



# Tableau Public – Calculations

יעל אלבו

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שם הקובץ: Sample - Superstore. גיליון: Orders

# Tableau Calculations

Totals .1

Calculated Fields .2

Table calculations .3

Level-of-Detail calculations (LODs) .4

# 1. חישוב Totals

Tableau Public - Book1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Standard

Data Analytics Pages

Orders (Sample - Superst...

**Dimensions**

1 Category

City

Country

Customer ID

Customer Name

2,3 Order Date

Order ID

Postal Code

**Measures**

Discount

Profit

Quantity

4 Sales

Latitude (generated)

Longitude (generated)

Number of Records

Measure Values

Filters

Marks

Automatic

Color Size Text

Detail Tooltip

SUM(Sales)

Columns

Category

Rows

YEAR(Order Date) QUARTER(Order D..

Year of.. Quarte.. Furnit.. Offic

2013	1 רבעון	22,656	14,...
	2 רבעון	28,064	31,...
	3 רבעון	41,958	53,...
	4 רבעון	64,515	52,...
2014	1 רבעון	27,374	23,...
	2 רבעון	27,565	32,...
	3 רבעון	49,586	35,...
	4 רבעון	65,993	46,...
2015	1 רבעון	24,021	29,...
	2 רבעון	40,464	34,...
	3 רבעון	53,558	45,...
	4 רבעון	80,859	74,...
2016	1 רבעון	23,724	43,...
	2 רבעון	45,032	45,...
	3 רבעון	56,283	72,...
	4 רבעון	90,348	84,...

5

6

7

Show Mark Labels

Aggregate Measures

Stack Marks

View Data...

Reveal Hidden Data

Percentage Of

Totals

Forecast

Trend Lines

Special Values

Table Layout

Legends

Filters

Highlighters

Parameters

Create Calculated Field...

Edit Calculated Field

Cycle Fields

Swap Rows and Columns Ctrl+W

Show Row Grand Totals

Show Column Grand Totals

Row Totals to Left

Column Totals to Top

Add All Subtotals

Remove All Subtotals

Total All Using

Data Source Sheet 1

# 1. חישוב Totals -> Add All Subtotals – Totals Analysis ->

Tableau Public - Book1

File Data Worksheet Dashboard Story **Analysis** Map Format Window Help



Data **Analytics**

**Summarize**

- Constant Line
- Average Line
- Median with Quartiles
- Box Plot
- Totals**

**Model**

- Average with 95% CI
- Median with 95% CI
- Trend Line
- Forecast
- Cluster

**Custom**

- Reference Line
- Reference Band
- Distribution Band
- Box Plot

Pages

Filters

Marks

Automatic

Color

Size

Text

Detail

Tooltip

SUM(Sales)

Columns

Category

Rows

YEAR(Order Date)

QUARTER(Order Date)

Year of..	Quarte..	Furnit..	Office
2013	רבעון 1	22,656	14,52
	רבעון 2	28,064	31,24
	רבעון 3	41,958	53,92
	רבעון 4	64,515	52,08
2014	רבעון 1	27,374	23,05
	רבעון 2	27,565	32,32
	רבעון 3	49,586	35,76
	רבעון 4	65,993	46,09
2015	רבעון 1	24,021	29,44
	רבעון 2	40,464	34,54
	רבעון 3	53,558	45,18
	רבעון 4	80,859	74,33
2016	רבעון 1	23,724	43,66
	רבעון 2	45,032	45,72
	רבעון 3	56,283	72,19
	רבעון 4	90,348	84,94

- Show Mark Labels
- ☒ Aggregate Measures
- Stack Marks
- View Data...
- Reveal Hidden Data

Percentage Of

**Totals**

Forecast

Trend Lines

Special Values

Table Layout

Legends

Filters

Highlighters

Parameters

Create Calculated Field...

Edit Calculated Field

Cycle Fields

Swap Rows and Columns

Ctrl+W

- ☒ Show Row Grand Totals
- Show Column Grand Totals
- Row Totals to Left
- Column Totals to Top
- Add All Subtotals**
- Remove All Subtotals
- Total All Using

# 1. חישוב Totals – כדי להיפטר מרמה לא נחוצה של Total:

Tableau Public - Book1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Tableau interface showing the setup for a table with subtotals. The Columns shelf contains 'Category' and the Rows shelf contains 'YEAR(Order Date)' (highlighted with a red box and labeled '1'). The Marks shelf contains 'SUM(Sales)'.

The resulting table is as follows:

Category					
Year of..	Quarte..	Furnit..	Office ..	Techno..	Grand ..
2013	רבעון 1	22,656	14,529	37,263	74,448
	רבעון 2	28,064	31,244	27,231	86,539
	רבעון 3	41,958	53,924	47,751	143,633
	רבעון 4	64,515	52,080	63,033	179,628
2014	רבעון 1	27,374	23,059	18,418	68,852
	רבעון 2	27,565	32,320	29,239	89,124
	רבעון 3	49,586	35,761	44,913	130,260
	רבעון 4	65,993	46,093	70,211	182,297
2015	רבעון 1	24,021	29,441	39,134	92,596
	רבעון 2	40,464	34,548	60,358	135,370
	רבעון 3	53,558	45,182	45,875	144,614
	רבעון 4	80,859	74,339	80,695	235,893
2016	רבעון 1	23,724	43,662	56,491	123,877
	רבעון 2	45,032	45,721	43,011	133,764
	רבעון 3	56,283	72,197	67,772	196,252
	רבעון 4	90,348	84,946	104,759	280,054

2 להסיר את ה- V מה-Subtotals

Filter...  
Show Filter  
Show Highlighter  
Sort...  
Format...  
Show Header  
Include in Tooltip  
Show Missing Values  
Year 2015  
Quarter Q2  
Month May  
Day 8  
More  
Year 2015  
Quarter Q2 2015  
Month May 2015  
Week Number Week 5, 2015  
Day May 8, 2015  
More  
Exact Date  
Attribute  
Measure  
Discrete  
Continuous  
Subtotals  
Remove

## 2. יצירת שדות מחושבים – Calculated Fields – חישוב שורות

Tableau Public - Book1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Standard

Data Analytics Pages Columns Rows Sheet 2 Drop field here

Dimensions

1 Create Calculated Field... 2

Create Parameter...  
Group by Folder  
Group by Data Source Table  
Sort by Name  
Sort by Data Source Order  
Hide All Unused Fields  
Show Hidden Fields

