Data Analyst Practice Quiz Questions and Solutions

For a full list of topics, see
https://mkt.tableau.com/files/TableauCertifiedDataAnalystBeta_ExamGuide.pdf

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The Data

Click here to get the data used on the quiz questions.

Quiz Questions

Problem Set #1

1. [2.1.5**.** Write type conversion functions**]** You have ORDER_DATE as field in the view. You would want to change the format of the field from string to date. Which function you would use to get Date from String?

a. DATETIME("ORDER_DATE")
b. DATE([ORDER_DATE])
c. DATE("ORDER_DATE")
d. TO_DATE([ORDER_DATE])

2. [2.1.5**.** Write type conversion functions] You have SHIP_DATE as field in the view. You would want to change the format of the field from string to date with a particular format. Make sure month name is displayed in full and also milliseconds (up to 5 digits) is displayed in the resulting date.

Choose the correct answer:

a. DATETIME([SHIP_DATE], 'dd-MM-yyyy HH.mm.ss')
b. DATETIME("SHIP_DATE", 'dd-MM-yyyy HH.mm.ss.AAAAA aa')
c. DATEPARSE([SHIP_DATE], 'dd-MMMM-yyyy HH.mm.ss.AAAAA aa')
d. DATEPARSE('dd-MMMM-yyyy HH.mm.ss.AAAAA aa' , [SHIP_DATE])

3. [1.1.9. Replace the connected data source with another data source for an existing chart or sheet]

You have created a workbook and sheets using a data source.You would now want to replace the connected data source with another data source for a workbook or sheet. Choose the correct answer:

a) Open a workbook that refers to the original data source. Select Data > Update Data Source. Go to the sheet tab and select Data > Update Data Source.
b) Open a workbook that refers to the original data source. Select Data > New Data Source and connect to new data source. On Data Source page, drag table to the canvas to set up data source if it's not done automatically. Go to the sheet tab and select Data > Replace Data Source
c) Open a workbook that refers to the original data source. Select Data > Replace Data Source and connect to new data source. On Data Source page, drag table to the canvas to set up data source. Go to the sheet tab and select Data > Update Data Source
d) Open a workbook that refers to the original data source. Select Data > Add Data Source and connect to new data source. Go to the sheet tab and select Data > Delete Data Source.

4. **[**1.2.4. Use multiple data sources (establish relationships, create joins, union tables, blend data)] Join types supported by Tableau prep are :

a) LeftOuter join, Outer join, Right join, leftOnly join, rightOnly join , Full
b) Left join, Outer join, RightOuter join, leftOnly join, rightOnly join, Inner join
c) Left join, Inner join, Right join, leftOnly join, rightOnly join, notInner join, Full
d) Outer join, Inner join, Right join, leftOnly join, rightOnly join, Full

5. [2.3.5. Ranking] A Rank function used in a calculated field to display the customer names with highest profits would be?

a) RANK (sum([Profit]),'desc')
b) RANK (sum([Profit]),'desc')
c) RANK (sum([Profit]),'asc')
d) RANK (sum([Profit]))

6. [2.4.4. Apply filters to multiple sheets and data sources]

Steps to create a filter so that ,it's applied for all worksheets in the workbook that use the current primary data source, are:

a) On the Filters shelf, right-click the Region field and select Apply to Worksheets > All Using This Data Source.
b) On the Filters shelf, right-click the field and select Apply to Worksheets > Selected Worksheets.
c) On the Filters shelf, right-click the field and select Apply to Worksheets > Only this Worksheet.
d) On the Filters shelf, right-click the field and select Apply to Worksheets > All Using Related Data Sources.

7. [1.3.1. Choose which data transformation to perform based on a business scenario] You are doing data cleaning and combining data for further Insight analysis for Customer sales scenario. Using Tableau prep you want to combine Sales table and Customer table. But there is a difference in granular levels. Which data transformation you would choose in this scenario?

a) Join
b) Aggregate
c) Union
d) Pivot

8. [3.4.2. Add custom shapes and color palettes] Which file need to be modified to add custom color palette in Tableau ?

a) Preferences.tps
b) Preferences.config
c) Preference .txt
d) Preference.tps

9. [3.4.2. Add custom shapes and color palettes] Steps to add custom color palette in Tableau:

a) Goto My Tableau Repository folder. Edit the Preferences.config file
Add preference tags inside the workbook tags. Color palettes are inserted between preferences tags.

b) Goto My Tableau Repository folder. Edit the Preferences.tps file
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c) Goto My Tableau Repository folder. Edit the Preferences.txt file
Add preference tags inside the color tags. Color palettes are inserted between preferences tags.

d) Goto My Tableau Repository folder. Edit the Preferences.tps file
Add preference tags inside the workbook tags. Color palettes are inserted between preferences tags.

10. [3.4.2. Add custom shapes and color palettes] Steps to add custom shapes in Tableau:

a) Copy the custom shape icon file to My Tableau Repository > “Shapes” folder. Reload the shapes (or reopen Tableau) for the new custom shape to appear.

b) Copy the custom shape icon file to My Tableau Repository > “Color and Shapes” folder. Reload the shapes (or reopen Tableau) for the new custom shape to appear

c) Copy the custom shape icon file to My Tableau Repository > “Custom” folder. New Shape is automatically added to the list of shapes in Tableau.

d) Copy the custom shape icon file to My Tableau Repository > “Mark Types” folder. New Shape is automatically added to the list of shapes in Tableau.

Hands-on Quiz 1

1. For items shipped in July of 2012, what percent of sales were sent in a Large Box?

- 13.27%
- 11.46%
- 11.95%

2. Find the top product subcategories by Sales within each delivery method. The second highest subcategory for Regular Air sales is ranked #_____ for Express Air.

- 1
- 2
- 3
- 4
- 5

3. In the furniture category, which unprofitable state is surrounded by only profitable states?

- Vermont
- Iowa
- Utah

Hands-on Quiz 2

1) **If 2013 Sales numbers were expected to increase by 10% in the following year in all customer segments, what would be the total estimated sales for Home Office in 2014?**

- 617,498
- 679,248
- 2,385,847

2) **Which product has the highest ship cost to sales ratio?**

- Hoover® Commercial Lightweight Upright Vacuum

- Accohide Poly Flexible Ring Binders
- Kensington 7 Outlet MasterPiece Power Center with Fax/Phone Line Protection
- Lexmark 4227 Plus Dot Matrix Printer

3) **Find the customer with the highest profit. What is his or her average shipping cost per order?**

[Hint: to calculate the shipping cost *per order* you will need to calculate the number of orders using the count distinct function]

- 66.72
- 10.49
- 12.59
- 12.18

Hands-on Quiz 3

1)

Which product category has the largest interquartile range for sales?

- Furniture
- Office Supplies
- Technology

2) **Which product sub-category has total sales which is $81,960 below the average sales per sub-category?**

(First calculate the average sales per subcategory, then subtract this value from the sales broken out by sub-category)

- Paper
- Chairs & Chairmats
- Tables
- Office Furnishings

3) **The top 5 customers by sales represent ____ of the total profits.**

- 2.63%
- .55%
- 1.65%

Knowledge-based Quiz 1

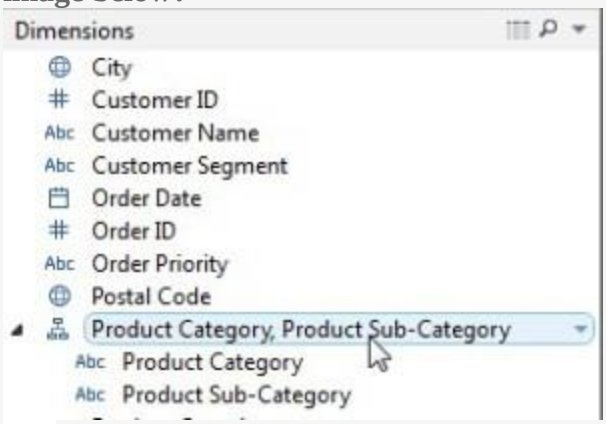
1) **A dimension is a field that typically holds**

- numerical data
- discrete qualitative data

2) **Dates are typically treated as**

- dimensions
- measures

3) **What word describes the area highlighted in light blue under the mouse cursor in the image below?**



- group
- set
- hierarchy
- parameter
- measure

4) **The icon next to a field means that field is**

- numerical
- qualitative
- geographic
- date or time

Knowledge Based Quiz 2

1) **Which of the following charts types always includes bars sorted in descending order?**

- Gantt Chart
- Pareto Chart
- Combo Chart
- Bar in Bar

2) **Which of the following charts uses binned data?**

- Pie Chart
- Box Plot
- Histogram
- Bullet Graphs

3) **If a field has a blue background, that means the field is**

- continuous
- discrete
- dimension
- measure

4) **When might you want to use a context filter?**

- When you want to FIRST apply a filter and THEN show the Top N or Bottom N elements
- When you want to filter on a range of values rather than a single value
- When you want to FIRST show the Top N and Bottom N and THEN apply a filter
- When you want to filter on you data based on a secondary data source

5) **This type level of detail expression computes total sales for the region, regardless of what dimensions are shown in the view.**

- {SUM([Sales])}
- { FIXED [Region] : SUM([Sales]) }
- { ONLY [Region] : SUM([Sales]) }
- { EXACT [Region] : SUM([Sales]) }

Forecasting

1) Answer this question using the Australia Labor Force data.Using Tableau's default monthly forecast, what is the predicted value for April 2014?

- 12,329

- 12,297
- 12,308
- 12,372

2) Answer this question using the Australia Labor Force data.Using Tableau's default monthly forecast, what is the upper value for the 99% prediction interval for the April 2014 forecast?

- 12,221.9
- 12,297
- 12,372.9
- 12,354.8

Trendlines

1) **Create a trend line for profit as a linear function of sales. What is the R^2 value?**

- 0.0738416
- 0.138074
- 0.147809

2) **Create a trend line for profit as a linear function of sales. According to the trend line, how much does profit increase for each dollar of sales?**

- 0.142809
- 0.966844
- 155.864
- 0.261169

3) **Create a trend line for profit as a function of sales. Based on the R^2 value, which model type results in the best fit?**

- Linear
- Exponential
- Logorithmic
- Polynomial with degree two

Data Manipulation Quiz

1)**Find the total sales value for 2010 orders shipped with "Low" priority**

- 445,010
- 310,095
- 379,127

2) **Which product has the highest total sales?**

- Hewlett Packard Laserjet 3310 Copier
- Canon PC940 Copier
- Global Troy Executive Leather Executive Low-Back Tilter
- Luxo Professional Fluorescent Magnifier Lamp with Clamp-Base Mount

3) **There are four customer segments in the Superstore data set. What percent of the total profits are associated with the Small Business segment?**

- 24.11%
- 21.63%
- 38.51%
- 15.74%

4) **The row and column shelves contain these**

- Grand Totals
- Pills
- Filters

5) **Adding a dimension to the row or column shelf will filter your data.**

- True
- False

6) **Suppose that your data has a dimension called "Product Category," which has the values "Furniture," "Office Supplies," and "Technology." Which of the following should you use to combine Furniture and Office Supplies into a single category?**

- Hierarchy
- Group
- Filter

Calculations

1) **Find the total profit for the South region for items ordered in 2011.**

- 52,889
- 54,889
- 55,335
- 11,775

2) **Which product subcategory has the highest ratio of profit to sales?**

- Binders and Binder Accessories
- Envelopes
- Labels
- Pens & Art Supplies
- None of the Above

3) **Find the total number of Small Business customers placing orders from the superstore.**

- 615
- 1,111
- 734
- 672

4) **What is wrong with this If Statement**

```
If [Sales] > 100 and "Delivery Truck" then 0  else [Shipping Cost]  End
```

- Nothing, the syntax is correct
- Instead of "Delivery Truck" it should be [Shipping Mode] = "Delivery Truck"
- Instead of "Delivery Truck" it should be [Delivery Truck]

5) **What will the function Left(3,"Tableau") return?**

- Tab
- eau
- An error

Joins and Blends

1) **Find the sale value for items ordered in 2012. Exclude the value of items which were returned.**

- 2,158,725
- 72,006
- 1,843,186
- 8,630,660

2) **All rows from both tables are returned in an INNER JOIN.**

- True
- False

3) **LEFT JOIN returns all rows from the left table, with the matching rows in the right table.**

- True
- False

4) **A LEFT JOIN or INNER JOIN creates a row each time the join criteria is satisfied, which can result in duplicate rows. One way to avoid this is to use data blending instead.**

- True
- False

Level of Detail

1) What % of Customers ordering items in 2011 also ordered items in 2012? (use the customer ID to identify the customer)

- 49.289%
- 50.711%
- 59.71%
- 43.69%
- None of the above

2) How many customers (as identified by customer id) made 8 or 9 separate orders?

- 590
- 121
- 26
- 8
- 7

3) How much greater were the sales for the East region than for the South region?

- 1,597,346
- 942,995
- 825,458
- 794,093
- None of the above

Level of Detail #2

Use the "All medalists" sheet from Summer_Olympic_medallists_1896-2008. How many countries never had any women athlete in Olympics (use GENDER field .NOC represents country code)

- 135
- 51
- 45
- 138

Using Sample-Superstore dataset find the average customer profit in every region. Which Customer segment has lowest average customer profit in most regions?

- Corporate
- Home Office
- Consumer
- Small Business

Which of the following are true about Exclude LOD expressions? [Select all that apply]

- [ ] Exclude LOD always cause replicated values to appear in the view.
- [ ] Has either the same level of detail as the view or a finer level of detail than the view.
- [ ] Default aggregation for Exclude LOD is ATTR
- [ ] EXCLUDE LOD expressions can be dimensions or measures.

Using the "All medalists" sheet from Summer_Olympic_medallists_1896-2008 , how many athletes won all medals(Gold, Silver & Bronze) in Tennis(Discipline)?

- 6
- 18
- 10
- 5

From the 1 digit sheet of EMSI_Jobchange_UK , find the city that ranked 3rd in overall contribution to jobs in 2014 in UK. How much % did "Education" industry from this city contributed to overall jobs in 2014 in UK?

- 9.44%
- 7.11%
- 0.76%
- 0.65%

Use the Top teams payroll list from Global Sports finances dataset. Use histogram with bin size of 10,000,000 to find how many leagues have average total payroll between 60M AND 70M?

- 4
- 1
- 2
- 0

Relationships

Use the Team Events Fixed & All medalists sheet from Summer_Olympic_medallists_1896-2008. Find the country which has won total of at least 500 gold medals in all years. In how many Disciplines did that country win these gold medals?

- USA 33
- USA 45
- Soviet Union 45

- Canada 30

Use Summer_Olympic_medallists_1896-2008. From Team Events fixed sheet find the country with 5th highest total in Silver medal tally. In which year did this country win most silver medals?

- Sweden in 1912 62 Medals
- Italy in 2004 39 medals
- France in 1900 86 medals
- Sweden in 1920 36 medals

What type of join is used by Tableau to show a viz with dimensions only when multi table data source is related?Add description here!

- Left join
- Full outer join
- Inner join
- Right join

Answers and Solutions

Problem Set #1

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a. DATETIME("ORDER_DATE")
b. DATE([ORDER_DATE])
c. DATE("ORDER_DATE")
d. TO_DATE([ORDER_DATE])

Explanation: https://help.tableau.com/current/pro/desktop/en-gb/functions_functions_typeconversion.htm

2. [2.1.5. Write type conversion functions] You have SHIP_DATE as field in the view. You would want to change the format of the field from string to date with a particular format. Make sure month name is displayed in full and also milliseconds (up to 5 digits) is displayed in the resulting date.

Choose the correct answer:

a. DATETIME([SHIP_DATE], 'dd-MM-yyyy HH.mm.ss')
b. DATETIME("SHIP_DATE", 'dd-MM-yyyy HH.mm.ss.AAAAA aa')
c. DATEPARSE([SHIP_DATE], 'dd-MMMM-yyyy HH.mm.ss.AAAAA aa')
d. DATEPARSE('dd-MMMM-yyyy HH.mm.ss.AAAAA aa' , [SHIP_DATE])

Explanation: https://help.tableau.com/current/pro/desktop/en-gb/functions_functions_typeconversion.htm

3. [1.1.9. Replace the connected data source with another data source for an existing chart or sheet] You have created a workbook and sheets using a data source.You would now want to replace the connected data source with another data source for a workbook or sheet. Choose the correct answer:

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d) Open a workbook that refers to the original data source. Select Data > Add Data Source and connect to new data source. Go to the sheet tab and select Data > Delete Data Source.

Explanation: https://help.tableau.com/current/pro/desktop/en-us/connect_basic_replace.htm

4. [1.2.4. Use multiple data sources (establish relationships, create joins, union tables, blend data)] Join types supported by Tableau prep are :

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Explanation: https://help.tableau.com/current/prep/en-us/prep_combine.htm

5. [2.3.5. Ranking] A Rank function used in a calculated field to display the customer names with highest profits would be?

a) RANK (sum([Profit]),'desc')
b) RANK (sum([Profit]),'desc')
c) RANK (sum([Profit]),'asc')
d) RANK (sum([Profit]))

Explanation: https://help.tableau.com/current/pro/desktop/en-us/functions_functions_tablecalculation.htm

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Steps to create a filter so that ,it's applied for all worksheets in the workbook that use the current primary data source, are:

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d) On the Filters shelf, right-click the field and select Apply to Worksheets > All Using Related Data Sources.

Explanation: https://help.tableau.com/current/pro/desktop/en-us/filtering_global.htm

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b) Aggregate
c) Union
d) Pivot

Explanation: https://help.tableau.com/current/prep/en-gb/prep_combine.htm

8. [3.4.2. Add custom shapes and color palettes] Which file need to be modified to add custom color palette in Tableau ?

a) Preferences.tps
b) Preferences.config
c) Preference .txt

d) Preference.tps

Explanation: https://help.tableau.com/current/pro/desktop/en-us/formatting_create_custom_colors.htm

9. [3.4.2. Add custom shapes and color palettes] Steps to add custom color palette in Tableau:

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d) Goto My Tableau Repository folder. Edit the Preferences.tps file
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c) Copy the custom shape icon file to My Tableau Repository > "Custom" folder. New Shape is automatically added to the list of shapes in Tableau.

d) Copy the custom shape icon file to My Tableau Repository > "Mark Types" folder. New Shape is automatically added to the list of shapes in Tableau.

