



THINKMETRICS

T QlikSense front-end formula cheatsheet

Formulas - Visualisation tricks - Front-end hacks & more

V 1.2



Thinkmetrics



NOTE!

Before you use.

Please use the Google doc version as that will be the version constantly being updated.

The link to the Google Doc is here:

[!\[\]\(339a16584d5da0f0a3ca4e9ec17bf6a1_img.jpg\) Qlik front end functions](#)

If the PDF you download is behind the Google Doc version, then please use the link to download the newest version.

You are free to copy and paste the formulas direct from the Google sheet rather than downloading the pdf.

Link: [!\[\]\(3211b5d1d968fc1665909b34f9f16010_img.jpg\) Qlik front end functions](#)

T



General

- [1. Count Number of distinct customers across the entire dataset \(Ignoring any selections\)](#)
- [2. Running Total](#)
- [3. Running Total Percentage](#)

TOTAL

- [4. Find the total sales per country \(where the country dimension may or may not be used.\)](#)
- [Note: TOTAL <field> gives the total for that field.](#)
- [6. Find Sum ignoring Selections but taking Dimension into account use {1}](#)
- [7. Find Sum of salesAmount ignoring Dimension and Selection](#)
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[56. Sum of SalesAmount for Rolling 12 months](#)

[Sum\({\\$<OrderDate = {">=\\$\(=AddMonths\(MonthStart\(Today\(\)\),-12\)\)"}>} SalesAmount\)](#)

[57. Sum of SalesAmount for Rolling 12 months untill today](#)

[Sum\({\\$<OrderDate = {">=\\$\(=AddMonths\(MonthStart\(Today\(\)\),-12\)\)<=\\$\(=\(today\(\)\)\)"}>} SalesAmount\)](#)

58. Sum of SalesAmount for Rolling 12 months using a calendar flag

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59. Script function: Add flag in master calendar script:

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61. Sum of SalesAmount where for selected ActualShippedDate is a value in
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62. Find the Sum of SalesAmount for the YEAR 2023 union with Country USA.

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65. Find the Sum of Sales Amount for the dataset excluded by any selections made by the user.

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73. Sales amount based on advanced calculation expression

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77. The sum of SalesAmount for selected countries and 2 default countries

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Set expressions inheritance rules (NEW OUTER SET EXPRESSIONS)

Outer Set inheritance to inner set

79. A case where no Set Identifier is added to the Inner Set. The outer set will be inherited to
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New Set Expressions and AGGR()

81. A case where the Set1 will not be inherited into Set2.

82. A case where OuterSet will be inherited into both Set1 and Set2.

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83. Find the sum of SalesAmount for countries where the product Sneakers has been sold, you
can use:

84. Find the Sum of SalesAmount for countries where the product Sneakers has never been

sold, you can use:

85. Returns the SalesAmount of those customers that ever have bought the product 'Hat'
86. Returns the SalesAmount of those customers that ever have bought the product 'Hat' based on possible values from the Supplier field
88. Count new customer percentage based on unique customerid in the max year - previous years
89. Count new customers based on unique customerid in the max year - that are not present in the previous years
90. Count Returning customers based on unique customerid in the max year - that are also present in the previous years
91. Count Returning customers percentage based unique customerid in the max year - that are also present in the previous years divided by the total distinct customers
92. Count Lost customers based on unique customerid that were present in the previous years but missing in the Max year.

Note: Same as finding the new customers but we use a - to calculate the customers missing in the list

93. Count Lost customers percentage based on unique customerid that were present in the previous years but missing in the Max year.

Note: Same as finding the new customers using Exclude but we use a - to calculate the customers missing in the list

RangeSum

94. Find the sum of a range of values

Above

95. Above examples:

ROWNO()

96. Calculate cumulative sales

Below

97. Calculate Below sales

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98. Creating a Pareto Chart

99. ABC analysis dimension /Pareto chart dimension

PICK AND MATCH

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Color using ARBG function

101. Custom chart colors if SalesAmount more than 200000 then Red else Green:

COLOR using RBG

102. Custom chart colors if SalesAmount more than 200000 then Blue else Red:

Color using Color function

103. Custom chart colors if SalesAmount is more than 200000, then Blue else Red:

Inbuilt color codes in Qlik Sense

104. Adding Conditional Colors to charts using color Hex codes

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- [106. Change background colors based on Rank Top 5 Ranked Product](#)
- [107. Create a synthetic dimension in the front end](#)
- [108. Create a synthetic dimension called Top, Middle, and Bottom countries and categorize countries based on Total SalesAmount](#)
- [109. Create a synthetic dimension called Top, Middle, and Bottom countries and categorize countries based on Total SalesAmount - Method 2](#)

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- [111. Clean the columns by retaining only the wanted characters from the field values](#)
- [112. Change the values to UPPER or LOWER](#)
- [113. Choose Characters from the right and left and middle values of the field values](#)
- [114. Find the length of values in a field](#)
- [115. Clean values in a field by removing the spaces](#)
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Combining the string functions

- [118. Find the position of the substring and a text string and then extract the next 3 characters](#)

Cleaning challenge:

- [119. Clean the FIELD = 3453XY32Cleaning.Hero](#)
- [120. Clean the FIELD = <Cle3411an41-1D34a1145ta>](#)

Column Functions

- [121. Based on the values of 2 columns, Change the color of the rows where the profit is over 100.](#)

Date Time functions

- [122. Load date as format 2023/02/10 and interpret and reformat to 2023-02-10.](#)
- [123. Convert from unix epoch time stamp to normal date timestamp:](#)
- [124. Extract Year and Month from the date](#)
- [125. Extract Year Month from Today's date in the Year Month Format](#)

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- [127. Hide a chart until a selection is made in the Product Model](#)
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- [129. Adding conditional Indicators to measures with miscellaneous symbols](#)
- [130. Miscellaneous symbols list:](#)
- [131. Convert numbers to the absolute value](#)

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- [132. Combine values from 2 fields](#)
- [133. Get Flight departure and arrival aggregated per flight No in this format:](#)

Dynamic Titles:

- [135. Create a dynamic title based on the field selections in countries which says: Sales for countries: Country names selected.](#)
- [136. Create a dynamic title which says "Total Sales for all Countries" if no selection is made in the field country else says Total sales for : followed by the country name selected.](#)

[137. Create a dynamic title based on the field selections in 2 fields, Products, and countries, which says : Sales for countries: Country names selected.](#)

[138. Create a list of OrderId per customer per country](#)

[Add Dynamic Links to your chart](#)

[141. Create a link that the user can click to visit an external webpage](#)

[Embed a button with link to external sites](#)

[142. Create a button that the user can select to visit an external website](#)

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[144. Create a What IF analysis using variables](#)

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[150. Create a chart to compare total salesAmount for 2 different selections made by user using Alternate State.\(Applying alternate states to measures\)](#)

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[153. Create a chart that gives the Intersection of selections made in 2 Alternate State charts .\(Applying alternate states to measures\)](#)

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[157. Create a dynamic map that shows Top Ranked Cities per country based on highest sales. No of cities to be shown based on user input Rank values.](#)

[158. How to Reload Apps from the front end](#)

[Script functions](#)

[159. What is a composite key?](#)

[160. For a given list of ID's find the previous months 'Status' value? Using Peek function](#)



Newly Added:

[150. Create a dynamic map that shows Top Ranked Cities per country based on highest sales.
No of cities to be shown based on user input Rank values.](#)

[151. How to Reload Apps from the front end](#)

[55. Sum of SalesAmount for Rolling 12 months](#)

[Sum\({\\$<OrderDate = {">=\\$\(=AddMonths\(MonthStart\(Today\(\)\),-12\)\)"}>} SalesAmount\)](#)

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[57. Sum of SalesAmount for Rolling 12 months using a calendar flag](#)

[Sum\({\\$<rolling_13 = {'1'}>} SalesAmount\)](#)

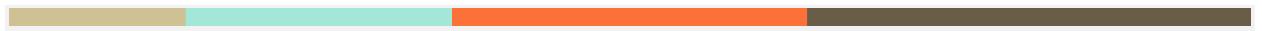
[58. Script function: Add flag in master calendar script](#)

[24. Calculate Total Sales for the First 3 months a customer has ordered.](#)

[Script functions](#)

[156. What is a composite key?](#)

[157. For a given list of ID's find the previous months 'Status' value?](#)



Notes: The fields used should be changed to the fields in your dataset.

General

1. Count Number of distinct customers across the entire dataset (Ignoring any selections)

`Count(DISTINCT {1} CustomerId)`

Note : {1} ignores selections

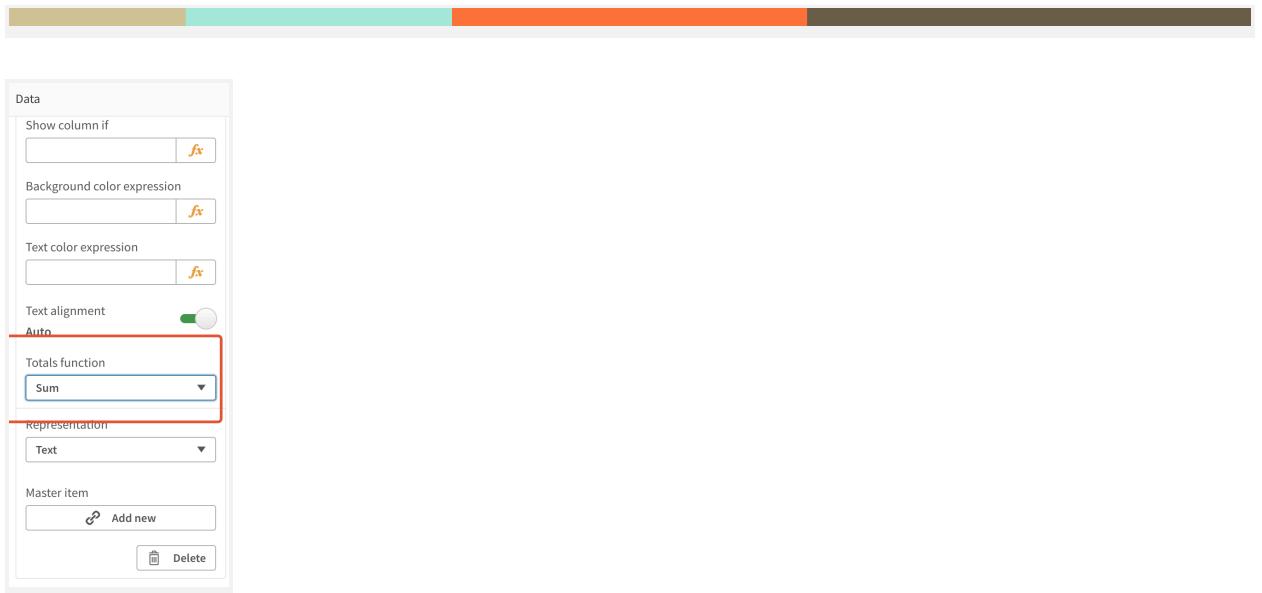
2. Running Total

`Rangesum(Above(Sum(SalesAmount),0,RowNo()))`

Or

`Sum(SalesAmount) → then select the Sum in the Totals function Drop Down option`

THINK METRICS



3. Running Total Percentage

`Rangesum(Above(Sum(SalesAmount),0,Rowno()))`

/

`Sum(Total SalesAmount)`

TOTAL

4. Find the total sales per country (where the country dimension may or may not be used.)

`Sum(TOTAL < country> SalesAmount)`

Note: TOTAL ignores dimension but abides the selection

Note: TOTAL <field> gives the total for that field.

5. Find the percentage of sales per customer per total sales in that region.

Dimension used: customer, region

I H I N K M = I R I C S



Sum(Sales)/Sum(TOTAL<region> Sales)

- Find Sum ignoring Selections but taking Dimension into account use {1}

Sum({1} SalesAmount)

- Find Sum of salesAmount ignoring Dimension and Selection

Sum(ALL SalesAmount)

Or

Sum({1} TOTAL SalesAmount)

Note:

In the below example Year 2020 is selected. Dimension is

Country	Q	Sum(SalesAmount)	sum(total SalesAmount)	sum({1} SalesAmount)	sum(all SalesAmount)	sum({1}total SalesAmount)
Totals		14,943,307.50	14,943,307.50	69,106,485.05	69,106,485.05	69,106,485.05
Armenia		5,097.91	14,943,307.50	30,098.41	69,106,485.05	69,106,485.05
Australia		2,346,514.72	14,943,307.50	10,498,438.11	69,106,485.05	69,106,485.05
Bhutan		17,679.16	14,943,307.50	138,283.23	69,106,485.05	69,106,485.05
Canada		468,867.41	14,943,307.50	1,955,136.92	69,106,485.05	69,106,485.05
China		163,601.23	14,943,307.50	863,588.29	69,106,485.05	69,106,485.05
Denmark		24,588.12	14,943,307.50	113,782.76	69,106,485.05	69,106,485.05
France		3,946,669.59	14,943,307.50	18,402,787.33	69,106,485.05	69,106,485.05
Germany		2,252,554.76	14,943,307.50	10,228,388.69	69,106,485.05	69,106,485.05
Greece		5,692.02	14,943,307.50	21,350.79	69,106,485.05	69,106,485.05
India		8,107.45	14,943,307.50	42,053.36	69,106,485.05	69,106,485.05
Iran		21,210.99	14,943,307.50	114,836.18	69,106,485.05	69,106,485.05
Ireland		1,640.13	14,943,307.50	3,085.53	69,106,485.05	69,106,485.05

Note: Sum(SalesAmount) takes both selections and dimensions into account.

Note: Sum(TOTAL SalesAmount) gives the sum of sales for the selected year 2020

Note: Sum({1} SalesAmount) gives the sum for the country dimension ex: Armenia but for all the years ignoring the selection 2020



Note: Sum(ALL SalesAmount) gives the total sales for ALL countries and all Years ignoring both the selection and dimension

Finding Percentage of Total SalesAmount Year 2022 is selected

Year		Month				
Country	Q	Sum(SalesAmount)	sum(SalesAmount)/ sum(total SalesAmount)	sum(SalesAmount)/ sum({1} SalesAmount)	sum(SalesAmount)/ sum(all SalesAmount)	sum(SalesAmount)/ sum({1}total SalesAmount)
Totals		16,103,690.2	100.00%	23.30%	23.30%	23.30%
Armenia		8,780.9	0.05%	29.17%	0.01%	0.01%
Australia		2,394,141.3	14.87%	22.80%	3.46%	3.46%
Bhutan		36,378.2	0.23%	26.31%	0.05%	0.05%
Canada		452,168.6	2.81%	23.13%	0.65%	0.65%
China		217,155.3	1.35%	25.15%	0.31%	0.31%

Note: Image applicable for questions 8, 9, 10

8. Percentage of SalesAmount per country for the total Sales of 2022 for all countries Ignoring the country dimension in the table but taking 2022 selection into account.

