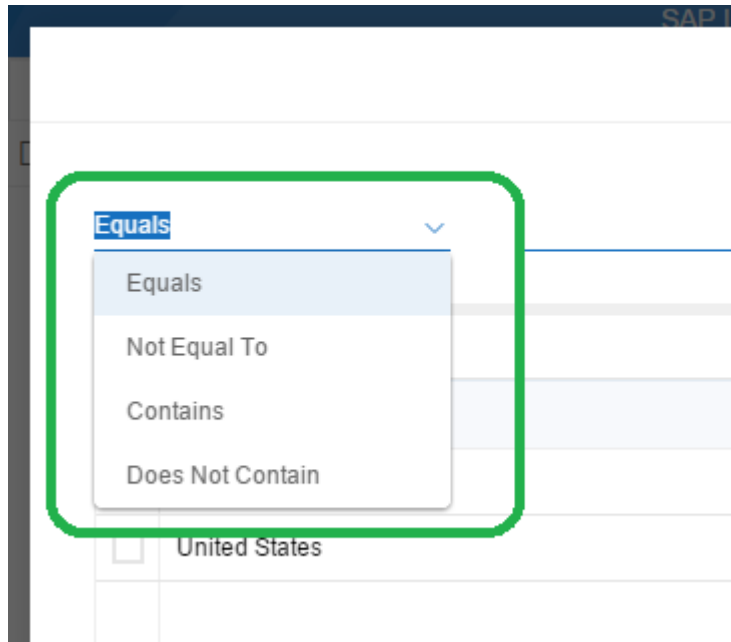
The screenshot shows the SAP Lumira Discovery interface. On the left, the 'DATASET' tab is active, displaying a list of measures and dimensions. The 'Measures' list includes Cost Price, Discount, Profit, Quantity, Row ID, and Sales. The 'Dimensions' list includes Time_Order Date (Year, Quarter, Month, Day) and Geography_Country_State_Re (Country, Region). A yellow box highlights the 'Filter icon' (a funnel with a plus sign) in the top toolbar. On the right, the 'DESIGN' tab is active, showing a table titled 'Cost Price by City, Quantity, Profit'. The table has columns for City, Quantity, and Profit. The data rows are: Aberdeen (3, 6.63), Abilene (2, -3.758), Akron (2, -56.31), and a row for Akron with a profit of -75.83. A yellow box highlights the 'Filter icon' in the top toolbar and the 'Dimensions' list in the 'DESIGN' tab.

- Filter screen pops up. Select “Operator” from the provided list based on which we will filter the data for the selected dimension. Please note, filter can be applied only for the selected component with a single or range of values.



The screenshot shows the filter screen in SAP Lumira Discovery. The title is 'Filter by: Quarter'. The 'Operator' dropdown is set to 'Equals'. The filter criteria are '2014/Q4' and '2014/Q3'. The filter list shows a search bar and a list of quarters from 2014/Q1 to 2016/Q1. The '2014/Q3' and '2014/Q4' rows are selected. The 'OK' and 'Cancel' buttons are at the bottom right.

- Hierarchy filter provide only 4 options to filter the data as seen below. Unlike dimension and measure filter options, “Contains” and “Does Not Contain” options are only available for hierarchical dimension.



- In this way, the filter is added as represented by the token in the filter bar and data is also filtered in the cross tab based on the given condition.