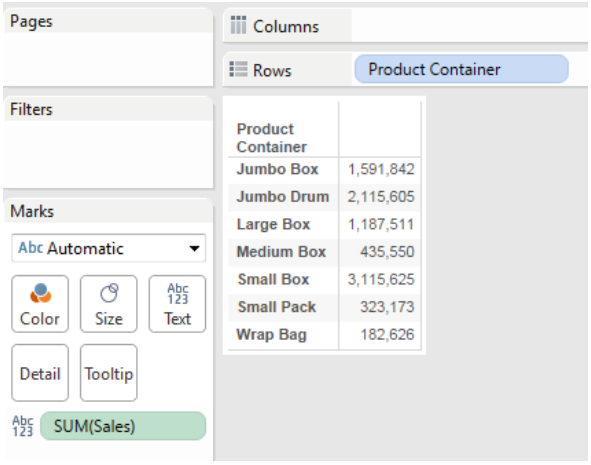
Explanation: https://www.tableau.com/about/blog/2017/12/add-holiday-cheer-your-vizzes-custom-icons-and-color-palettes-79302

Hands-on Quiz 1

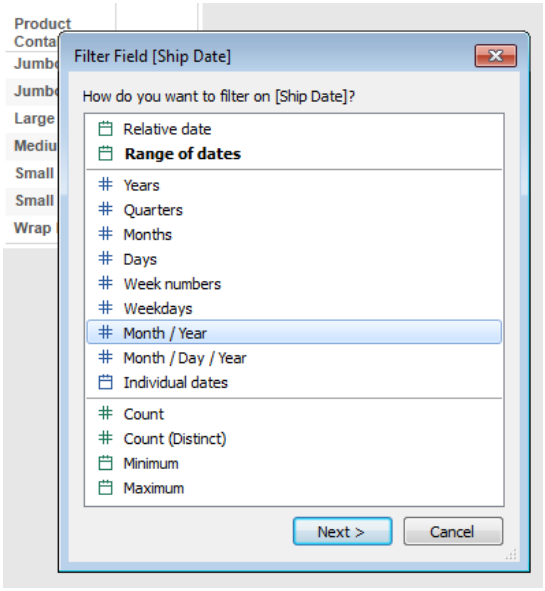
1) **For items shipped in July of 2012, what percent of sales were sent in a Large Box?**

- 13.27%
- 11.46%
- 11.95%

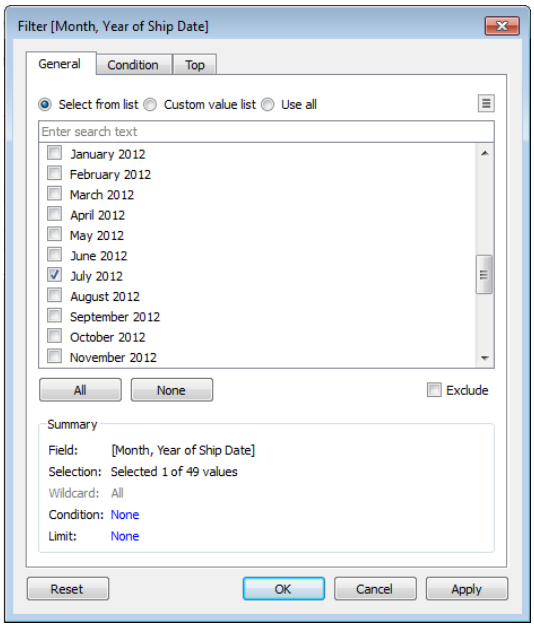
Double-click on “Product Container” and “Sales” to add these to the view:



Filter on Ship Date = July 2012 by first drag “Ship Date” to the Filters card:



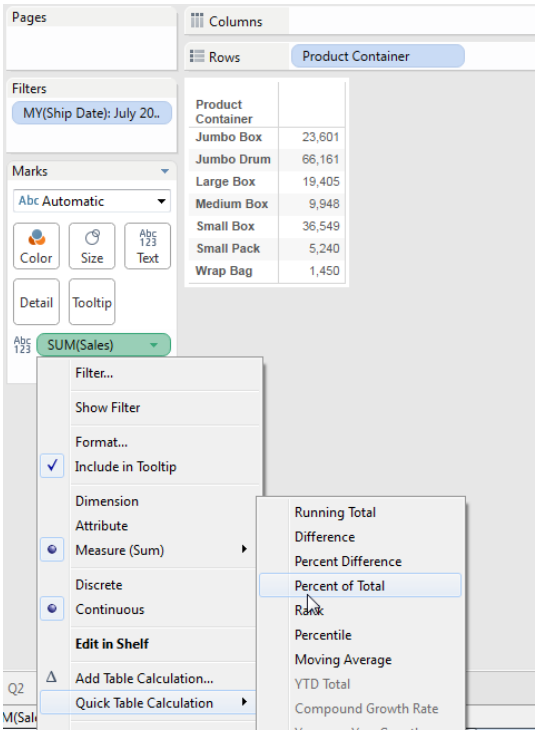
Select Month/Year, then select July 2012:



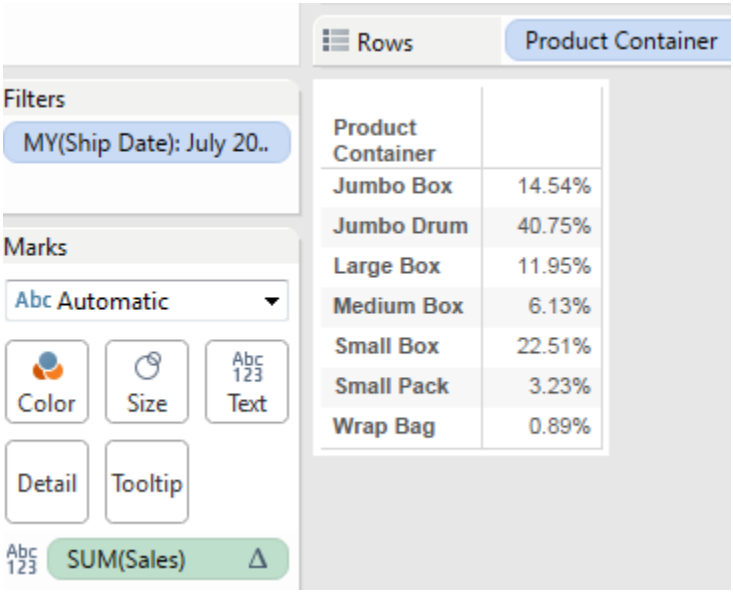
Once you do this you'll see the sales for items shipped in July 2012 for each type of product container:

Product Container	
Jumbo Box	23,601
Jumbo Drum	66,161
Large Box	19,405
Medium Box	9,948
Small Box	36,549
Small Pack	5,240
Wrap Bag	1,450

Almost there – we just need to see percentages rather than the absolute sales. Click Sales, then Quick Table Calculation, and finally Percent of Total.



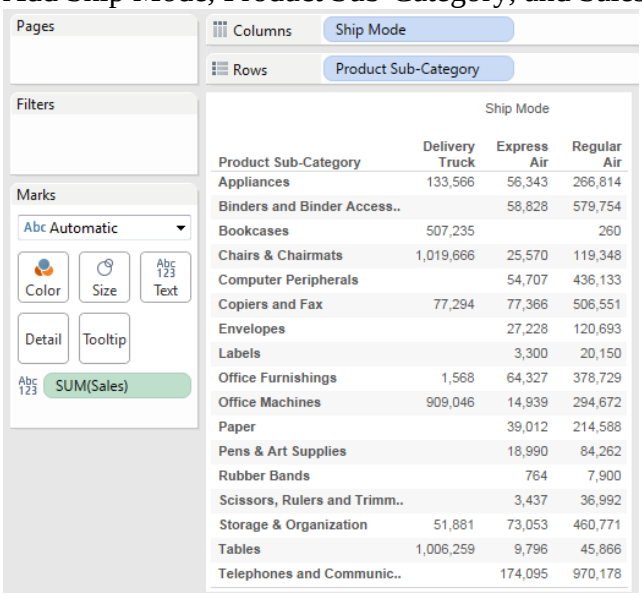
Once this is done we see 11.95% for Large Box:



2) **Find the top product subcategories by Sales within each delivery method. The second highest subcategory for Regular Air sales is ranked #_____ for Express Air.**

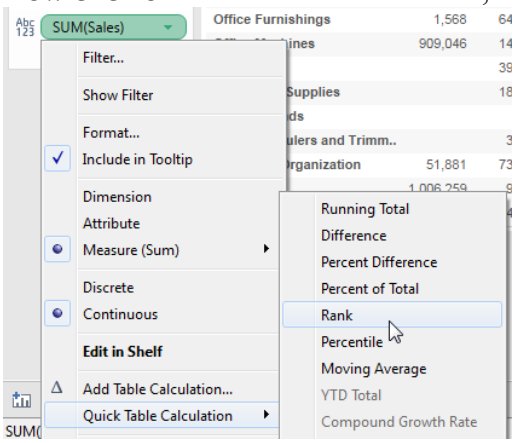
- 1
- 2
- 3
- 4
- 5

Add Ship Mode, Product Sub-Category, and Sales to the view:

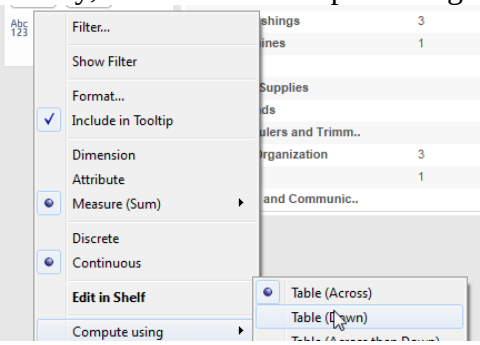


	Ship Mode		
Product Sub-Category	Delivery Truck	Express Air	Regular Air
Appliances	133,566	56,343	266,814
Binders and Binder Access..		58,828	579,754
Bookcases	507,235		260
Chairs & Chairmats	1,019,666	25,570	119,348
Computer Peripherals		54,707	436,133
Copiers and Fax	77,294	77,366	506,551
Envelopes		27,228	120,693
Labels		3,300	20,150
Office Furnishings	1,568	64,327	378,729
Office Machines	909,046	14,939	294,672
Paper		39,012	214,588
Pens & Art Supplies		18,990	84,262
Rubber Bands		764	7,900
Scissors, Rulers and Trimm..		3,437	36,992
Storage & Organization	51,881	73,053	460,771
Tables	1,006,259	9,796	45,866
Telephones and Communic..		174,095	970,178

Now click on Sales in the Marks area, select “Quick Table Calculation” and then “Rank”



Finally, switch from Compute using Table (Accross) to Compute using Table (Down).



The #2 category for Regular Air is “Binders and Accessories.” This is #5 for Express Air.

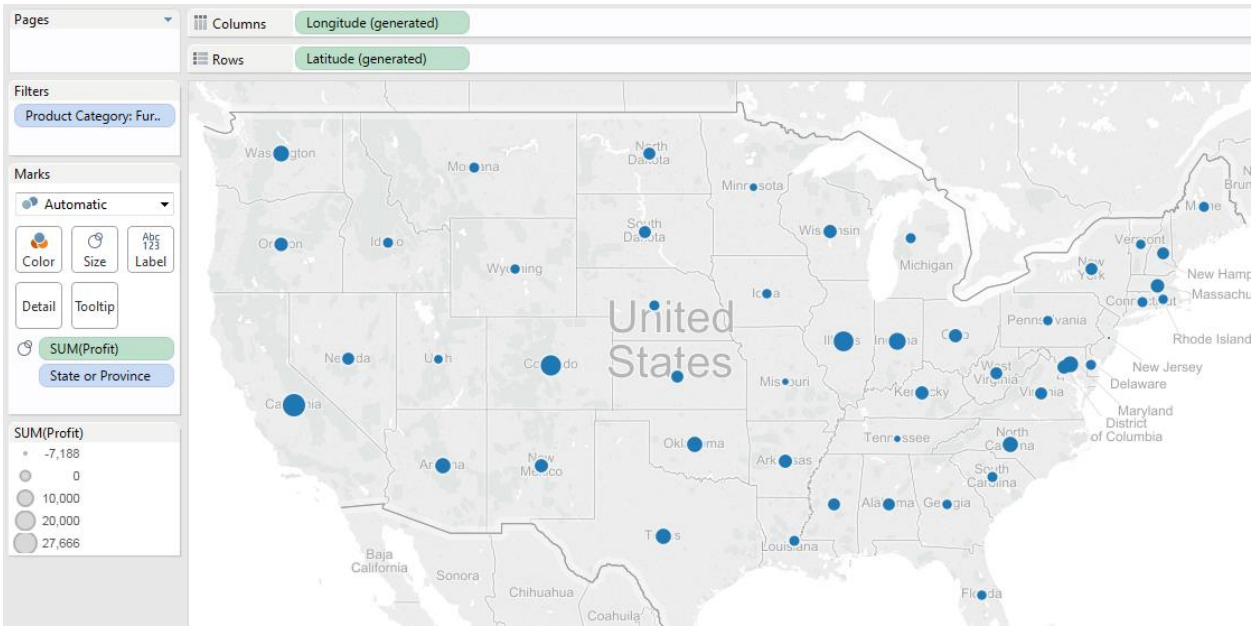
Ship Mode

Product Sub-Category	Delivery Truck	Express Air	Regular Air
Appliances	5	6	8
Binders and Binder Access..		5	2
Bookcases	4		17
Chairs & Chairmats	1	10	11
Computer Peripherals		7	5
Copiers and Fax	6	2	3
Envelopes		9	10
Labels		15	15
Office Furnishings	8	4	6
Office Machines	3	12	7
Paper		8	9
Pens & Art Supplies		11	12
Rubber Bands		16	16
Scissors, Rulers and Trimm..		14	14
Storage & Organization	7	3	4
Tables	2	13	13
Telephones and Communic..		1	1

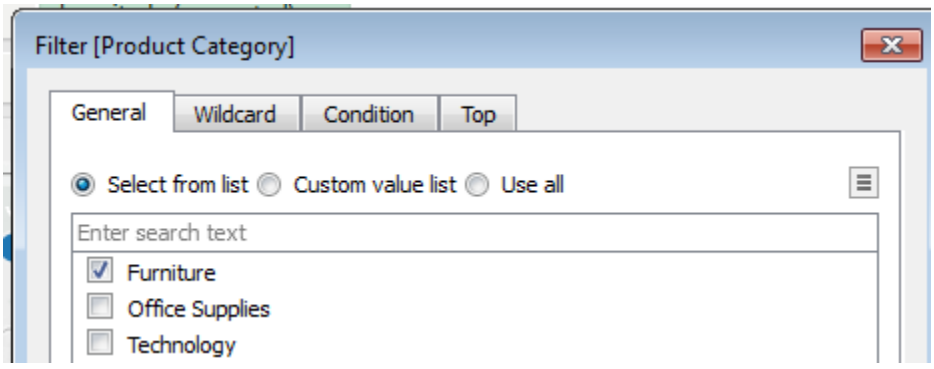
3) **In the furniture category, which unprofitable state is surrounded by only profitable states?**

- Vermont
- Iowa
- Utah

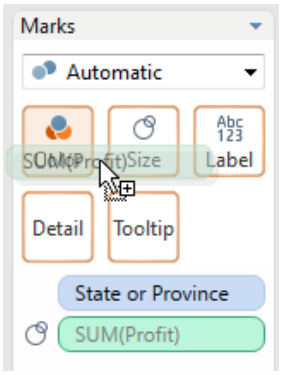
Double click on “State or Province” and “Profit” to add to the view:



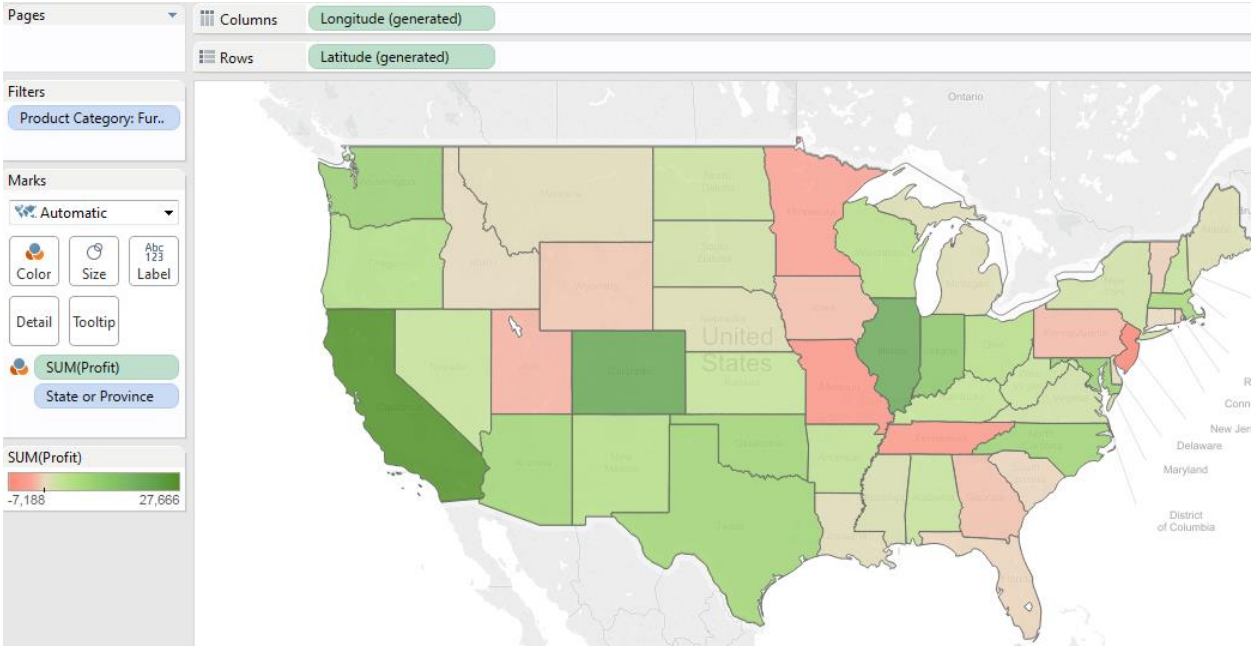
Filter on the Furniture product category:



Now drag “SUM(Profit)” to the color area on the Marks card:



In the furniture category, Vermont is surrounded by three profitable states: New York, Massachusetts, and New Hampshire.

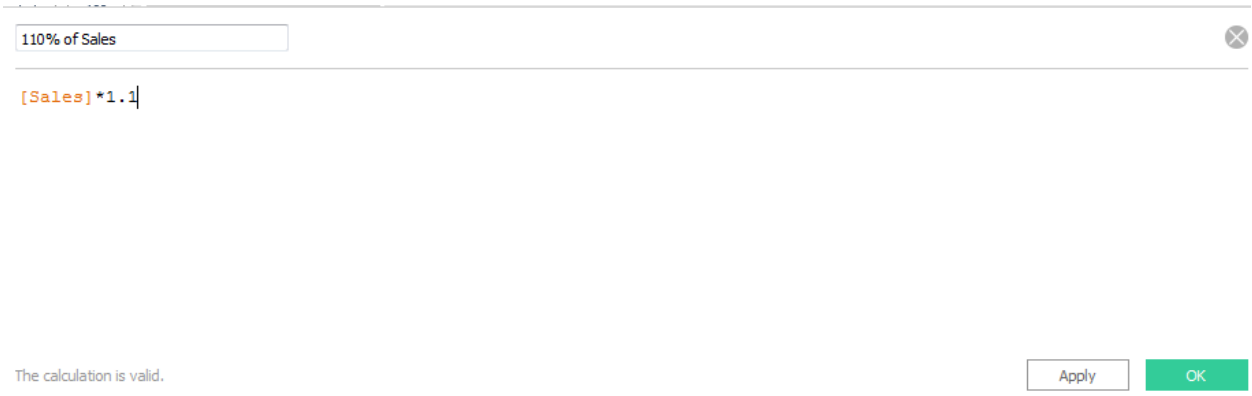


Hands-on Quiz 2

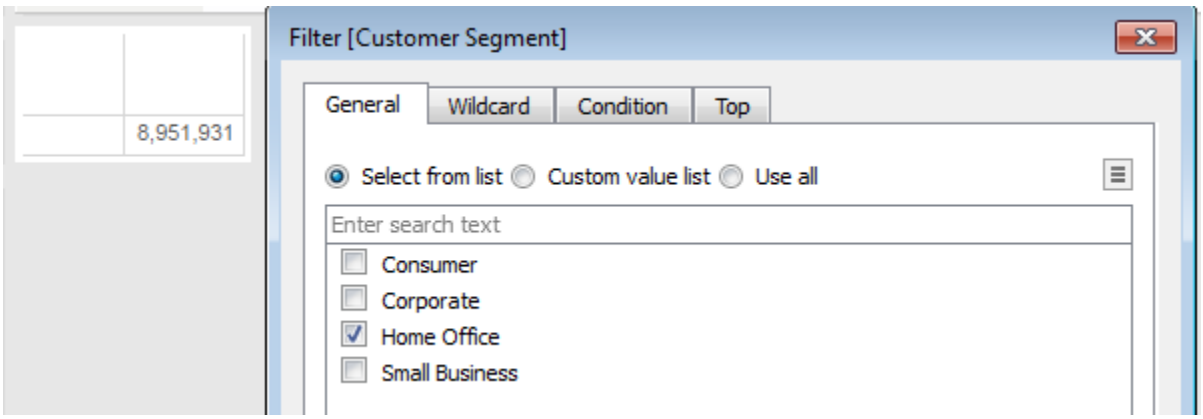
1) **If 2013 Sales numbers were expected to increase by 10% in the following year in all customer segments, what would be the total estimated sales for Home Office in 2014?**