Sum(SalesAmount)/ Sum(TOTAL SalesAmount)



9. Percentage of SalesAmount of the country for the total SalesAmount of that country for all years (Ignoring the 2022 selection but taking the dimension country into account)

$\text{Sum}(\text{SalesAmount}) / \text{Sum}(\{\text{1}\} \text{ SalesAmount})$

10. Percentage of SalesAmount of the country for the total SalesAmount for all countries for all years (Ignoring the 2022 selection and the dimension country)

$\text{Sum}(\text{SalesAmount}) / \text{Sum}(\text{ALL SalesAmount})$

Product category	Q	Product Name	Q	Sum([Sales Amount])	Total Sales Per Category	Percentage of Product Sales Per Category
Totals				6000	6000	100.00%
A	W			1000	1500	66.67%
A	X			500	1500	33.33%
B	Y			2000	2000	100.00%
C	S			1000	2500	40.00%
C	Z			1500	2500	60.00%

image applicable for: questions 11, 12 , 13, 14

11. Total Sales Per Category in every row:

$\text{Sum}(\text{TOTAL} < [\text{Product category}]> [\text{Sales Amount}])$

12. Percentage of Product Name Sales per Product Category:

$\text{Sum}([\text{Sales Amount}]) / \text{Sum}(\text{TOTAL} < [\text{Product category}] > [\text{Sales Amount}])$

13. Show the total sales for all products in every row

$\text{Sum}(\text{TOTAL} [\text{SalesAmount}])$



14. Percentage of Product Sales per Overall total sales for all products

`Sum([SalesAmount]) / Sum(TOTAL [SalesAmount])`

15. Find the Sum of SalesAmount per Product, disregarding the dimension Contract in the field.

`Sum(total (aggr(sum({<Contract=>} SalesAmount), [Product Name])))`

AGGR()

`(FieldName, (Sort-type, Ordering))`

Structured parameters can be nested:

`(FieldName, (FieldName2, (Sort-type, Ordering)))`

orderid	CustomerNa...	country	Sum(SalesAmou...	Avg(SalesAmount)	Avg(Aggr (Sum(SalesAmount), country))	Avg(Aggr (Sum(SalesAmount), country, CustomerName))
Totals			3050	305	762,5	508,33333
8	hel	Germany	400	400	-	400
4	hick	Germany	150	150	-	150
2	Jen	Germany	300	300	-	-
1	Jen	Germany	100	100	1050	500
3	Jen	Germany	100	100	-	-
9	kit	Denmark	600	600	600	600
6	Tom	Austria	300	300	-	-
5	Tom	Austria	200	200	600	600
7	Tom	Austria	100	100	-	-
10	zee	Norway	800	800	800	800

Image applicable for questions: 15, 16

16. Find the average SalesAmount per country

`Avg(Aggr(Sum(SalesAmount), Country))`

Note: This aggregates the Sum of SalesAmount per Country, then divide by the no of distinct countries. In this case $1050 + 600 + 600 + 800 = 3050$ then Divide by 4 which is the no of Unique countries = 762.5

17. Find the average per country per customer

Avg(Aggr(Sum(SalesAmount), Country, Customer))

Note: This aggregates the Sum of SalesAmount per Country per customer then divide by the no of distinct countries. In this case $400 + 150 + 500 + 600 + 600 + 800 = 3050$ then Divide by 6 which is the no of Unique customers = 508.33

18. Find the Max Sales Amount per Customer

Aggr (Max(SalesAmount), CustomerName)

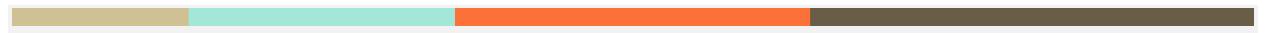
Note: This looks at the each sales from a customer and selects the max amount of it. EX: Jen has 3 orders 300, 100 ,100. Max sales is therefore 300. As shown below.

orderid	CustomerName	country	Sum(SalesAmount)	aggr (max(SalesAmount), country, CustomerName)
			3050	-
8	hel	Germany	400	400
4	hick	Germany	150	150
2	Jen	Germany	300	-
1	Jen	Germany	100	300
3	Jen	Germany	100	-
9	kit	Denmark	600	600
6	Tom	Austria	300	-
5	Tom	Austria	200	300
7	Tom	Austria	100	-
10	zee	Norway	800	800

Image applicable for question 17

19. Find the Max Sales Amount per Customer in each row

Aggr (NoDistinct Max(SalesAmount), CustomerName)



Note: Since Distinct is implicit in AGGR() if you want this value to be in each row per customer then mention explicitly NODISTINCT. As shown below

orderid	Q	CustomerName	Q	country	Q	Sum(SalesAmount)		aggr (Nodistinct max(SalesAmount), CustomerName)
Totals						3050		-
8	hel	Germany				400		400
4	hick	Germany				150		150
2	Jen	Germany				300		300
1	Jen	Germany				100		300
3	Jen	Germany				100		300
9	kit	Denmark				600		600
6	Tom	Austria				300		300
5	Tom	Austria				200		300
7	Tom	Austria				100		300
10	zee	Norway				800		800

Image is applicable for questions 18

20. Find Max Distinct Orders per country per customer

`Max(Aggr(Count(distinct(OrderNumber)),Country,CustomerId))`

21. Retrieve the top 2 Rank customer names based on the distinct number of orders

`=If(aggr(rank(count(distinct(OrderNumber))),Country,CustomerId) <= 2,
Customer_name)`

Note: Change the number '2' to any number you wish

22. Print out the top 5 Ranked customer's names based on the sales and print the names out

Expected format:

Top 5 customers

1 - Stephanie Molina 2 - Lauren Lewis 3 - Patricia Molina DDS 4 - Joel Livingston 5 - Charles Chapman

THINK M2IROS

```
concat(distinct
IF(aggr(rank(sum(SalesAmount)),Customer_name)<=5,aggr(rank(sum(SalesAmount)),C
ustomer_name)&' - '&Customer_name& CHR(10)))
```

chr(10) gives a line break. Can be replaced with & ''

Note: You can use different chr from here:

https://www.w3schools.com/charsets/ref_html_ascii.asp

23. Rank customers per country based on the number of distinct orders

Aggr(Rank(Count(Distinct(OrderNumber))), Country, CustomerId)

24. Calculate Total Sales for the First 3 months a customer has ordered.

Note: You can combine IF, AGGR and Rank to calculated basd on conditions:

Sum(IF(AGGR(Rank([-Year Month])<=3,customer_id,[Year Month]), SalesAmount))

25. Find the Average Sales Amount per Country Per Customer

Use a dimension with Country and Customer

AGGR(Sum(SalesAmount)/ Count(Distinct(OrderID)), Country, Customer)

26. Find the Max Average Sales Amount per Country Per Customer

Max(AGGR(Sum(SalesAmount)/ Count(Distinct(OrderID)), Country, Customer))



FirstSortedValue

27. Retrieve the customer Name with the Min Average Sale Amount per Country Per Customer

```
FirstSortedValue(Customer, AGGR(Sum(SalesAmount)/ Count(Distinct(OrderID)), Country, Customer))
```

Note: Aggr is sorted in ascending order. The first sorted value, therefore, retrieves the lowest average Sales

28. Retrieve the customer Name with the max Average Sale Amount per Country Per Customer

Note: Adding “ - “ in front of AGGR sorts the values in descending order.

```
FirstSortedValue(Customer, - AGGR(Sum(SalesAmount)/ Count(Distinct(OrderID)), Country, Customer))
```

29. Find the Sum of cumulative aggregate sales per year and month

```
Sum(Aggr( Rangesum(Above(Sum(Sales),0,12)), (Year, (Numeric, Ascending)), (Month, (Numeric, Ascending)) ))
```

T

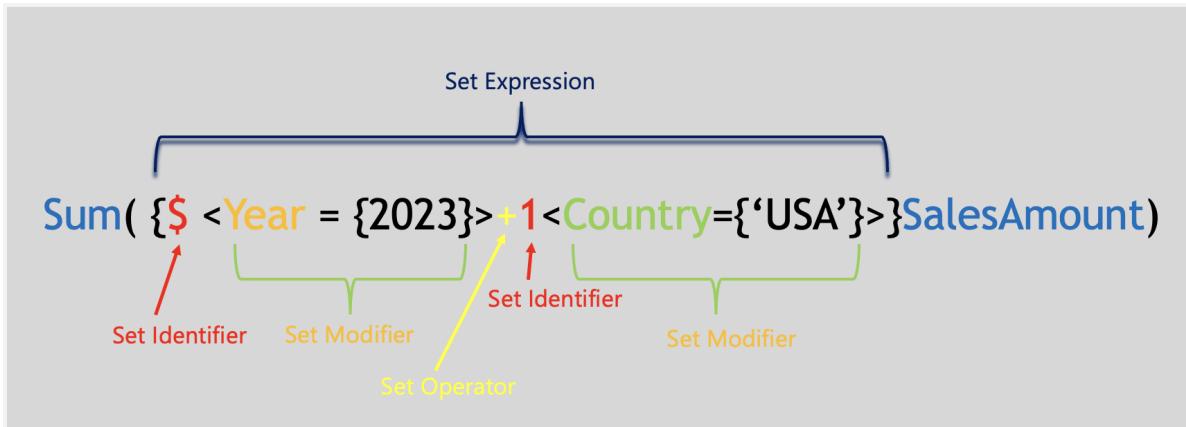


Note: This is aggr using structured parameter where Year and month are structured in ascending order and then aggregated

Year	Month	Sum(Sales)	Structured Aggr()
2022	Jan	100	100
2022	Feb	100	200
2022	Mar	100	300
2022	Apr	100	400
2022	May	100	500
2022	Jun	100	600
2022	Jul	100	700
2022	Aug	100	800
2022	Sep	100	900
2022	Oct	100	1000
2022	Nov	100	1100
2022	Dec	100	1200
2023	Jan	100	100

Set Expressions

Set expressions can be used inside and outside aggregation functions, and are enclosed in curly brackets.



Source: helpqlik.com

Set Expression will be applied for both the measures automatically

New release of Qlik 2022 enables Set Expressions to be applied in 2 ways.

Inner Set

30. Find the SalesAmount for the Year 2023 using an Inner Set Expression

$$\text{Sum(} \{ \$ <\text{Year}=\{2023\}> \} \text{ SalesAmount)}$$

31. Find the percentage of SalesAmount per customer for the Year 2023 using an Outer set expression

$$\{ <\text{Year}=\{2023\}> \} \text{ Sum(SalesAmount) / Count(distinct Customer)}$$

32. Apply an Outer set expression to a Master Measure

Note: Outer set expression applied to master measure that is already created

$$\{ <\text{Year}=\{2023\}> \} [\text{Master Measure}]$$

THINK METRICS

Set expressions with Lexical scoping

Note: Set Expression will be applied to the expressions enclosed inside the brackets()

33. Find the average salesAmount per customer for the year 2023 minus the average overall sales for the country using the outer expression

$$(\{<\text{Year}=\{2023\}>\} \text{Sum}(\text{SalesAmount}) / \text{Count}(\text{distinct Customer})) - \text{Avg}(\text{CountrySales})$$

Note: Here the OuterSet expression Year = 2023 will not be applied to - avg CountrySales, since it is outside the ()

Set identifiers:

1	Represents the full set of all the records in the application, irrespective of any selections made.
\$	Represents the records of the current selection in the default state. The set expression {\$} is thus usually the equivalent to not stating a set expression.
\$1	Represents the previous selection in the default state. \$2 represents the previous selection-but-one, and so on.
\$_1	Represents the next (forward) selection. \$_2 represents the next selection-but-one, and so on.

34. Sum of SalesAmount for entire dataset disregarding any user selection (Takes dimension into account)

THINKMETRICS
Sum ({1} SalesAmount)

35. Sum of SalesAmount for any user selected data if no selection is made then the entire dataset (Takes dimension & user selection into account)

Sum ({\$} SalesAmount)

Same as **Sum (SalesAmount)**

Note: $\{ \$ \}$ is implied and does not need to be written

36. Sum of SalesAmount for the previous user selected data

Sum ({\$1} SalesAmount)

37. Sum of SalesAmount ignoring any selection in the field Country

Sum({<Country = >} SalesAmount)

Same as

Sum({\$<Country = >} SalesAmount)

Note: $\$$ is implied i.e user selections are considered.

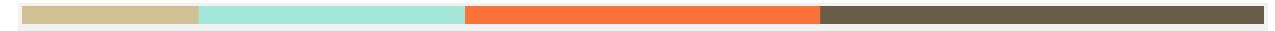
Set modifiers

Set modifier is what is enclosed in between **< angled brackets >**

38. Sum of SalesAmount for one selected year

Sum ({\$<Year = {2023}>} SalesAmount)

T I P P I N G M I L E S T O N E S



39. Sum of SalesAmount for year 2023, and country USA

```
Sum ( {$<Year = {2023}, Country = { 'USA' }>} SalesAmount)
```

40. Sum of SalesAmount for the year 2023, and any country starting with ' S '

```
Sum({$<Year={2023}, Region={"S*"}>} SalesAmount)
```

Adding multiple field values in one modifier

You can add multiple field values in one modifier by adding a comma ‘ , ‘ between the field values.

41. Sum of SalesAmount for 3 selected years values from the field Year

```
Sum ({$<Year = {2023, 2024, 2025}>} SalesAmount)
```

42. Sum of SalesAmount for 3 selected country values from the field Country

```
Sum( {$<Country = { USA, Sweden, 'United Kingdom' }>} SalesAmount)
```

Or

```
Sum( {$<Country = { 'USA', 'Sweden', 'United Kingdom' }>} SalesAmount)
```

T D I N K M I I R K U S

43. Sum of SalesAmount only for a certain date type

```
Sum({<Date_typ={'Order'} >}SalesAmount)
```

```
Sum({<Date_typ={'Shipped'} >}SalesAmount)
```

```
Sum({<Date_typ={'Due'} >}SalesAmount)
```

Note: Used in canonical calendar. Check out the masterclass for more info

Using Single Quotes ‘‘ vs using Double Quotes “ “

Note: Use Single quote on literal case sensitive values of fields or with dates.

