



Summary : Tableau Intermediate to Advance

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Data Source: https://www.kaggle.com/vjchoudhary7/hr-analytics-case-study?select=employee_survey_data.csv



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01

Set, Group, Bin & Parameter



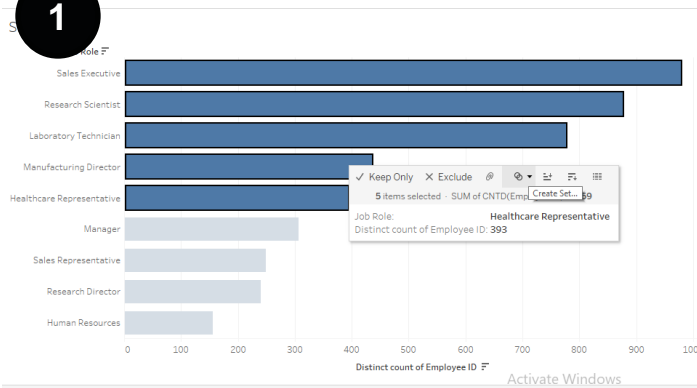
DEFINITION

- **Group** are created to combine similar members in a field. Grouping in Tableau refers to combining multiple members in a single dimension into higher level categories.
- **Bins** combine a set of data into groups of equal size which makes the data and the view systematic.
- **Sets** are custom fields that define the subset of data based on some conditions. Sets can be Static as well as dynamic. The members of a **static set** do not change, they are fixed even when the data changes. The members of the **dynamic set** changes when the data changes.
- **Parameter** holds a value such as an integer, date or string value that can be used to replace a constant value in a calculation. A parameter is made to make the view more user interactive.