- 617,498
- 679,248
- 2,385,847

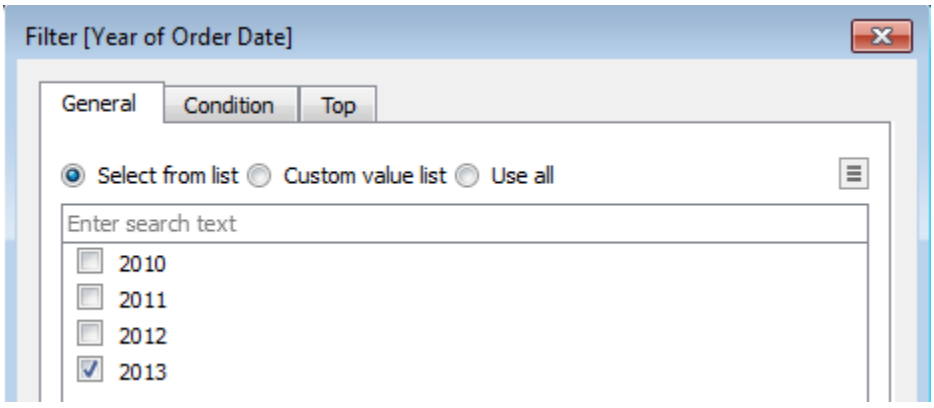
Create a new calculated field called 110% of Sales:



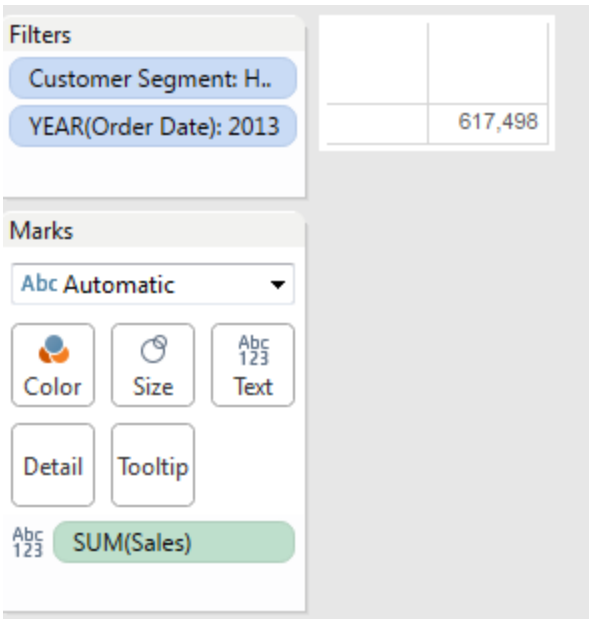
Drag Sales into the view and filter on Home Office:



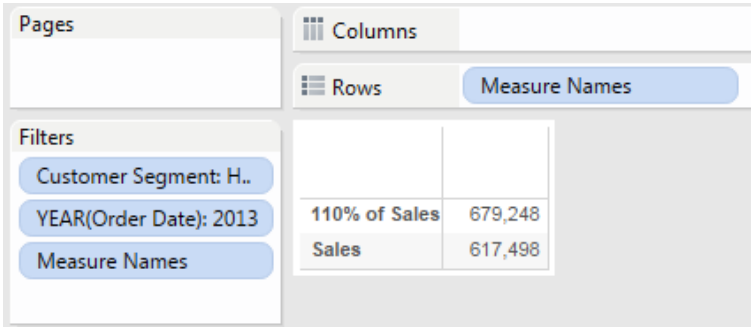
Filter on Year of Order Date = 2013



Your view should looks like this:



Double-click the new field “110% of Sales” to add it to the view:

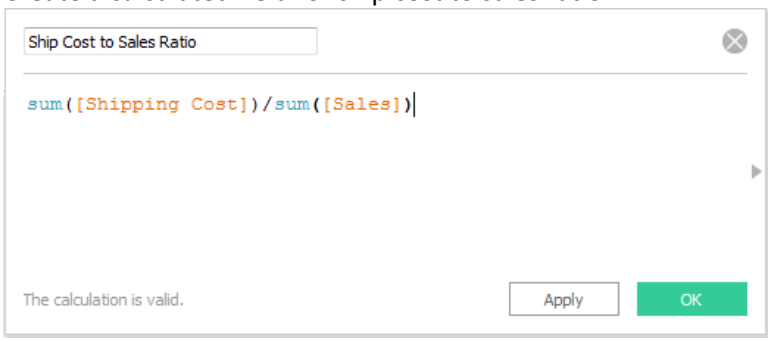


So we found the total sales for the Home Office segment in 2013 ($617,498) and then increased this value by 10% to get the 2014 projection.

2) **Which product has the highest ship cost to sales ratio?**

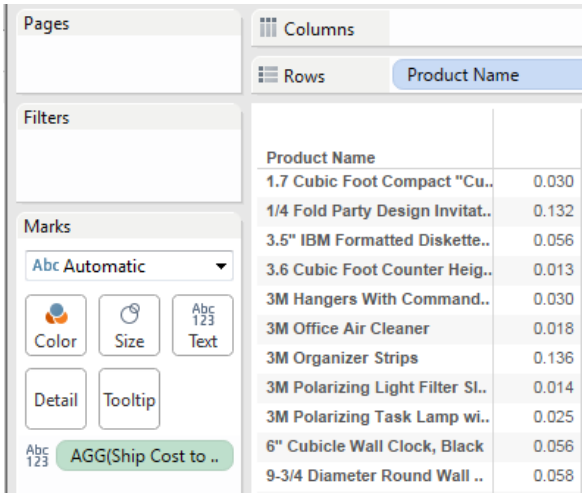
- Hoover® Commercial Lightweight Upright Vacuum
- Accohide Poly Flexible Ring Binders
- Kensington 7 Outlet MasterPiece Power Center with Fax/Phone Line Protection
- Lexmark 4227 Plus Dot Matrix Printer

Create a calculated field for ship cost to sales ratio.

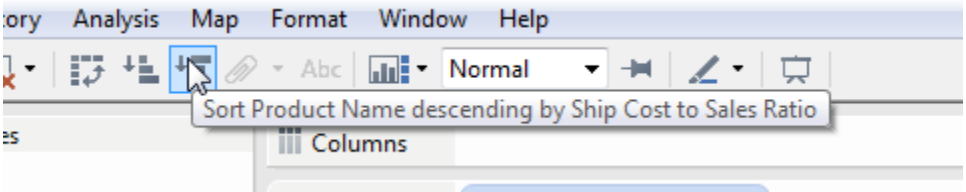


The sums in the numerator and denominator ensure that we will calculate the total shipping cost divided by the total sales for the specified level of granularity in our view, rather than just calculating the shipping cost to sales ratio for each row in our data and then aggregating the result.

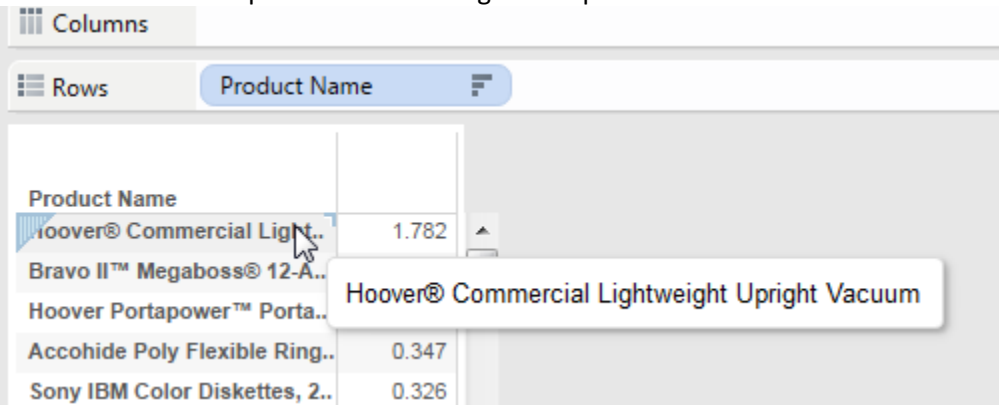
Add the new field and the “Product Name” field to the view:



Sort:



We can now see the product with the highest ship cost to sales ratio:

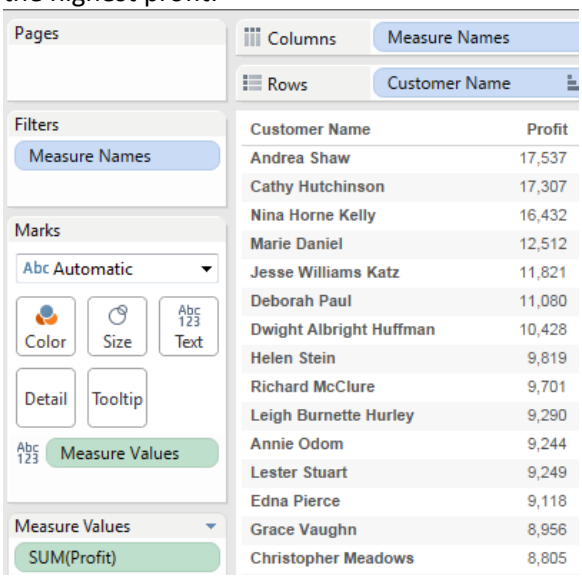


3)Find the customer with the highest profit. What is his or her average shipping cost per order?

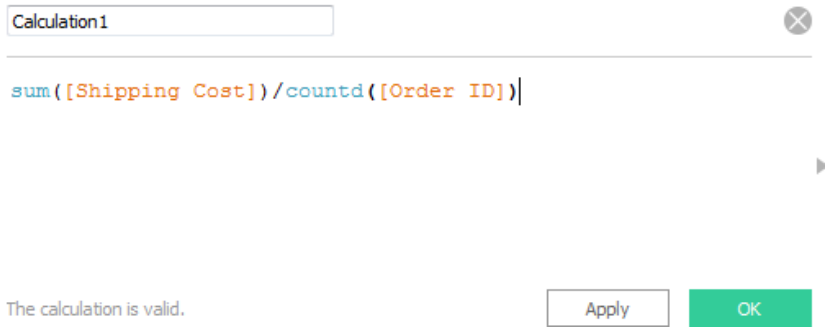
[Hint: to calculate the shipping cost *per order* you will need to calculate the number of orders using the count distinct function]

- 66.72
- 10.49
- 12.59
- 12.18

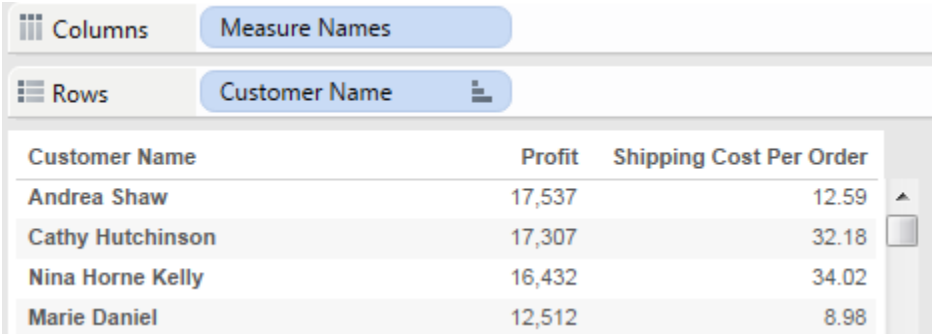
Add Customer Name and Shipping Cost to the view, then sort by Shipping cost to see the customer with the highest profit:



Calculate the shipping cost per order by dividing the total shipping cost by the number of orders. The number of order can be calculated using the count of the distinct order ids:



Add this new field to the view:



Customer Name	Profit	Shipping Cost Per Order
Andrea Shaw	17,537	12.59
Cathy Hutchinson	17,307	32.18
Nina Horne Kelly	16,432	34.02
Marie Daniel	12,512	8.98

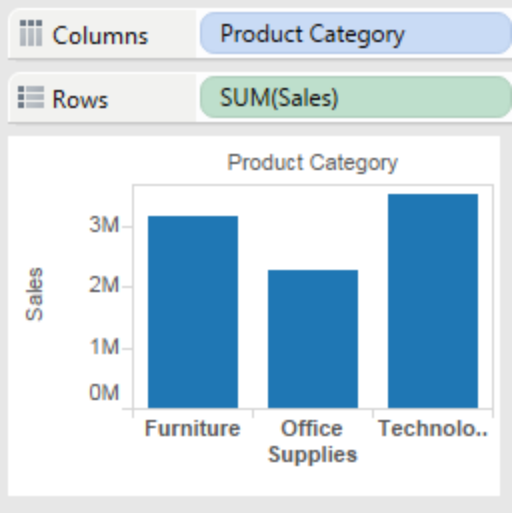
Hands-on Quiz 3

1)

Which product category has the largest interquartile range for sales?

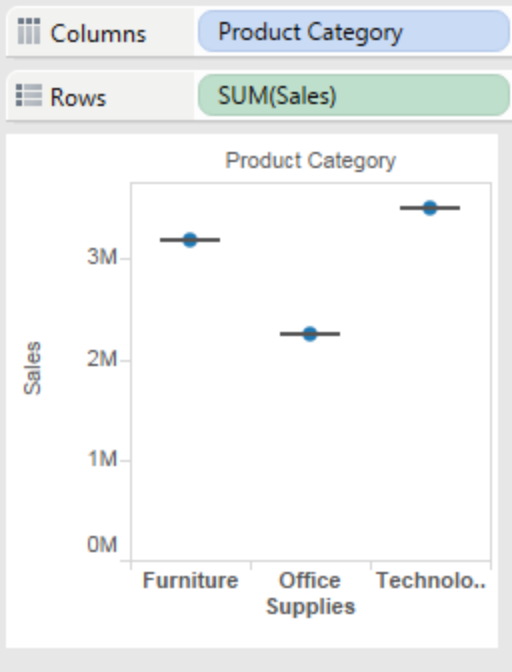
- Furniture
- Office Supplies
- Technology

Add product category and sales to the view:

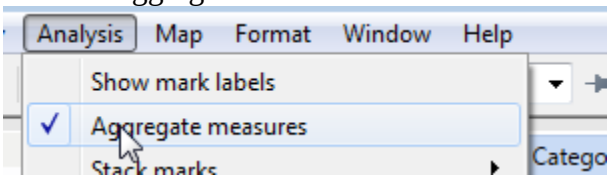


Switch to a box plot:

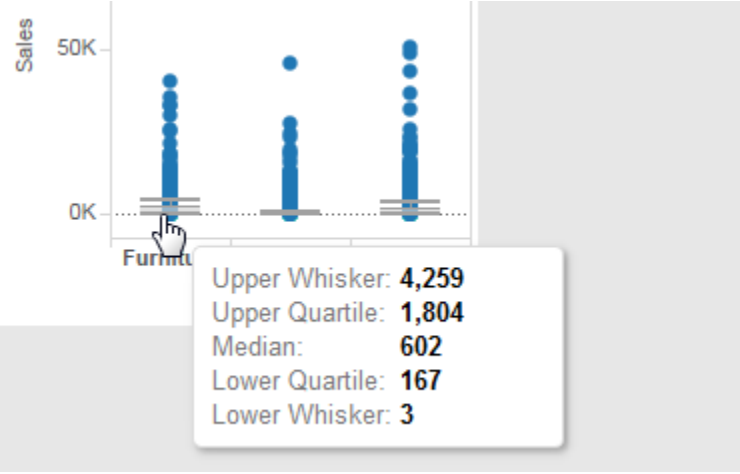
You are now a box and whisker plot based on the aggregated data:



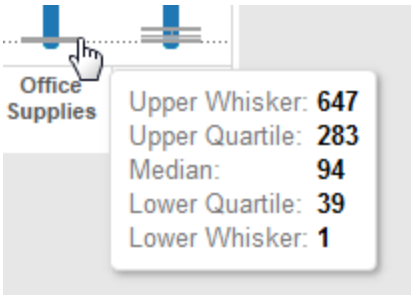
Remove aggregation:



Mouse over to see the 1st and 3rd Quartiles:



IQR for Furniture = 1,804 – 167 = 1,637



IQR for Office Supplies = 283 – 39 = 244

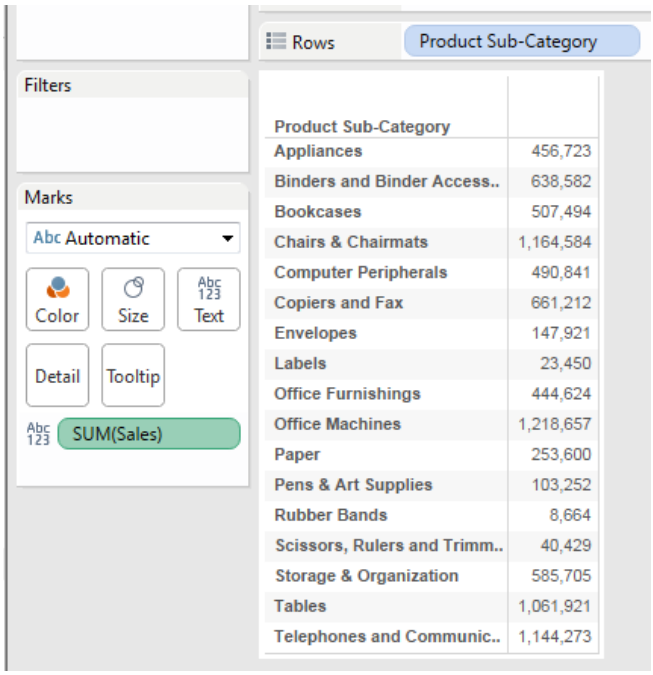
IQR for technology = 1,505 – 207 = 1,298

2)**Which product sub-category has total sales which is $81,960 below the average sales per sub-category?**

(First calculate the average sales per subcategory, then subtract this value from the sales broken out by sub-category)

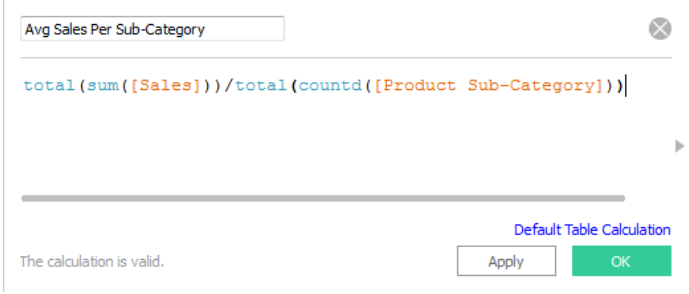
- Paper
- Chairs & Chairmats
- Tables
- Office Furnishings

Add subcategory and sales to the view.

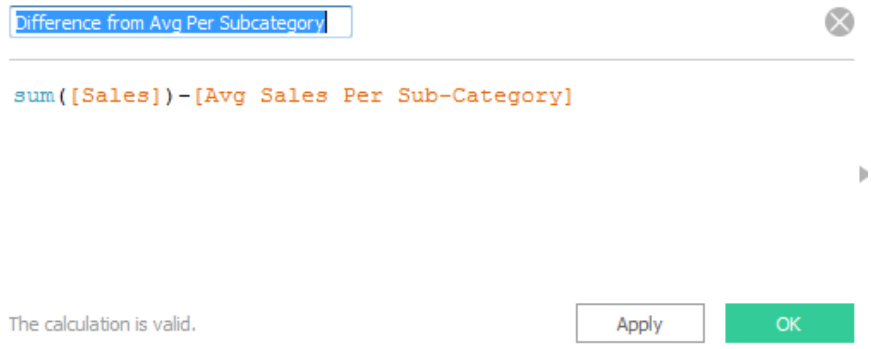


Product Sub-Category	
Appliances	456,723
Binders and Binder Access..	638,582
Bookcases	507,494
Chairs & Chairmats	1,164,584
Computer Peripherals	490,841
Copiers and Fax	661,212
Envelopes	147,921
Labels	23,450
Office Furnishings	444,624
Office Machines	1,218,657
Paper	253,600
Pens & Art Supplies	103,252
Rubber Bands	8,664
Scissors, Rulers and Trimm..	40,429
Storage & Organization	585,705
Tables	1,061,921
Telephones and Communic..	1,144,273

Calculate the average total sales per subcategory by dividing the total sales by the total number of subcategories.