Filters Marks

Automatic

Color Size Text

Detail Tooltip

4 # Profit 5 # Sales

# Discount  
# Quantity  
# Latitude (generated)  
# Longitude (generated)  
# Number of Records

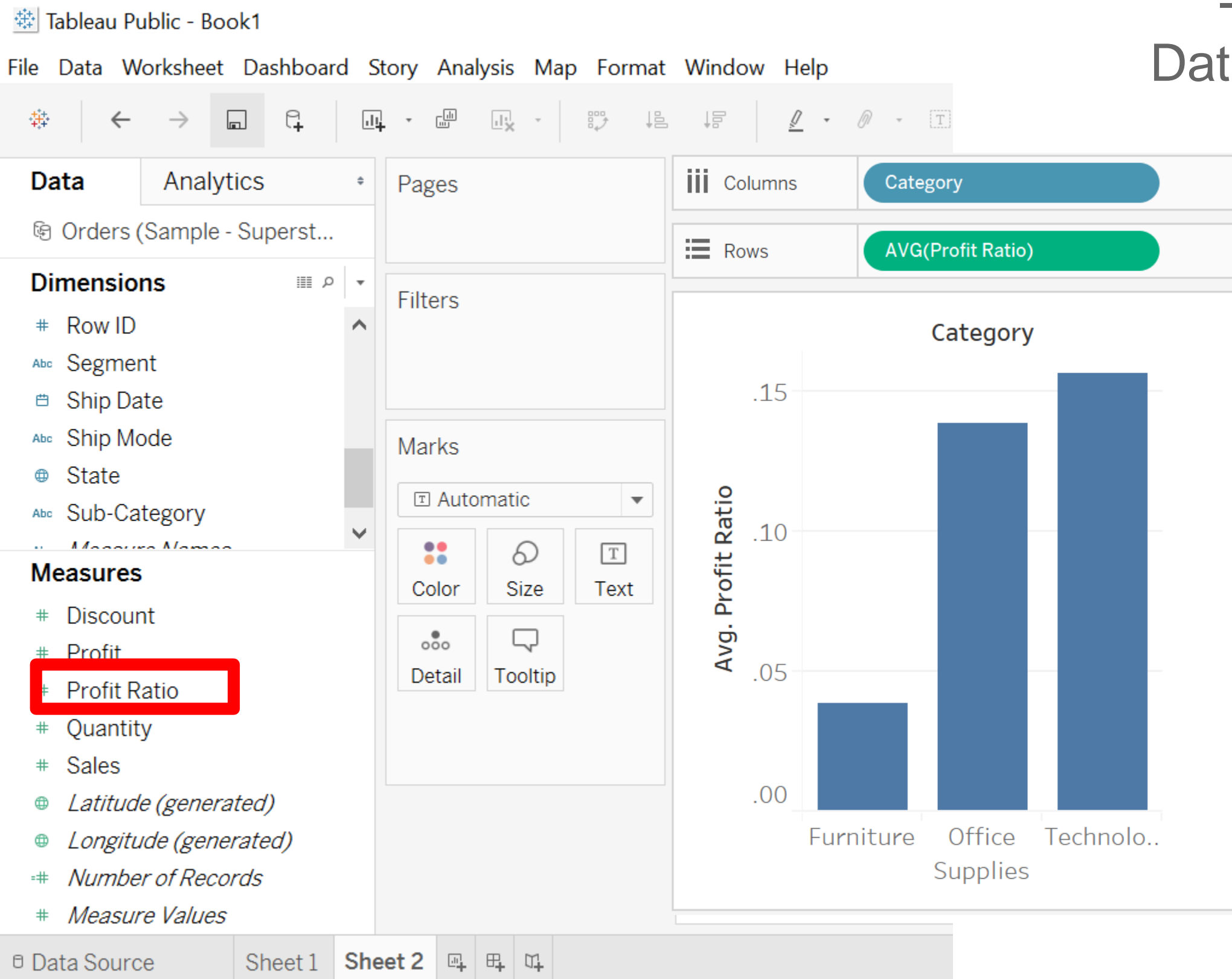
Profit Ratio

$[Profit] / [Sales]$

The calculation is valid.

Apply OK

## 2. יצירת שדות מחושבים - השדה החדש מופיע ב-Data



2. יצירת שדות מחושבים -

כמה ימים לוקח לשגר משלוח  
ממועד ההזמנה?

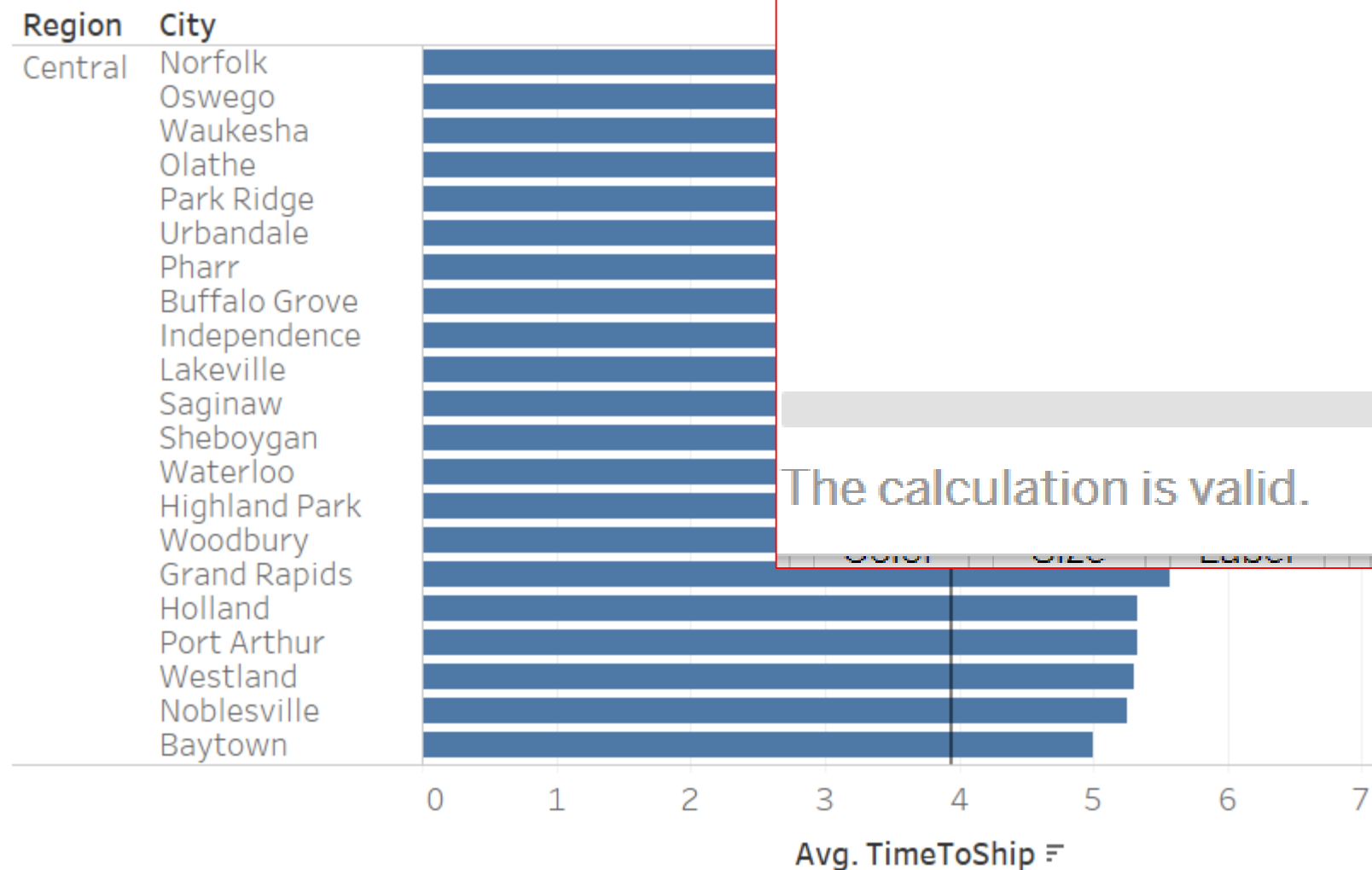
חשבו לכל עיר בכל אזור.

רמז: Datediff



## 2. יצירת שדות מחושבים - חישוב בעזרת פונקציה

Columns	AVG(TimeToShip)
Rows	Region City



TimeToShip

DATEDIFF('day', [Order Date], [Ship Date])

The calculation is valid.

