Calculate

Power BI Calculate Function

CALCULATE is the often used DAX function in Power BI, even though CALCULATE cannot do anything, this function works as a base function to apply other DAX functions in different scenarios. For example, if you want to apply filter and find the average sales for one particular city then we can use the CALCULATE function to apply filter and arrive calculations.

So, the CALCULATE function evaluates the expression given by the user with all the applied filters. Below is the syntax of the CALCULATE function.

```
CALCULATE(
CALCULATE(Expression, [Filter1], ...)
  Evaluates an expression in a context modified by filters.
```

- **Expression:** This is nothing but what is the expression we need to perform. For example, if we need to get the sales total.
- **Filter 1:** Based on the **Expression** given what is the filter we need to apply. For example, to get the **Expression** result Filter 1 will be anyone particular city.
- **Filter 2:** Based on the **Expression** given what is the second set of filter we need to apply. For example, in the particular city particular PIN Code region.

In this exercise, we will take you through one of the important and often used DAX functions Calculate in Power BI.

Power BI Calculate Function

```
1 Overall Sales = CALCULATE(SUM(Sales_Table[Sale Value]),ALL(Sales_Table))
```

City	Sale Value	Overall Sales	% Share
Auburn	9926	79393	12.50
Columbia	22436	79393	28.26
Columbus	13077	79393	16.47
Concord	14896	79393	18.76
Des Moines	19058	79393	24.00
	79393	79393	100.00

CALCULATE(
CALCULATE(**Expression**, [Filter1], ...)
Evaluates an expression in a context modified by filters.

Examples of Dax Calculate Function in Power BI
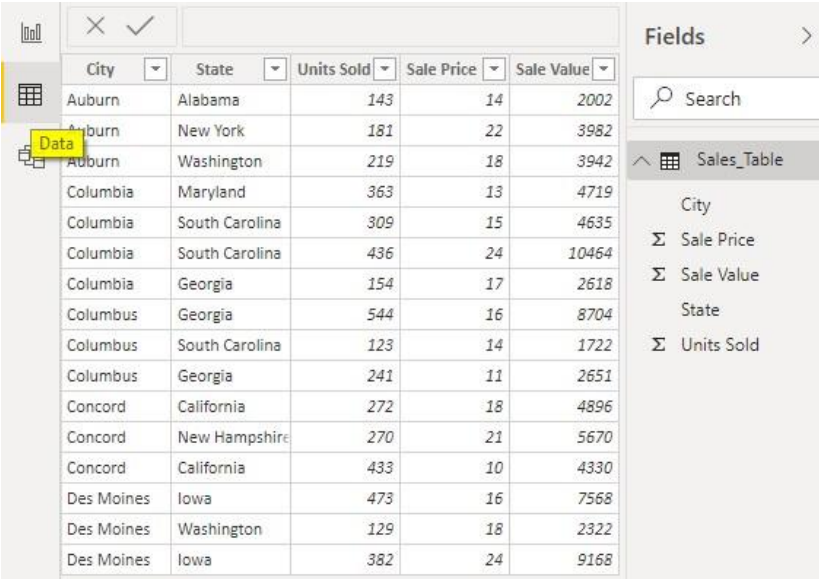
Below are the examples of the Dax Calculate function.

Example #1

Below is the data we are going to use to demonstrate the CALCULATE function in Power BI. You can use the same data by downloading the excel workbook from course site.

	A	B	C	D	E
1	**City**	**State**	**Units Sold**	**Sale Price**	**Sale Value**
2	Auburn	Alabama	$ 143	$ 14	$ 2,002
3	Auburn	New York	$ 181	$ 22	$ 3,982
4	Auburn	Washington	$ 219	$ 18	$ 3,942
5	Columbia	Maryland	$ 363	$ 13	$ 4,719
6	Columbia	South Carolina	$ 309	$ 15	$ 4,635
7	Columbia	South Carolina	$ 436	$ 24	$ 10,464
8	Columbia	Georgia	$ 154	$ 17	$ 2,618
9	Columbus	Georgia	$ 544	$ 16	$ 8,704
10	Columbus	South Carolina	$ 123	$ 14	$ 1,722
11	Columbus	Georgia	$ 241	$ 11	$ 2,651
12	Concord	California	$ 272	$ 18	$ 4,896
13	Concord	New Hampshire	$ 270	$ 21	$ 5,670
14	Concord	California	$ 433	$ 10	$ 4,330
15	Des Moines	Iowa	$ 473	$ 16	$ 7,568
16	Des Moines	Washington	$ 129	$ 18	$ 2,322
17	Des Moines	Iowa	$ 382	$ 24	$ 9,168
18					

You can directly upload the data table to the Power BI file, I have already uploaded the table to Power BI Desktop file.