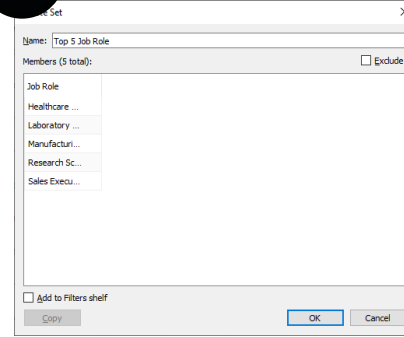
SET : 1. Static Set

1



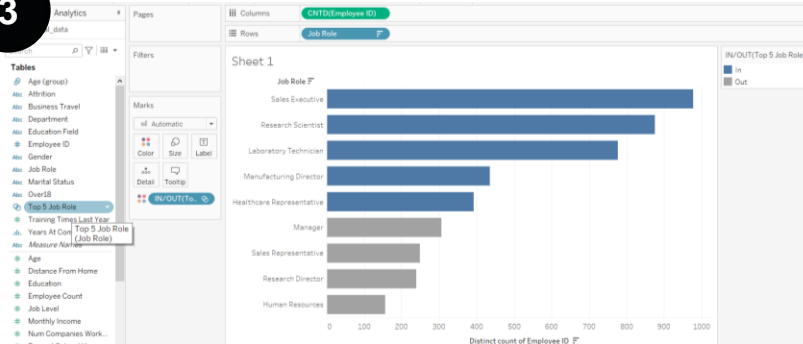
Select rows –
Click create set

2



Name the set –
OK

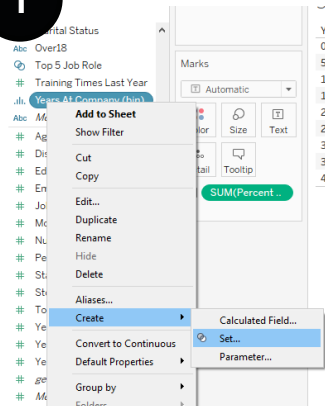
3



Drag new set to
color pane

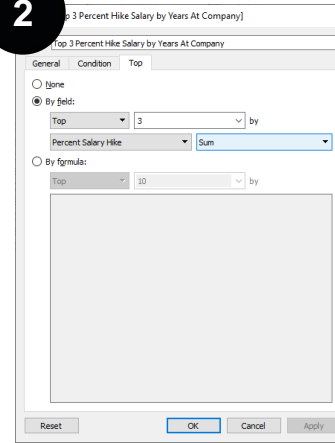
SET : 2. Dynamic Set

1



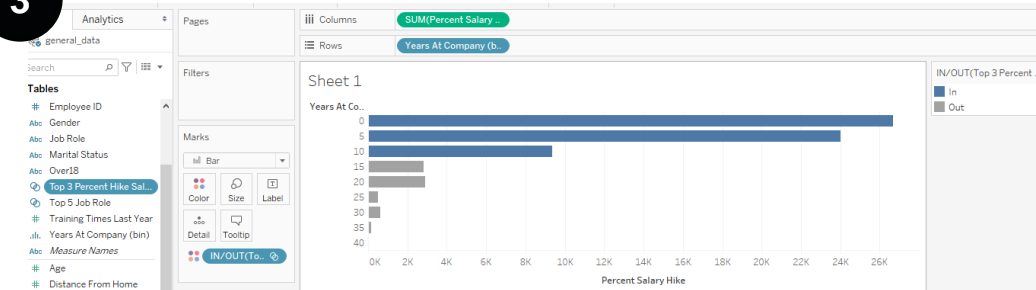
Click column – Create - Set

2



Name the set – Click tab Top – Choose by field

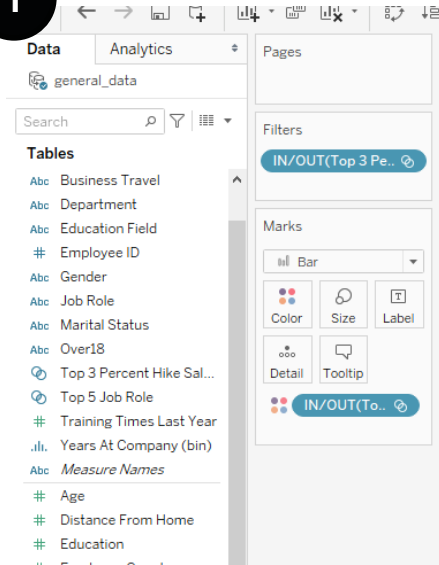
3



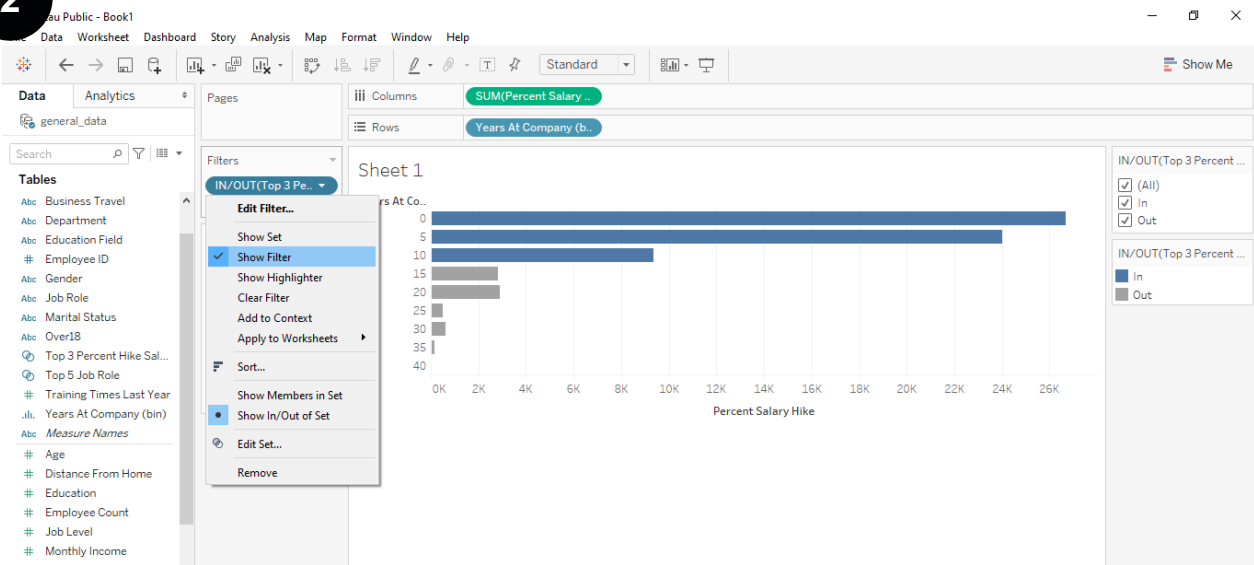