Add a calculation for the difference from the average sales per subcategory:



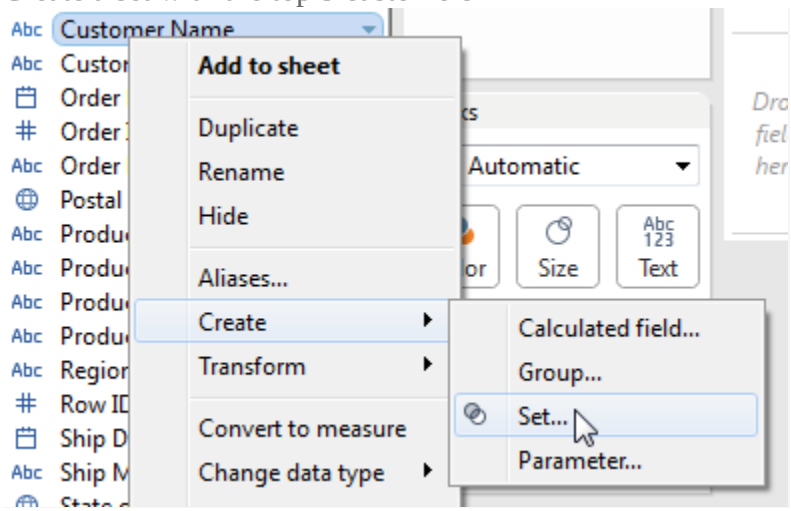
Sales for office furnishings are $81,960

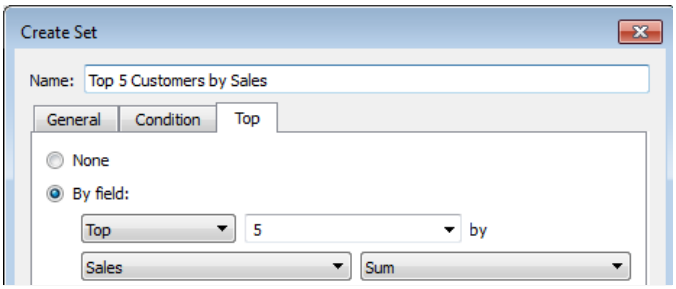
Product Sub-Category	Avg Sales Per Sub-Category along Table (Do..	Difference from Avg Per Subcategory alo..	Sales
Appliances	526,584	-69,861	456,723
Binders and Binder Access..	526,584	111,998	638,582
Bookcases	526,584	-19,090	507,494
Chairs & Chairmats	526,584	638,000	1,164,584
Computer Peripherals	526,584	-35,744	490,841
Copiers and Fax	526,584	134,628	661,212
Envelopes	526,584	-378,663	147,921
Labels	526,584	-503,134	23,450
Office Furnishings	526,584	-81,960	444,624
Office Machines	526,584	692,072	1,218,657
Paper	526,584	-272,984	253,600
Pens & Art Supplies	526,584	-423,333	103,252
Rubber Bands	526,584	-517,920	8,664
Scissors, Rulers and Trimm..	526,584	-486,155	40,429
Storage & Organization	526,584	59,121	585,705
Tables	526,584	535,337	1,061,921
Telephones and Communic..	526,584	617,689	1,144,273

3) **The top 5 customers by sales represent ____ of the total profits.**

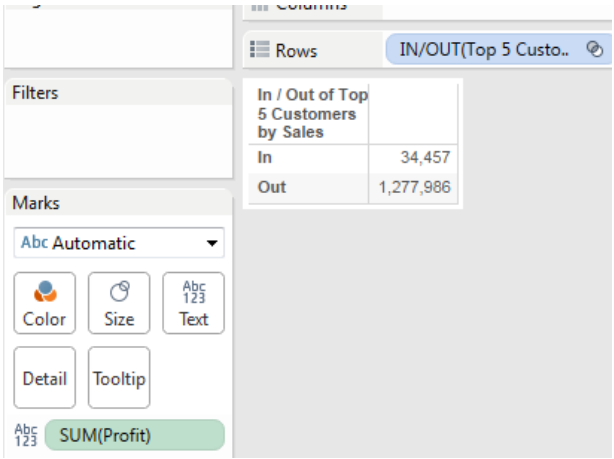
- 2.63%
- .55%
- 1.65%

Create a set with the top 5 customers

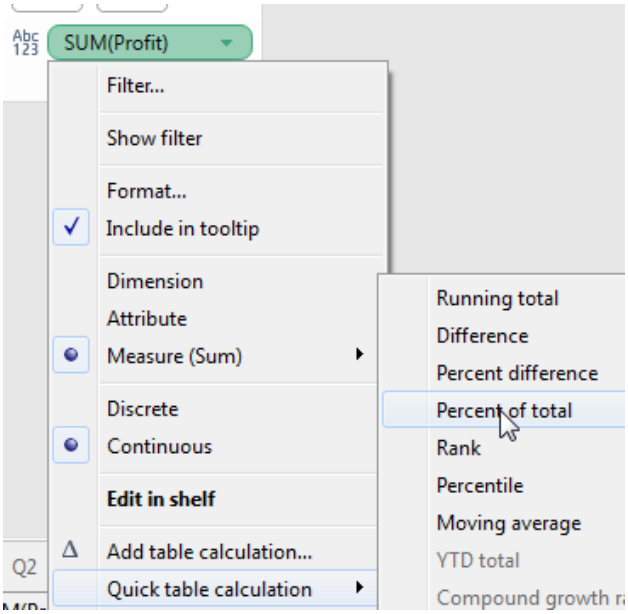




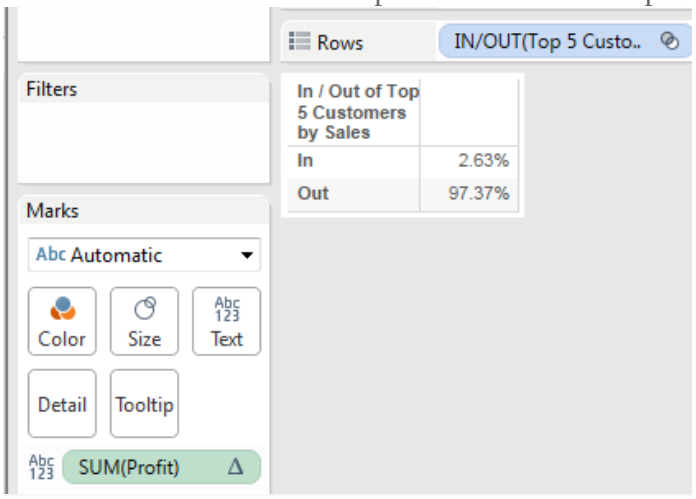
Add the set to the view (by double-clicking) and then add profit to the view:



Click on Sum(Profit) , then click Quick table calculation, and finally Percent of Total:



You should now see at the top 5 customers are responsible for 2.63% of total profit.



Knowledge-based Quiz 1

1) **A dimension is a field that typically holds**

- numerical data
- discrete qualitative data

When you first connect to a data source, Tableau assigns any fields that contain **discrete categorical** information (for example, fields where the values are strings or Boolean values) to the Dimensions area in the Data pane.

Click here for Tableau Documentation

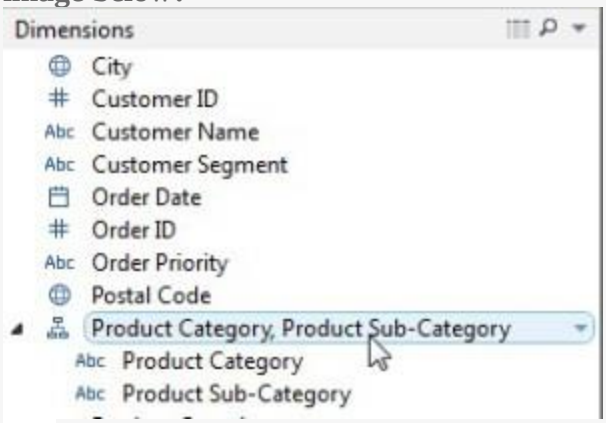
2) **Dates are typically treated as**

- (•) dimensions
- ( ) measures

Dates and times are automatically placed in the **Dimensions** area of the Data pane.

Click here for Tableau Documentation

3)**What word describes the area highlighted in light blue under the mouse cursor in the image below?**



- ( ) group
- ( ) set
- (•) hierarchy
- ( ) parameter
- ( ) measure

Is the symbol for a relational hierarchy

Click here for a page showing the meanings of the Tableau icons

Click here to see more on creating a hierarchy

4)**The icon next to a field means that field is**

- numerical
- qualitative
- geographic
- date or time

The  icon indicates that the field contains geographical data and has been assigned a geographic role.

Knowledge Based Quiz 2

1) **Which of the following charts types always includes bars sorted in descending order?**

- Gantt Chart
- Pareto Chart
- Combo Chart
- Bar in Bar

A **Pareto chart** contains both bars and a line graph, where individual values are represented in descending order by bars, and the cumulative total is represented by the line. (definition from Wikipedia)

See Pareto charts in Tableau here.

2) **Which of the following charts uses binned data?**

- Pie Chart
- Box Plot
- Histogram
- Bullet Graphs

To construct a **histogram**, the first step is to "**bin**" the range of values—that is, divide the entire range of values into a series of intervals—and then count how many values fall into each interval. The **bins** are usually specified as consecutive, non-overlapping intervals of a variable. (source: Wikipedia)

Pie charts, box plots, and bullet graphs do not use binned data.

If you haven't created a histogram in Tableau, check out this link to see how.

3) **If a field has a blue background, that means the field is**

- continuous

- discrete
- dimension
- measure

If a field is continuous, the background color is green; if it is discrete, the background color is blue. Background color does not indicate dimension vs. measure—it indicates continuous vs. discrete.

This page discusses continuous and discrete field types.

4) **When might you want to use a context filter?**

- When you want to FIRST apply a filter and THEN show the Top N or Bottom N elements
- When you want to filter on a range of values rather than a single value
- When you want to FIRST show the Top N and Bottom N and THEN apply a filter
- When you want to filter on you data based on a secondary data source

This example shows how you can use a context filter first, and then find the Top N results for the filtered data.

5) **This type level of detail expression computes total sales for the region, regardless of what dimensions are shown in the view.**

- {SUM([Sales])}
- { FIXED [Region] : SUM([Sales]) }
- { ONLY [Region] : SUM([Sales]) }
- { EXACT [Region] : SUM([Sales]) }

FIXED level of detail expressions compute a value using the specified dimensions, without reference to the dimensions in the view.
So in this case, { FIXED [Region] : SUM([Sales]) } will find the sum of sales for the region, regardless of the view level of detail.

See this link for an explanation of FIXED level of detail expressions.

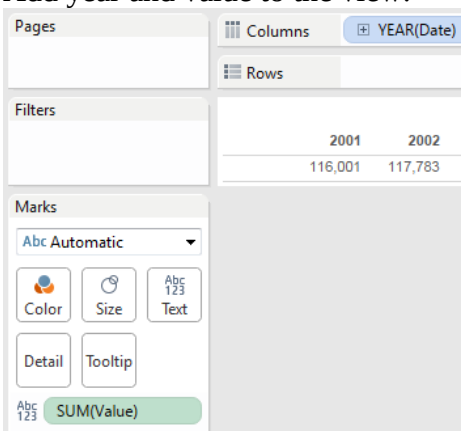
Also, see this link to understand how level of detail expressions interact with the view level of detail.

Forecasting

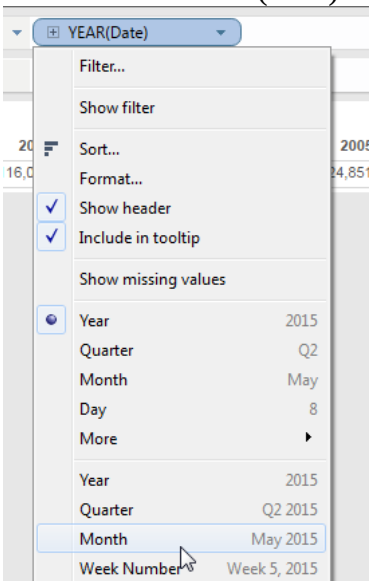
1) Answer this question using the Australia Labor Force data. **Using Tableau's default monthly forecast, what is the predicted value for April 2014?**

- 12,329
- 12,297
- 12,308
- 12,372

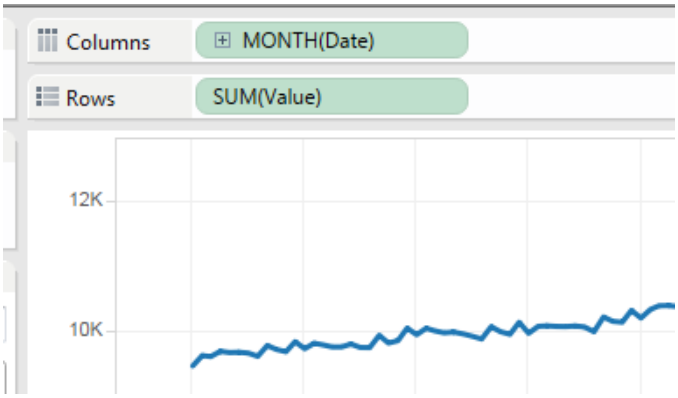
Add year and value to the view:



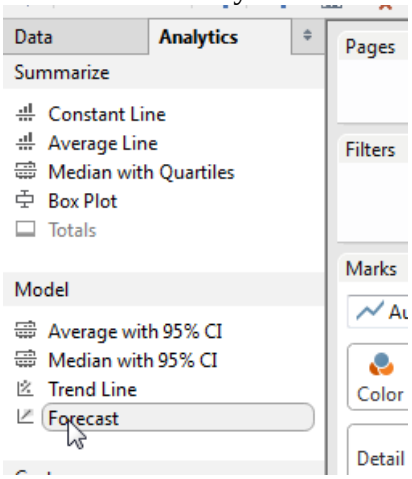
Switch from YEAR(Date) to the month / year view:



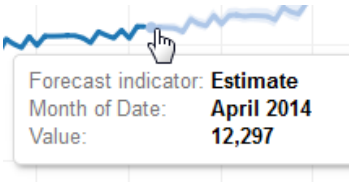
Switch to line graph:



Switch to the analytics tab and double-click forecast:



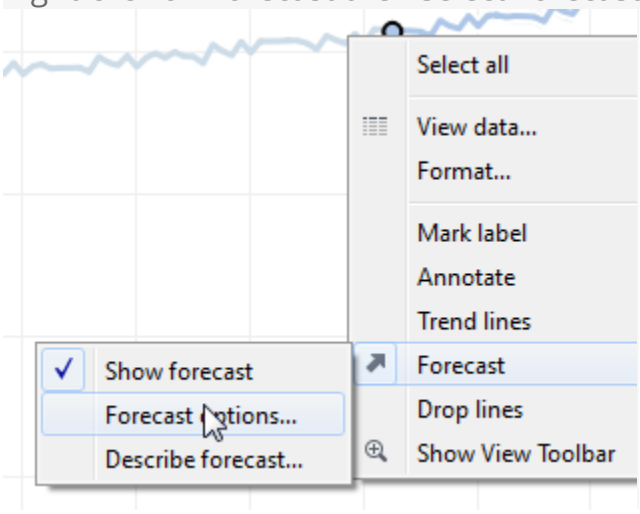
Mouse over to see the forecast:



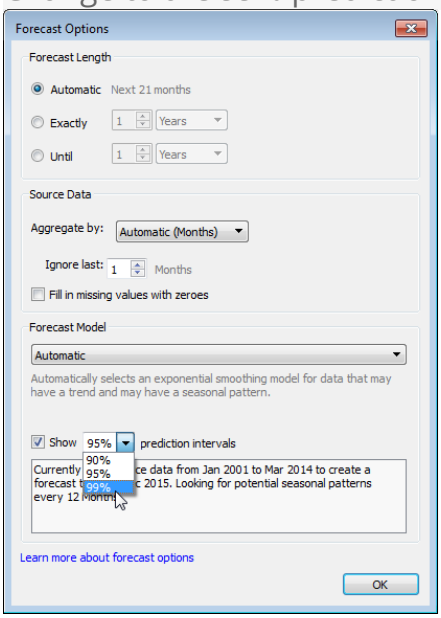
2) Answer this question using the Australia Labor Force data. **Using Tableau's default monthly forecast, what is the upper value for the 99% prediction interval for the April 2014 forecast?**

- 12,221.9
- 12,297
- 12,372.9
- 12,354.8

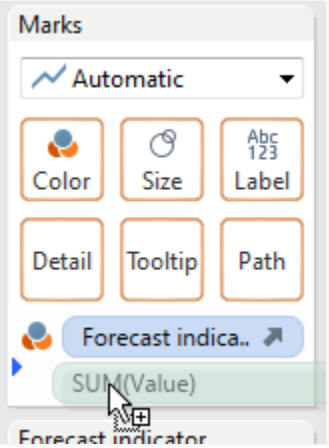
Right-click on Forecast then select Forecast Options:



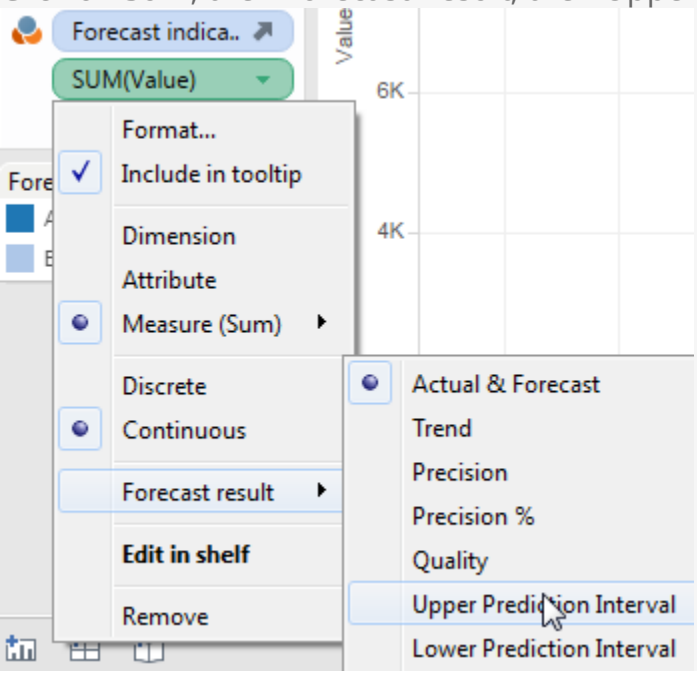
Change to the 99% prediction interval:



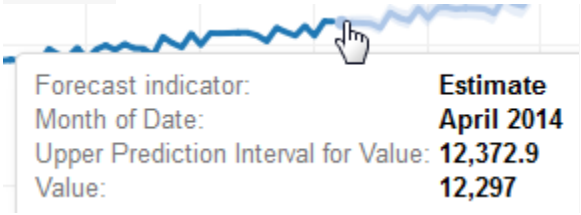
Add value to the marks card:



Click on Sum, then Forecast Result, then Upper Prediction Interval



Mouse over April 2014 and you'll now see the upper value for the 99% prediction interval

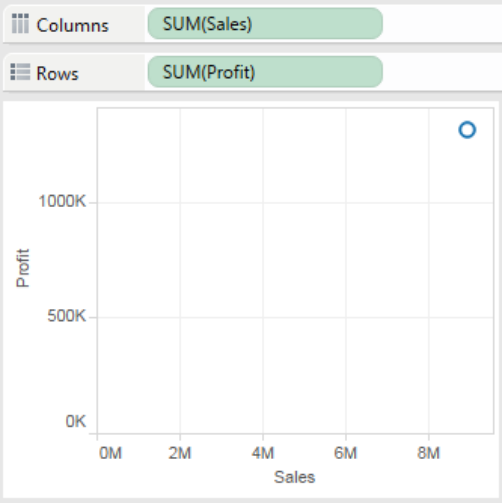


Trendlines

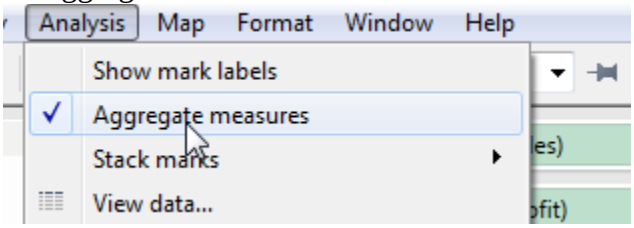
1) **Create a trend line for profit as a linear function of sales. What is the R^2 value?**