Sheets Affected

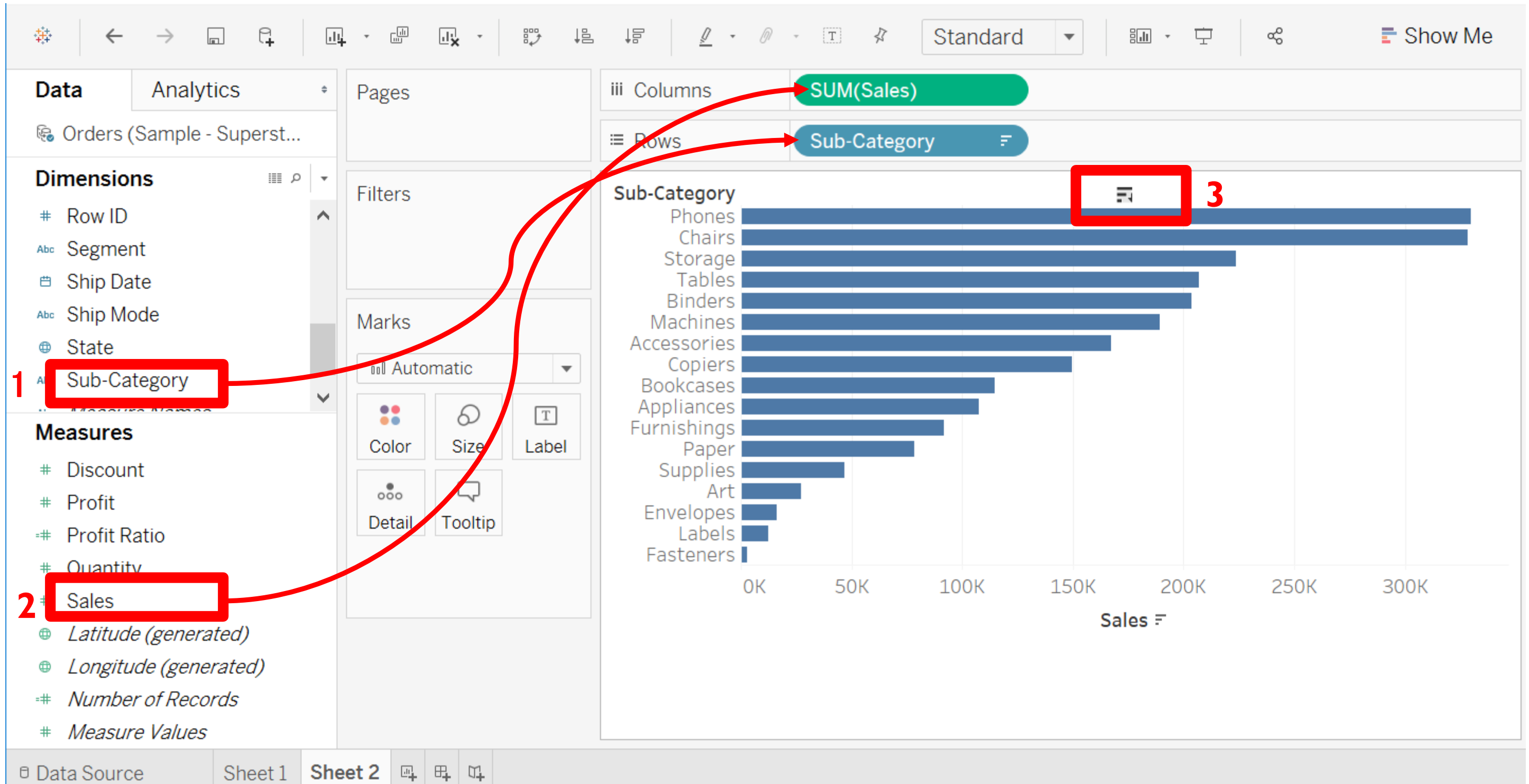
Apply

OK

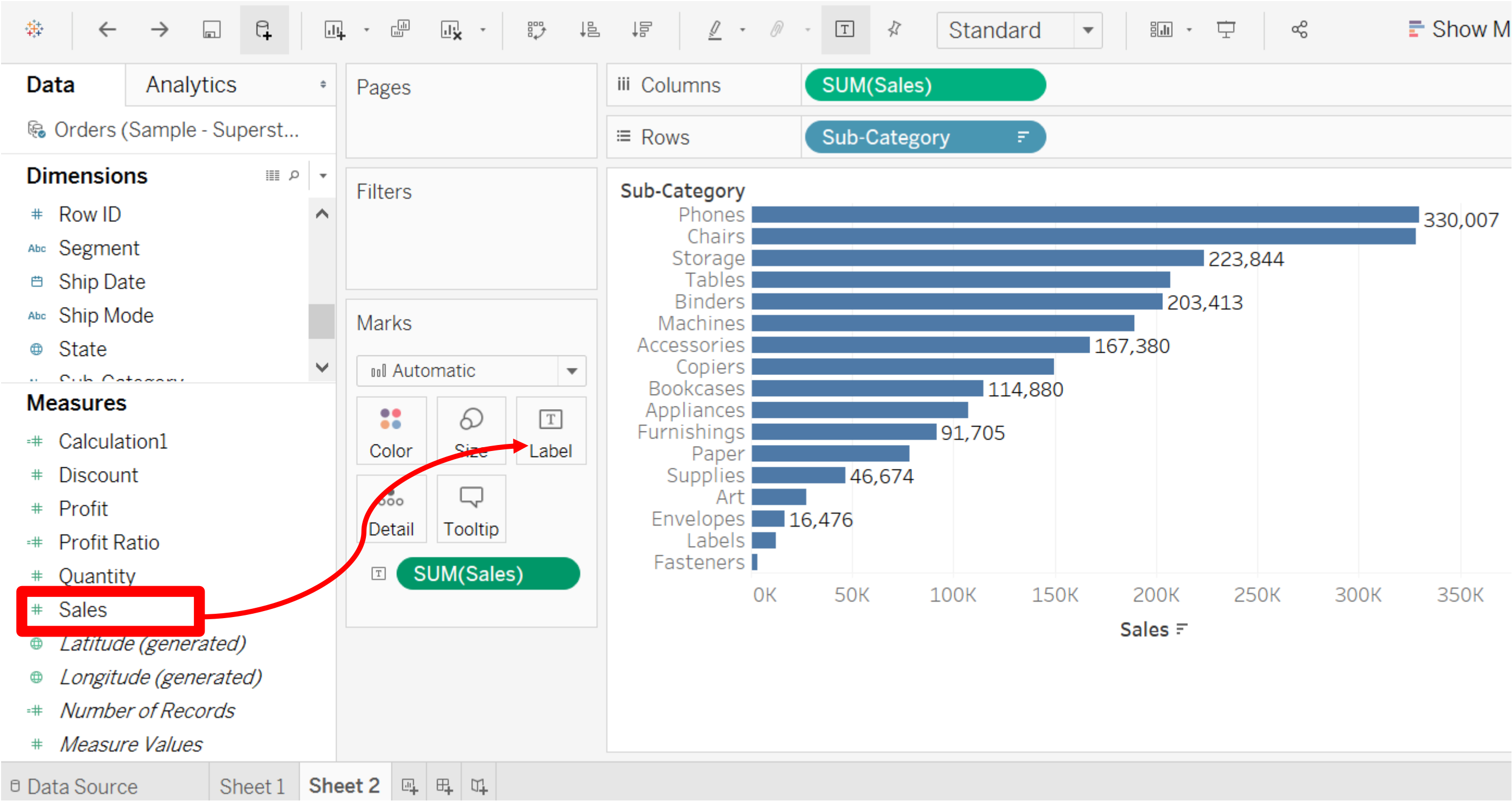
2. יצירת שדות מחושבים -

כיצד נציג את קו הממוצע לפי אזור?

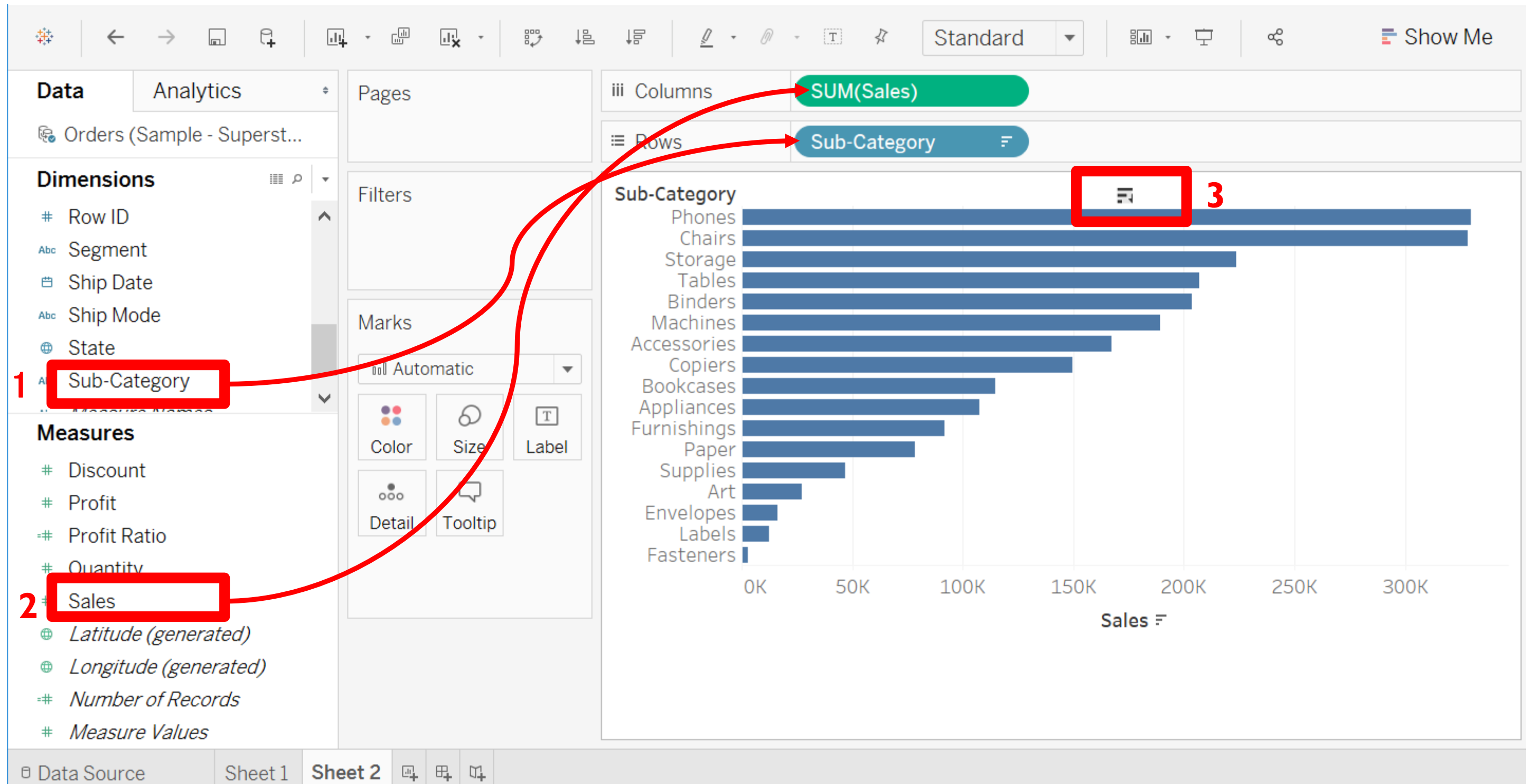
### 3. Table Calculation – בדף חדש:



# Labels -> Sales- Table Calculation .3



# Rank – Table Calculation .3      אנחנו מעוניינים להציג את הדרוג (לא את הערך)

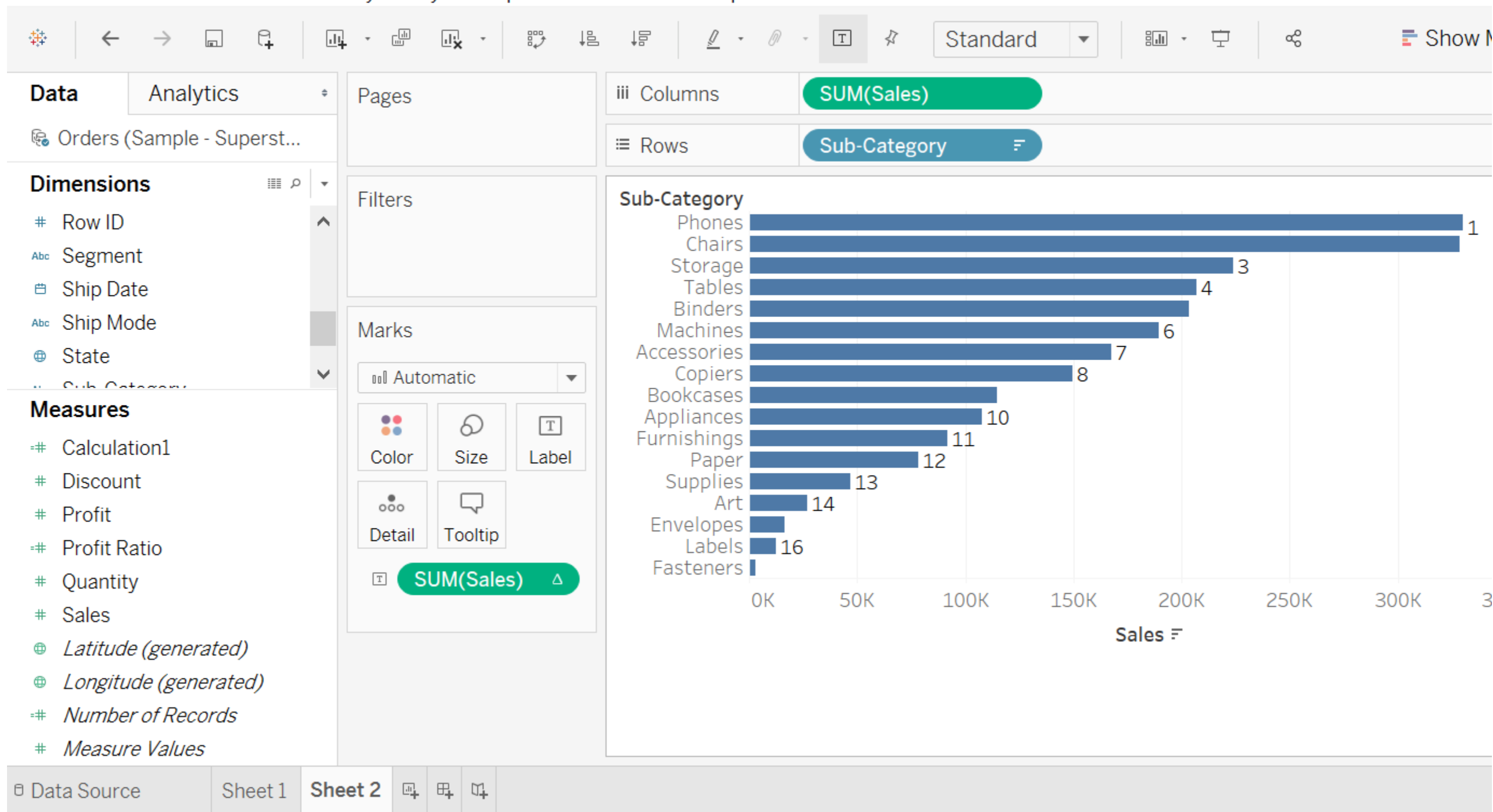


### 3. Table Calculation – המטרה: אנחנו מעוניינים להציג Rank ולא Sum.

The screenshot shows the Tableau Desktop interface with the following elements:

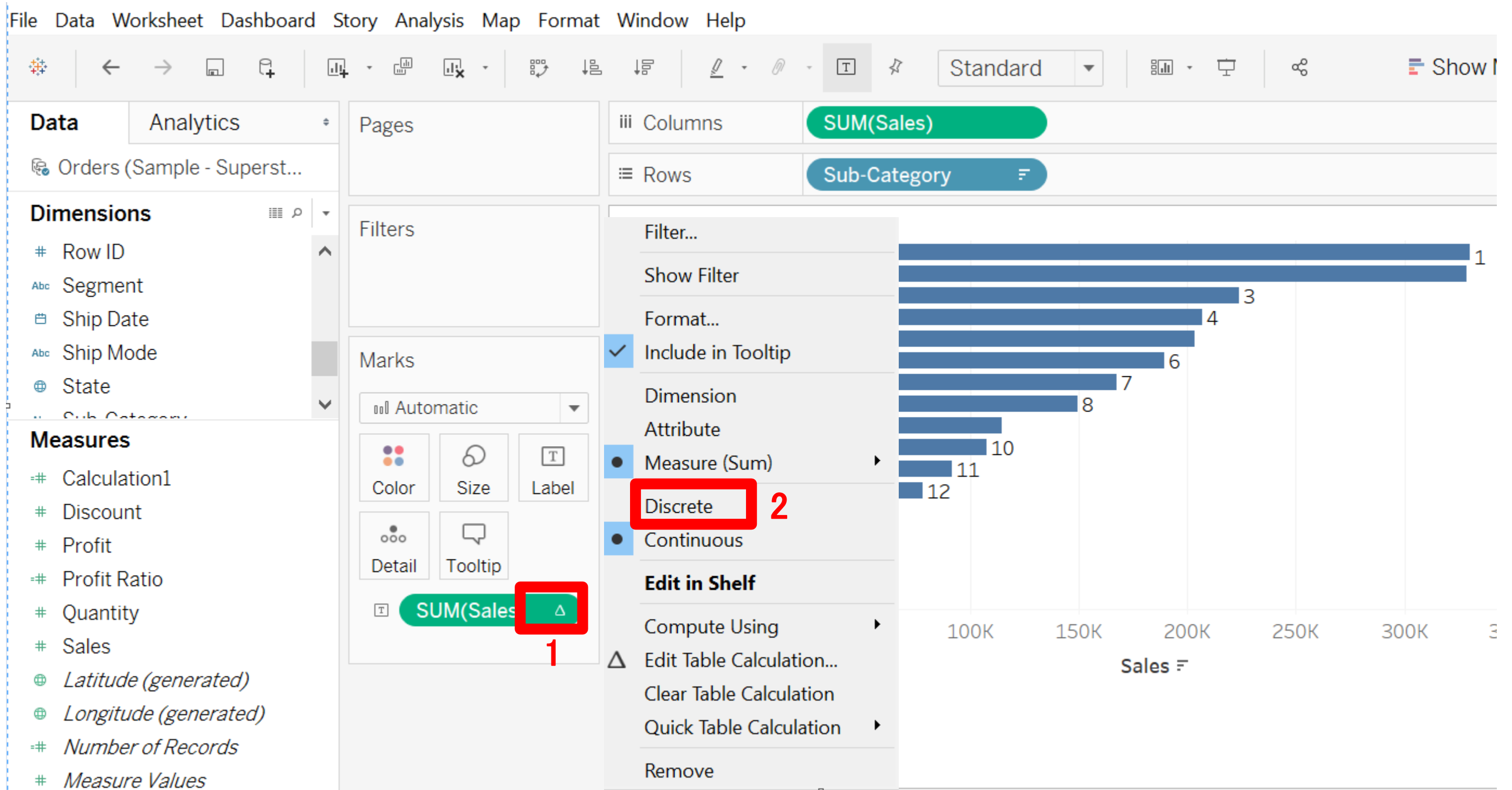
- Columns Shelf:** SUM(Sales)
- Rows Shelf:** Sub-Category
- Dimensions:** Row ID, Segment, Ship Date, Ship Mode, State, Sub-Category
- Measures:** Calculation1, Discount, Profit, Profit Ratio, Quantity, Sales, Latitude (generated), Longitude (generated), Number of Records, Measure Values
- Marks Card:** SUM(Sales) (highlighted with a red box and number 1)
- Context Menu:** Opened for SUM(Sales), showing options like Filter..., Show Filter, Format..., Include in Tooltip, Dimension, Attribute, Measure (Sum), Discrete, Continuous, Edit in Shelf, Add Table Calculation... (highlighted with a red box and number 2), Quick Table Calculation, and Remove.
- Table Calculation Dialog:** Opened, showing:
  - Calculation Type:** Rank (highlighted with a red box and number 3), Descending, Competition (1, 2, 2, 4)
  - Compute Using:** Table (down) (highlighted with a red box and number 4), Cell, Specific Dimensions
  - Sub-Category:** Checked
  - Show calculation assistance:** Checked
- Close Button:** A red box with a close button (X) is highlighted with a red box and number 5.

File Data Worksheet Dashboard Story Analysis Map Format Window Help



# Rank – Table Calculation .3

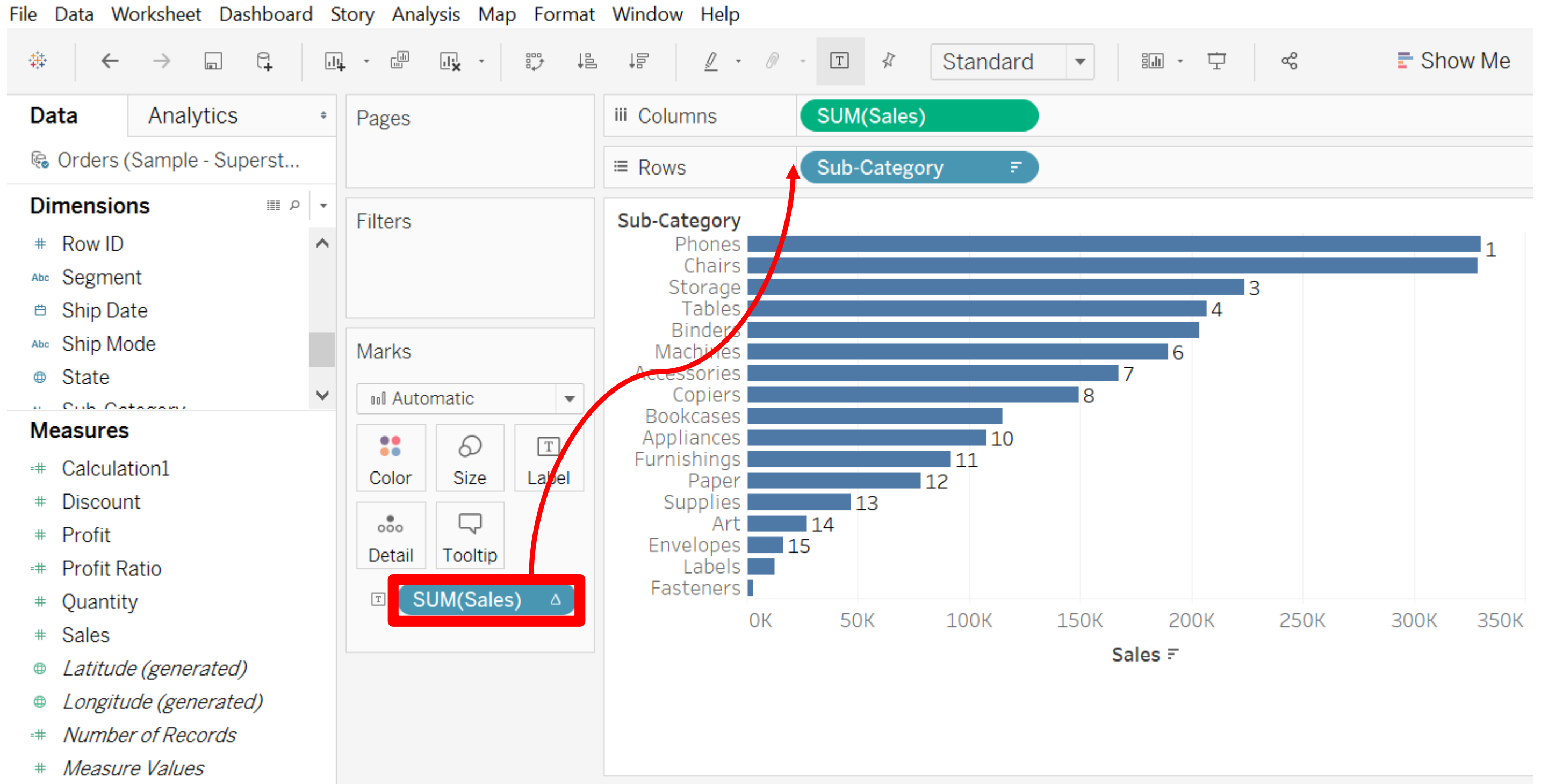
כעת נציג את הדרוג (כ-discrete) משמאל לבר:





# Rank – Table Calculation .3

נגרור את SUM(Sales) מה-Marks ל-Rows (הכי שמאלי)



כיצד נציג את הדרוג rank לפי קטגוריה?

נגרור את category ל-Rows.

מה הבעיה? כיצד נתקן?

# Rank – Table Calculation .3

כעת נגזר את Category ל- Rows (הכי שמאלי) ונתקן את החישוב

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Standard

Show M

Data Analytics

Pages

Columns SUM(Sales)

Rows Category

Dimensions

Category

City

Country

Customer ID

Customer Name

Order Date

Measures

Calculation1

Discount

Profit

Profit Ratio

Quantity

Sales

Latitude (generated)

Longitude (generated)

Number of Records

Measure Values

Filters

Marks

Automatic

Color

Size

Label

Detail

Tooltip

Category	Rank of..	Sub-Catego..
Furniture	2	Chairs
	4	Tables
	9	Bookcases
	11	Furnishings
Office Supplies	3	Storage
	5	Binders
	10	Appliances
	12	Paper
	13	Supplies
	14	Art
	15	Envelopes
Technology	16	Labels
	17	Fasteners
	1	Phones
	6	Machines
7	Accessories	
8	Copiers	

Table Calculation

Rank of Sales

Calculation Type

Rank

Descending

Competition (1, 2, 2, 4)

Compute Using

Table (down)

Pane (down)

Pane (across then down)

Pane (down then across)

Cell

Specific Dimensions

Sub-Category

Category

Show calculation assistance

Filter...