Visualize set

SET : 3. Set As Filter

1



2

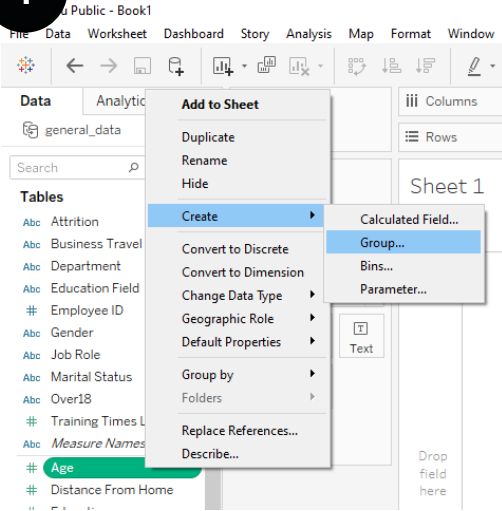


Hold ctrl and drag in/out to pane filters

Click in/out in pane filters – Click show filter

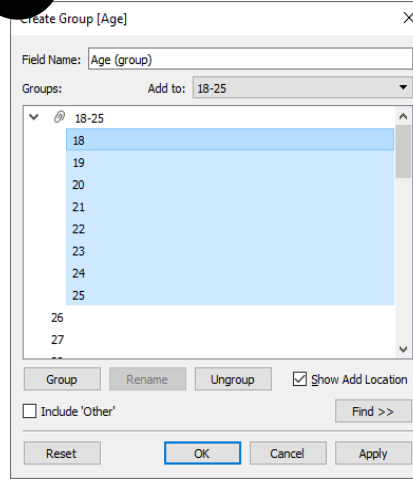
GROUP

1



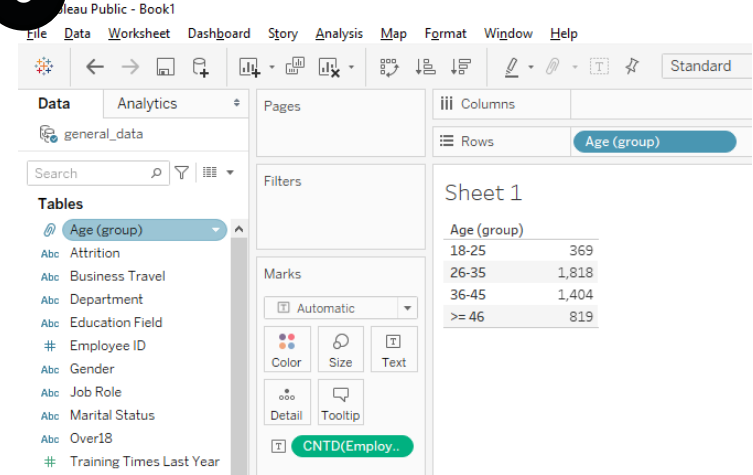
Click column – Create – Group

2



Select value – Click group –
Name the group

3

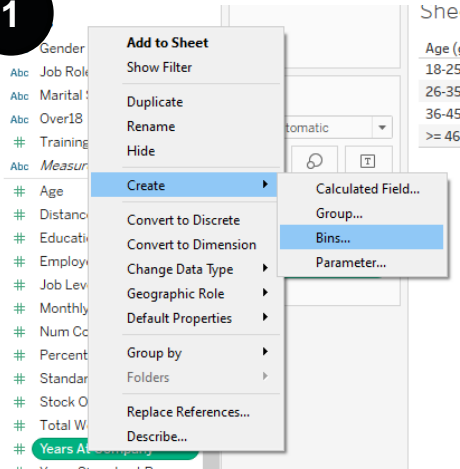


Visualize group data



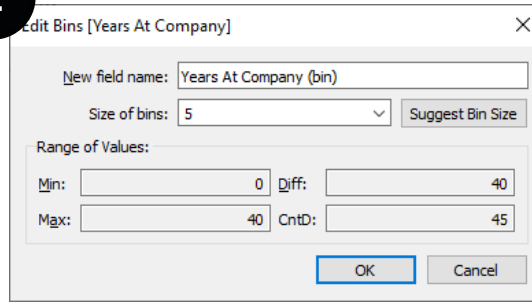
BIN

1



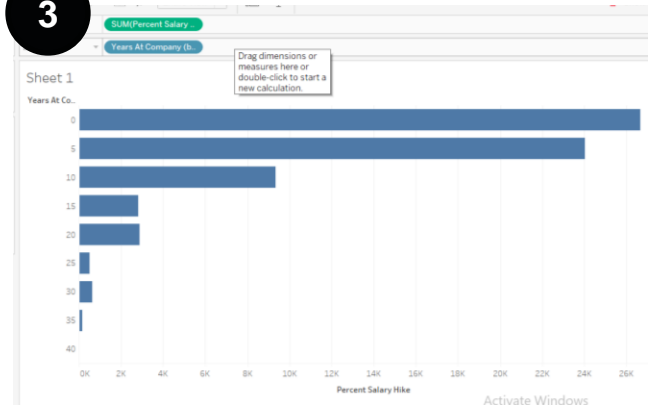