44. Sum of SalesAmount for ‘United Kingdom’ country value from the field Country

```
Sum( {$<Country = { 'United Kingdom' }>} SalesAmount)
```

45. Sum of SalesAmount for ‘2023-02-02’ date value from the field Date

```
Sum( {$<Date = { '2023-02-02' }>} SalesAmount)
```

Note: Use Double quotes for searches and for not case sensitive or case insensitive values

46. Sum of SalesAmount for ‘United Kingdom’ , ‘UNITED KINGDOM’ , ‘united kingdom’ country values from the field Country

```
Sum( {$<Country = { "United Kingdom" }>} SalesAmount)
```

47. Sum of SalesAmount for all products that start with Ice* values from the field Product

```
Sum( {$<Product = { "Ice*" }>} SalesAmount)
```

48. Sum of Sales for all Year after 2022

```
Sum( {$<Year = { ">2022" }>} SalesAmount)
```

Dollar \$ Expansion in Set modifiers

Note: Calculation inside the Set modifiers needs to be placed inside a Dollar \$ sign expansion

49. Sum of SalesAmount for Calculated Max Year taking user selection into account.

```
Sum( {$<Year = { $(=Max(Year)) }>} SalesAmount)
```

50. Sum of SalesAmount for Calculated Max -1 Year taking user selection into account.

```
Sum({<Year = {$(=Max(Year)-1)}>}SalesAmount)
```

51. The sum of SalesAmount for Calculated Max Year without taking considering user selection.

```
Sum( {$<Year = {$(=Max({1} Year))}>} SalesAmount)
```

52. Sum of SalesAmount for Max Order date field

```
Sum( {$<OrderDate = {'$(=Date(Max(OrderDate)))'}>} SalesAmount)
```

53. Sum of SalesAmount for Min Order date field

```
Sum( {$<OrderDate = {'$(=Date(Min(OrderDate)))'}>} SalesAmount)
```

54. Sum of SalesAmount for Previous month (sales occurred greater than or equal to one month back from today)

```
Sum( {$<OrderDate = {">=$(=AddMonths(Today(),-1))">} SalesAmount)
```

Note: If today = 2023-02-25 then the result becomes <OrderDate = {">=2023-01-25"}>

Note: Addmonths adds months to the month in the given date. Here we add -1 hence date from one previous month

55. Sum of SalesAmount for Entire Previous month (sales occurred greater than or equal to start of the previous month)

```
Sum( {$<OrderDate = {">=$(=AddMonths(MonthStart(Today()),-1))">} SalesAmount)
```

Note: If today = 2023-02-25 then the result becomes <OrderDate = {">=2023-01-01"}>

Monthstart takes the first date of the month from current date today()

Addmonths adds months -1, hence start of the previous month

56. Sum of SalesAmount for Rolling 12 months

```
Sum( {$<OrderDate = {">=$(=AddMonths(MonthStart(Today()),-12))">} SalesAmount)
```

57. Sum of SalesAmount for Rolling 12 months until today

```
Sum( {$<OrderDate = {">=$(=AddMonths(MonthStart(Today()),-12))<=$(=(today()))"}>} SalesAmount)
```

58. Sum of SalesAmount for Rolling 12 months using a calendar flag

```
Sum( {$<rolling_13 = {'1'}>} SalesAmount)
```



59. Script function: Add flag in master calendar script:

```
if([TempDate] >= date(monthstart(addmonths(today(),-13))) and [TempDate] <=
date(today(),0), 1, 0) as rolling_13,
```

Set expression with the variables

60. Sum of sales based on the variable created for the max year in the dataset.

Create a variable called `vMaxYear = Max(Calendar_Year)`

```
Sum({< Calendar_Year = {'$(=vMaxYear)'}>} SalesAmount )
```

Modifiers based on field values of other fields.

61. Sum of SalesAmount where for selected ActualShippedDate is a value in ExpectedDeliveryDate

```
Sum( {$< ExpectedDeliveryDate = ActualShippedDate>} SalesAmount)
```

Set Operators

Union:



Returns the set of data that is present in any of the 2 set modifiers

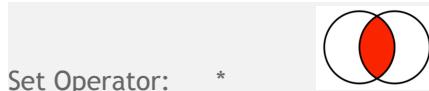
Exclusion:

T H I N K M = I R I C S



Returns the set of data not present in the second but present in the first. If used with only 1 set modifier then '-' returns the remaining of the dataset from the modifier.

Intersection:



Returns the dataset present in both the dataset.

Symmetric difference (XOR):



Returns the dataset that is either in one or the other modifier dataset but not in both.

62. Find the Sum of SalesAmount for the YEAR 2023 union with Country USA.

Note: Year dataset will take selections into consideration since set identifier is \$ while the country will neglect any selection because of set identifier 1

`Sum({$<Year={2023}>+1<Country={'USA'}>}SalesAmount)`

63. Find the Sum of SalesAmount for the YEAR 2023 but excludes Country USA.

Note: Year dataset will take selections into consideration since set identifier is \$ while the country will neglect any selection because of set identifier 1

`Sum({$<Year={2023}>-1<Country={'USA'}>}SalesAmount)`

64. Find the Sum of Sales Amount for records that have both YEAR 2023 and Country is USA. (Intersection)

Note: Year dataset will take selections into consideration since set identifier is \$ while the country will neglect any selection because of set identifier 1



`Sum({$<Year={2023}>*1<Country={'USA'}>}SalesAmount)`

65. Find the Sum of Sales Amount for the dataset excluded by any selections made by the user.

`Sum ({1-$} SalesAmount)`

`note:{1}` selects the entire dataset.

`Note: {$}` considers the selections made by the user

— Exclusion Operator

66. Find the Sum of Sales Amount for the intersection of selection and bookmark

`Sum ({BM01} SalesAmount)`

67. Find the Sum of Sales Amount for the dataset that is present in both user selection and bookmarks

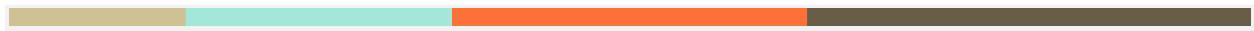
`Sum ({$*BM01} SalesAmount)`

68. Find the Sum of Sales Amount for user selected data or bookmarks

`Sum ({$+BM01} SalesAmount)`

69. Find the Sum of Sales Amount excluding user selection or bookmarks

DATA SCIENCE LEARNING



Sum ({\$-(\$+BM01)} SalesAmount)

70. Year to Date Sum of Sales Amount based on Calendar Date

Sum({<calendar_date = {">=\$(=(YearStart(Today())))<=\$(=(today())))"} >}SalesAmount)

71. Current year-to-date Sum of SalesAmount with the calendar flag

Sum({< CurYTDFlag = {'1'} >}SalesAmount)

Note: Your script should have a calendar flag for all dates in the current year till the current date.

72. Find the Sum of SalesAmount based on advanced wild search where the first name is 5 letters.

Sum({<first_name = {"?????"} >}SalesAmount)

73. Sales amount based on advanced calculation expression

Sum({<first_name = {"=Sum(SalesAmount)>2000"} >}SalesAmount)

74. Sales amount for countries based on advanced search that start with U or end with land

Sum ({\$<Country={"U*"}+{"*land"}>} Sales)

75. Retrieve the first names for those whose Sales Amount is more than 20000 using Set Expressions



`Only({< first_name = {"=sum(SalesAmount)>20000"} >}first_name)`

76. Retrieve the first names for those whose Sales Amount is more than 20000
And the Sales Amount using Set Expressions

Expected Format: Aaron has a sales of 43714.4608

`Only({< first_name = {"=sum(SalesAmount)>20000"} >}first_name)`

`&' has a sales of ' &`

`Sum({< first_name = {"=sum(SalesAmount)>20000"}>}SalesAmount)`

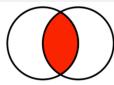
Note:

To disregard the dimensional grouping - Use the Total qualifier

To disregard the selection - Use Set Analysis

Implicit set operators

Implicit union $+=$ 

Implicit intersection $*=$ 



77. The sum of SalesAmount for selected countries and 2 default countries

Note: Implicit union adds Sweden and Germany to the list of countries selected.

```
Sum( {$<Country += {'Sweden','Germany'} >} SalesAmount )
```

78. The sum of SalesAmount for selected products and all products starting with Oat except oatgurt

Note: Implicit union adds all products that start with Oat except Oatgurt to the list of products selected unless Oatgurt is a user-selected product in which case it will be included.

```
Sum( {$<Product += {"Oat*"} - {'Oatgurt'} >} SalesAmount )
```

Set expressions inheritance rules (NEW OUTER SET EXPRESSIONS)

Outer Set inheritance to inner set

79. A case where no Set Identifier is added to the Inner Set. The outer set will be inherited to the inner set.

```
{<OuterSet>} Sum( {<InnerSet>} Field )
```



80. A case where Adding a Set Identifier to the Inner Set. The OuterSet will not be inherited into the InnerSet, since the inner set expression contains a set identifier.

```
{<OuterSet>} Sum( {$<InnerSet>} Field )
```

New Set Expressions and AGGR()

81. A case where the Set1 will not be inherited into Set2.

```
Sum({<Set1>} Aggr(Count({<Set2>} Field )))
```

82. A case where OuterSet will be inherited into both Set1 and Set2.

```
{<OuterSet>} Sum({<Set1>} Aggr(Count({<Set2>} Field )))
```

Elemental Functions P & E ()

83. Find the sum of SalesAmount for countries where the product Sneakers has been sold, you can use:

```
Sum({<Country = P({1<Product='Sneakers'})>} Country) SalesAmount)
```

84. Find the Sum of SalesAmount for countries where the product Sneakers has never been sold, you can use:



`Sum({<Country = E({1<Product={'Sneakers'}>} Country)>} SalesAmount)`

Note: Remember that selections are abided

85. Returns the SalesAmount of those customers that ever have bought the product 'Hat'

Note: `P()` brings the possible customer names that have bought Hat

`sum(${<Customer = P({1<Product={'Hat'}>})>} SalesAmount)`

86. Returns the SalesAmount of those customers that ever have bought the product 'Hat' based on possible values from the Supplier field

Note: `P()` brings the possible all values from supplier field names that are associated with Product - Hat. Those supplier values are then used as input in the Customers field.

`sum(${<Customer = P({1<Product={'Hat'}>} Supplier)>} SalesAmount)`

87. Returns the SalesAmount for those customers that never bought the product 'Hat'.

Note: The element function `E()` returns the list of customers that are excluded based on if they bought Product 'Hat'. It brings in a list of all customers and excludes the ones that have bought Product 'Hat'.

`Sum(${<Customer = E({1<Product={'Hat'}>})>} SalesAmount)`

88. Count new customer percentage based on unique customerid in the max year - previous years

`Count(distinct ${<CustomerId = e({< Year = {">=$(=min(Year)) and <=$(=Max(Year)-1)">})>} CustomerId)}`

/ count(distinct(CustomerId))

89. Count new customers based on unique customerid in the max year - that are not present in the previous years

Count(distinct

```
{<CustomerId = e({< Year = {">=$(=min(Year)) and <=$(=Max(Year)-1)">}>} CustomerId)
```

90. Count Returning customers based on unique customerid in the max year - that are also present in the previous years

Count(distinct

```
{<CustomerId = p({<Year={"<$(>=max(Year))"}>},Year={"$(>=max(Year))"}>}CustomerId)
```

91. Count Returning customers percentage based unique customerid in the max year - that are also present in the previous years divided by the total distinct customers

Count(distinct

```
{<CustomerId = p({<Year={"<$(>=max(Year))"}>},Year={"$(>=max(Year))"}>}CustomerId)
```

/

count(distinct(CustomerId))

THINK METRICS

92. Count Lost customers based on unique customerid that were present in the previous years but missing in the Max year.

Note: Same as finding the new customers but we use a - to calculate the customers missing in the list

```
- Count(DISTINCT{< CustomerId =  
e({<Year={"$(>max(Year))"}>}}, Year={"<$(>max(Year))"}>}CustomerId)
```

93. Count Lost customers percentage based on unique customerid that were present in the previous years but missing in the Max year.

Note: Same as finding the new customers using Exclude but we use a - to calculate the customers missing in the list

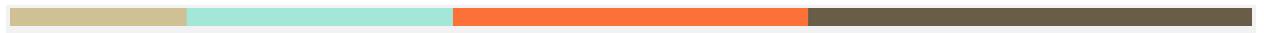
```
Count(DISTINCT{< CustomerId = e({<Year={"$(>max(Year))"}>}}, Year={"<$(>max(Year))"}>}  
CustomerId) / COUNT(DISTINCT(CustomerId))
```

RangeSum

94. Find the sum of a range of values

RangeSum (5,10,20)	Returns 35
--------------------	------------

THINKMETRICS



Above

Selects the value ABOVE the current row.

(Above(Sum(Sales),1))

1 is the OFFSET. = indicates one row above the current row. The default is one row above.

So ABOVE(Sum(SalesAmount)) is the same as ABOVE(Sum(SalesAmount), 1)

95. Above examples:

Customer Name	SalesAmount	Above(SalesAmount)	Above(SalesAmount, 2)	if ((SalesAmount) > above(SalesAmount), 'Higher')	Background expression:
Jen	100	-	-		
hick	150	100	-	Higher	if ((SalesAmount) > above(SalesAmount), green())'
Tom	200	150	100	Higher	Higher

Note: Row could be the table row or the straight table equivalent of the chart.

THINK METRICS



ROWNO()

Returns the No of current rows in a table or straight table equivalent of a chart

96. Calculate cumulative sales

`RangeSum(Above(sum(SalesAmount),0,RowNo()))`

Note: This calculates the Sum of SalesAmount from the current row to all the rows ABOVE

Or

Expression: `Sum(sold)`

Modifier: `Accumulation`

Number formatting: `Auto`

Add a modifier to your Measure expression and choose Accumulation as your modifier

Below

Selects the value BELOW the current row.

`Below(Sum(Sales),1)`

1 is the OFFSET. = indicates one row below the current row. The default is one row below.