Show Filter

Show Highlighter

Sort...

Format...

Show Header

Include in Tooltip

Dimension

Attribute

Measure (Sum)

Discrete

Continuous

Edit in Shelf

Compute Using

Edit Table Calculation

Clear Table Calculation

OK

5

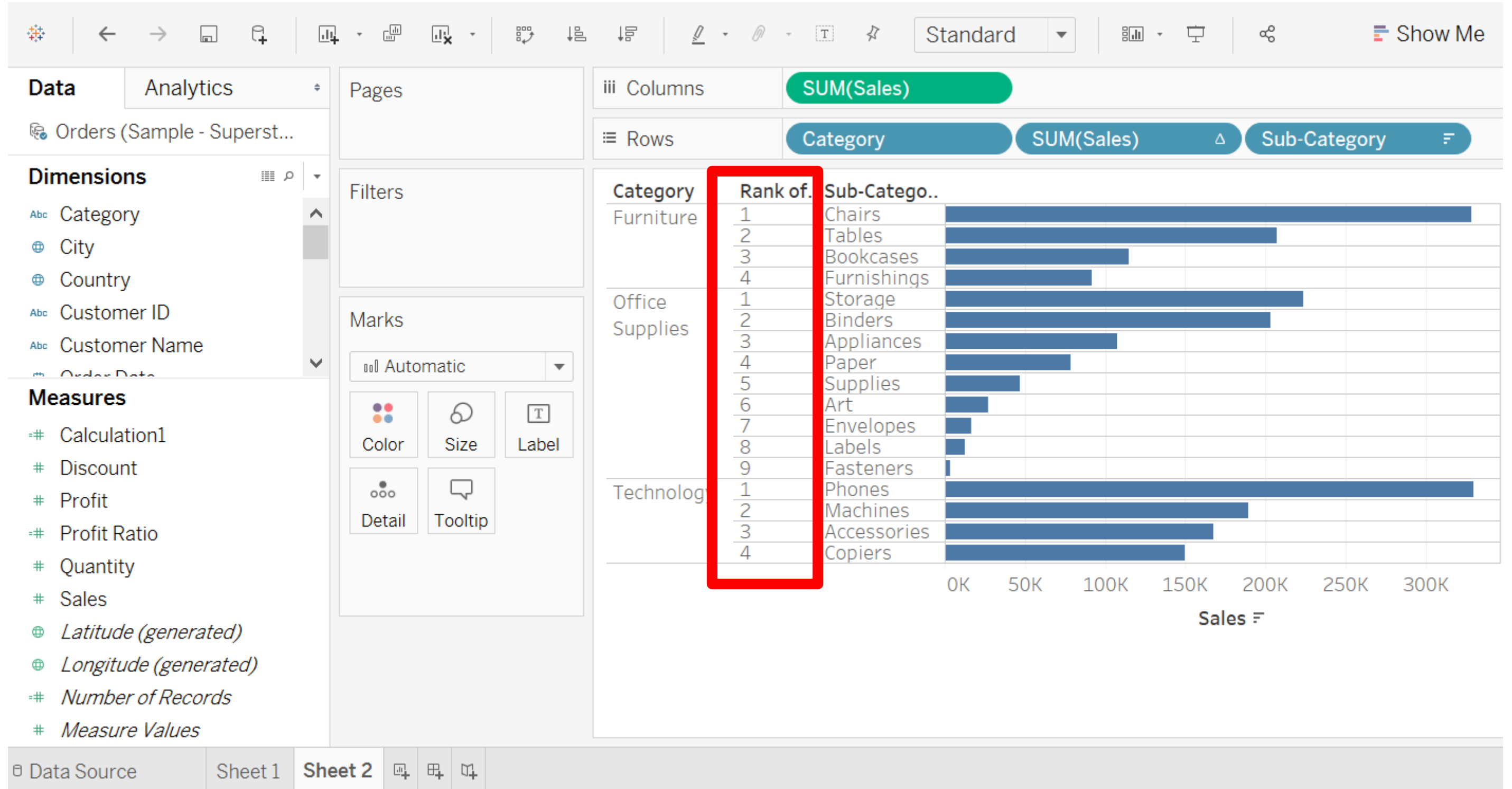
4

3

2

1

File Data Worksheet Dashboard Story Analysis Map Format Window Help