Click column – Create – Bins

2



Set size of bins – OK

3

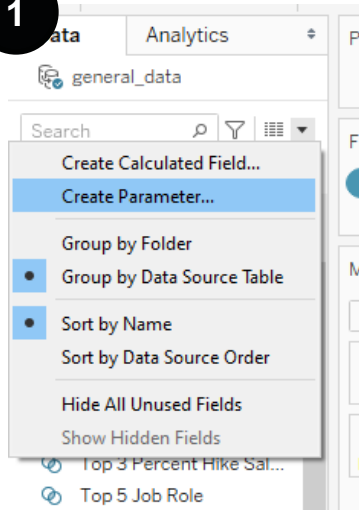


Visualize bins data



PARAMETER

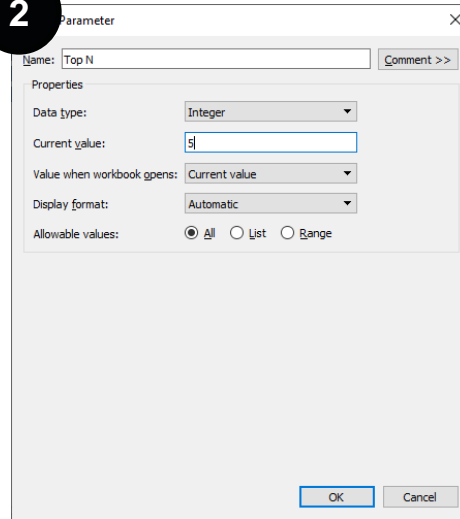
1



Click create parameter

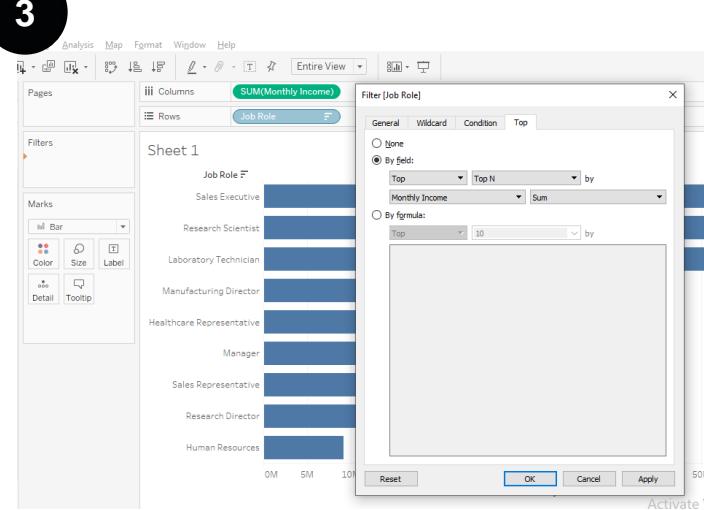


2



Name the parameter – setting data type, current value - OK

3

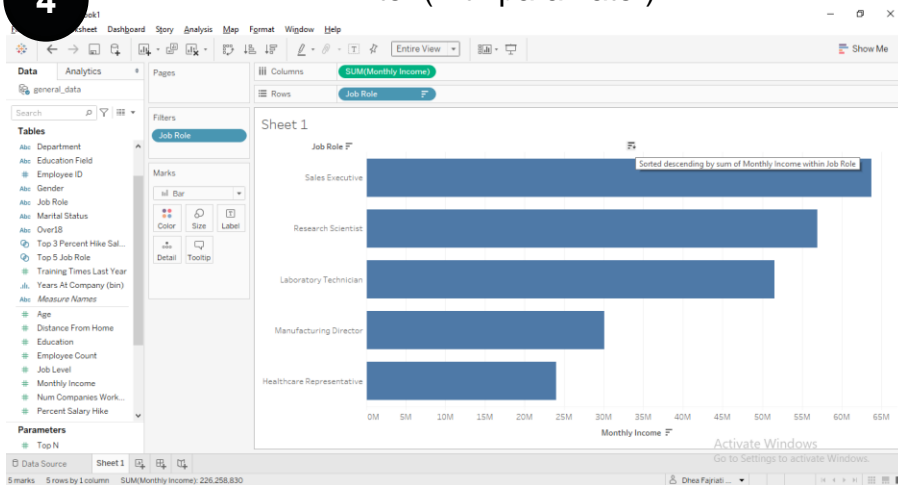


Drag Job Role to filters pane – setting filter – Choose tab Top – Choose by field

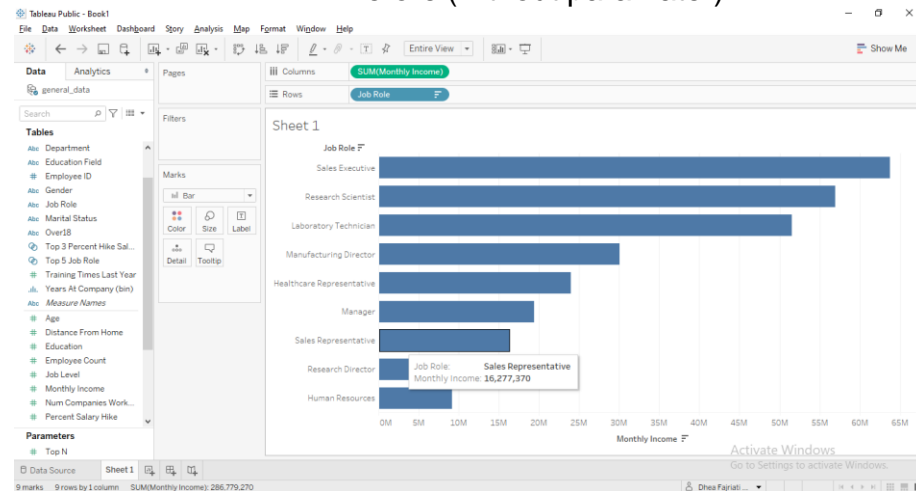
PARAMETER

4

After (with paramater)