So `Below(Sum(SalesAmount))` is the same as `Below(Sum(SalesAmount), 1)`

J H I N K M – I ↗ I C S

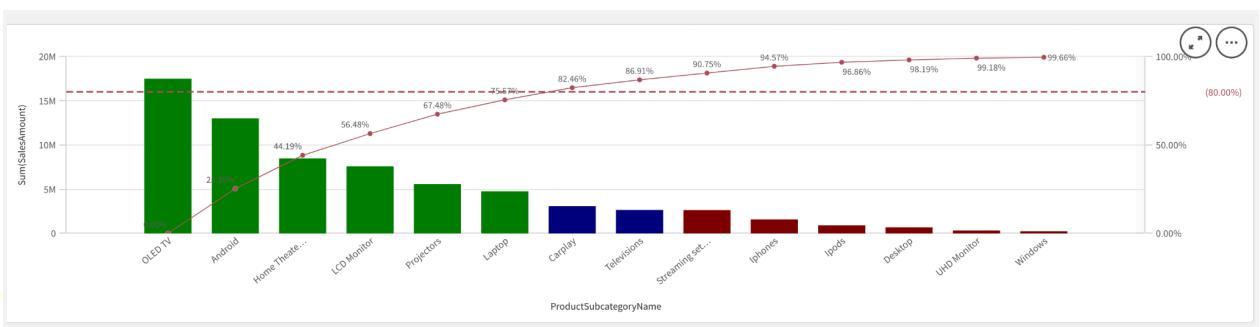
97. Calculate Below sales



Customer Name	SalesAmount	Below(SalesAmount)	Below(SalesAmount, 2)	if ((SalesAmount) < BELOW(SalesAmount), 'Higher')	if ((SalesAmount) < BELOW(SalesAmount), green(), 'Higher')
Jen	100	150	200	LOWER	LOWER
Hick	150	200	-	LOWER	LOWER
Tom	200	-	-	-	-

Pareto Chart

98. Creating a Pareto Chart





Step 1: Add a combo chart :

Step 2: Add line percentage as :

```
Rangesum(Above(Sum(SalesAmount),1,rowno()))/ Sum(TOTAL SalesAmount)
```

Step 3: Add bar chart with the measure

```
Sum(SalesAmount)
```

Step 4: For the bar chart, add color expression as

```
Aggr(
if(rangesum(above(sum({<ProductSubcategoryName=>}SalesAmount)/sum({<ProductSubcategoryName=>}total SalesAmount),1,rowno())) < 0.8,green(),
if(rangesum(above(sum({<ProductSubcategoryName=>}SalesAmount)/sum({<ProductSubcategoryName=>}total SalesAmount),1,rowno())) < 0.9,blue(),red())),
(ProductSubcategoryName,(=sum({<ProductSubcategoryName=>}SalesAmount),Desc)))
```

Note: Replace *ProductSubcategoryName* with your desired Dimension

Note: (ProductSubcategoryName,(=Sum({\$<ProductSubcategoryName=>}SalesAmount),Desc))

Is Sorted aggregate to ignore selection in Product sub Category field and is sorted descending based on the Sun of Sales Amount and makes the color remain even when values are selected.

99.ABC analysis dimension /Pareto chart dimension

THINK METRICS



Replace *ProductSubcategoryName* with the desired Dimension.

Step 1: Add a Filter Pane

Step 2: Add Dimension

Aggr

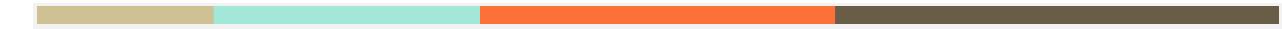
```
(if(rangesum(above(sum({1}SalesAmount)/sum({1}total SalesAmount),1,rownr())) < 0.8, 'A',
    if(rangesum(above(sum({1}SalesAmount)/sum({1}total SalesAmount),1,rownr())) <
        0.9, 'B','C')),
    (ProductSubcategoryName,(=sum({1}SalesAmount),Desc)))
```

PICK AND MATCH

Note: Sum sales using PICK Match instead of IF:

Tutorial on Pick and match: [QlikSense tutorial: STOP using IF!!! Use these functions instead ...](#)

THINK ME = I RICUS



100. If the country is 'US', then red, IF country is 'Sweden' then green, else Yellow:

```
PICK(MATCH(Country,
'US','Sweden')+1,argb(175,254,197,80),argb(175,242,0,0),argb(175,111,176,29))
```

Note: The first color signifies the else clause, Yellow. Check the tutorial for detailed explanation.

Chart Color functions

Color using ARBG function

101. Custom chart colors if SalesAmount more than 200000 then Red else Green:

```
IF (SUM(SalesAmount) > 200000, argb(175,111,176,29),argb(175,242,0,0))
```

Notes: ARGB (alpha, R, B, G)

Alpha is value of Opacity value with 255 denotes full opacity. R, G, B is the value for Red, Blue and Green respectively.

Instead of ARGB, you can use RGB(r, g, b) which gives the same result but with fixed alpha

COLOR using RGB

102. Custom chart colors if SalesAmount more than 200000 then Blue else Red:





`IF (SUM(SalesAmount) > 200000, RGB(0,0,128),RGB(128,0,0))`

Color using Color function

103. Custom chart colors if SalesAmount is more than 200000, then Blue else Red:

`IF (Sum(SalesAmount) > 200000, blue(), red())`

Stating the color, qlik retrieves the rbg value for that color. You can state the opacity or alpha inside the color

Example:

`Red() - rgb(128,0,0)`

`color(alpha)` brings the argb value with the alpha stated. Alpha is an integer between 0 to 255

`Red(128) - argb(128, 128, 0,0)`

Inbuilt color codes in Qlik Sense

Color function	RGB value	ARBG value
LightBlue	173,216,230	255,216,230,255



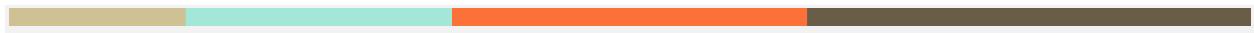
black ([alpha])	(0,0,0)	(alpha, 0, 0, 0)
blue()	(0,0,128)	
brown(128)		(128, 128, 128, 0)
darkgray([alpha])	(128,128,128)	
green([alpha])	(0,128,0)	
lightblue([alpha])	(0,0,255)	
lightgray([alpha])	(192,192,192)	
lightgreen([alpha])	(0,255,0)	
lightmagenta([alpha])	(255,0,255)	
lightred([alpha])	(255,0,0)	
magenta([alpha])	(128,0,128)	
red([alpha])	(128,0,0)	
white([alpha])	(255,255,255)	
yellow([alpha])	(255,255,0)	

Adding Conditional Colors to charts using color Hex codes

104. Adding Conditional Colors to charts using color Hex codes

You can add conditional colors using Hex codes inside single quotes for example:

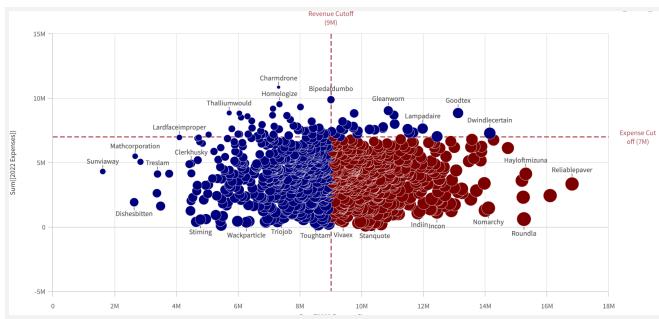
'#4477aa'



```
If( [2022 Revenue] >= $(vRevenue) and [2022 Expenses] <= $(vExpense), '#fa8775  
, '#4477aa)
```

Conditional coloring

105. Change colors of a scatter plot based on variable input by the user.



Check the Masterclass for detailed instruction

Tutorial: [Dynamic Target Quadrant In QLIK SENSE.](#)

```
If( [2022 Revenue] >= $(vRevenue) and [2022 Expenses] <= $(vExpense),  
red(),blue())
```

Where VRevenue and vExpense and values stored in variables.

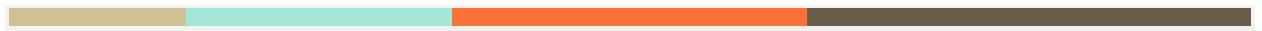
Or

```
If([2022 Revenue] >= 500000 and [2022 Expenses] <= 100000, red(),blue())
```

106. Change background colors based on Rank Top 5 Ranked Product

```
IF(Rank(Sum(SalesAmount))<= 5, green(),red())
```





Create a synthetic dimension

Note: Synthetic dimensions are calculated dimensions created in the front end to categorize the data.

107. Create a synthetic dimension in the front end

Tutorial on Synthetic dimensions:

- ▶ PART 1: How to create Synthetic Dimensions and custom measures with ...

Create a dimension: `VALUELIST('Top Countries', 'Middle Countries', 'Bottom Countries')`

108. Create a synthetic dimension called Top, Middle, and Bottom countries and categorize countries based on Total SalesAmount

Tutorial on Synthetic dimensions:

- ▶ QlikSense tutorial: Synthetic Dimensions using calculated set expression....

Step 1: Create a dimension: `VALUELIST('Top Countries', 'Middle Countries', 'Bottom Countries')`

Or

Create a variable called `vToplist` columns and enter the value as 'Top Countries', 'Middle Countries', 'Bottom Countries'

In dimensions add `=ValueList(${vToplist})`

Add measure: `Pick(Match(ValueList(${vToplist}), ${vToplist}),`

`count(distinct{<Country ={"=sum(SalesAmount)>=1000000"}>}Country)`

```
, count(distinct{<Country ={"=sum(SalesAmount)<1000000 and
Country={"=sum(SalesAmount)>=500000"}>} Country},count( distinct{<Country
={"=sum(SalesAmount)>=100000"}>} Country) )
```

Method without variable:

```
IF(ValueList('Top Countries', 'Middle Countries', 'Bottom Countries') = 'Top Countries',
count( distinct
    {<Country {"=sum(SalesAmount)>=1000000"}>}Country)
,
IF(ValueList('Top Countries', 'Middle Countries', 'Bottom Countries') = 'Middle Countries',
count(distinct
    {<Country {"=sum(SalesAmount)<1000000 and Country
={"=sum(SalesAmount)>=500000"}>} Country},
IF(ValueList('Top Countries', 'Middle Countries', 'Bottom Countries') = 'Bottom Countries',
count( distinct
    {<Country {"=sum(SalesAmount)>=100000"}>} Country) ) )
```

109. Create a synthetic dimension called Top, Middle, and Bottom countries and categorize countries based on Total SalesAmount - Method 2

Tutorial: [▶ Synthetic Dimension Part 2: Creating calculated dimension while using AGGR funct...](#)

Create a dimension:

```
AGGR(
    if(sum(SalesAmount) >=1000000, dual('Top Countries', -1),
        if(sum(SalesAmount) <1000000 and sum(SalesAmount)>= 500000, dual('Middle Countries',
0),
            if(sum(SalesAmount) <100000 ,dual('Bottom Countries', 1)))
    , Country)
```

Measure: Count(Distinct Country)



Data cleaning functions

110. Clean the columns by removing the unwanted characters from the field values

PurgeChar ('w5h7a8t','578')	result: 'what'
Purgechar ('value', 'characters to purge')	

111. Clean the columns by retaining only the wanted characters from the field values

Keepchar ('text', 'characters to keep')	result: 'what'
---	----------------

112. Change the values to UPPER or LOWER

UPPER (' AweSome')	result: 'AWESOME'
LOWER ('AweSome')	result: 'awesome'

113. Choose Characters from the right and left and middle values of the field values

<code>LEFT ('Helloweicsd', 5)</code>	result: 'Hello'
<code>left('value', count)</code>	Picks the first 5 values from the left
<code>Right (' bloodyhell', 4)</code>	result: 'hell'
<code>Right ('value', count)</code>	Picks the first 4 from the right
<code>Mid('whatFUNitis', 5, 3)</code>	Result: 'FUN'
<code>Mid('whatFUNitis', 5)</code>	Result: 'FUNitis'
<code>Mid('Value', start, count)</code>	

114. Find the length of values in a field

<code>Len('bonkers')</code>	Result: 7



115. Clean values in a field by removing the spaces

Ltrim(' blimey')	Result: 'blimey'
Rtrim('groot ')	Result: 'groot'

116. Find the position of a substring in a text string

Index('1999-01-05','-', 1) First 1 occurrence of the '-' is in position 5 =Index('1999-01-05','-', 2) Second '2' occurrence of the '-' is in position 8 Index('value', substring[, count])	Result: 5 Result 8
--	-------------------------------

117. Extract the first name and the surname from the full names separated by a space

Subfield('James Bond' , ' ', 1) Subfield('James Bond' , ' ', 2)	Result: James Result: Bond
--	-----------------------------------

Subfield('James Bond' , '' , -1)

Result: Bond

Subfield('1999-01-05', '-' , 1)

Result: 1999

Combining the string functions

118. Find the position of the substring and a text string and then extract the next 3 characters

Mid('1999-007-001',Index('1999-007-001','-')+1,3)

Result: 007

1999-007-001 = Field

Index gets the first position of the ‘-’ and then +1 is added to it , then the function mid extracts the next 3 digits.

Subfield('1999-007-001', '-' , 2)

Result: 007

Cleaning challenge:

119. Clean the FIELD = 3453XY32Cleaning.Hero

Right(FIELD, len(FIELD)-index(FIELD, 'XY32')-3)

Result: Cleaning.Hero

Subfield(Right(FIELD, len(FIELD)-index(FIELD, 'XY32')-3), '.',1)

First Name Result: Cleaning

3453XY32Cleaning.Hero

Last Name Result: Hero

```
Subfield( Right(FIELD, len(FIELD)-index(FIELD, 'XY32')-3),
':',2)
```

120. Clean the FIELD = <Cle3411an41-1D34a1145ta>

```
PurgeChar(FIELD, '341156')
```

Result: <Clean-Data>

```
Replace(field, '-', '')
```

Result: <Cle3411an41
1D34a1145ta>

```
TextBetween(field, '<', '>')
```

Result:
Cle3411an41-1D34a1145ta

```
Subfield(subfield(FIELD, '<', 2), '>', 1)
```

Result:
Cle3411an41-1D34a1145ta

Putting all the above functions together

```
Subfield(subfield(Replace(PurgeChar(FIELD, '341156'), '-', ''),
'<', 2), '>', 1)
```

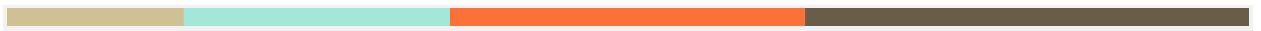
Result: Clean Data

Or

```
TextBetween(Replace(PurgeChar(FIELD, '341156'), '-', ''),
'>')
```

Result: Clean Data

TUTORIALS 



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Column Functions

In the front end, create a column based on the difference in values of 2 other columns

`Column(ColumnNo)` column(1) refers to the first measure column. Column ignores the dimension columns.

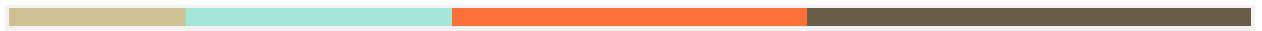
Product Name	Sales Amount	Cost Of Goods	Profit
			<code>Column(1) - Column(2)</code>
X	110	50	60
Y	210	100	110
Z	320	150	170
S	100	60	40

121. Based on the values of 2 columns, Change the color of the rows where the profit is over 100.

Add the below in background expression:

```
IF(Column(1) - Column(2) >= 100, Green(), Red())
```

T



Date Time functions

122. Load date as format 2023/02/10 and interpret and reformat to 2023-02-10.

```
Date(Date#('2023/02/10', 'YYYY/MM/DD'), 'DD-MM-YYYY')
```

Note: Date#() interprets the string and calculates the appropriate numerical component

Note: Date() to that result to reformat the string representation to the required format DD-MM-YYYY.