Now we will experiment CALCULATE function to arrive at different sets of results.

## Arrive one particular city sales total

Now, for example, assume you need to create a **"New Measure"** which gives one particular city total for an example "Columbia" city. This is where we need to use the CALCULATE function to apply calculation, right-click on the table, and choose the "New Measure" option.
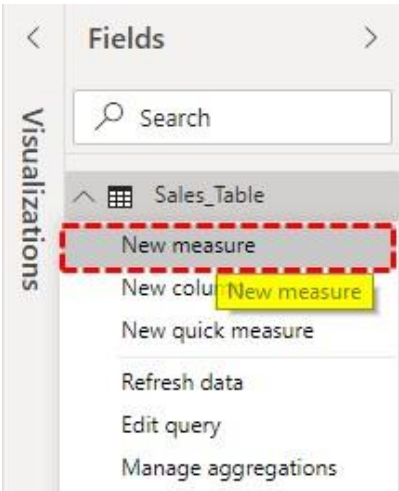
- Give the name to this measure as "Columbia City Sales".
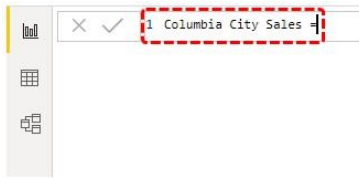
- Now open the CALCULATE function.
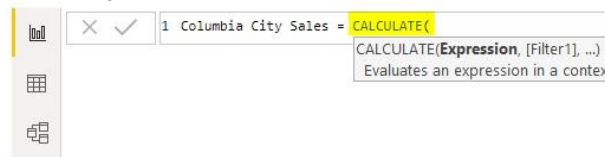
- **An expression** is the first option, in this example, we need to add the "Columbia" city total, so open SUM function.
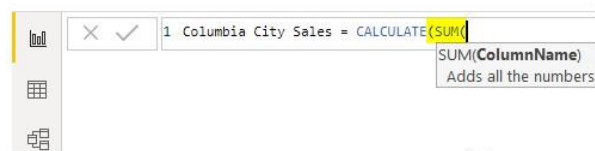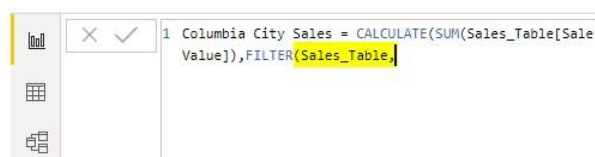

- The **Column Name** that we need to SUM is "Sales Value Column", so choose the respective column.
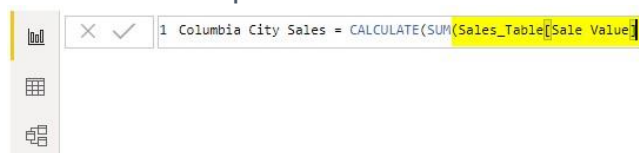
- Now SUM function adds the "sales value" together but in the **Filter** argument, we need to mention for which city we need to get the sum of sales, so open FILTER function.
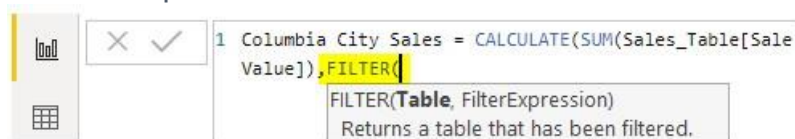
- The **Table** that we are referring to is "Sales Table", so first, choose the table name.
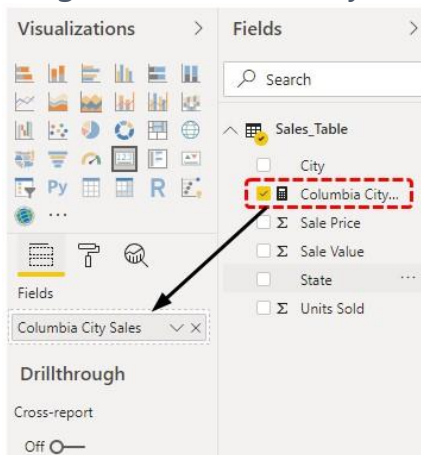
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For **Filter Expression** we need to select the "City" column and give the criteria as "Columbia".