Before (without paramater)

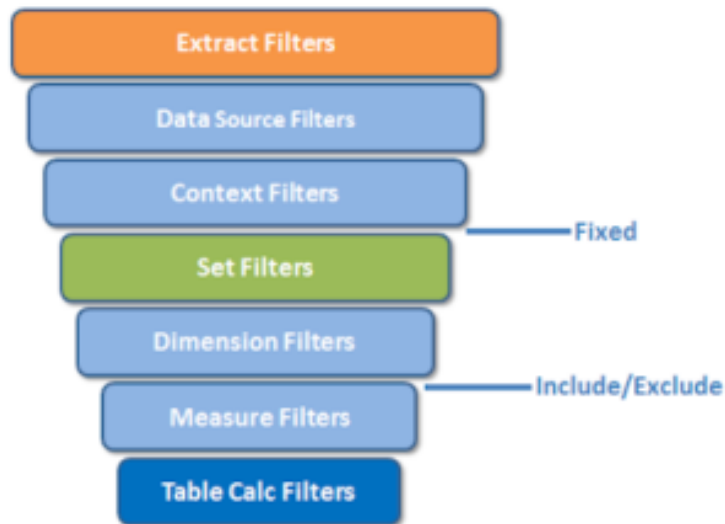


02

Calculated Fields with Level of Details



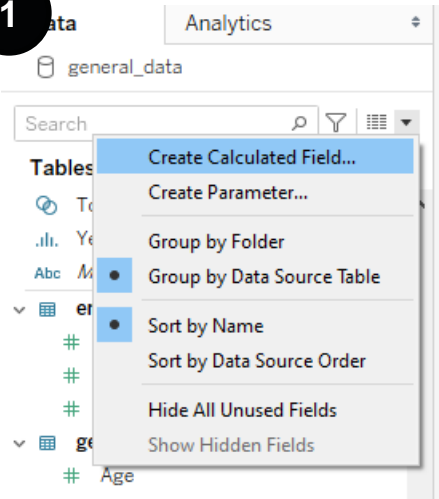
TABLEAU FILTERS HIERARCHY



- **Fixed expressions** aggregate the value only at the dimensions specified in the calculation and doesn't take into consideration the dimensions in the view.
- **Include expressions** is used to compute the value using the specified dimension that's not present in the view.
- **Exclude expressions** is pretty much the opposite of INCLUDE. Instead of adding more dimensions, you're getting rid of them