123. Convert from unix epoch time stamp to normal date timestamp:

Input:1677938227

`timestamp((‘1677938227’/ 86400) + 25569) = 2023-03-04 13:57:07`

Result: 2023-03-04 13:57:07

124. Extract Year and Month from the date

`Year(DateField)`

`Month(DateField)`



125. Extract Year Month from Today's date in the Year Month Format

`Date((Today()), 'YYYY-MM')`

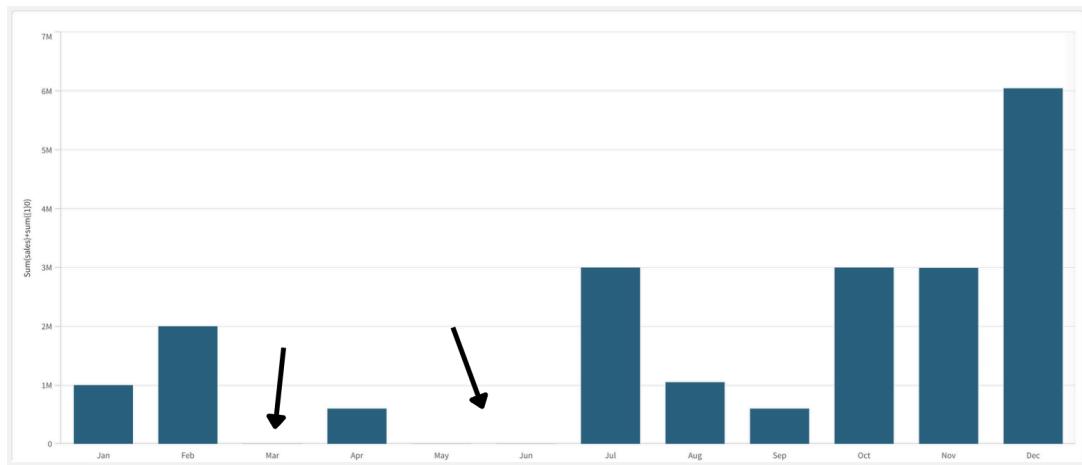
Function	Formula	Result
Get the starting date of the previous following year	<code>AddYears(YearStart(Today()), 1)</code>	2024-02-01
Get the starting date of the previous year	<code>AddYears(YearStart(Today()), -1)</code>	2022-02-01
Add 3 months to the current and extract the year month	<code>Date(MonthEnd(AddMonths(today(), 1)), 'YYYY-MM')</code>	2023-03
Remove 3 months from the current and extract the year month	<code>Date(MonthEnd(AddMonths(today(), -1)), 'YYYY-MM')</code>	2023-01

Miscellaneous

Force 0 values to charts

126. Find the Sum of SalesAmount and force 0 values if there are no sales for certain months

THINK METRICS



`Sum(SalesAmount) + sum({1} 0)`

127. Hide a chart until a selection is made in the Product Model



In data handling : add a calculation condition

Chart suggestions [switch]

Data

Add-ons

▼ Data handling

Calculation condition

Displayed message

Reference lines

IF(GetSelectedCount([Product Model]) = 0, 0, 1)

Add Label:

Shows the Chart when more than one Product model is selected

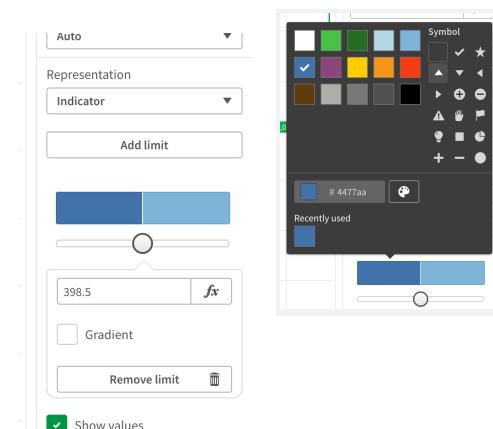
=IF(GetSelectedCount([Product Model]) = 0,'No Product Model selected')



128. Adding conditional Indicators to measures: Such as upward arrow

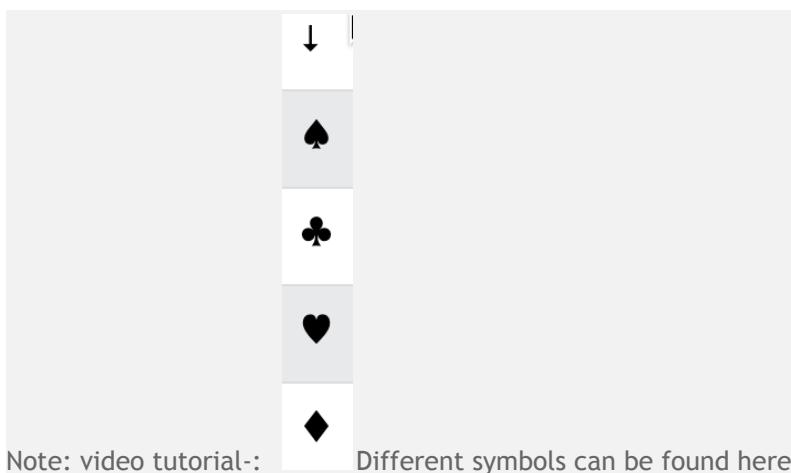


Choose the measure -> Representation - Indicator --> Add limits click on the limit(color)
Choose color and symbol



129. Adding conditional Indicators to measures with miscellaneous symbols

Tutorial: [QLIK SENSE : How to add custom indicator symbols. based on measure values. #q...](#)



Note: video tutorial:- [Different symbols can be found here:](#)

[HTML Symbol Entities Reference](#)

`if(sum(SalesAmount) > 20000, chr(9830), chr(9824))`

T U I N Z R A L T O F C



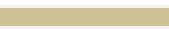
Result:

+Click to add title				
Customer_name	sales	sales	if(sum(SalesAmount) > 20000, chr(9830), chr(9824))	
Totals	69,106,485.05	69,106,485.05	♦	
Aaron Mitchell	5,442.91	▼	♠	
Aaron Olson	26,525.94	▲	♦	

130. Miscellaneous symbols list:

Check full list here : [HTML Unicode UTF-8](#)

chr(9824)	♠
chr(9827)	♣
chr(9829)	♥
chr(9830)	♦
chr(915)	Γ
chr(8719)	∏
chr(8721)	Σ
chr(8709)	∅
T H I N K M = Γ R I C E	



chr(8383)	฿
chr(8613)	↑
chr(8615)	↓
chr(8756)	⋮
chr(8757)	⋮
chr(9698)	◀
chr(9701)	▶
chr(9756)	👉
chr(9757)	👉
chr(9758)	👉
chr(9759)	👉
chr(128400)	👉
chr(128578)	😊
chr(128577)	😢

131. Convert numbers to the absolute value

FABS(-5.5) Result: 5.5

T

General String functions

132. Combine values from 2 fields

```
Field1 & '----->'& Field2
```

133. Get Flight departure and arrival aggregated per flight No in this format:

```
LHT --> BLR; CPH--> STM; AMS --> MUC;
```

```
=Aggr(Concat(FlightDeparture & '-->'&FlightArrival, ','), FFlightNo)
```

134. By Default show the max Year else the user selected year.

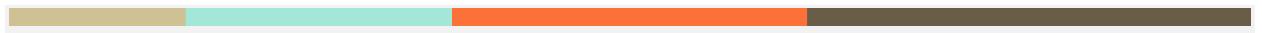
Create a variable with the following:

```
If(GetselectedCount(Year) > 0, GetFieldSelections(Year), Max(Year))
```

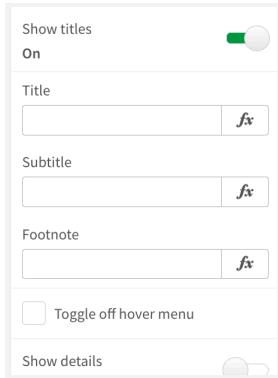
Note: GetSelectedCount Counts the field Year selections. If a user selects a field then the count is greater than 0 hence the function GetFieldSelections brings the years selected by the user. Else the function MAX brings in the Max Year value.

Dynamic Titles:

135. Create a dynamic title based on the field selections in countries which says: Sales for countries: Country names selected.



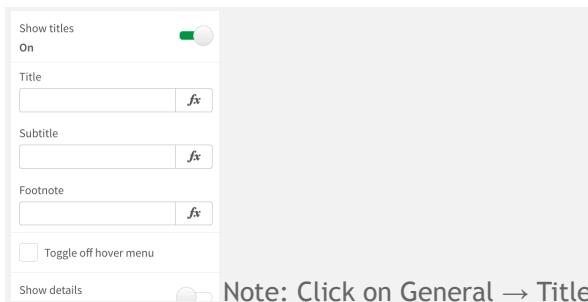
Note: Click on General → Title



='Sales for Countries: '& GetFieldSelections(country)

Result: Sales for Countries: Austria, Germany

136. Create a dynamic title which says “Total Sales for all Countries” if no selection is made in the field country else says Total sales for : followed by the country name selected.

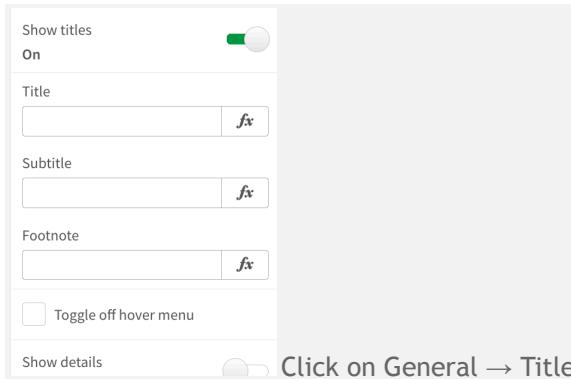


T

If(GetSelectedCount(country)>0,
 'Sales for Countries: '& GetFieldSelections(country), 'Total Sales for all countries')

Result: Total Sales for all countries If no selections made
 Else Sales for Countries: Austria, Germany

137. Create a dynamic title based on the field selections in 2 fields, Products, and countries, which says : Sales for countries: Country names selected.



=Sales for Countries: '& GetFieldSelections(country) & ' and Sales for Products: '& GetFieldSelections(products)

138. Create a list of OrderId per customer per country

AGGR(Concat(Distinct orderID, '|'), CustomerName, Country)

Result:

Argentina	Los Pantalones Magicos	182510.09	1001279 1001358 1001435 1001539 10011059 10011161 10011271 10011323 ...
-----------	------------------------	-----------	---

Note: Order Id's will be sorted in ascending order

139. Create a list of OrderId per customer per country sorted by OrderDate



`AGGR(Concat(Distinct orderID, '|', orderdate), CustomerName, Country)`

140. Create a list of CustomerName sorted by SalesAmount

`Concat(distinct CustomerName ,'-',SalesAmount)`

Result: 'Jen-Hel-Timmy-Jesus-Blue-Helen'

Add Dynamic Links to your chart

141. Create a link that the user can click to visit an external webpage

Tutorial: [YouTube QlikSense: Create Dynamic links using a field. QlikSense tips](#)

Step 1: Add the link in the measure:

`'https://www.imdb.com/title/'&[FieldID]`

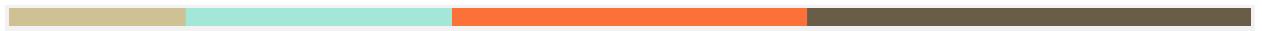
Step 2: Change on Representation → Link

Embed a button with link to external sites

142. Create a button that the user can select to visit an external website

Tutorial: [YouTube Qlik Sense: Embed External links using Buttons in QlikSense](#)





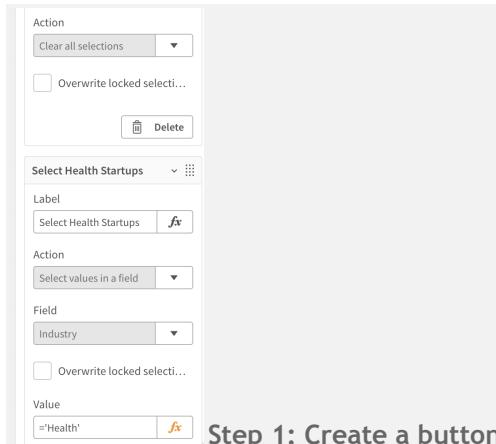
Step 1: Create a button

Step 2: Under actions and navigation select Open a website or email.

Step 3: Add the website address in the website URL

Automate a sheet using a button.

143. Create a button that when pressed clears current selections and makes a selection called 'Health' from a field called Industry and automatically moves to the next sheet.