- 0.0738416
- 0.138074
- 0.147809

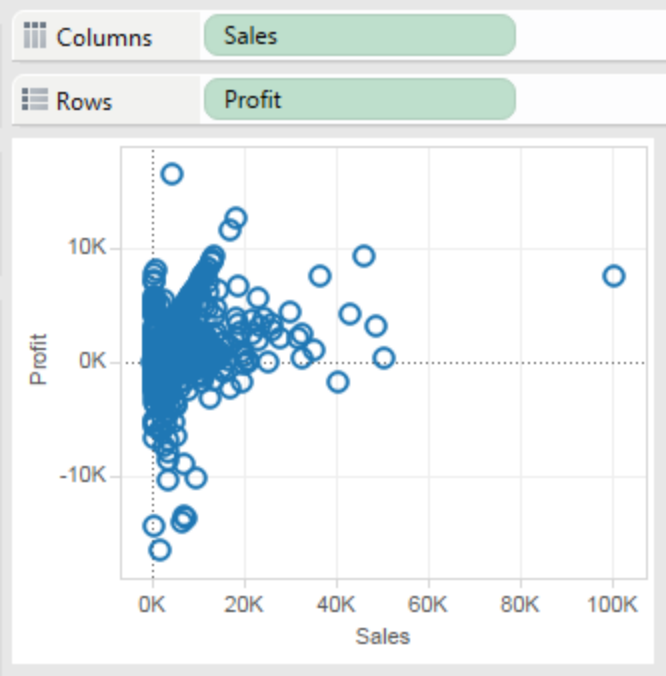
Double click on profit and sales to add both to your view:



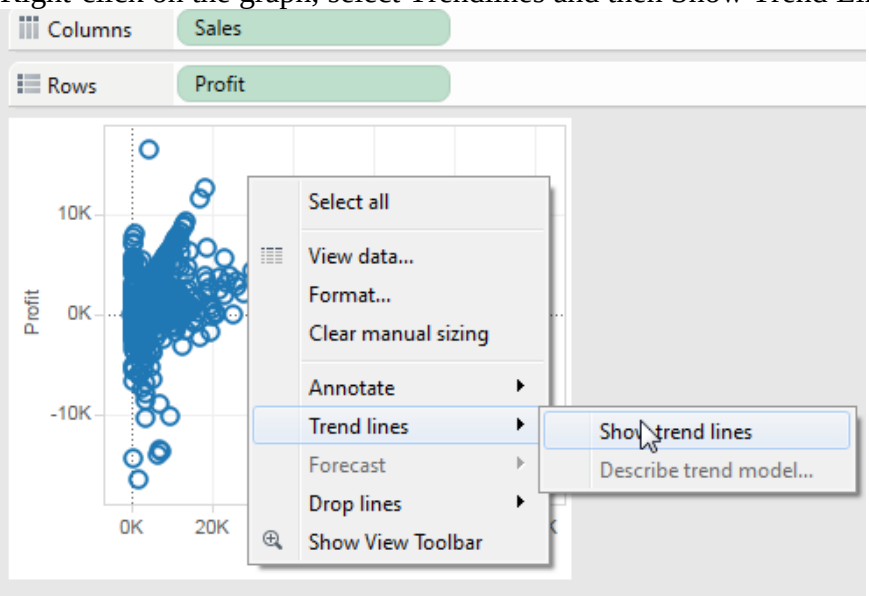
Disaggregate:



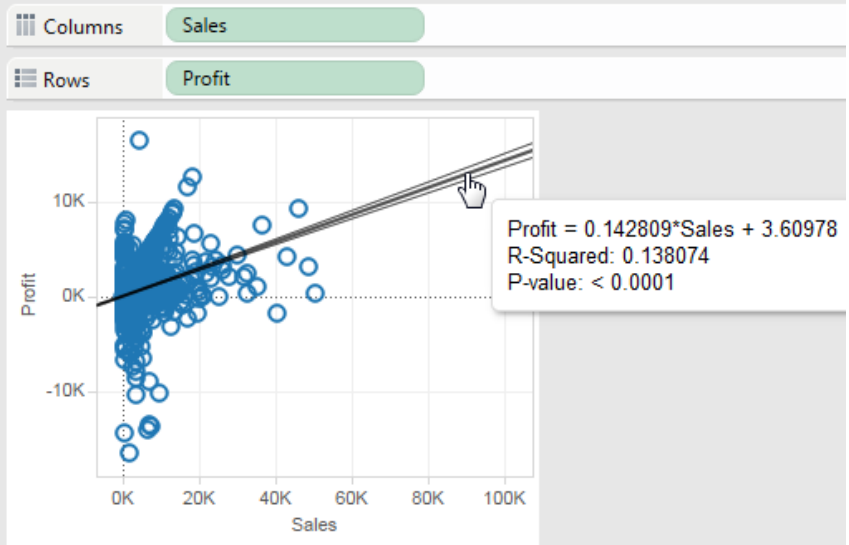
One “Aggregate measures” is unchecked, the graph should now look like this:



Right-click on the graph, select Trendlines and then Show Trend Line:



Mouse over the trend line to see the R-squared value.



2) **Create a trend line for profit as a linear function of sales. According to the trend line, how much does profit increase for each dollar of sales?**

- (•) 0.142809
- ( ) 0.966844
- ( ) 155.864
- ( ) 0.261169

Looking at the screenshot above, we see the formula for the trendline is:

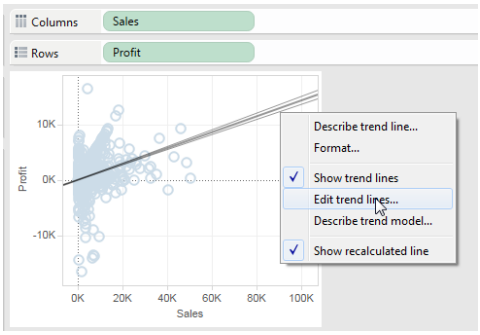
Profit = 0.142809*Sales + 3.60978

This means that for every one dollar of sales, profit increases by .142809 dollars (in other words, about 15 cents).

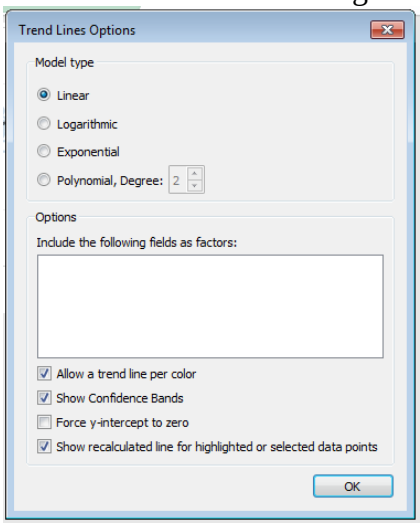
3) **Create a trend line for profit as a function of sales. Based on the R^2 value, which model type results in the best fit?**

- ( ) Linear
- ( ) Exponential
- ( ) Logarithmic
- (•) Polynomial with degree two

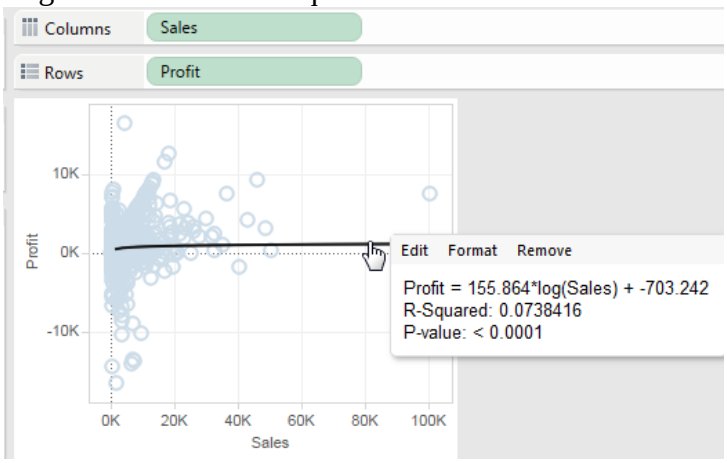
Right click and select Edit Trendline to change the model type.



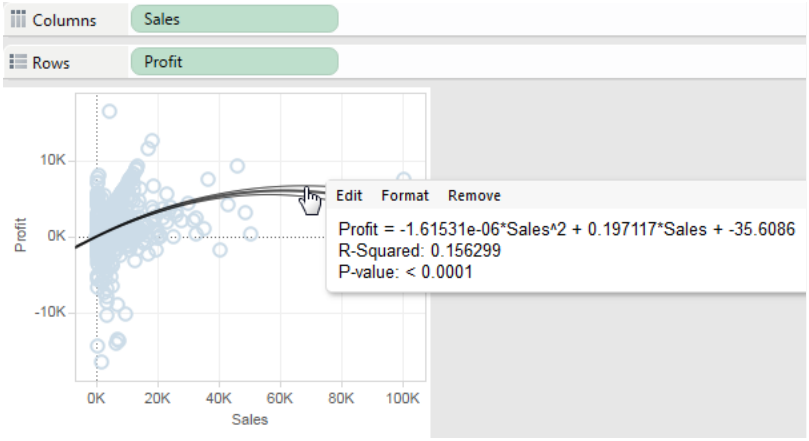
Switch from a Linear to Logarithmic, Exponential, and Polynomial Degree 2.



Logarithmic has an R-squared value of .0738416:



Polynomial degree 2 has an R-squared of .156299. This is the highest R-squared, hence the this model can be considered the best fit.

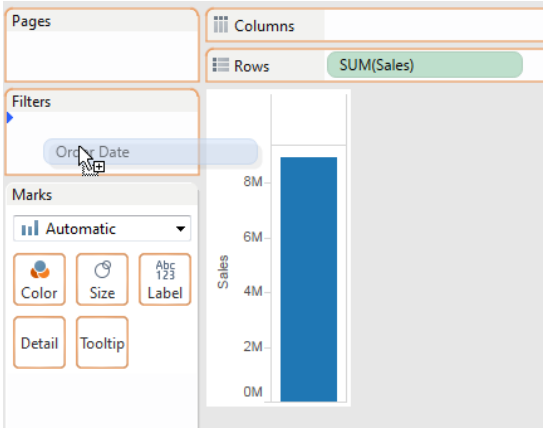


Data Manipulation Quiz

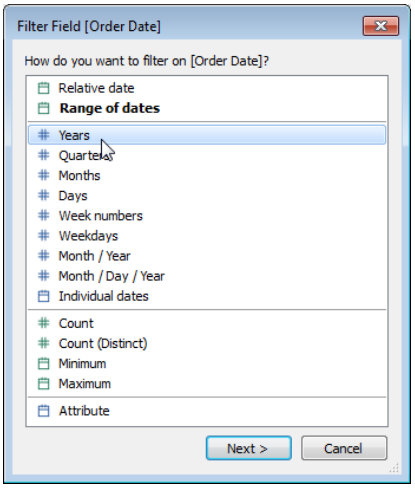
1) **Find the total sales value for 2010 orders shipped with "Low" priority**

- 445,010
- 310,095
- 379,127

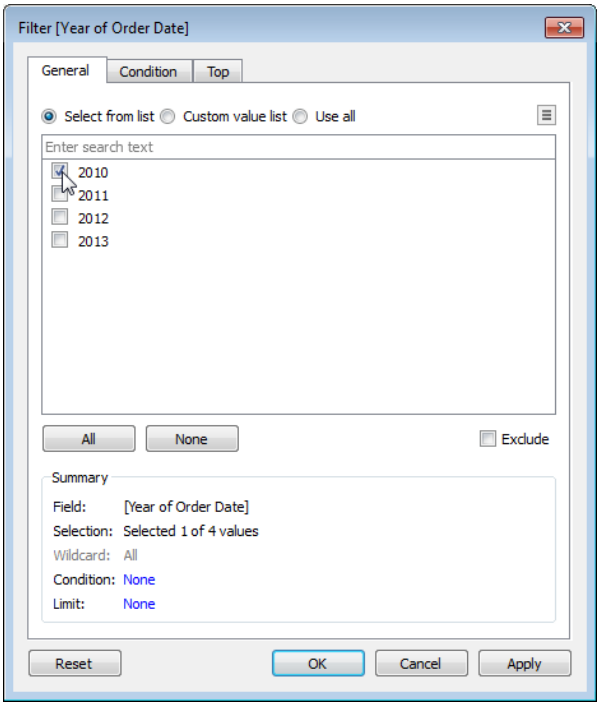
Add sales to the view and filter on order date = 2010:



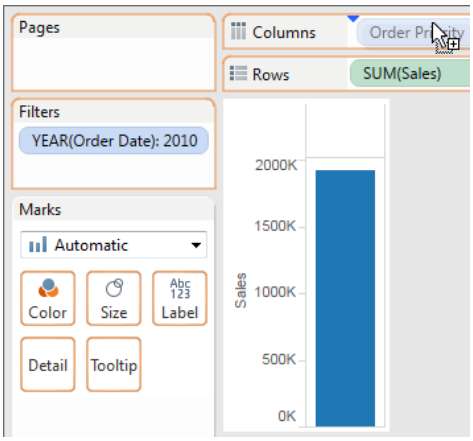
Select Years



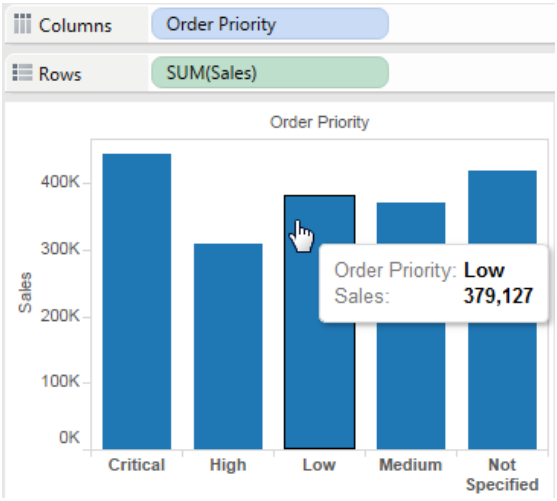
Select 2010:



Drag Order Priority to the Columns shelf:



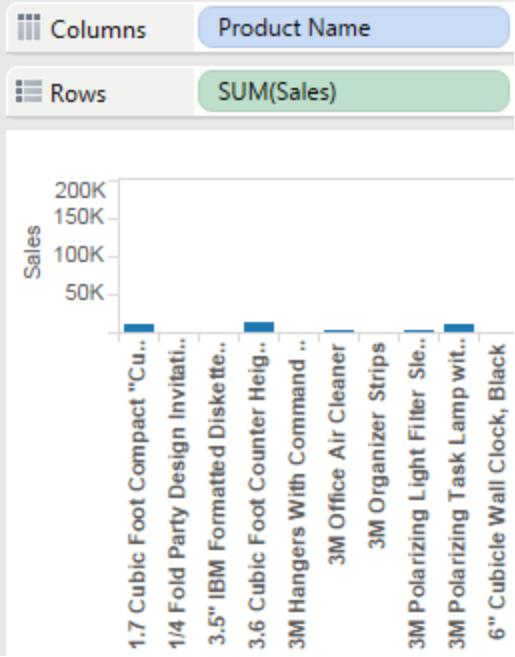
Mouse over Low to find the total Sales for 2010 orders with Low Priority:



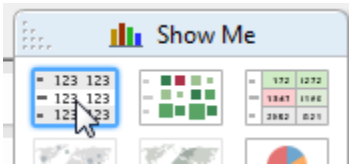
2) **Which product has the highest total sales?**

- Hewlett Packard Laserjet 3310 Copier
- Canon PC940 Copier
- Global Troy Executive Leather Executive Low-Back Tilter
- Luxo Professional Fluorescent Magnifier Lamp with Clamp-Base Mount

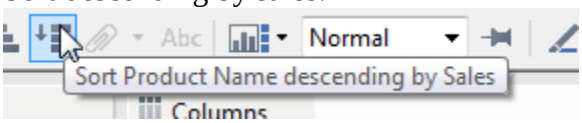
Add Sales and Product Name to the view:



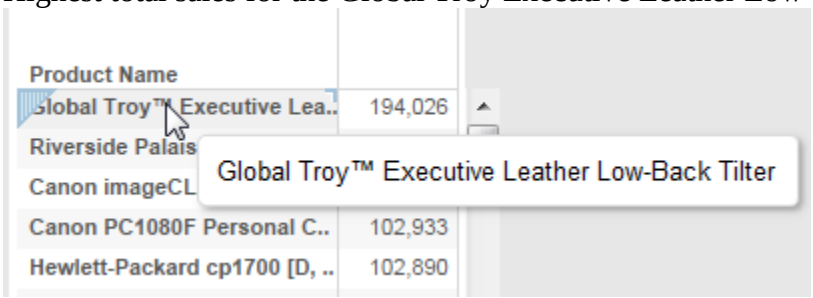
Switch to a table view:



Sort descending by sales:



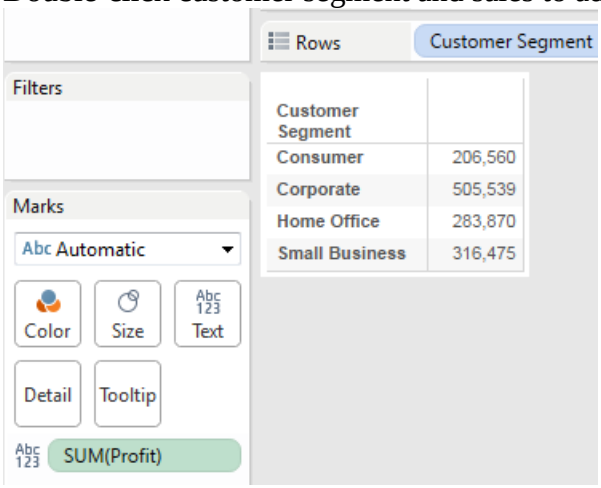
Highest total sales for the Global Troy Executive Leather Low-Back Tilter



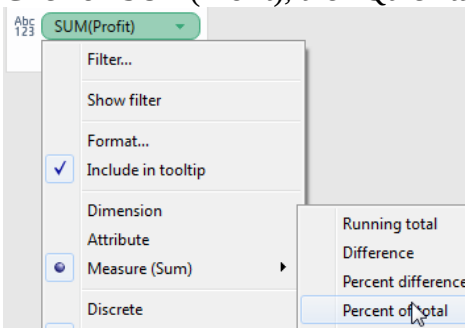
3) **There are four customer segments in the Superstore data set. What percent of the total profits are associated with the Small Business segment?**

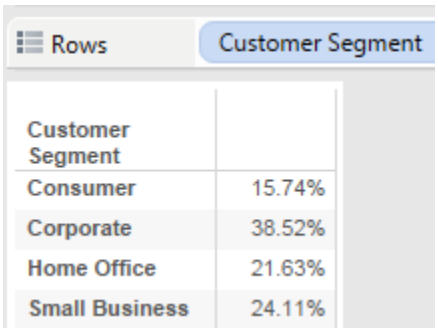
- 24.11%
- 21.63%
- 38.51%
- 15.74%

Double-click customer segment and sales to add them to the view:



Click on SUM(Profit), then Quick table calculation, then Percent of Total





4) **The row and column shelves contain these**

- Grand Totals
- Pills
- Filters

When you drag a dimension or measure to the row or column shelves, headers or axes are added to the view. Dimensions appear as a blue pill on the column shelf, while measures appear as green pills.

More here: https://www.interworks.com/blog/skennedy/2014/05/01/tableau-terminology-101-pills-shelves-and-dashboards-oh-my

5) **Adding a dimension to the row or column shelf will filter your data.**

- True
- False

Adding a dimension to the row or column shelf will increase the granularity of your view, but it will not filter. To filter, drag a dimension or measure to the filter shelf.