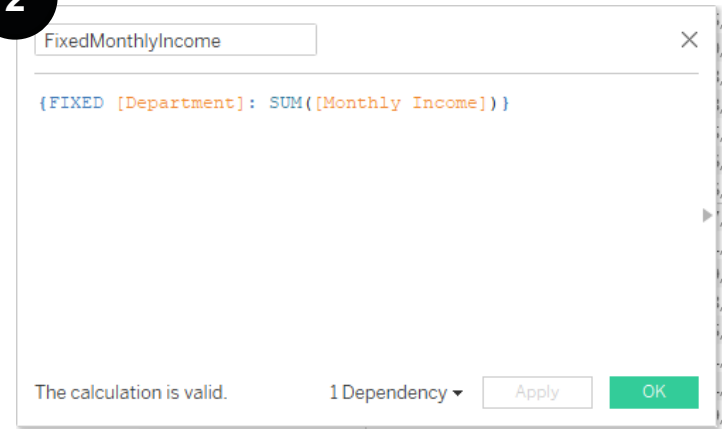
LEVEL OF DETAILS : Fixed

1



Click create calculated field

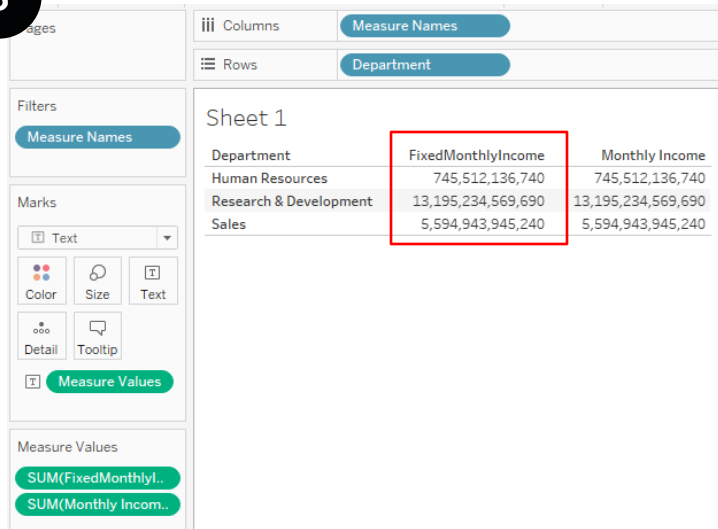
2



For each Department, find the sum of monthly income

LEVEL OF DETAILS : Fixed

3



Columns: Measure Names
Rows: Department

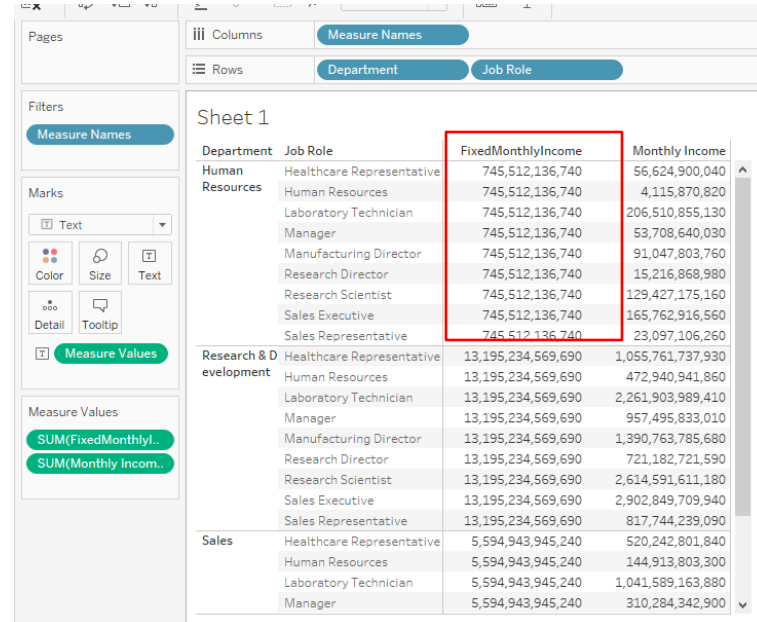
Sheet 1

Department	FixedMonthlyIncome	Monthly Income
Human Resources	745,512,136,740	745,512,136,740
Research & Development	13,195,234,569,690	13,195,234,569,690
Sales	5,594,943,945,240	5,594,943,945,240

Filters: Measure Names

Marks: Text

Measure Values: SUM(FixedMonthlyIncome), SUM(Monthly Income)



Columns: Measure Names
Rows: Department, Job Role

Sheet 1

Department	Job Role	FixedMonthlyIncome	Monthly Income
Human Resources	Healthcare Representative	745,512,136,740	56,624,900,040
	Human Resources	745,512,136,740	4,115,870,820
	Laboratory Technician	745,512,136,740	206,510,855,130
	Manager	745,512,136,740	53,708,640,030
	Manufacturing Director	745,512,136,740	91,047,803,760
	Research Director	745,512,136,740	15,216,868,980
	Research Scientist	745,512,136,740	129,427,175,160
	Sales Executive	745,512,136,740	165,762,916,560
Research & Development	Sales Representative	745,512,136,740	23,097,106,260
	Healthcare Representative	13,195,234,569,690	1,055,761,737,930
	Human Resources	13,195,234,569,690	472,940,941,860
	Laboratory Technician	13,195,234,569,690	2,261,903,989,410
	Manager	13,195,234,569,690	957,495,833,010
	Manufacturing Director	13,195,234,569,690	1,390,763,785,680
	Research Director	13,195,234,569,690	721,182,721,590
	Research Scientist	13,195,234,569,690	2,614,591,611,180
Sales	Sales Executive	13,195,234,569,690	2,902,849,709,940
	Sales Representative	13,195,234,569,690	817,744,239,090
	Healthcare Representative	5,594,943,945,240	520,242,801,840
	Human Resources	5,594,943,945,240	144,913,803,300
	Laboratory Technician	5,594,943,945,240	1,041,589,163,880
	Manager	5,594,943,945,240	310,284,342,900