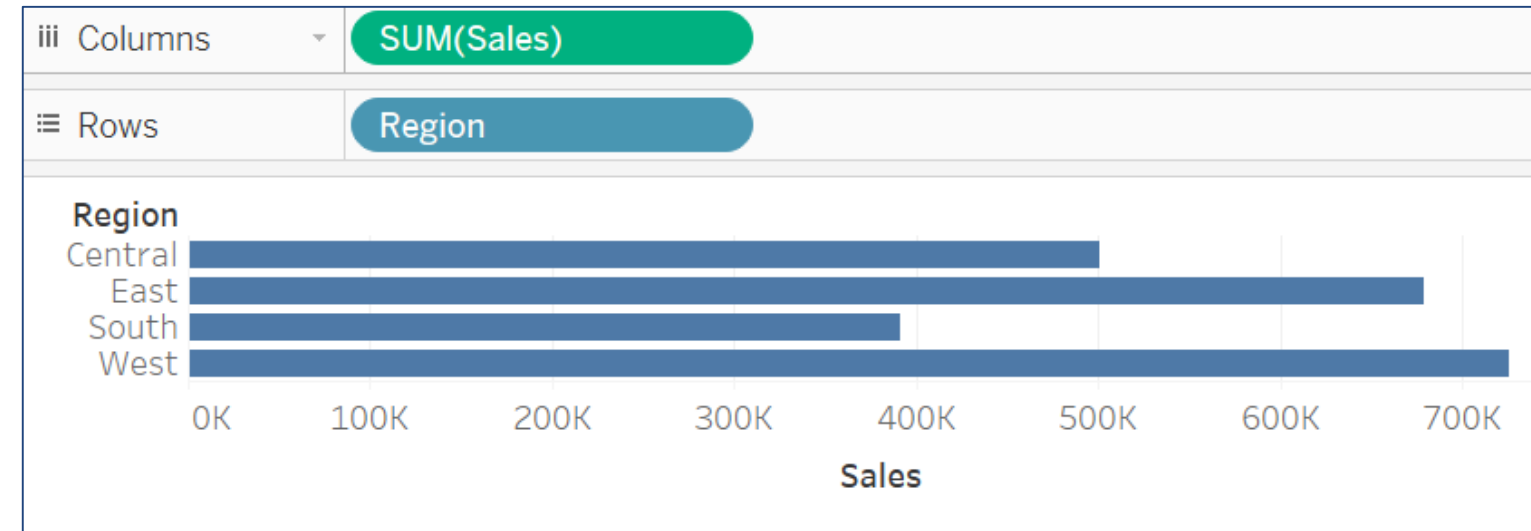


## 4. LOD (Level of Detail)

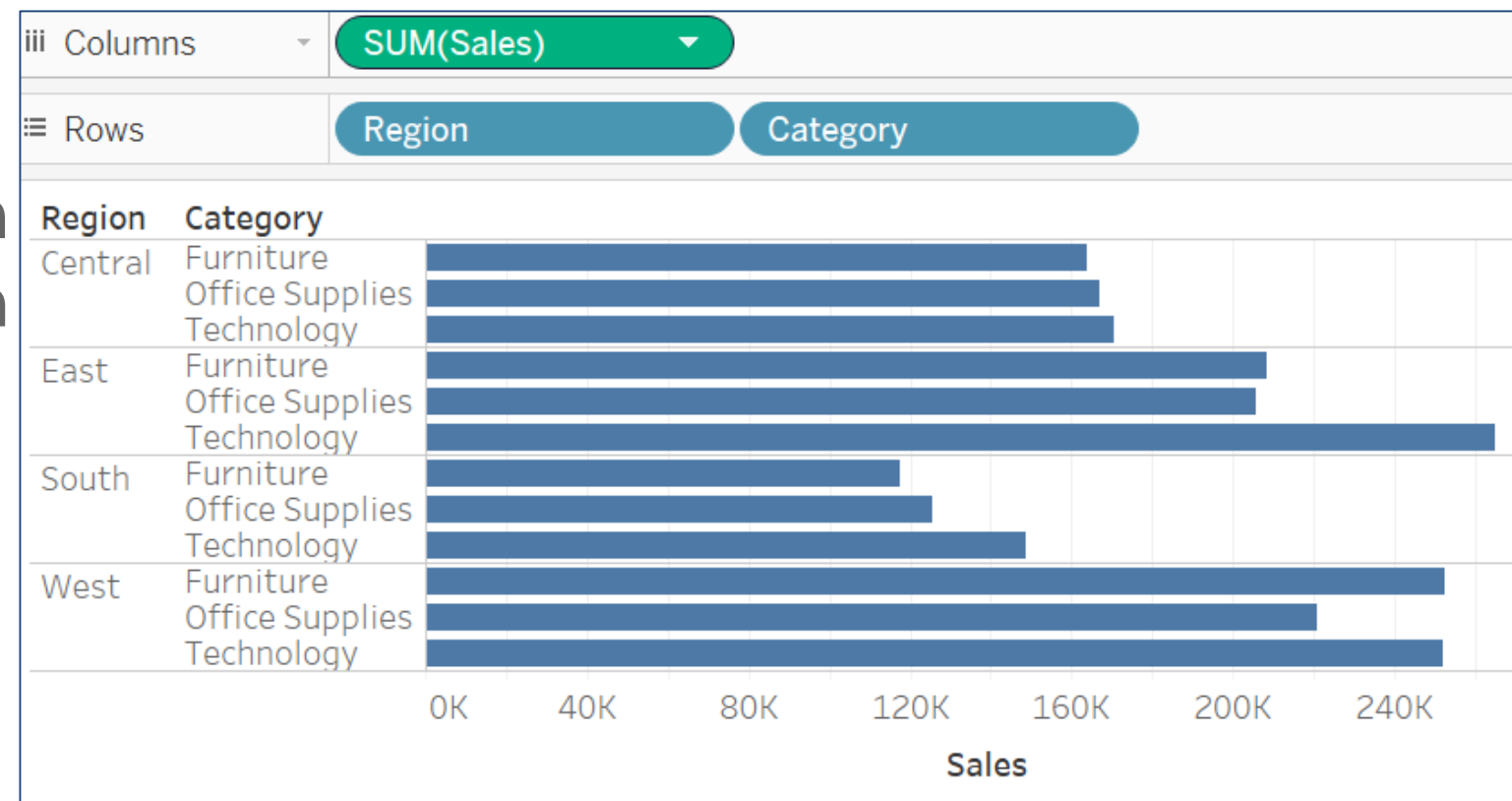
רמת הפרוט מוגדרת ע"י ה-dimensions שנבחרו לפילוח ה-measures.

דוגמא:

זה



מול

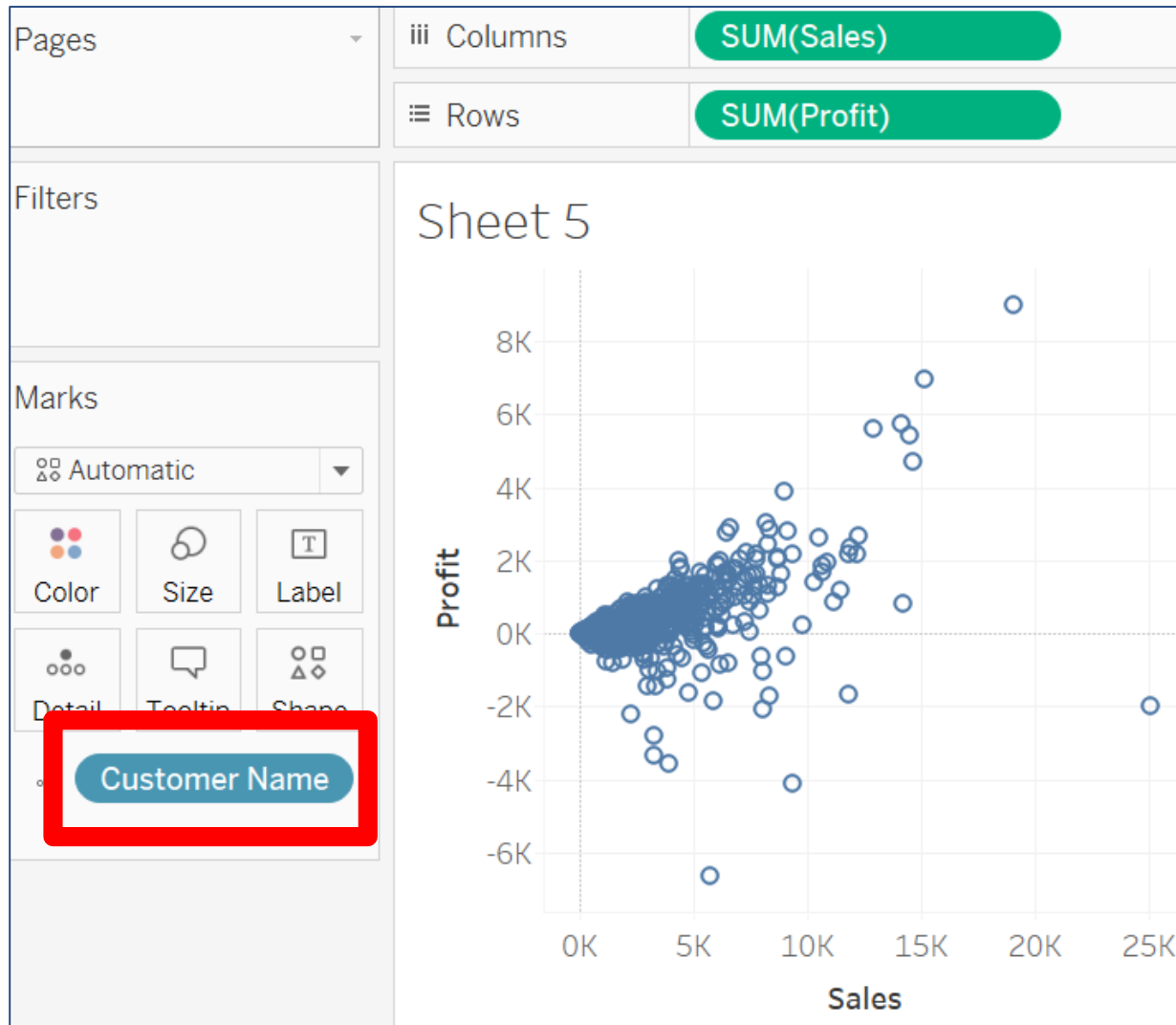


הוספנו רמת פרוט ע"י הוספת השדה Category למדף.