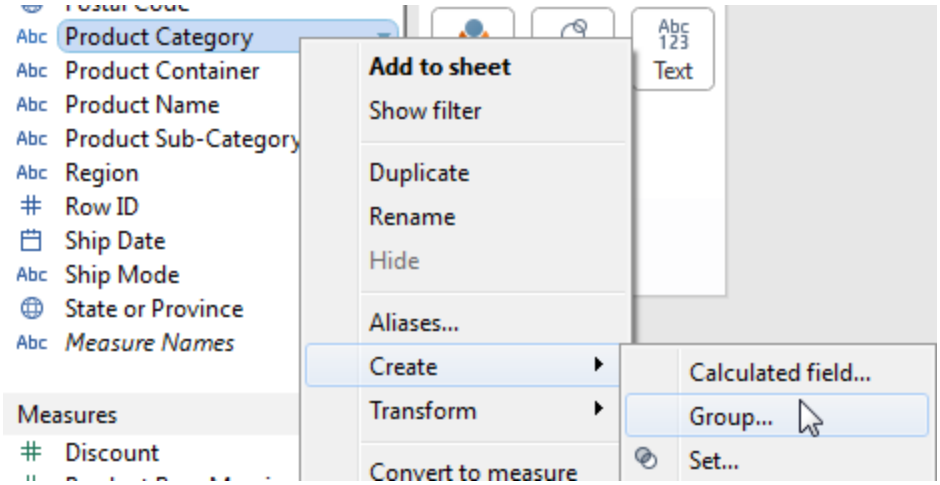
More here: https://onlinehelp.tableau.com/current/online/en-us/help.htm#web_author_filters_shelf.htm?Highlight=filter

6) **Suppose that your data has a dimension called "Product Category," which has the values "Furniture," "Office Supplies," and "Technology." Which of the following should you use to combine Furniture and Office Supplies into a single category?**

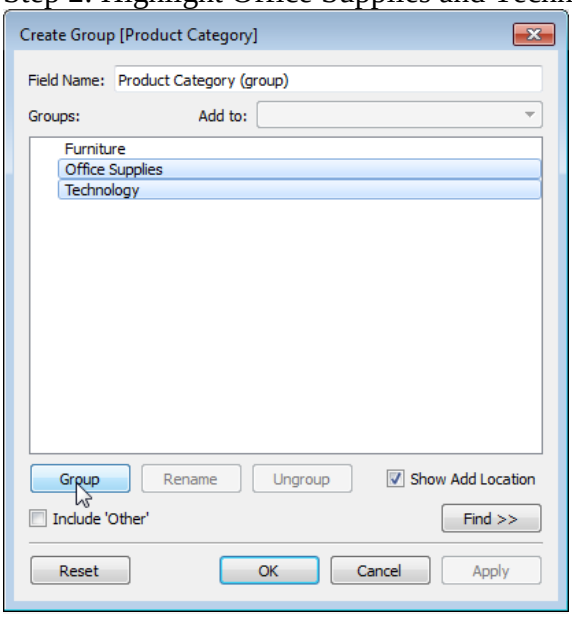
- Hierarchy
- Group
- Filter

A group is a combination of dimension members that make higher level categories. For example, “Office Supplies” and “Furniture” are both members of “Product Category,” so we can use a group to combine them to make “Office Supplies and Furniture.”

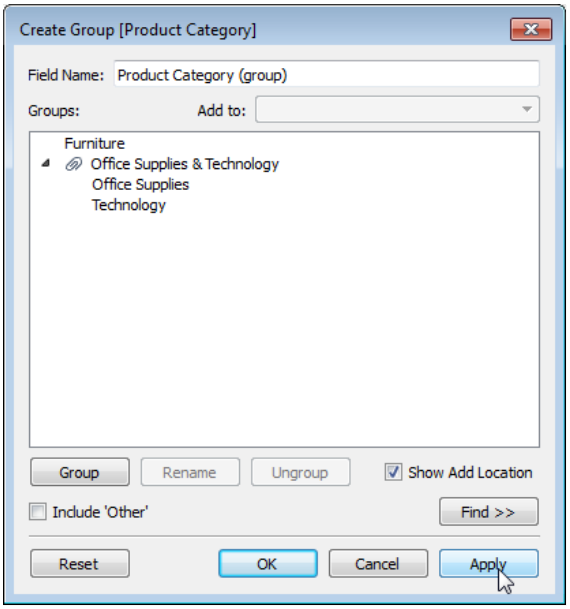
Step 1: Create Group



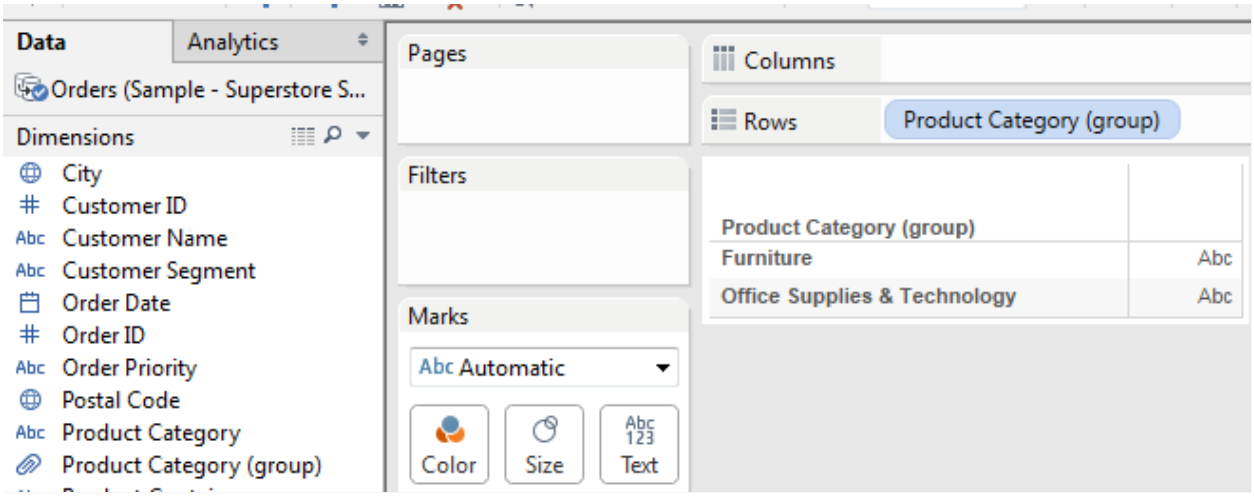
Step 2: Highlight Office Supplies and Technology. Then Click Group.



Step 3: Click Apply



Step 4: Add Product Category (group) to the view:

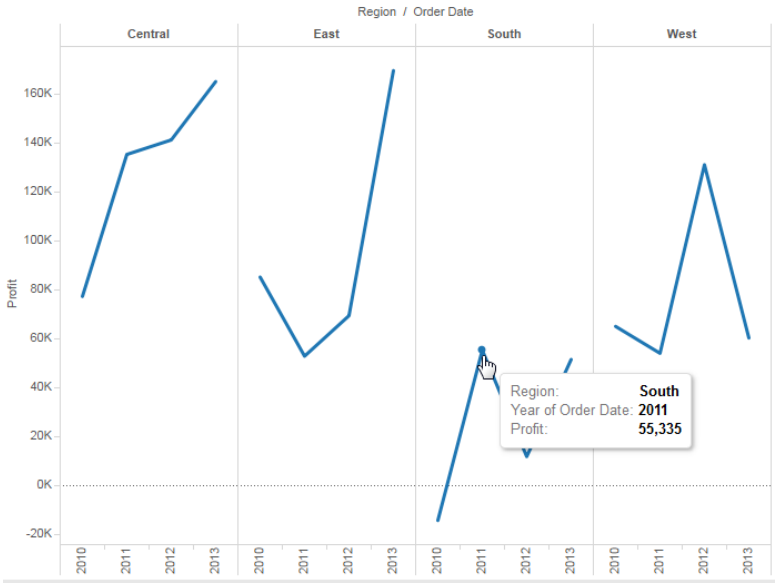


Calculations

1)**Find the total profit for the South region for items ordered in 2011.**

- 52,889
- 54,889
- 55,335
- 11,775

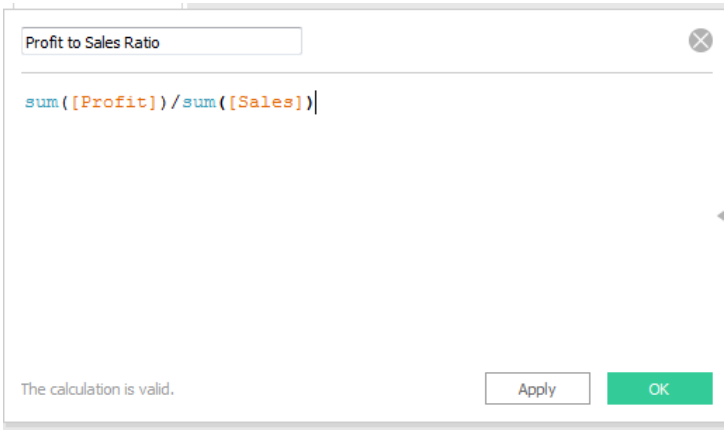
Add Profit, Region, and Order Date to the view:



2) **Which product subcategory has the highest ratio of profit to sales?**

- Binders and Binder Accessories
- Envelopes
- Labels
- Pens & Art Supplies
- None of the Above

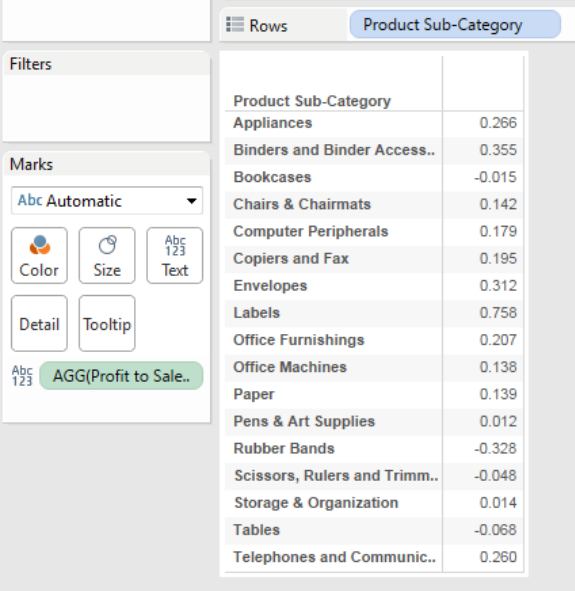
Create a calculated field called Profit to Sales Ratio:



Notice we are dividing the sum of the profit by the sum of the sales. If we did simply [Profit]/[Sales] we would calculate the profit to sales ratio for each row of data, but each row

would be weighted equally when we aggregate. We don't want that, rather we'd like to divide the total profit by the total sales for each product category.

Add the product sub-category and the new calculated field to the view:



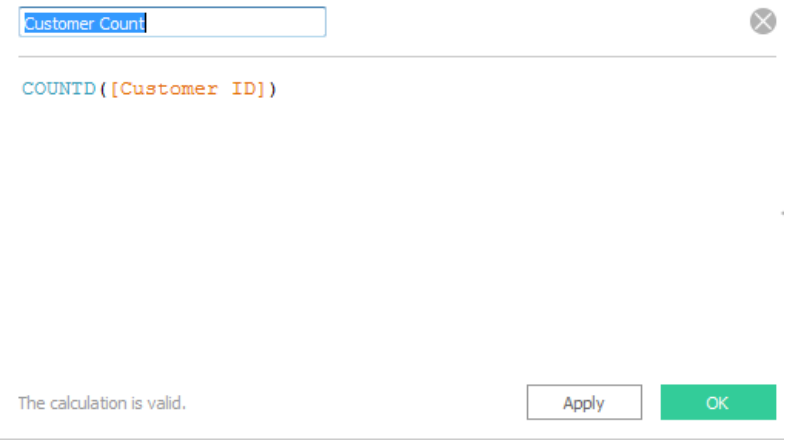
Product Sub-Category	
Appliances	0.266
Binders and Binder Access..	0.355
Bookcases	-0.015
Chairs & Chairmats	0.142
Computer Peripherals	0.179
Copiers and Fax	0.195
Envelopes	0.312
Labels	0.758
Office Furnishings	0.207
Office Machines	0.138
Paper	0.139
Pens & Art Supplies	0.012
Rubber Bands	-0.328
Scissors, Rulers and Trimm..	-0.048
Storage & Organization	0.014
Tables	-0.068
Telephones and Communic..	0.260

Sort or just visually inspect to see that Labels have the best sales to profit ratio.

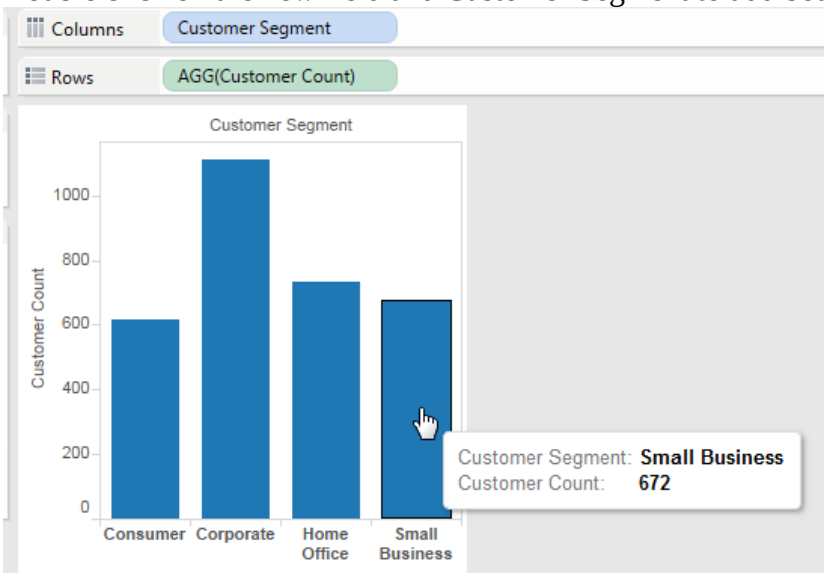
3) **Find the total number of Small Business customers placing orders from the superstore.**

- 615
- 1,111
- 734
- 672

Create a calculated field for distinct customers



Double click on the new field and Customer Segment to add both to the view:



4)**What is wrong with this If Statement**

```
If [Sales] > 100 and "Delivery Truck" then 0  else [Shipping Cost]  End
```

- Nothing, the syntax is correct
- (•) Instead of "Delivery Truck" it should be [Shipping Mode] = "Delivery Truck"
- Instead of "Delivery Truck" it should be [Delivery Truck]

5)**What will the function Left(3,"Tableau") return?**

- Tab
- eau
- (•) An error

The function Left has the following syntax: Left(string, num_chars). So it should be Left(“Tableau”,3) rather than Left(3,“Tableau”)

Joins and Blends

1) **Find the sale value for items ordered in 2012. Exclude the value of items which were returned.**

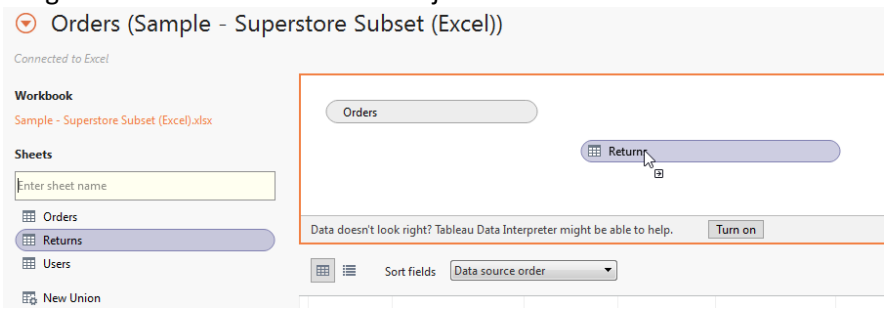
- (•) 2,158,725

72,006

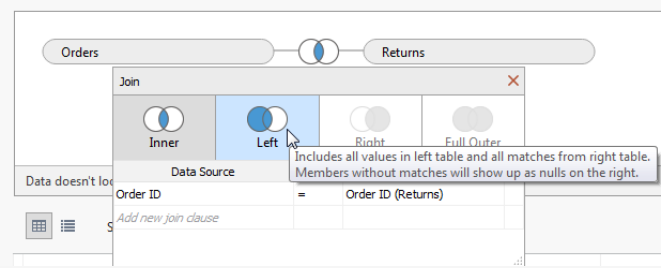
1,843,186

8,630,660

Drag the Returns data into the data join area:



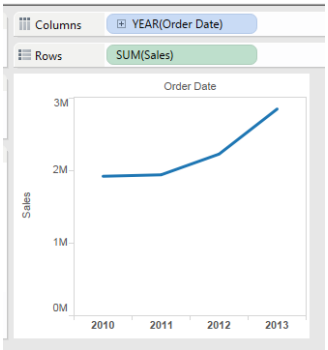
Select Left to do a left join. This will include all values from the Orders table and all Order ID matches with the right table.



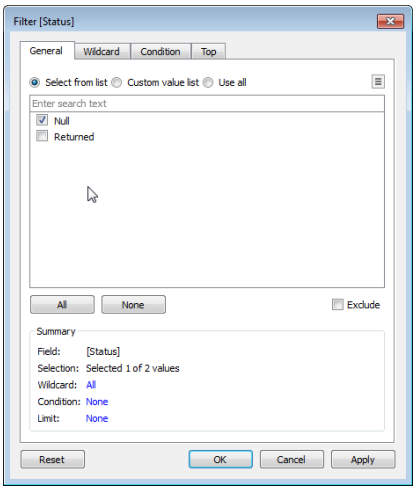
Scroll right in the data preview area. You should see that Order ID (Returns) is generally null, meaning there is no record for the order in the returns data set. In these cases the order was not returned. When the Order ID (Returns) is populated you will see the Status = Returned.

lered ...	Orders Sales	Orders Order ID	Returns Order ID (Returns)	Returns Status
17	118.36	56001	null	null
2	110.02	86299	null	null
5	487.27	90649	null	null
2	12.18	90033	null	null
9	54.79	9895	9895	Returned

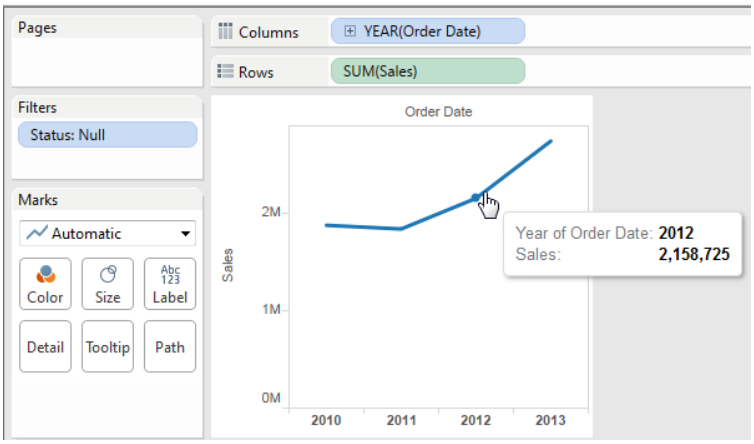
Add Sales and Order Date to the view:



Filter on Status=Null to filter out the Returned items.



Mouse over 2012 to see the sales for that year:



2) All rows from both tables are returned in an INNER JOIN.

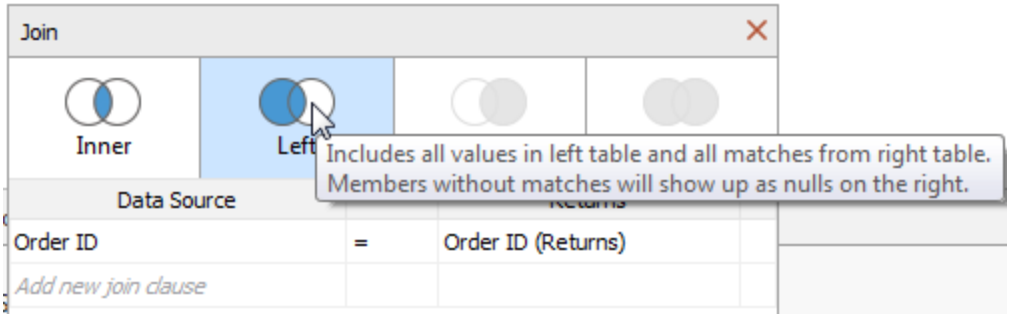
- True
- False

An inner join includes only values with matches in both tables.
A *full outer* join will include all rows in both tables.