Step 1: Create a button

Step 2: Under actions select → clear all selection

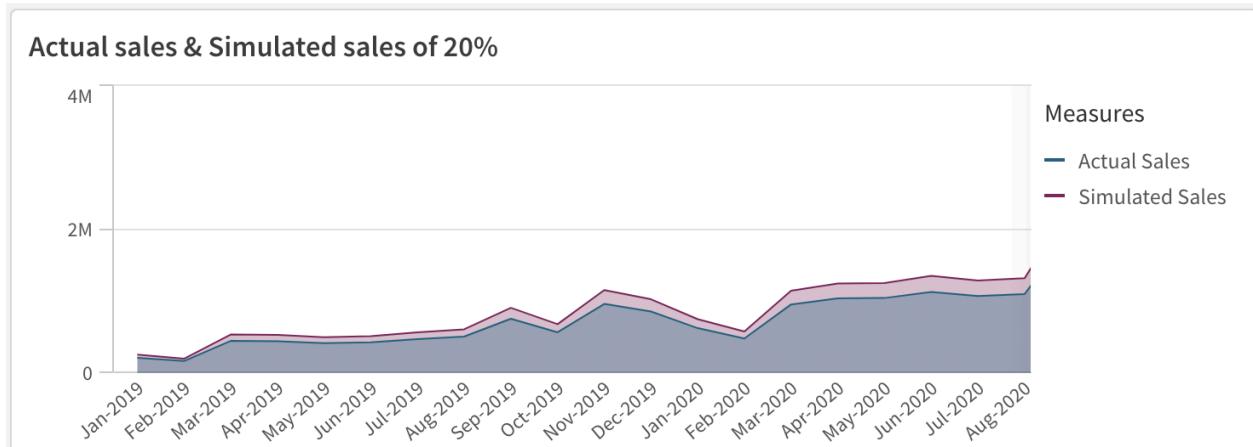
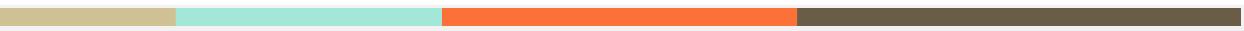
Step 3: Add an action select → Select values in a field and enter the desired value of the field

Step 4: Add navigation: select → Go to next sheet

Create a What if Analysis chart based on 20% simulation of the actual sales

$$\text{Sum}(\text{SalesAmount}) * (1+0.2)$$

Note: 0.2 = 20% Change to as per your need



Variables

144. Create a What IF analysis using variables

Note: Check the masterclass for tutorials

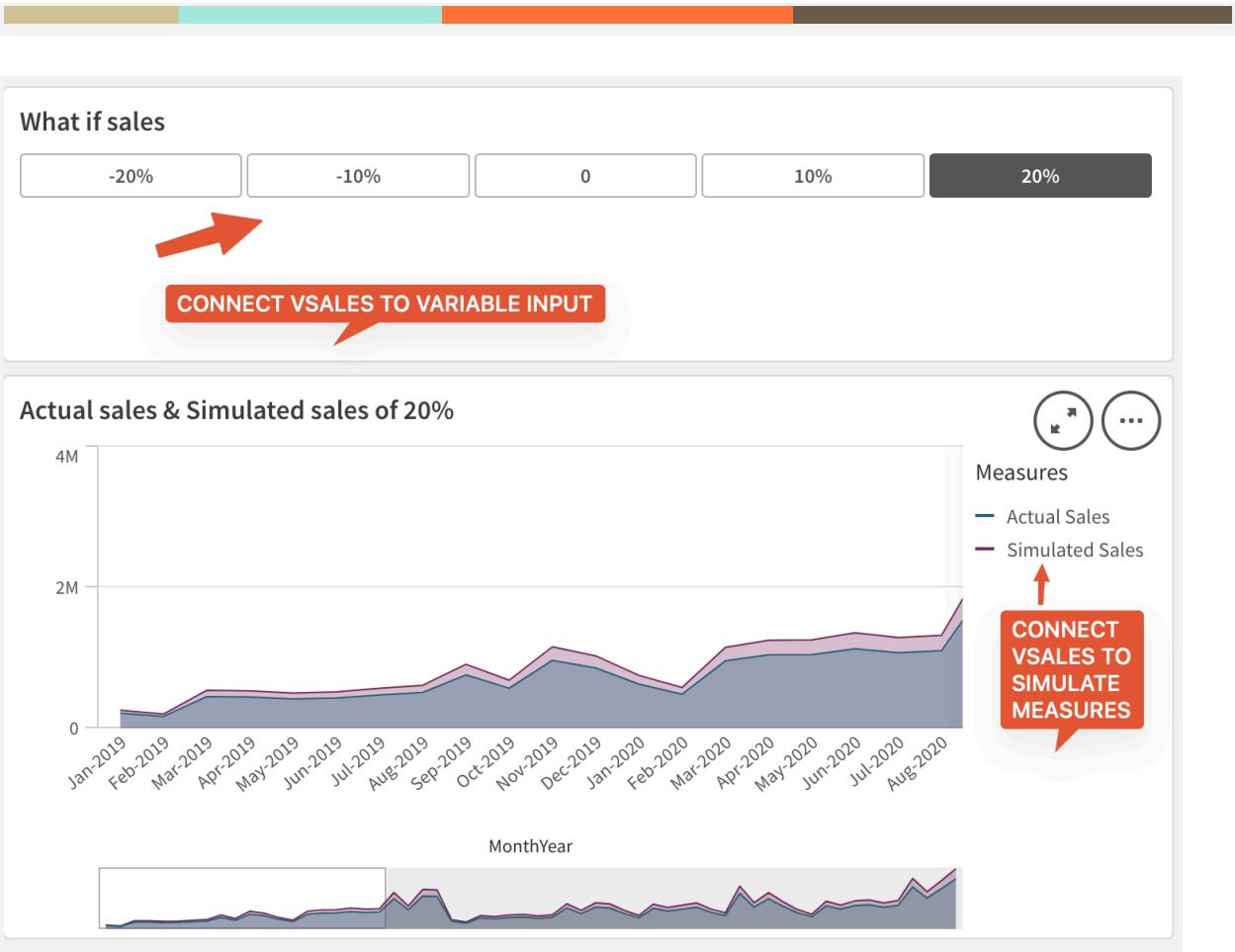
Tutorial: Check the steps here:

[How to Dynamically Recalculate measures in the front end.](#)

Step 1: Create a variable called vsales and connect it to the variable input extension.

Step 2: Connect variables to measures

THINKMETRICS

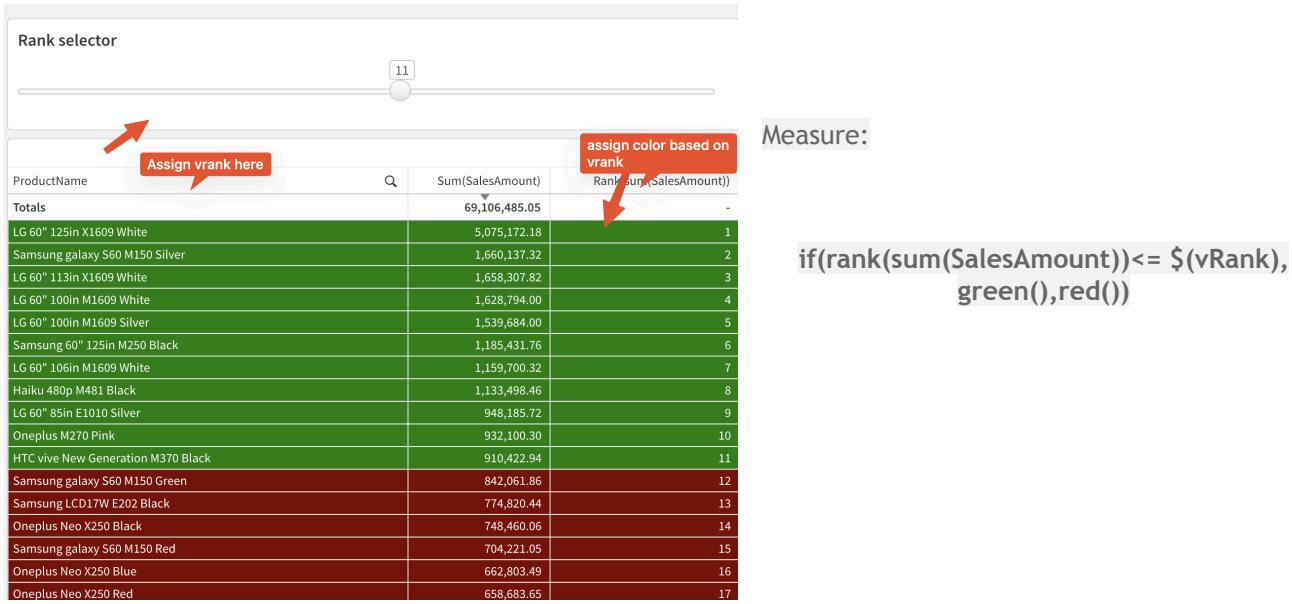


THEN USE THE MEASURE:

`Sum(SalesAmount)*(1+$vSales))`

145. Creating a Rank selector using Variables:

Check the tutorial steps here: [QlikSense tutorial: How automatically select top-ranked value](#)...

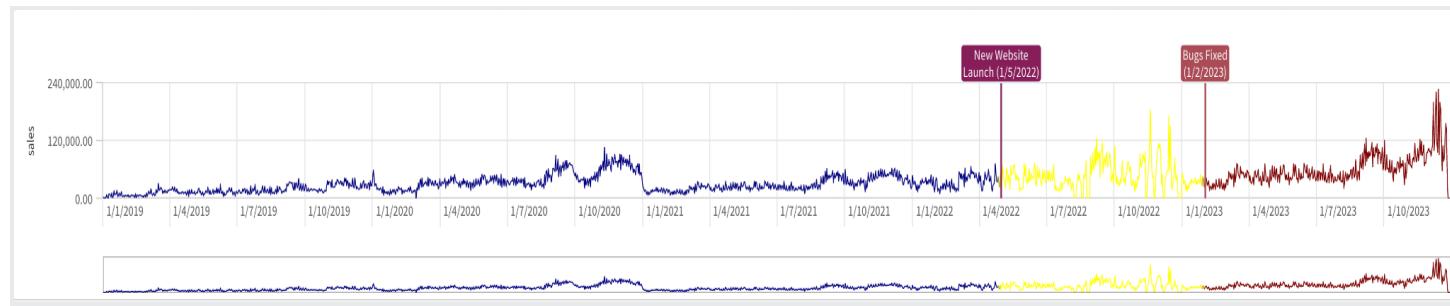


More chart tricks

146. Creating a chart with dimensional reference lines at and color different segments

Note: tutorial: [QlikSense : Using Dimensional reference lines to build cool dashboards](#)

Result:



Step 1: Add dimensional reference lines with the expression for Reference line location:

In this case: =MakeDate(2022,05,01) & =MakeDate(2023,02,01)

Step 2: Add the Label, background and color and type of line.

Step 3: Under Chart Appearance- by the expression :

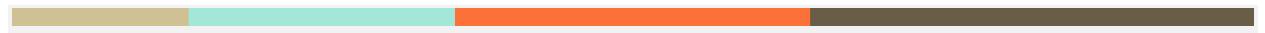
```
If(calendar_date < '1/5/2022', Blue(),  
if(calendar_date > MakeDate(2022,05,01) and calendar_date < MakeDate(2023,02,01),  
Yellow(),  
if(calendar_date > MakeDate(2023,02,01), red())))
```

147. Create a drill-down changing graph:

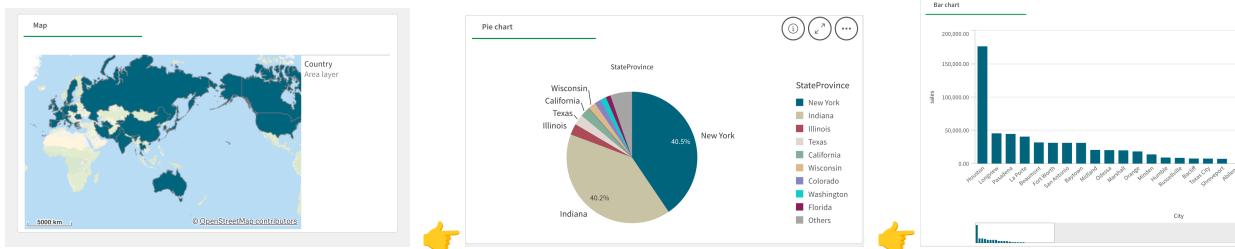
Note: Video tutorial: QlikSense: Elevate your dashboard with changing DRILL DOWN charts



Drill down: Map pie chart bar chart



Drill down: Country ➔ State ➔ City



Step 1: Use a container chart.

Step 2. Add the 3 charts you want. In this case Map, Pie chart and Bar chart

-  Content
- Charts
 - Map > 
 - Pie chart > 
 - Bar chart > 
-  Add

Step 3: Click on Map chart show condition:

Add expression: =GetSelectedCount(Dimension of Map)=0

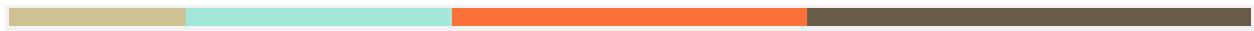
The screenshot shows the Power BI ribbon with the 'Map' section selected. The ribbon tabs include 'Content', 'Charts', 'Map', 'Label', 'Show condition', and 'Edit properties'. Below the ribbon, there is a 'Pie chart' and 'Bar chart' button.

example:=GetSelectedCount(Country)=0

Step 4: Click on the second chart (Pie Chart) show condition:

Add expression: =GetSelectedCount(Dimension of map)>0 and GetSelectedCount(Dimension of Pie chart)=0

Example: GetSelectedCount(Country)>0 and GetSelectedCount(StateProvince)=0



Step 5: Click on the third chart (Bar chart) show condition:

Add expression: =GetSelectedCount(Dimension of Bar chart)>0

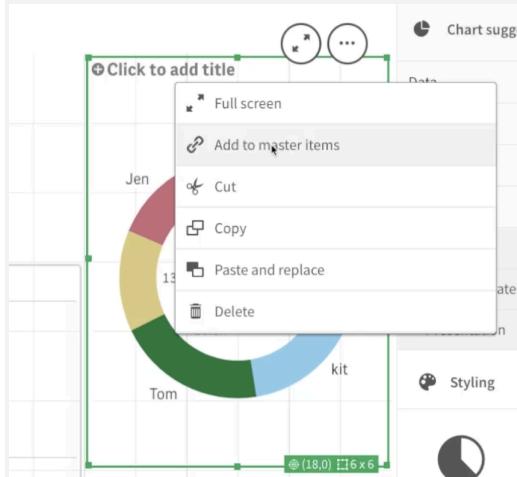
Example: GetSelectedCount(StateProvince)>0

148. Create a custom tooltip and embed a chart in the tooltip.



Step 1: Create the chart you want to embed and make it a master visualization.

By creating the chart and then right-click -> Add to master items.



Step 2: Select the chart you want to customize the tooltip. Select tool tip -> Hide basic rows -> Add chart.

THINK METRICS

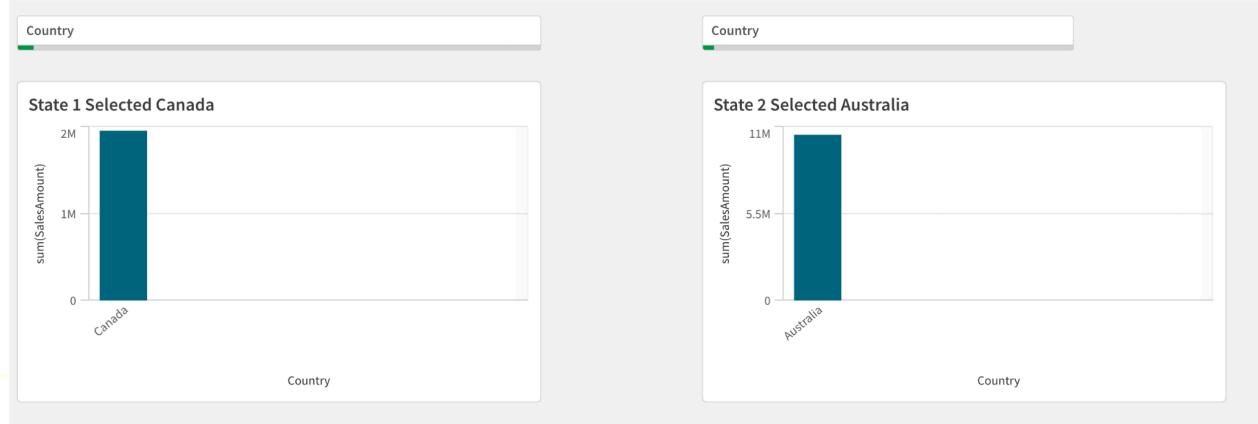
The screenshot shows the Qlik Sense Master Visualization Editor interface. On the left, there's a horizontal bar composed of four colored segments: gold, cyan, orange, and dark brown. To the right is the main workspace. At the top right of the workspace is a vertical toolbar labeled "Measures" with a "Add measure" button. Below it is a "Chart" section with a "Chart preview" link and a "pie chart" option. A pie chart is displayed with four segments labeled "Jen", "zee", "hel", and "kit". The segments show percentages: Jen (27.1%), zee (20.3%), hel (13.6%), and kit (13.6%). Below the chart are three buttons: "Edit master item", "Delete chart", and "Step 3: Select the Chart you added to the master visualization".