Ok, we are done close two brackets and hit enter key to get the new measure.

• Drag the Columbia city to fields to see the new measure.

Ok, now this measure gives the total sales of the city "Columbia" only.

You can cross-check the "Columbia" city total in Excel as well.

	A	B
1		
2		
3	**City**	**Sum of Sale Value**
4	Auburn	9,926
5	Columbia	22,436
6	Columbus	13,077
7	Concord	14,896
8	Des Moines	19,058
9	**Grand Total**	**79,393**
10		

Like this, we can use the CALCULATE function to arrive at different kinds of results.
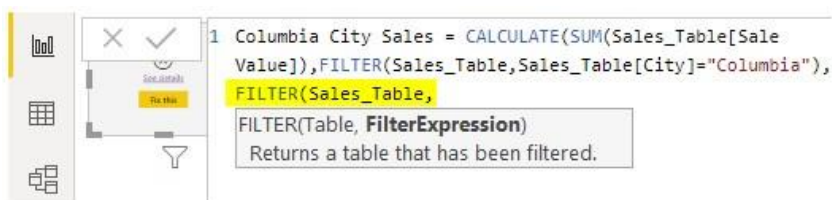
Example #2

Now for an example assume for the city "Columbia" we need only the sales value for the state "South Carolina", so this time we need to apply two filters.
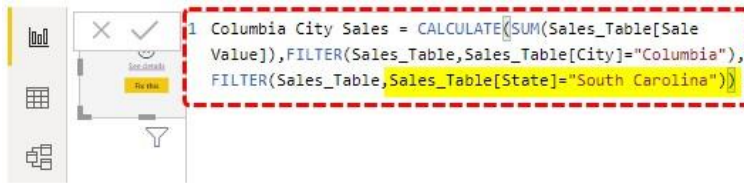
- With the continuation of the previous DAX function close only one bracket and open another filter function.
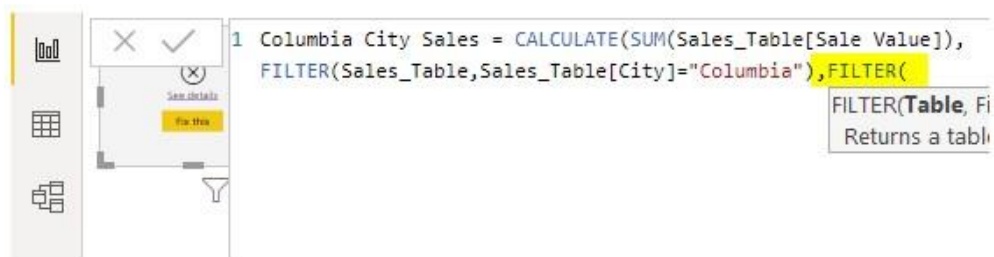
- Once again mention the table we are referring to.

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This time we need to apply the filter for the column "State" and select the column and give the criteria as "South Carolina".

• Sales Value of State South Carolina is shown below.

Now our new total will be 15099 i.e. this is the sales value for the state "South Carolina" in the city "Columbia".