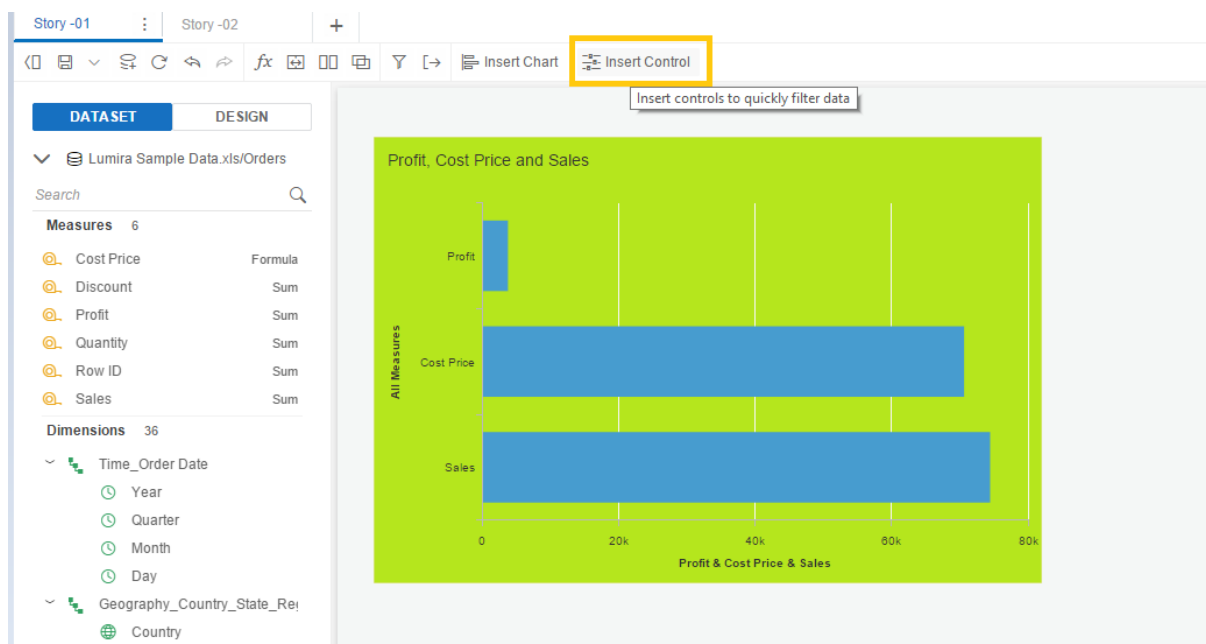
The screenshot shows the QlikView interface with a cross-tab table. The filter bar at the top indicates the filter 'Quarter (2) = 2014/Q4, 2014/Q3' is applied. The table title is 'Cost Price by City, Quantity, Profit, Sale Price, Year, Quarter and City'. The table has columns for City, Quantity, Profit, Sale Price, Year, Quarter, and Cost Price. The data is filtered to show only the specified quarters.

City	Quantity	Profit	Sale Price	Year	Quarter	Cost Price
San Diego	3	20.5176	435.999	2014	Result	415.48
					Result	415.48
				2014	2014/Q4	536.40
					Result	536.40
		73.194	585.552	2014	2014/Q3	512.36
					Result	512.36
	434.9...	1199.976	764.98	2014	2014/Q3	764.98
					Result	764.98
				2014	2014/Q3	10.16
					Result	10.16
		9.7608	19.92	2014	2014/Q3	10.16
					Result	10.16