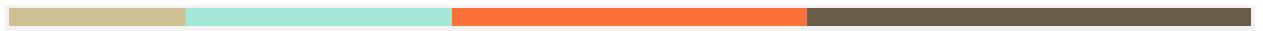
Step 3: Select the Chart you added to the master visualization

149. Create 2 bar charts for side-by-side comparison of SalesAmount per Country using Alternate States

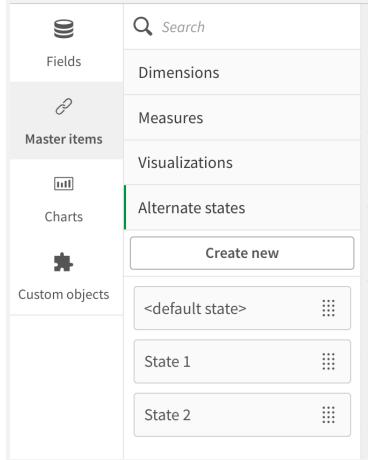
Tutorial: [QlikSense Tutorial: Comparative Analysis using Alternate states 101](#)

Expected result:



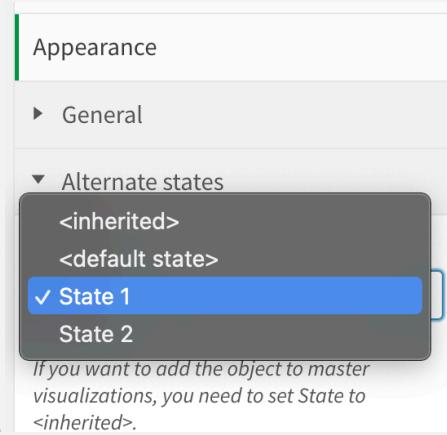


Step 1: Create 2 alternate states called State 1 & State 2: Master Items → Alternate states → Create new



Step 2: Add 2 filter panes with dimension country.

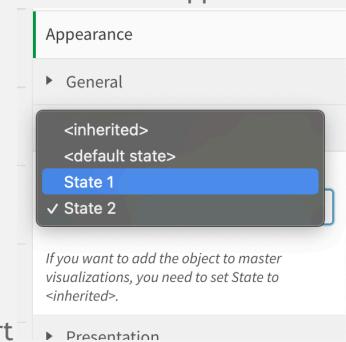
Step 3: Select one of the filter panes & apply alternate states. Go to Appearance → Alternate States →



'State 1'. Repeat for the second filter and apply State 2

Step 4: Create 2 bar charts and add dimension country and measure as SalesAmount.

Step 5: Select one of the Bar charts and apply alternate states. Go to Appearance → Alternate States

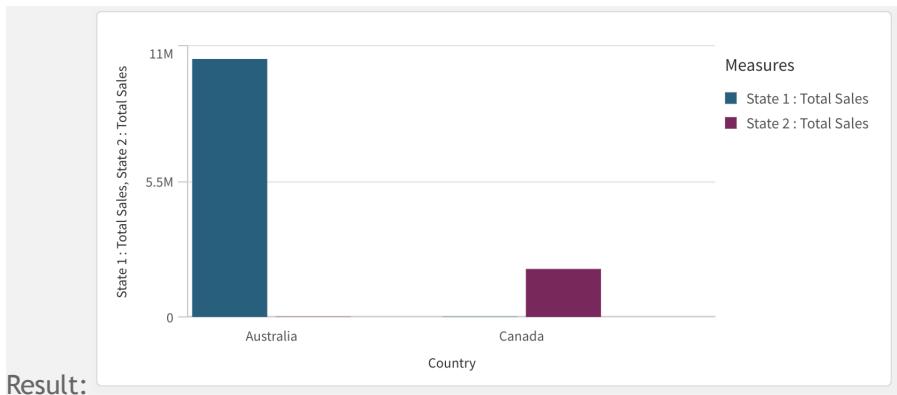


→ 'State 1'. Repeat the process for the second bar chart

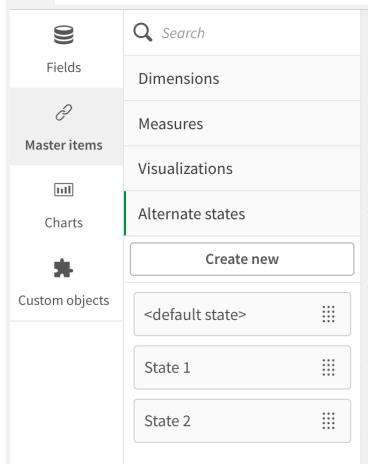


Now when making selections in the filter panes, only the corresponding Applied State bar chart will be affected.

150. Create a chart to compare total salesAmount for 2 different selections made by user using Alternate State.(Applying alternate states to measures)



Step 1: Create 2 alternate states called State 1 & State 2: Master Items → Alternate states → Create new



Step 2: Add 2 filter panes with the desired dimension.

THINK METRICS

Step 3: Select one of the filter panes & apply alternate states. Go to Appearance → Alternate States →

The screenshot shows the Power BI ribbon with the 'Appearance' tab selected. Under the 'Alternate states' section, 'State 1' is highlighted with a blue selection bar, indicating it is the active state. A tooltip below the menu items provides instructions: 'If you want to add the object to master visualizations, you need to set State to <inherited>'.

'State 1'. Repeat for the second filter and apply 'State 2'

Step 4: Go to master items and create a master measure for state 1:

The screenshot shows the 'Master items' pane with the 'Measures' section selected. A new measure named 'State 1 : Total Sales' is being created, with the expression 'sum({[State 1]}SalesAmount)'. The measure is currently selected, indicated by a blue border.

Repeat the process for State 2:

Add measure expression:

`Sum({[State 1]}SalesAmount)`

`Sum({[State 2]}SalesAmount)`

Step 5: Select the desired chart and apply the newly created master measures. Now the values in the chart will match the selections made in the Alternate state-applied Filter Panes.

151. Create dynamic labels for the Alternate States selections.

```
= 'Sales' & GetCurrentSelections(chr(13)&chr(10), ':', ',', 9, 'State 1')
```

Note: Change 'State 1' to the name of your Alternate State

I H I N K M = I R I C S

152. Compare Alternate State charts by synchronizing selections between regular states the .(Applying alternate states to measures)

Tutorial: <https://youtu.be/CwVjuuimGcU>

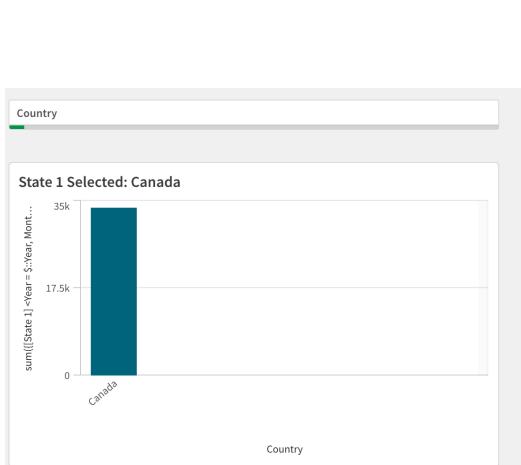
Adding this to the measure of State 1 and State 2 chart will sync the fields Year and Month based on Default State Year and Month filter.

`sum({[State 1] <Year = $::Year, Month = $::Month>}SalesAmount)`

`sum({[State 2] <Year = $::Year, Month = $::Month>}SalesAmount)`



Example: Year 2023 and Month Jan is selected in a default filter.



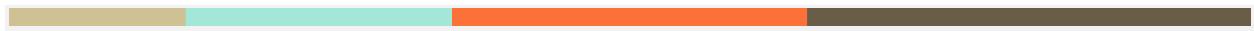
In my Alternate State 1:

Only Selection available is Country. However Since When i select a country, the Year and Month and in the default selection i.e Year = 2023 and Month = Jan is automatically applied

Despite only Country is selected in Alternate State 1, we are comparing the same year and month as the default State.

153. Create a chart that gives the Intersection of selections made in 2 Alternate State charts .(Applying alternate states to measures)

Tutorial: QlikSense tutorial: Comparative Alternate states using set operators 101 in QlikS...



Example:

State 1: Australia, Canada, China, Germany, South Korea, United Kingdom is selected.

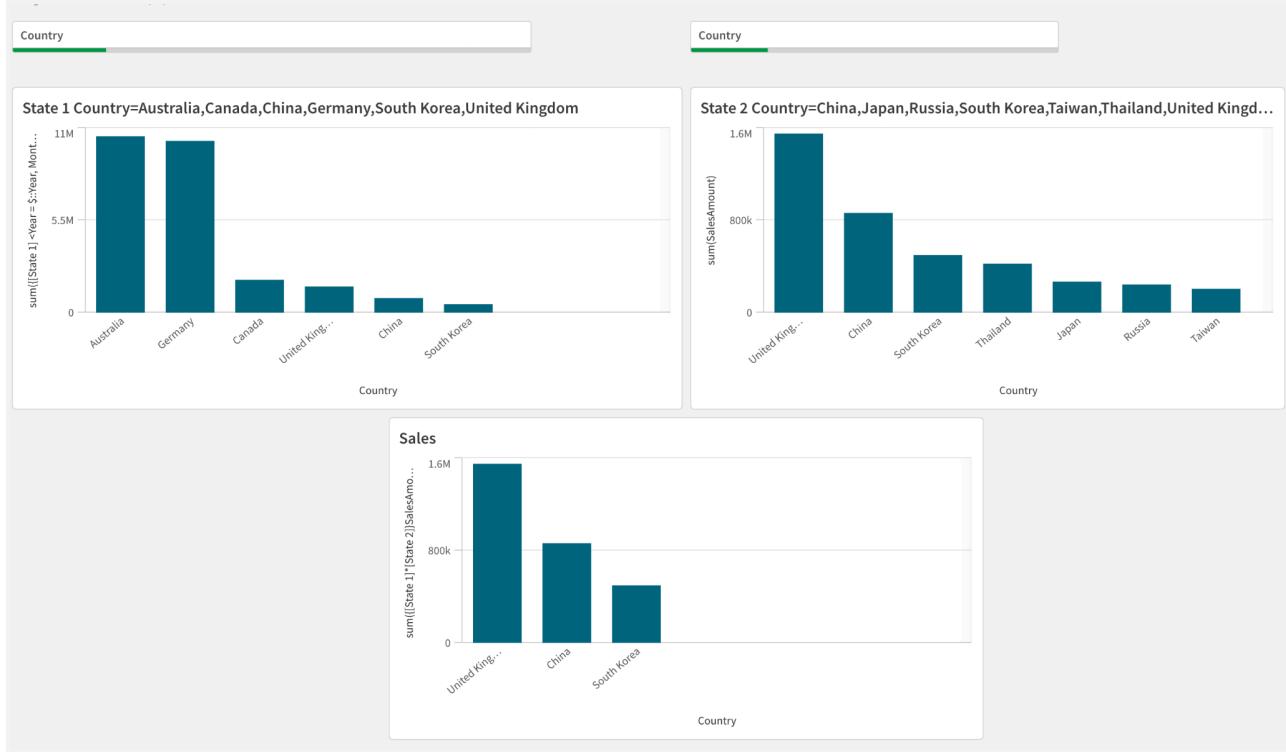
State 2: China, Japan, Russia, South Korea, Taiwan, United Kingdom is selected.

Results: Chart which shows the Common countries in the 2 alternate selections. I.e China South Korea and United Kingdom.

Measure:

$\text{Sum}([\text{State 1}] * [\text{State 2}]\text{SalesAmount})$

Note: $[\text{State 1}] * [\text{State 2}]$ gives the intersection of the 2 states.



154. Create a chart that gives the union of selections made in 2 Alternate State charts .(Applying alternate states to measures)

Tutorial: [QlikSense tutorial: Comparative Alternate states using set operators 101](#) in QlikS...

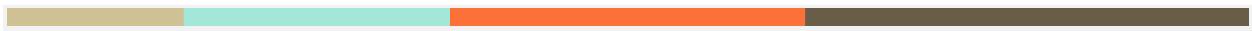
Example:

State 1: Australia, Canada is selected.

State 2: China, Japan is selected.

Results: Chart which shows union of selections countries in the 2 alternate selections. I.e Australia, Canada, China & Japan.