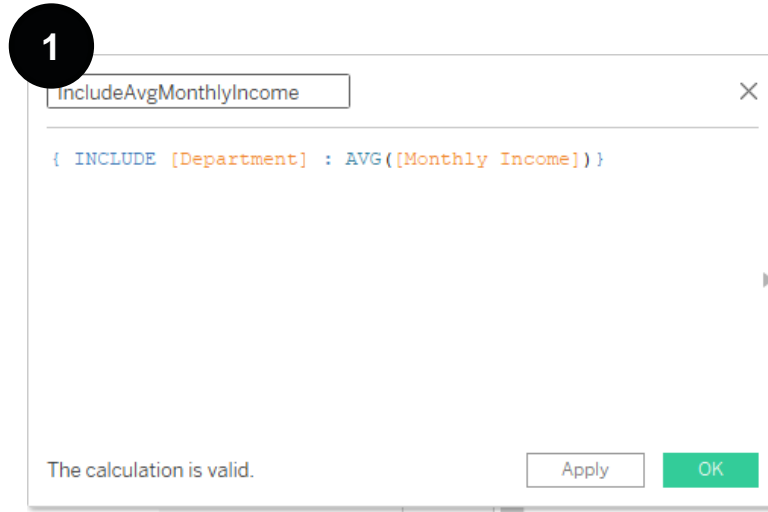
Filters: Measure Names

Marks: Text

Measure Values: SUM(FixedMonthlyIncome), SUM(Monthly Income)

Even if you add new dimension in the view, the measure will be calculated based on the dimensions specified in the expression. This means that the changes in the view do not impact the aggregation of the measure Monthly Income, which is the feature of a fixed LOD expression.

LEVEL OF DETAILS : Include



You can translate INCLUDE LOD as For every dimension in the view AND every listed dimension (Department), calculate the aggregate expression.

LEVEL OF DETAILS : Include

2

Columns: Measure Names
Rows: Age (group)

Filters: Measure Names

Marks: Text

Measure Values: SUM(IncludeAvgMo...), AVG(Monthly Incom...), SUM(Monthly Incom...)

Sheet 1

Age (group)	IncludeAvgMonthl...	Avg. Monthly Income	Monthly Income
18-25	196,583	73,357	1,843,946,912,700
26-35	186,729	63,504	7,864,589,205,090
36-45	184,022	66,466	6,356,895,041,700
>= 46	188,442	62,201	3,470,259,492,180

With include

Columns: Age (group), Department
Rows: Age (group), Department

Filters: (empty)

Marks: Text

Measure Values: AVG(Monthly I...)

Sheet 1 (2)

Age (group)	Department	
18-25	Human Resources	53,473
	Research & Development	78,809
	Sales	64,301
	Total	196,583
26-35	Human Resources	61,701
	Research & Development	65,728
	Sales	59,299
	Total	186,728
36-45	Human Resources	52,004
	Research & Development	69,124
	Sales	62,894
	Total	184,022
>= 46	Human Resources	63,505
	Research & Development	61,955
	Sales	62,588
	Total	188,442

Without include
Total = sum of each department's average monthly income

LEVEL OF DETAILS : Exclude

1



You can translate EXCLUDE LOD as 'For every dimension in the view EXCEPT the listed dimension (Job Role), calculate the aggregate expression'

LEVEL OF DETAILS : Exclude

2

Columns: Measure Names
Rows: Age (group) Department

Filters: Measure Names

Marks: Text

Measure Values: AVG(Monthly Income), ATTR(Exclude)

Sheet 1 (2)

Age (group)	Department	Avg. Monthl..	Exclude
18-25	Human Resources	53,473	53,473
	Research & Development	78,809	78,809
	Sales	64,301	64,301
26-35	Human Resources	61,701	61,701
	Research & Development	65,728	65,728
	Sales	59,299	59,299
36-45	Human Resources	52,004	52,004
	Research & Development	69,124	69,124
	Sales	62,894	62,894
>= 46	Human Resources	63,905	63,905
	Research & Development	61,955	61,955
	Sales	62,582	62,582

Columns: Measure Names
Rows: Age (group) Department Job Role

Filters: Measure Names

Marks: Text

Measure Values: AVG(Monthly Income), ATTR(Exclude)

Sheet 1 (2)

Age (group)	Department	Job Role	Avg. Mo..	Exclude
18-25	Human Resources	Laboratory Technician	51,710	53,473
		Manufacturing Director	57,595	53,473
		Research Scientist	82,680	53,473
		Sales Executive	36,510	53,473
	Research & Development	Healthcare Representative	91,966	78,809
	Research & Development	Human Resources	84,120	78,809
		Laboratory Technician	96,686	78,809
		Manager	53,593	78,809
		Manufacturing Director	100,738	78,809
		Research Director	54,355	78,809
	Sales	Research Scientist	80,709	78,809
		Sales Executive	55,543	78,809
		Sales Representative	74,790	78,809
		Healthcare Representative	74,646	64,301
		Laboratory Technician	46,757	64,301
	Human Resources	Manager	26,185	64,301
		Manufacturing Director	88,593	64,301
		Research Director	82,370	64,301
		Research Scientist	68,463	64,301
		Sales Executive	55,277	64,301
		Laboratory Technician	92,284	61,701
		Manager	87,603	61,701

In the above output, you can see that the values of the excluded expression are replicated because job role exclude

03

Table Calculation

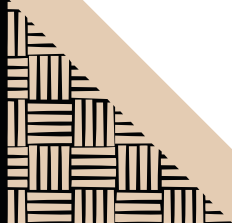


DEFINITION

Table calculations are a special type of calculated field within Tableau Desktop that apply transformations (i.e. additional math) on values within a visualization. Common examples of table calculations include running sum, moving average, and percent of total.