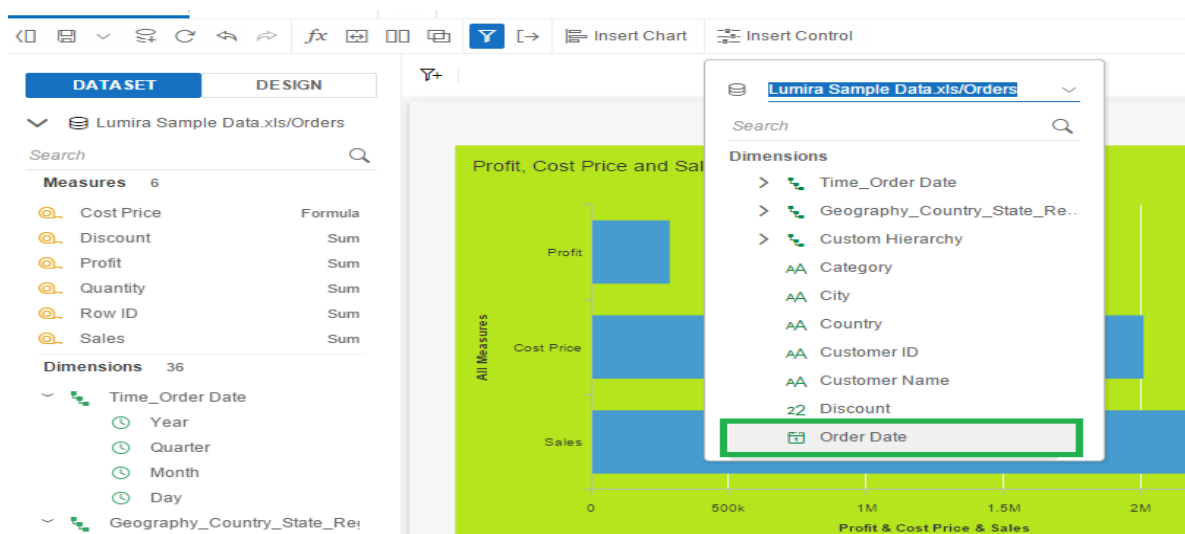
4. Controls

Interactive filters in a story make it easy to highlight different areas of the data in the story. In SAP Lumira Discovery, “**Controls**” provide us this functionality of interactively filter the data in story visualizations. The filter created by the control applies to each appropriate visualization. We can include controls in a section of the story or overlap the control on a visualization as describe below.

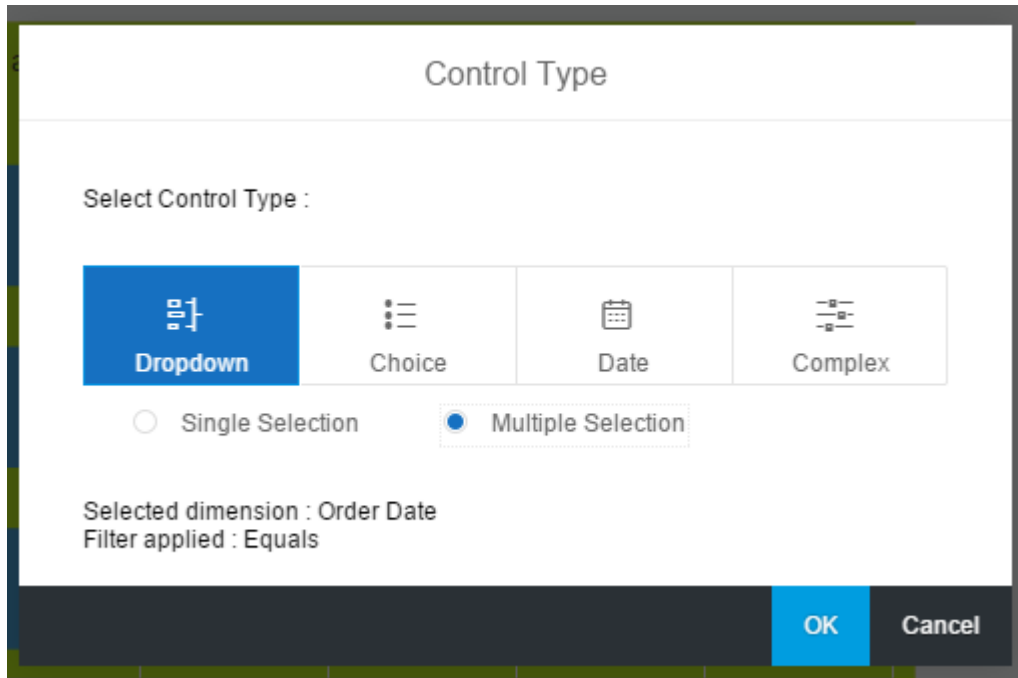
- Navigate to “**Design View**” and click on “**Insert Control**” icon as highlighted below in the global toolbar.



- Select the dimension which need to be filtered from the dropdown list.



- “Control Type” dialog box pops up displaying the multiple options to select from. Choose the required option and then press OK. Here we have selected “**Dropdown**” option with multiple selection.



- In this way, the “**Control**” is added to the story. The highlighted container specifies the location of the control in the visualization.



- Token is displayed in the filter bar above the chart canvas representing the data is filtered.



Once we have added a filter, there are number of options to control that how it looks and works. We can freely re-size or move the controls.