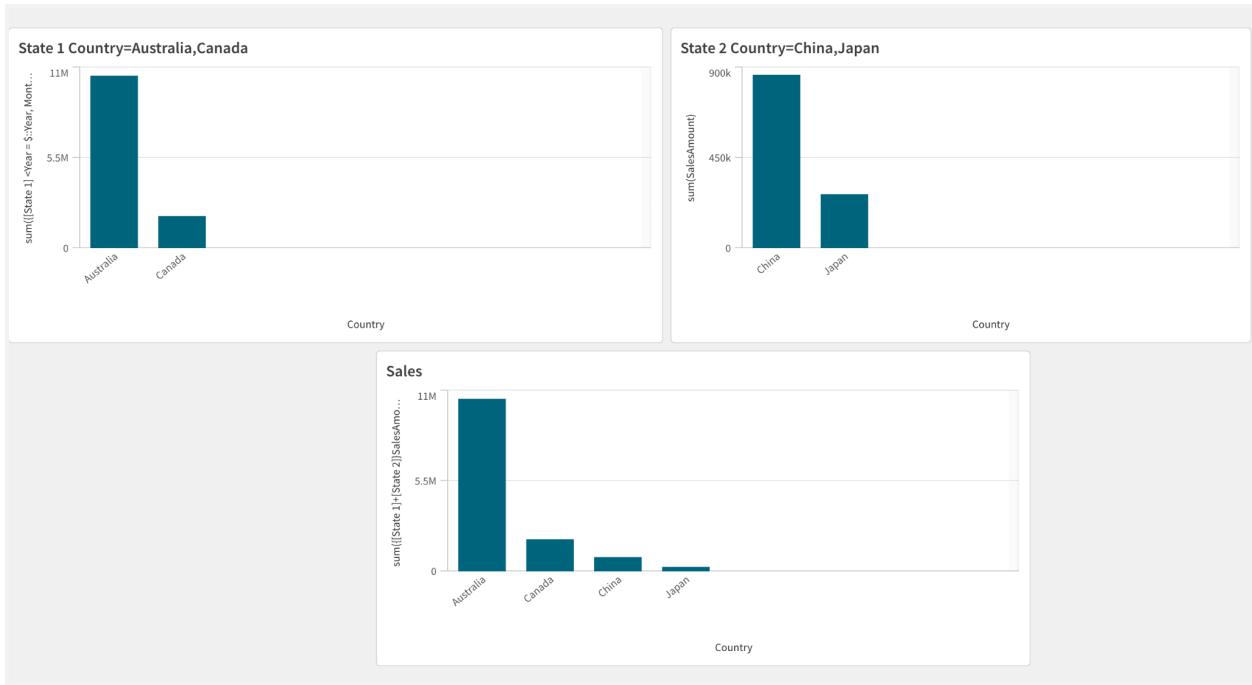
Measure:



Sum({[State 1] + [State 2]}SalesAmount)

Note: [State 1] + [State 2] gives the union of the 2 states.

Note:



155. Create a chart that gives the union of Default state and selections made in Alternate State 1 charts .(Applying alternate states to measures)

Tutorial: [QlikSense tutorial: Comparative Alternate states using set operators 101](#) in QlikS...

Example:

Default State : Australia, Canada is selected.

State 2: China, japan is selected.

Results: Chart which shows union of selections countries in the 2 alternate selections. I.e Australia, Canada, China & Japan.

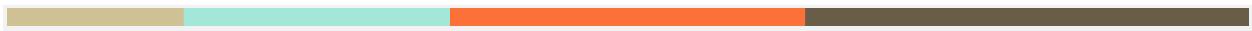
Measure:

Sum({\$ + [State 1]}SalesAmount)

Note: \${ + [State 1] gives the union of the Default State and state1 .

156. Create a chart that gives the exclusion of selections made in 2 Alternate State charts .(Applying alternate states to measures)





Example:

State 1: Australia, Canada is selected.

State 2: Australia, China, Japan, Bhutan is selected.

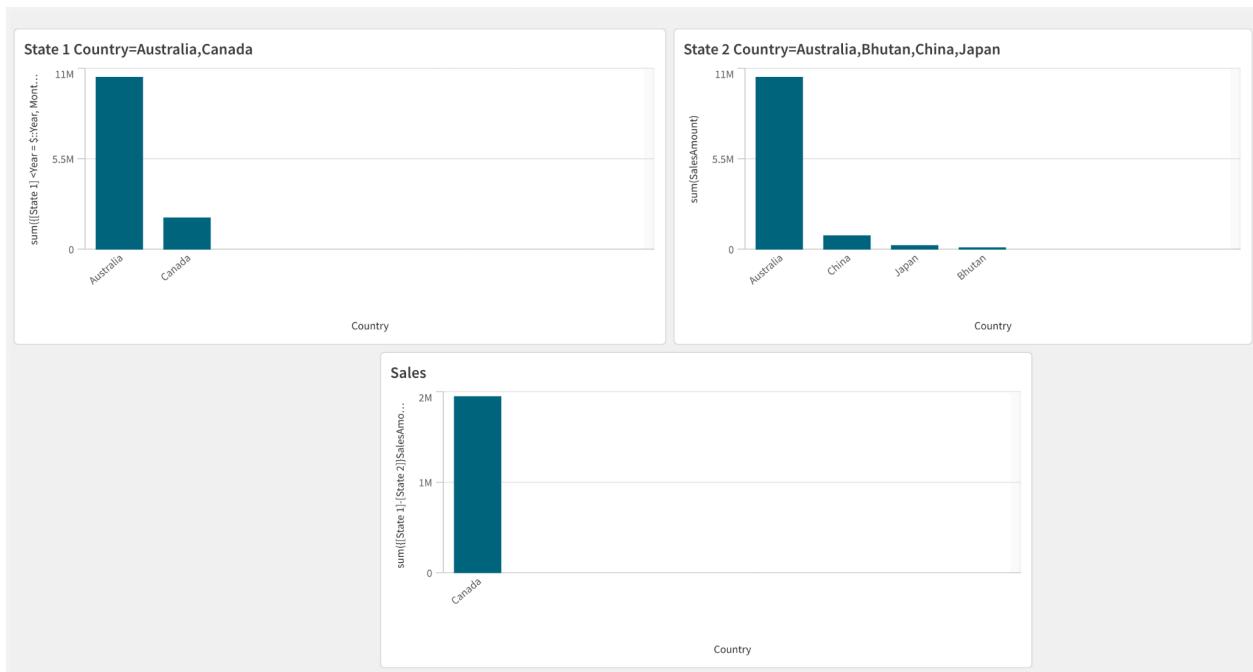
Results: Chart which shows exclusion of selections countries in the 2 alternate selections. I.e Selections that are made in State 1 but does not exist in State 2.

In this example only Canada is selected in State 1 since the other selection i.e Australia, exists in State 2 as well, and is hence excluded

Measure:

$\text{Sum}(\{\text{[State 1]} - \text{[State 2]}\}\text{SalesAmount})$

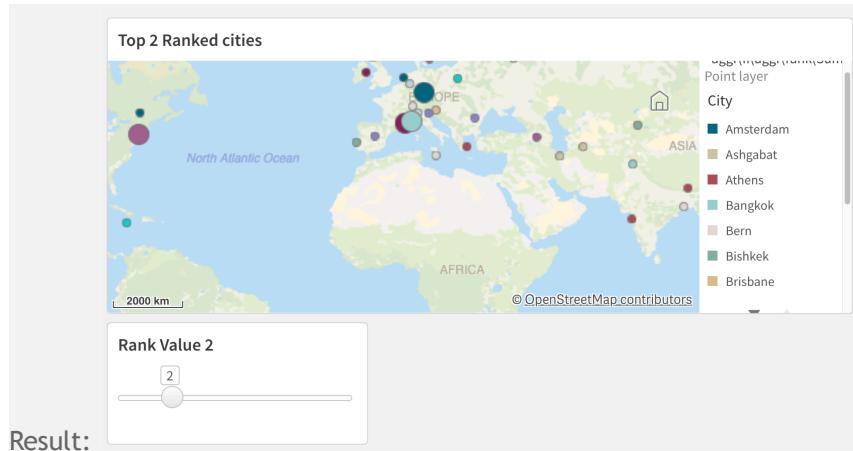
Note: $\text{[State 1]} - \text{[State 2]}$ gives the exclusion of the 2 states.





157. Create a dynamic map that shows Top Ranked Cities per country based on highest sales. No of cities to be shown based on user input Rank values.

Tutorial: [QlikSense tutorial: Dynamic maps using user input variable](#)

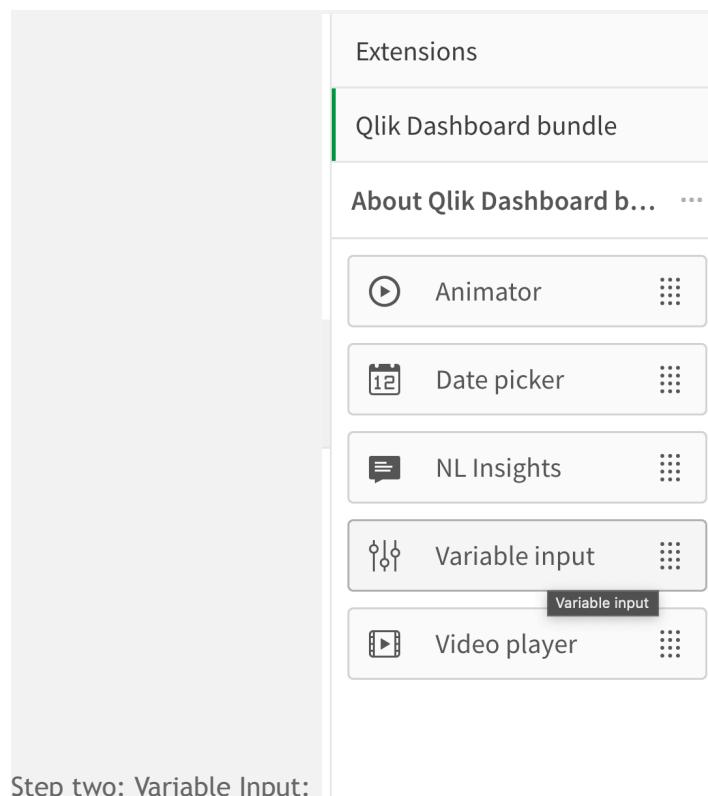


Variables

Name
varMinDate
varMaxDate
vfilelocation
vCurrentYear
vRank

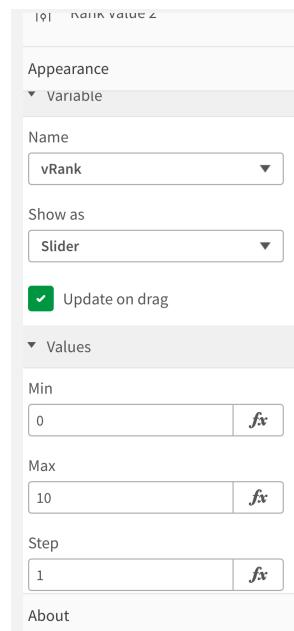
Step one: Create a variable

THINK METRICS



Step two: Variable Input:

Step 3: Connect the newly created variable to the variable input and add the min Max values.



Step 4: Add MMaps chart to the sheet

Step 5: Add a point layer and the following as Dimension:



```
aggr(if(aggr(rank(Sum(SalesAmount)),Country,City) <= $(vRank), City), City)
```

Step 5 Location: Cities (Since we want to plot the cities)

Step 6 Colors: Based on Dimension

Step 7 Tool Tip: Add measures you want to show. Example Show Rank:

```
aggr(rank(sum(SalesAmount)),Country,City)
```

Show: Percentage of Sales of the city to the Total Sales of all cities in that country:

```
aggr( sum(SalesAmount)/Sum(Total<Country>(SalesAmount)),Country, City)
```

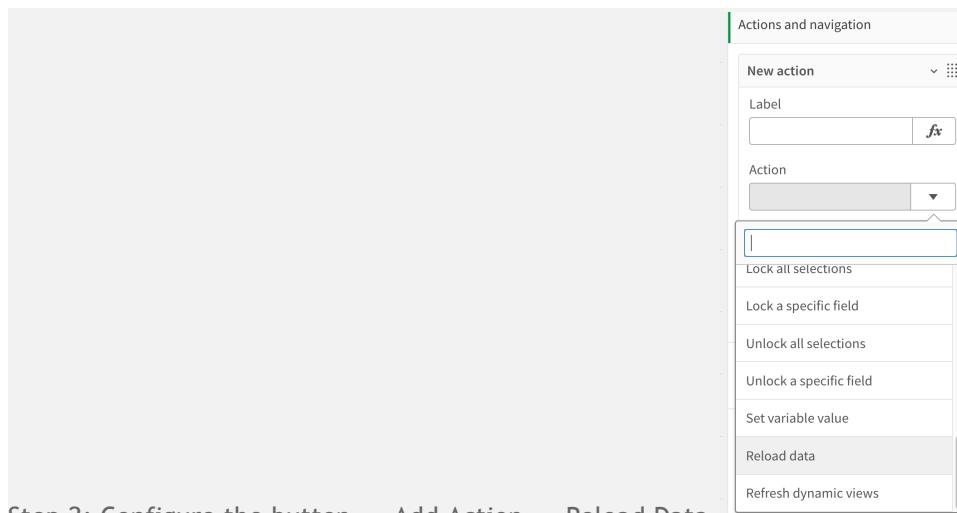
158. How to Reload Apps from the front end

Watch the trick: <https://youtube.com/shorts/Y0xqQ4lNw7Y?feature=share>

Note: You need to be the owner of the app to be able to have the rights to reload the app

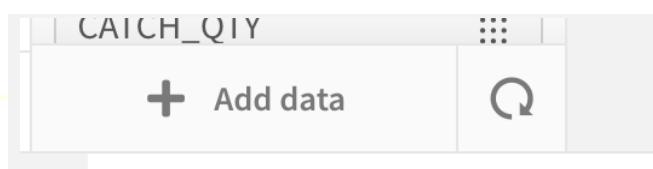
Method 1:

Step 1: Add a Button



Step 2: Configure the button → Add Action → Reload Data

Method 2: Go to fields → Reload Data



Script functions

159. What is a composite key?

When two or more internal tables have two or more fields in common, this implies a composite key relationship.

Composite key is just the concatenation of two or more fields and each link value represents one to one relationship of the values, whereas the generic key contains primary key along with the symbolic key, which represents one to many relationships amongst the values of the field.

Example: You have Field 1 and Field 2 in both the tables and their combination will give you a relationship between the two. Loading it as it is will give you a synthetic key.

In order to avoid the synthetic key you can create a composite key:

```
Autonumber([fileId_1] & '-' & [fileId_2]) as composite_key
```

160. For a given list of ID's find the previous months 'Status' value? Using Peek function

id	date	status	prev_status
3	2023-07-01	Y	-
3	2023-08-01	N	Y
3	2023-09-01	N	N
3	2023-10-01	Y	N

Ex: For Id = 3, there's no value prior to 2023-07-01. But the status for 2023-08-01 - current status is N, previous status is Y since the Status for 2023-07-01 is Y.

Solution:

Hint: Use the function: Peek()

In the script:

table_name:

T Load

```

    id,
    status,
    date,
If(id=Peek(id),Peek(status)) as prev_status
    Resident temp
order by id,date asc
;

```

If(id=Peek(id),Peek(status)) if the id matches a previous id then we peek the status for the previous ID

NOte: order the table in ascending order since you want the previous months status

order by id,date asc.

Note: You can also use the function

Previous() instead of peek to achieve the same result.

161. Find the average sales per customer per year in the script using Window function

Note: what does the Window function do : Window function() performs calculations from multiple rows by creation a partition (Like a group by statement) and aggregating over the resulting window producing a value for each row separately. tea

Window(Avg(Salary), Unit, Department, Country) as AvgSalary

NOTE: You can add multiple partitions

162. Conditional Window function: Find the average sales per customer per year only for a selected country in the script using Window function

Window(Avg(Salary), Unit, Department, Country='Germany') as AvgSalaryGermany