## 4. LOD (Level of Detail)

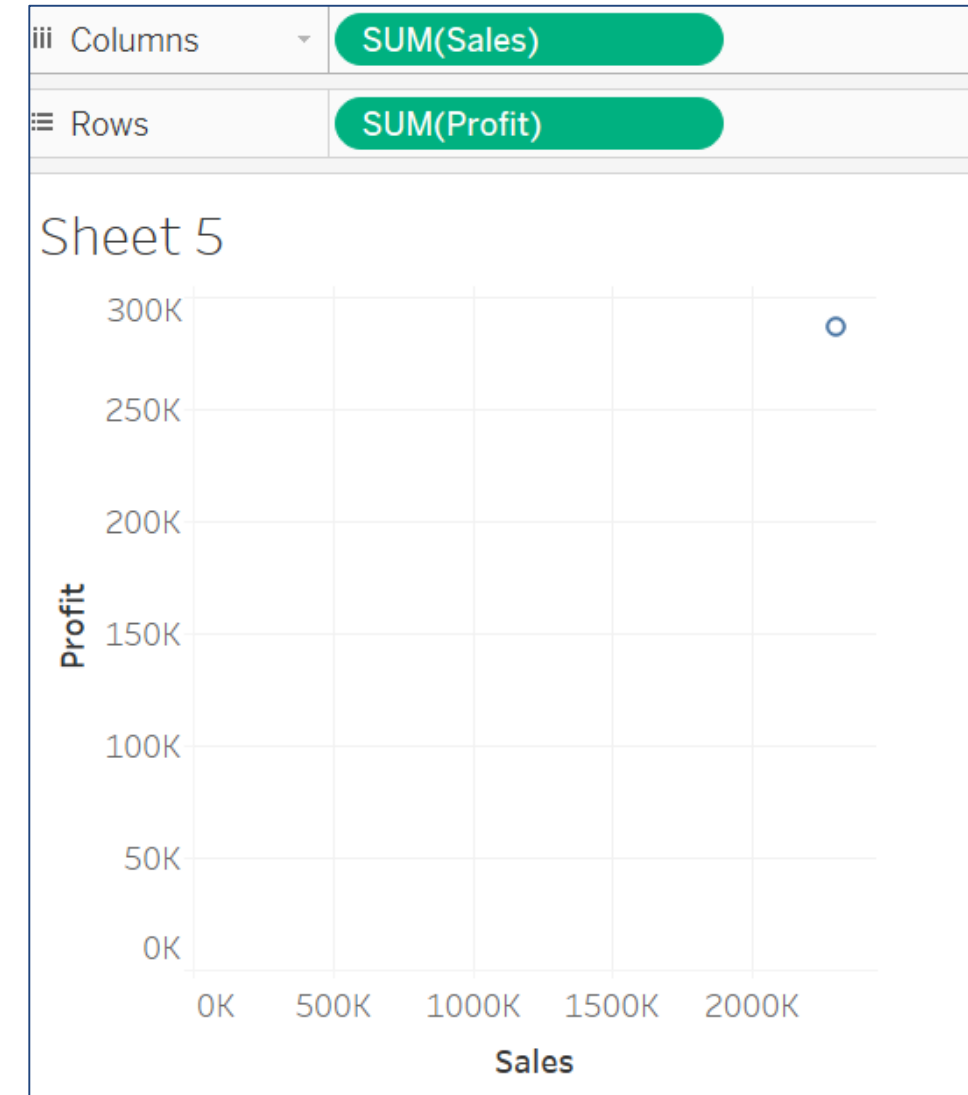
בנוסף למדף, ניתן לשלוט על רמת הפרוט ע"י הוספת שדה ל-marks

דוגמא:



מול

2



זה

1

הוספנו רמת פרוט ע"י הוספת  
השדה Customer Name ל-Detail

## 4. LOD (Level of Detail)

דרך נוספת ואלגנטית להוספת וגריעת פרוט, וכן שימוש ברמות שונות של אגרגציה – **LOD expression**.

- Exclude – לגריעת רמת פרוט, למרות שמופיעה בתצוגה
- Include – להוספת רמת פרוט, למרות שאינה מופיעה בתצוגה

אנחנו נתמקד ב:

- Fixed – קיבוע רמת האגרגציה.

קריאה נוספת:

<http://www.tableaulearners.com/2016/level-detail-expressions-tableau/>

Fixed

LOD (Level of Detail) .4

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Standard

Show M

Data Analytics

Orders (Sample - Superst...

Dimensions

- Category
- City
- Country
- Customer ID
- Customer Name
- Order Date
- Order ID
- Postal Code
- Product ID
- Product Name
- Region

Measures

- Profit
- Profit Ratio
- Quantity
- Sales

Pages

Filters

Marks

Automatic

Color Size Text

Detail Tooltip

SUM(Sales)

Columns

Region State City

Region	State	City	
Central	Illinois	Arlington Heights	14
		Aurora	7,573
		Bloomington	964
		Bolingbrook	218
		Buffalo Grove	831
		Carol Stream	1,306
		Champaign	152
		Chicago	48,540
		Danville	43
		Decatur	3,169
		Des Plaines	1,493
		Elmhurst	892
		Evanston	1,754
		Frankfort	98
		Freeport	216
		Glenview	158
		Highland Park	2,035
Naperville	1,288		
Normal	367		
Oak Park	10		

באיזו רמת  
אגרגציה  
מחושב ה-  
Sales?



כיצד נחשב (במשתנה) את סכום המכירות בכל  
Region?

כיצד נחשב (במשתנה) את סכום המכירות בכל  
state?

Fixed\_Region\_Sales

```
{ FIXED [Region] : SUM ( [Sales] ) }
```

Fixed\_States\_Sales

```
{ FIXED [State] : SUM ( [Sales] ) }
```

The calculation is valid.

The calculation is valid.

Apply

OK

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Standard

Show Me

Data Analytics

Orders (Sample - Superst...

**Dimensions**

- Category
- City
- Country
- Customer ID
- Customer Name
- Order Date
- Order ID
- Postal Code
- Product ID
- Product Name
- Region

**Measures**

- Discount
- Fixed\_Region\_Sales
- Fixed\_State\_Sales
- Profit

**Columns**

Measure Names

**Rows**

Region State City

**Filters**

Measure Names

**Marks**

Automatic

Measure Values

Measure Values

SUM(Fixed\_Region\_..)

SUM(Sales)

Region	State	City	Fixed_..	Sales
Central	Illinois	Arlington Heights	501,240	14
		Aurora	501,240	7,573
		Bloomington	501,240	964
		Bolingbrook	501,240	218
		Buffalo Grove	501,240	831
		Carol Stream	501,240	1,306
		Champaign	501,240	152
		Chicago	501,240	48,540
		Danville	501,240	43
		Decatur	501,240	3,169
		Des Plaines	501,240	1,493
		Elmhurst	501,240	892
		Evanston	501,240	1,754
		Frankfort	501,240	98
		Freeport	501,240	216
		Glenview	501,240	158
		Highland Park	501,240	2,035
		Naperville	501,240	1,288
		Normal	501,240	367

Red arrow pointing from 'Fixed\_Region\_Sales' in the Measures list to the 'Fixed\_..' column in the table.

Red arrow pointing from 'SUM(Fixed\_Region\_..)' in the Marks card to the 'Fixed\_..' column in the table.

# זו התוצאה המתקבלת:

## LOD (Level of Detail) .4

File Data Worksheet Dashboard Story Analysis Map Format Window Help

Standard Show Me

**Data** Analytics Pages

Orders (Sample - Superst...

**Dimensions**

- Category
- City
- Country
- Customer ID
- Customer Name
- Order Date
- Order ID
- Postal Code
- Product ID
- Product Name
- Region

**Measures**

- Discount
- Fixed\_Region\_Sales
- Fixed\_State\_Sales
- Profit

**Columns** Measure Names

**Rows** Region State City

**Filters** Measure Names

**Marks** Automatic

**Measure Values**

- SUM(Fixed\_Region\_...
- SUM(Fixed\_State\_Sa..
- SUM(Sales)

Region	State	City	Fixed_Region_Sales	Fixed_State_Sales	Sales
Central	Illinois	Arlington Heig..	501,240	80,166	14
		Aurora	501,240	80,166	7,573
		Bloomington	501,240	80,166	964
		Bolingbrook	501,240	80,166	218
		Buffalo Grove	501,240	80,166	831
		Carol Stream	501,240	80,166	1,306
		Champaign	501,240	80,166	152
		Chicago	501,240	80,166	48,540
		Danville	501,240	80,166	43
		Decatur	501,240	80,166	3,169
		Des Plaines	501,240	80,166	1,493
		Elmhurst	501,240	80,166	892
		Evanston	501,240	80,166	1,754
		Frankfort	501,240	80,166	98
		Freeport	501,240	80,166	216
		Glenview	501,240	80,166	158
		Highland Park	501,240	80,166	2,035
		Naperville	501,240	80,166	1,288
		Normal	501,240	80,166	367

Red arrows indicate the relationship between the measures and the data table:

- From **Fixed\_State\_Sales** in the Measures list to the **Fixed\_State\_Sales** column in the table.
- From **SUM(Fixed\_State\_Sa..)** in the Measure Values list to the **Fixed\_State\_Sales** column in the table.

# לסיכום Tableau Calculations

1. Totals

2. Calculated Fields ברמת השורה

3. Table calculations

4. Level-of-Detail calculations (LODs)

שילחו כעת קישור לפורום תרגיל 4.

עד לשבוע הבא: גם תרגיל גיוס תרומות לפורום תרגיל 4  
(כתגובה לעצמכם).

Calculation - Fundraising