Table calculations are defined by how they are

1. **Partitioning (Scope)** is deciding where table calculations start and end. Within Tableau, partitioning is denoted by unchecked checkboxes within the Edit Table Calculation window.
2. **Addressing (Direction)** defines the direction of the calculation. Addressing is trickier to understand because it describes what dimensions are referenced ('compute on the basis of what?') and the direction they will be used (order matters!).



EXAMPLE: Percent of Total

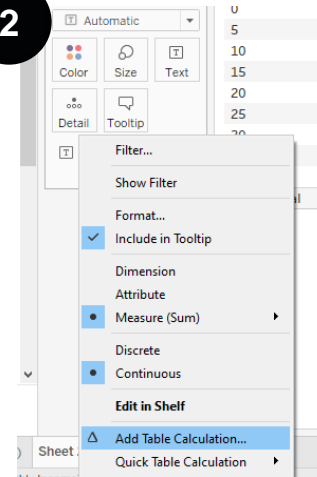
1

The screenshot shows the Tableau interface. The Columns shelf contains 'Department' and the Rows shelf contains 'Attrition' and 'Age (group)'. The Marks shelf is set to 'Automatic' and shows a green pill for 'SUM(Monthly Income)'. The main view is a table titled 'Sheet 2' with the following data:

Attrition	Age (group)	Department		
		Human Resources	Research & Development	Sales
No	18-25	22,821,216,210	896,975,774,190	307,169,850,780
	26-35	228,183,551,280	4,193,508,323,700	2,016,153,394,650
	36-45	186,354,532,440	4,009,125,894,210	1,651,945,830,570
	>= 46	101,362,004,370	2,128,201,540,290	806,351,001,840
Yes	18-25	53,673,898,320	423,687,415,230	139,618,757,970
	26-35	87,052,507,110	1,004,836,521,960	334,854,906,390
	36-45	36,828,256,230	299,434,711,230	173,205,817,020
	>= 46	29,236,170,780	239,464,388,880	165,644,386,020

Create monthly income table by age and department

2



Click SUM(Monthly Income) –
Click Add Table Calculation

EXAMPLE: Percent of Total

See the difference

3

Columns: Department
Rows: Years At Company (b..)

Sheet 2

	Department			
Years At Company (b..)	Human Resources	Research & Development	Sales	Grand Total
0	3.80%	68.95%	27.24%	100.00%
5	4.87%	66.56%	28.57%	100.00%
10	2.65%	67.77%	29.57%	100.00%
15	3.19%	61.38%	35.43%	100.00%
20	1.62%	67.71%	30.67%	100.00%
25		74.37%	25.63%	100.00%
30		64.63%	35.37%	100.00%
35		100.00%		100.00%
40			100.00%	100.00%
Grand Total	3.82%	67.54%	28.64%	100.00%

Table Calculation
% of Total Monthly Income

Calculation Type
Percent of Total

☐ Compute total across all pages

Compute Using

- Table (across)
- Table (down)
- Table
- Cell
- Specific Dimensions

☒ Department Addressing

☐ Years At Company (bin) Partitioning

At the level

Sort order: Specific Dimensions

☒ Show calculation assistance

Columns: Department
Rows: Years At Company (b..)

Sheet 2

	Department			
Years At Company (b..)	Human Resources	Research & Development	Sales	Grand Total
0	39.04%	39.98%	37.26%	39.17%
5	44.53%	34.37%	34.78%	34.87%
10	10.43%	15.04%	15.48%	14.99%
15	3.95%	4.31%	5.86%	4.74%
20	2.05%	4.83%	5.16%	4.82%
25		0.80%	0.65%	0.73%
30		0.50%	0.64%	0.52%
35		0.17%		0.12%
40			0.16%	0.05%
Grand Total	100.00%	100.00%	100.00%	100.00%

Table Calculation
% of Total Monthly Income

Calculation Type
Percent of Total

☐ Compute total across all pages

Compute Using

- Table (across)
- Table (down)
- Table
- Cell
- Specific Dimensions

☐ Department Partitioning

☒ Years At Company (bin) Addressing

At the level

Sort order: Specific Dimensions

☒ Show calculation assistance

Calculation Type = Percent of Total



THANK YOU

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