Example #3

Now for an example, you want to find the percentage share of each city for the overall sales, this is done by using the below formula.
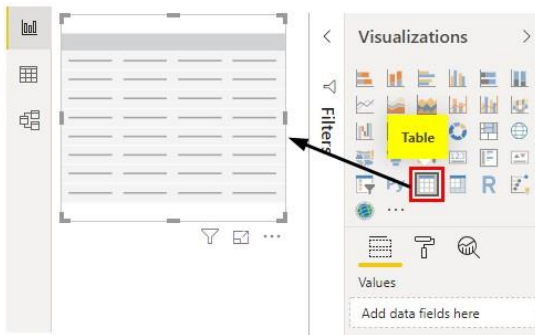
% Share = City Sale / Overall Sales * 100

But one problem is this is not the excel to use flexibly with <u>cell references</u>, now the idea is to get the overall sales total against all the city totals.

- So we need to create one more measure and that measure is as follows.


```
1 Overall Sales = CALCULATE(SUM(Sales_Table[Sale Value]),ALL(Sales_Table))
```
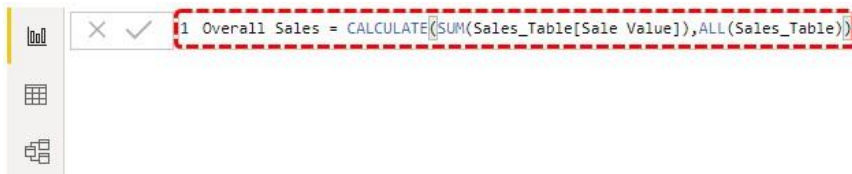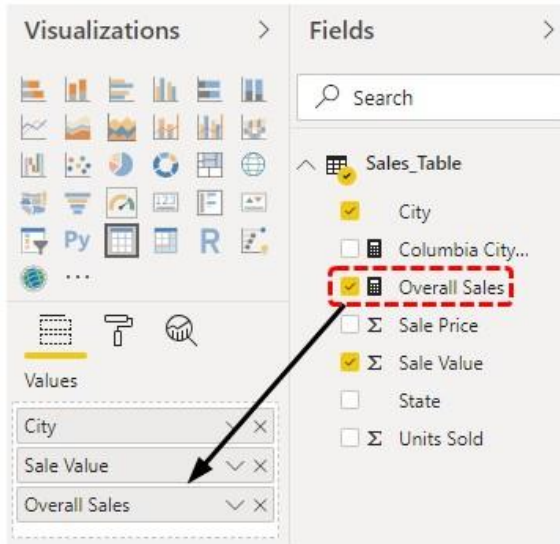
- Now insert "Table" visual first.

- For this table visual first add City name and Sales Value columns.

City	Sale Value
Auburn	9926
Columbia	22436
Columbus	13077
Concord	14896
Des Moines	19058
Total	**79393**

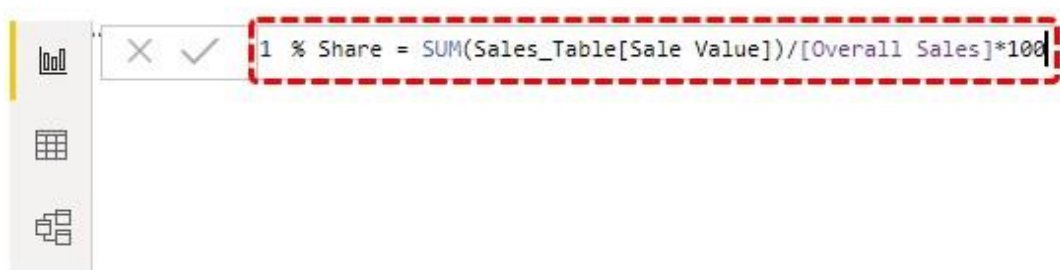As you can see above, we have each city total here, and the overall sales value is 79393. Now drag and drop the new measure column "Overall Sales".

•

- Now as you can see against each city we have "Overall Sales" value. Now using these two measures we can create a new measure to get the percentage share. Use the below function to get the new measure.


```
1 % Share = SUM(Sales_Table[Sale Value])/[Overall Sales]*100
```

- Now drag and drop this new measure to the table to get each city % share.

There you go we have a % share column. Like this using CALCULATE DAX function, we can arrive expressions based on different filters and conditions.

Note: Power BI Calculate Function file can also be downloaded from the link below and the final output can be viewed.

Things to Remember

- CALCULATE function in power bi is used to arrive at different results based on conditions.
- CALCULATE is always used with other DAX functions in power bi to get the job done.