3) LEFT JOIN returns all rows from the left table, with the matching rows in the right table.

- True
- False

The description of a left join is shown here:



4)**A LEFT JOIN or INNER JOIN creates a row each time the join criteria is satisfied, which can result in duplicate rows. One way to avoid this is to use data blending instead.**

- (•) True
- ( ) False

For a detailed explanation of how joins produce dupicate rows and how blending can be used to avoid duplication, please take a look at the following article:

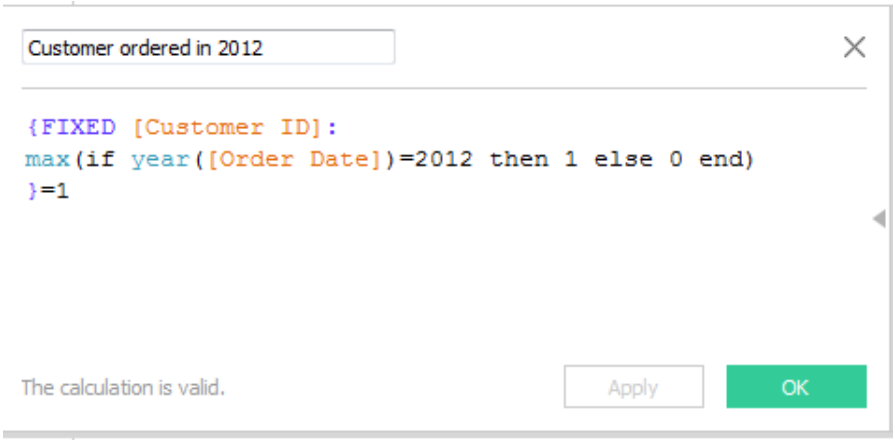
http://kb.tableau.com/articles/knowledgebase/removing-duplicated-data-after-join

Level of Detail

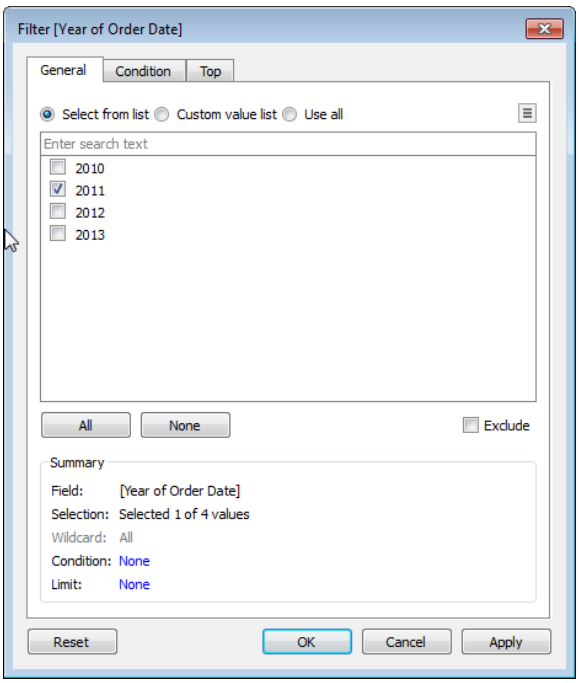
1. What % of Customers ordering items in 2011 also ordered items in 2012? (use the customer ID to identify the customer)

    A. 49.289%
    B. 50.711%
    C. 59.71%
    D. 43.69%
    E. None of the above

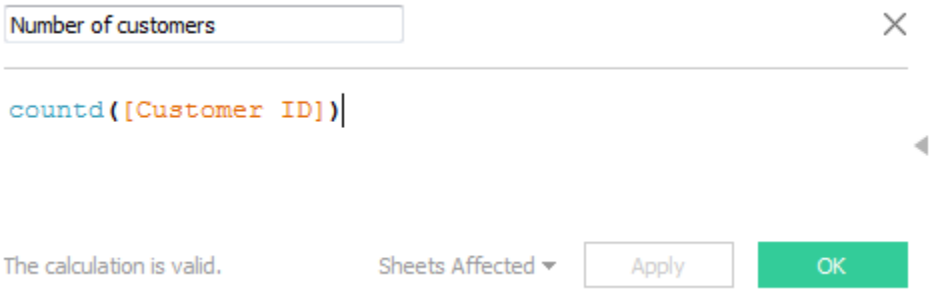
    Use a LOD expression to determine whether the customer ordered in 2012:



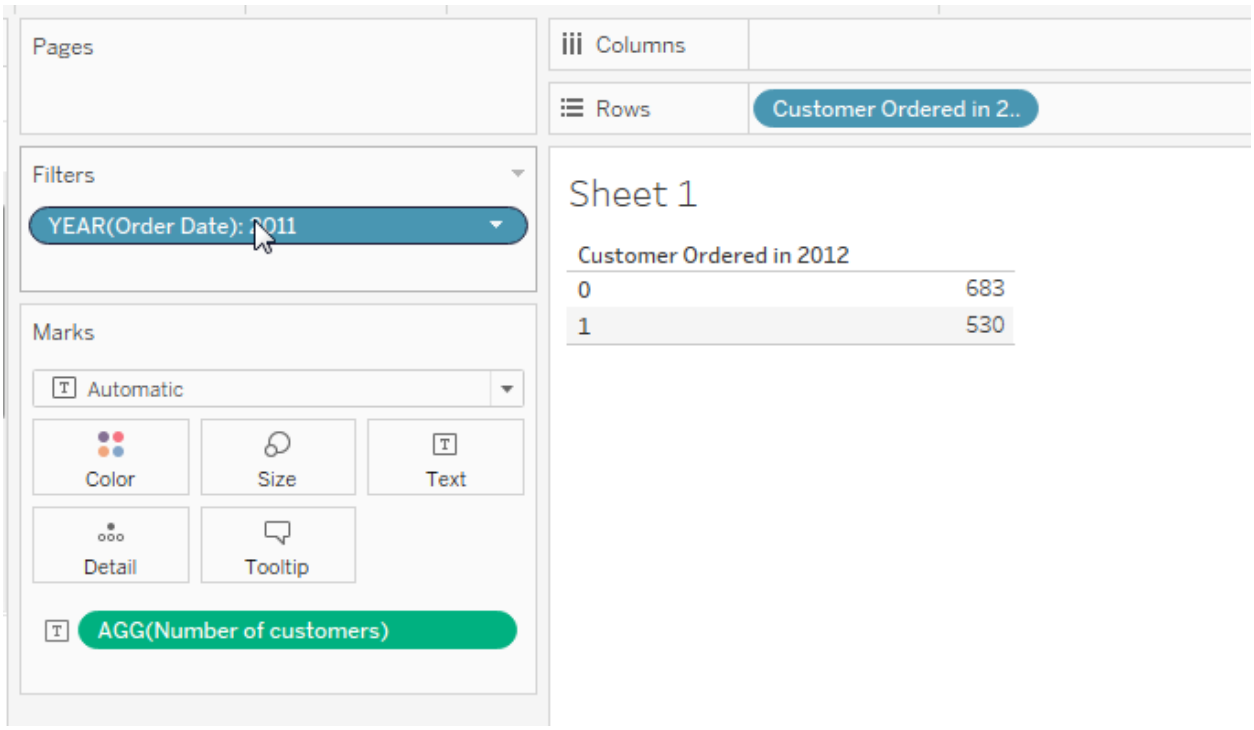
Filter on 2011 orders:



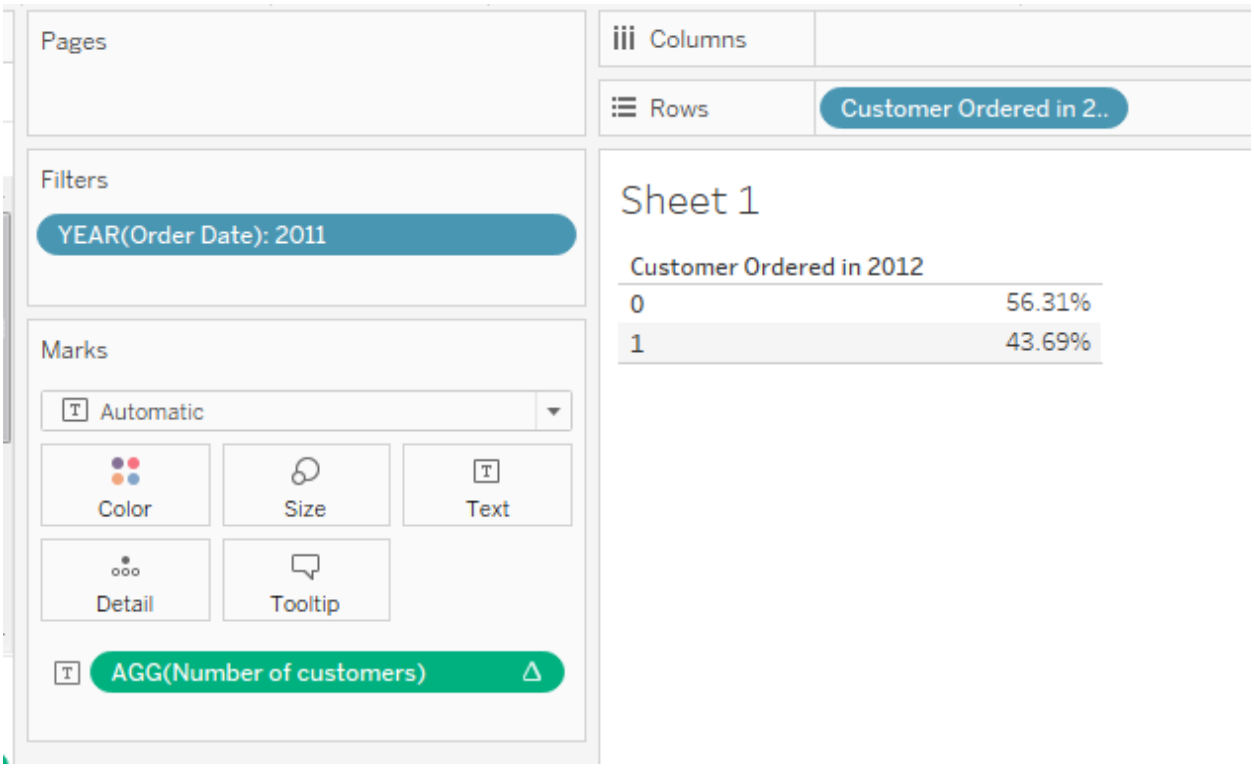
Add a count distinct calculation for the number of customers:



Now we have the customers ordering in 2011, and whether or not they ordered in 2012:



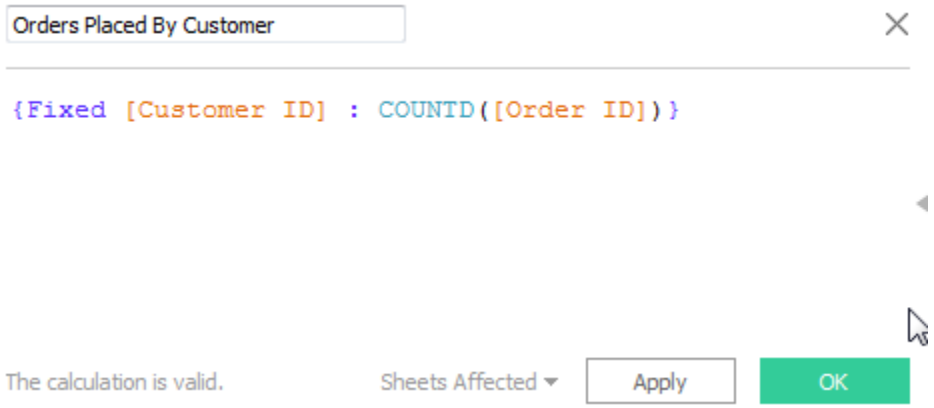
Use a % of total table calculation:



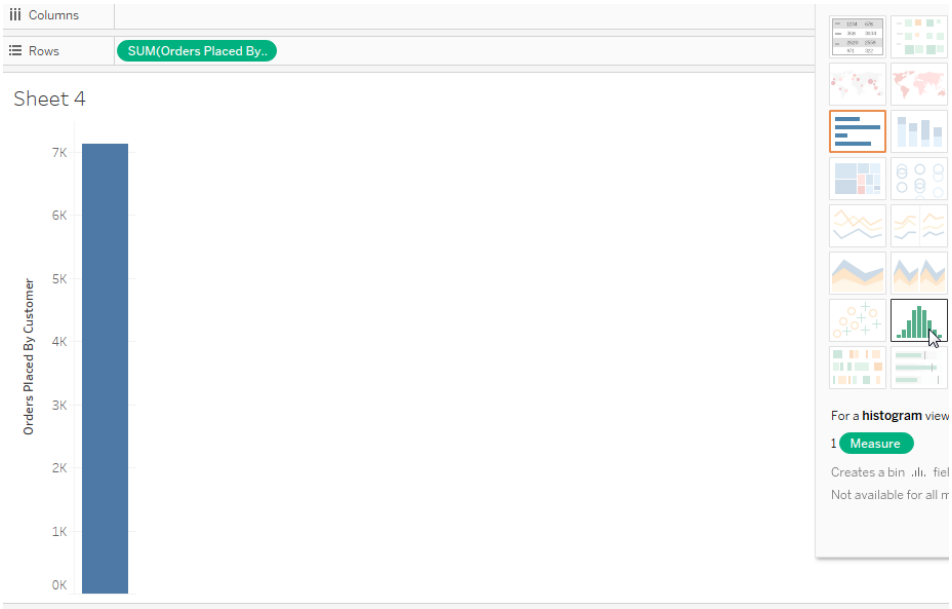
2. How many customers (as identified by customer id) made 8 or 9 separate orders?
    A. 590

B. 121
C. 26
D. 8
E. 7

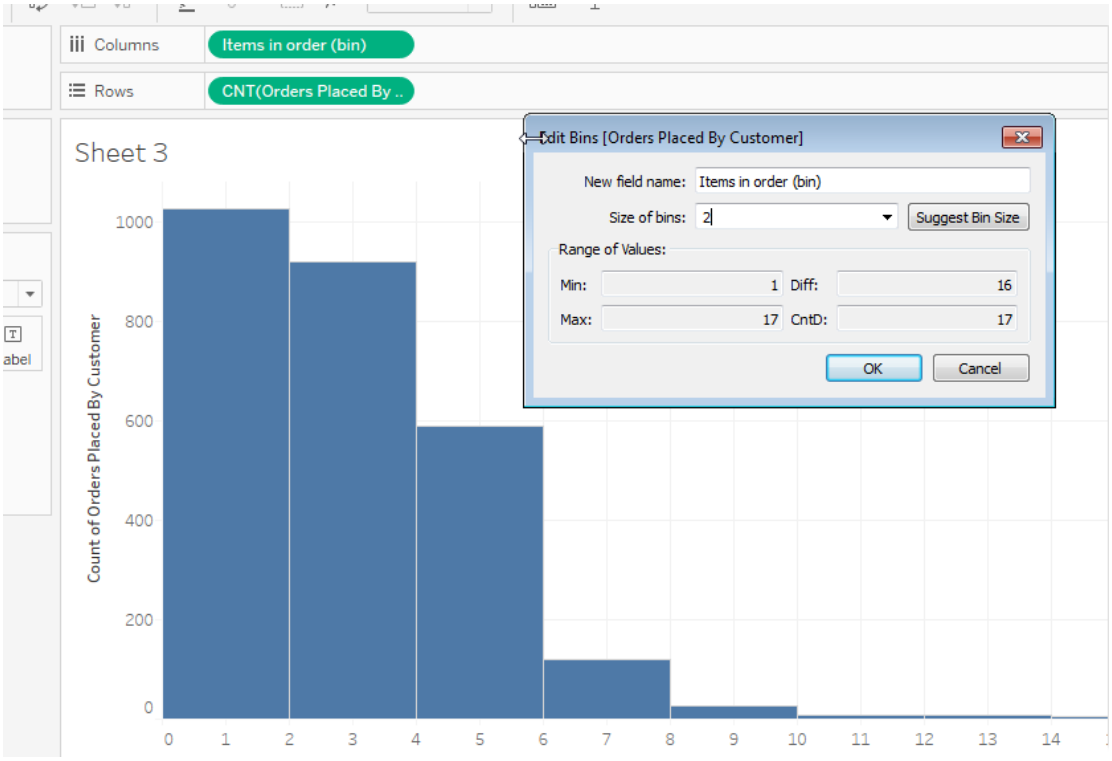
Add a formula to



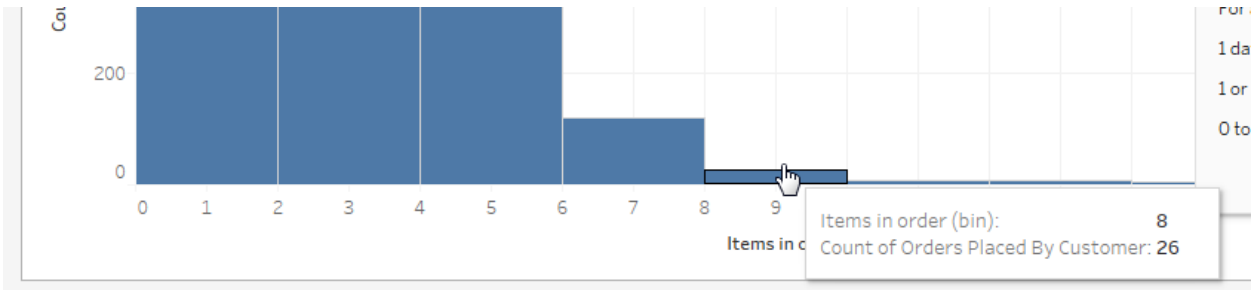
Add this to the view and change to a histogram:



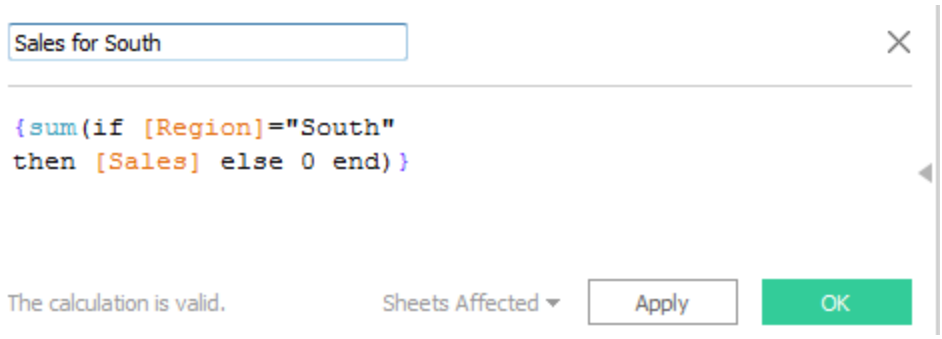
Check the bin size:



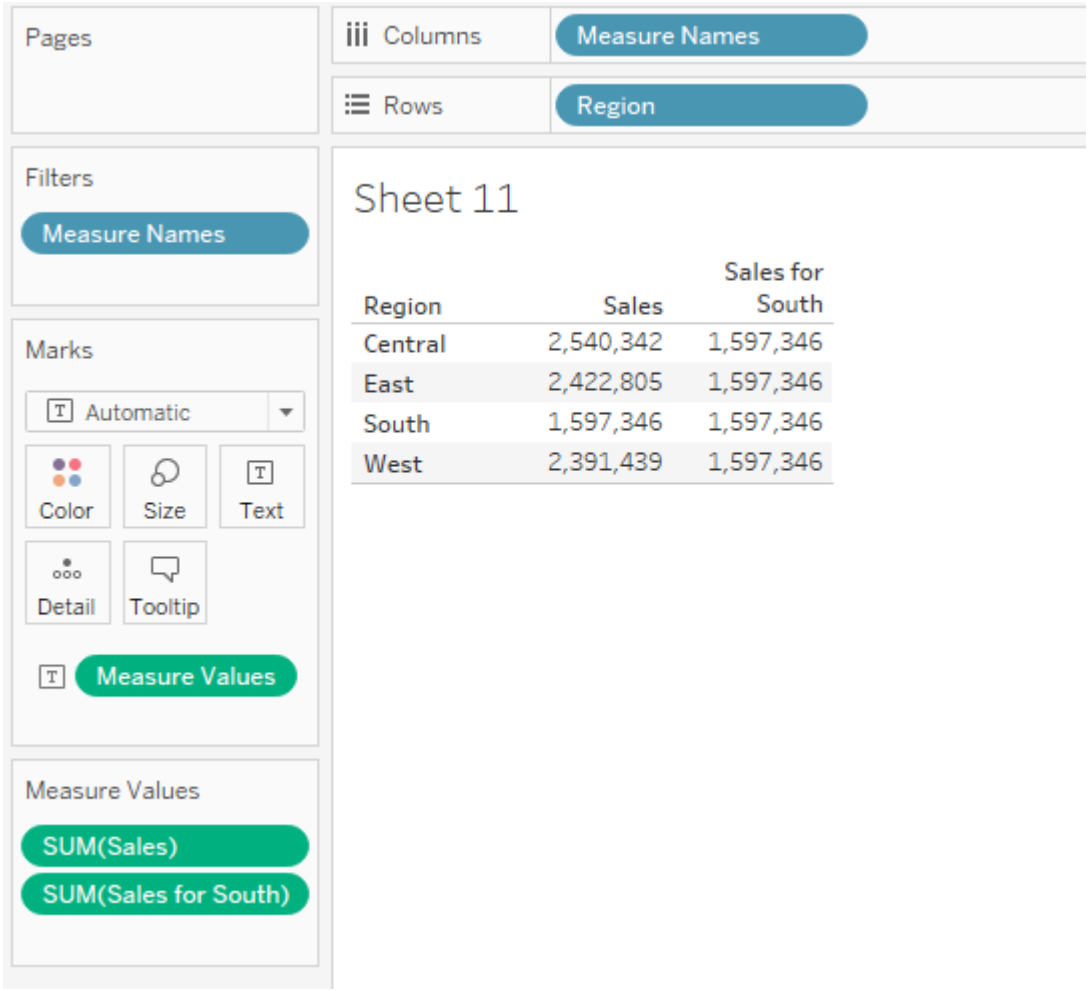
Look at the 8 – 10 bin:



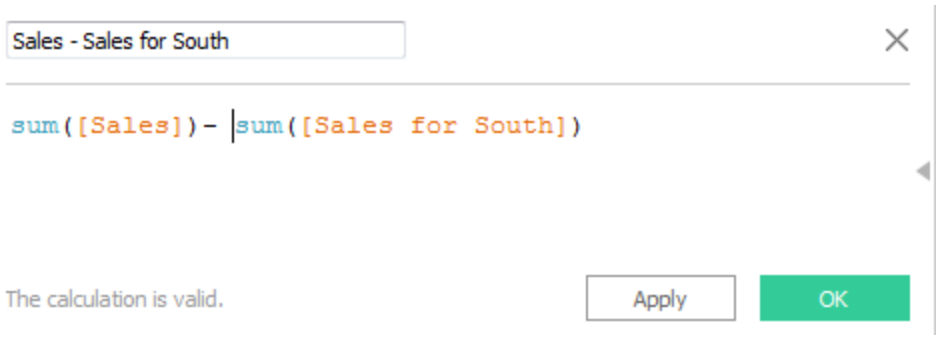
3. How much greater were the sales for the East region than for the South region?
   A. 1,597,346
   B. 942,995
   C. 825,458
   D. 794,093
   E. None of the above



Add Region, Sales and Sales for South to the view:



This is almost what we need. Let's just take the difference of Sales and Sales for South:



Add this to the view:

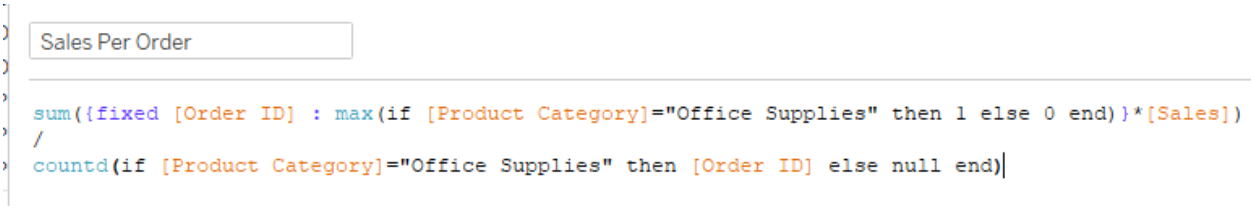
Sheet 11

Region	Sales	Sales for South	Sales - Sales for South
Central	2,540,342	1,597,346	942,995
East	2,422,805	1,597,346	825,458
South	1,597,346	1,597,346	
West	2,391,439	1,597,346	794,093

Region: East
Sales - Sales for South: 825,458

Level of Detail #2

1. A single order can include multiple items across multiple product categories. Each item will be on a different row of the data, but the rows will share a single Order ID. Find the average sales value for orders which include office supplies.

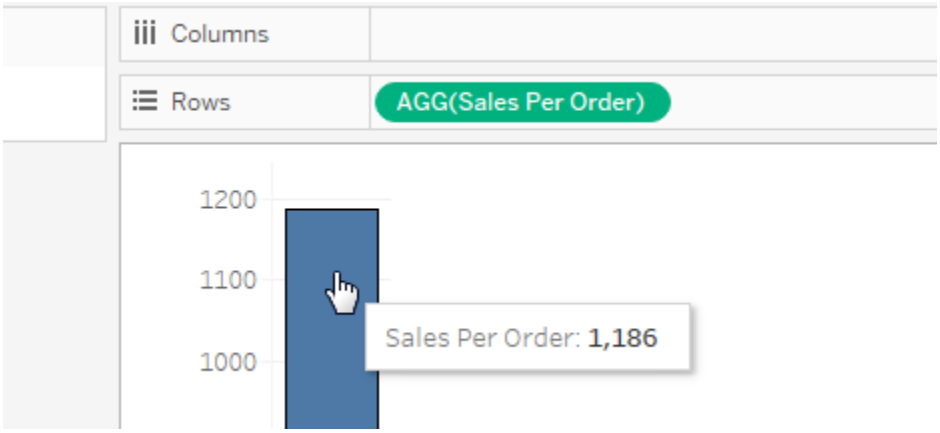


{fixed [Order ID] : max(if [Product Category]="Office Supplies" then 1 else 0 end)} returns 1 whenever the order ID has at least one row where the product category is office supplies, otherwise 0. This value is then multiplied by the [Sales], so if the order ID includes any rows where [Product Category] is Office Supplies then the total value of [Sales] for that order we be returned, otherwise the value will be 0.

countd(if [Product Category]="Office Supplies" then [Order ID] else null end) will return the number of unique values of order ID where there is at least one row where Product Category = Office Supplies"

Dividing the sales value for orders with Office Supplies by the total orders which include office supplies gives us the answer.

Add this calculation to the worksheet:



2. How many customers placed 5 or more orders? (use Order ID to identify an order, and customer ID to identify a customer)

Orders Per Customer >= 5

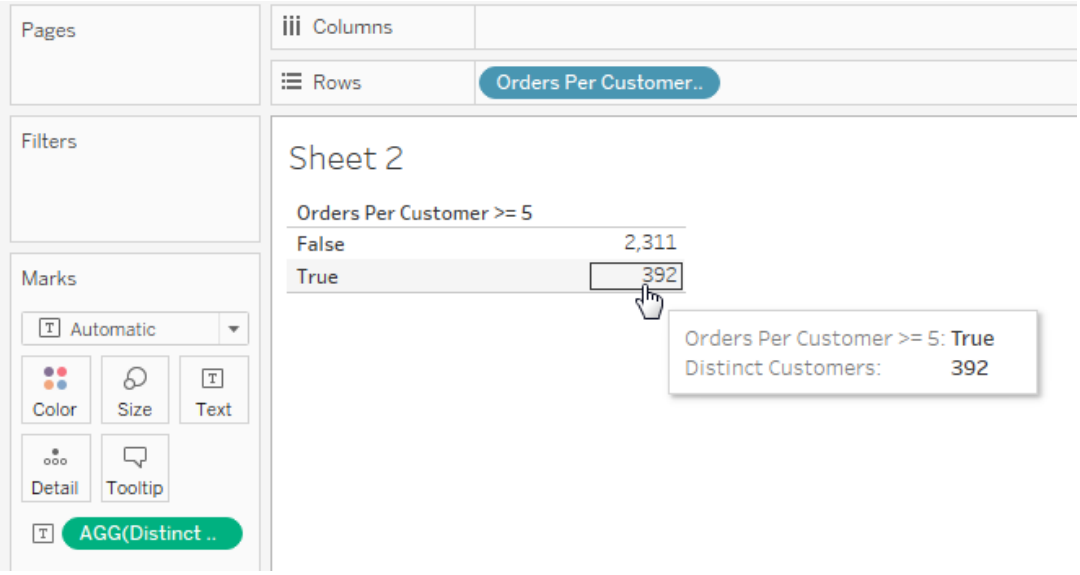
```
{FIXED [Customer ID] : countd([Order ID])} >= 5
```

Then add a formula that counts the distinct customers:

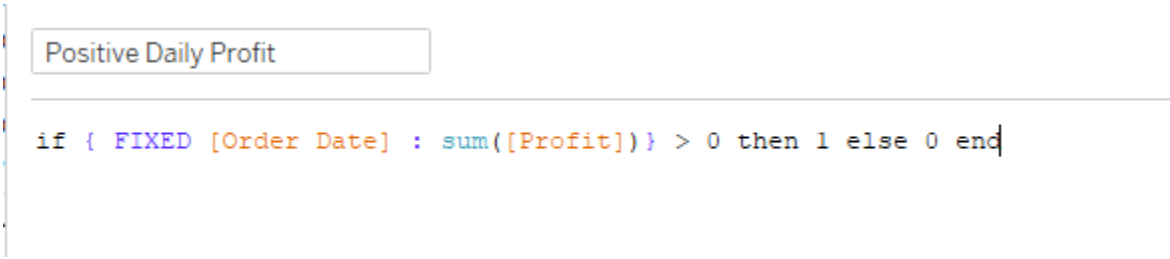
Distinct Customers

```
COUNTD([Customer ID])
```

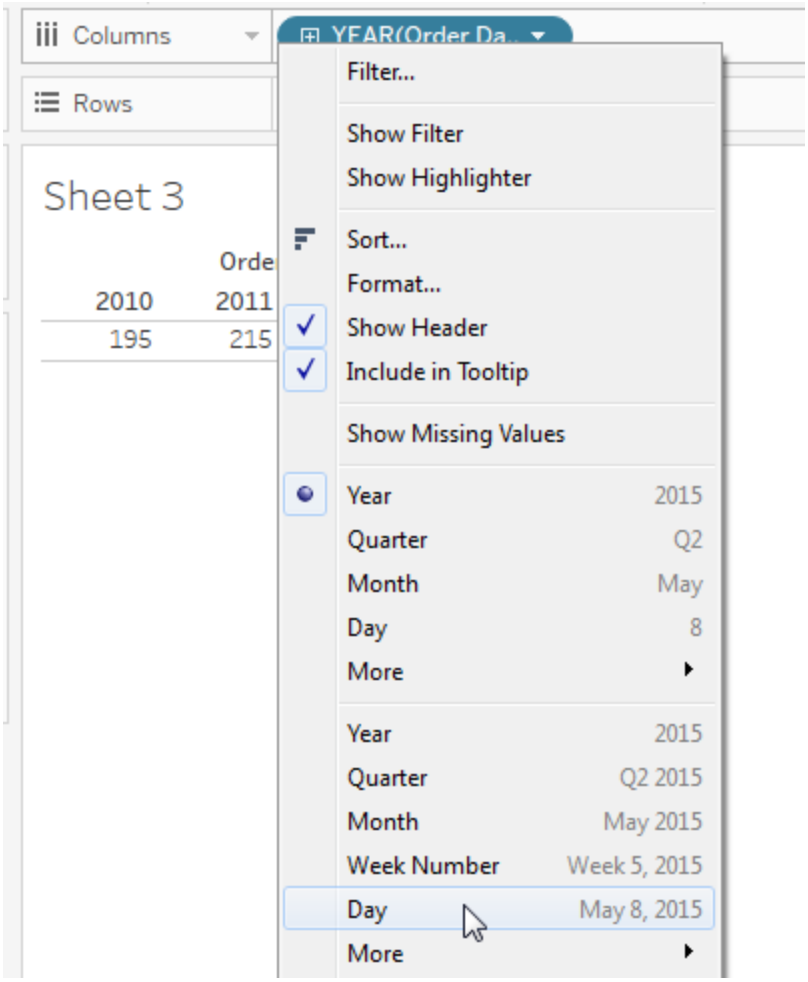
Add the calculations to the view:



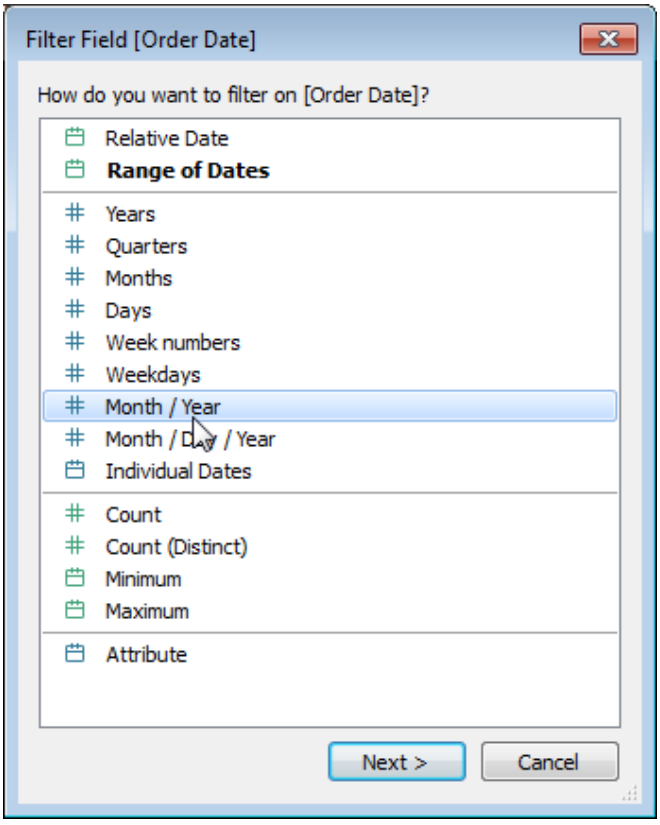
3. How many days in January of 2011 had a positive total profit?

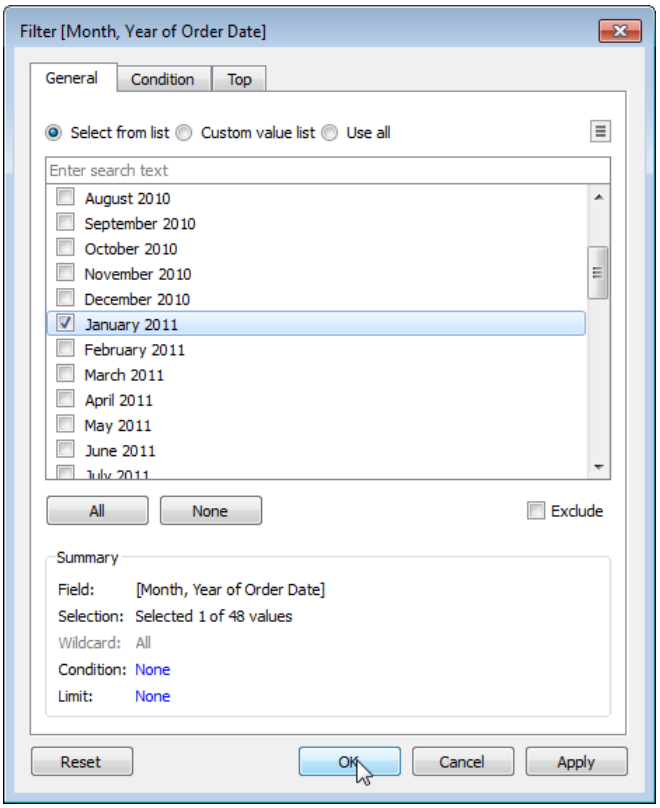


Add order date to the view and change it to daily:

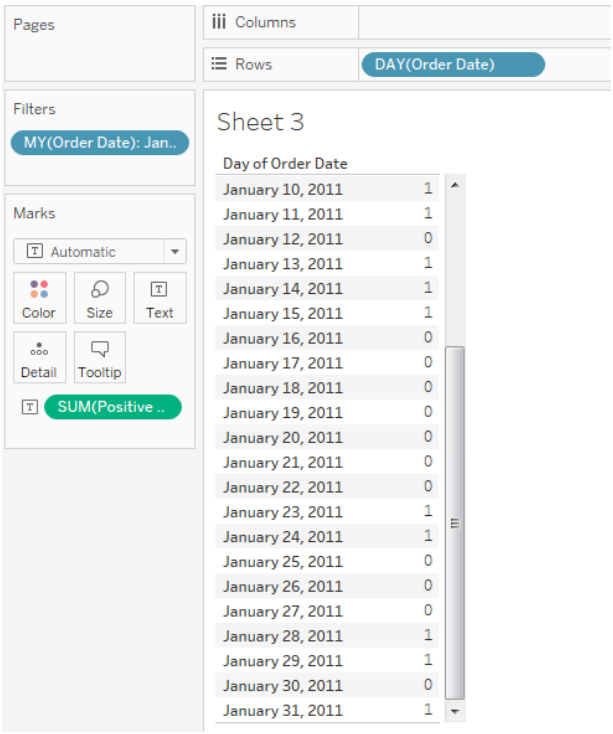


Filter on Order Date = January 2011

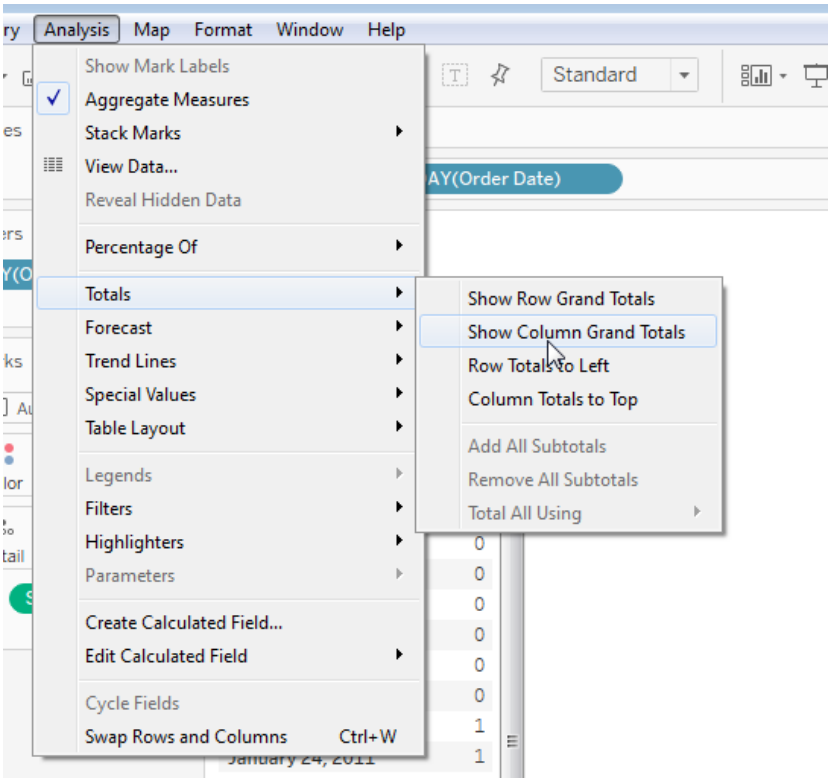


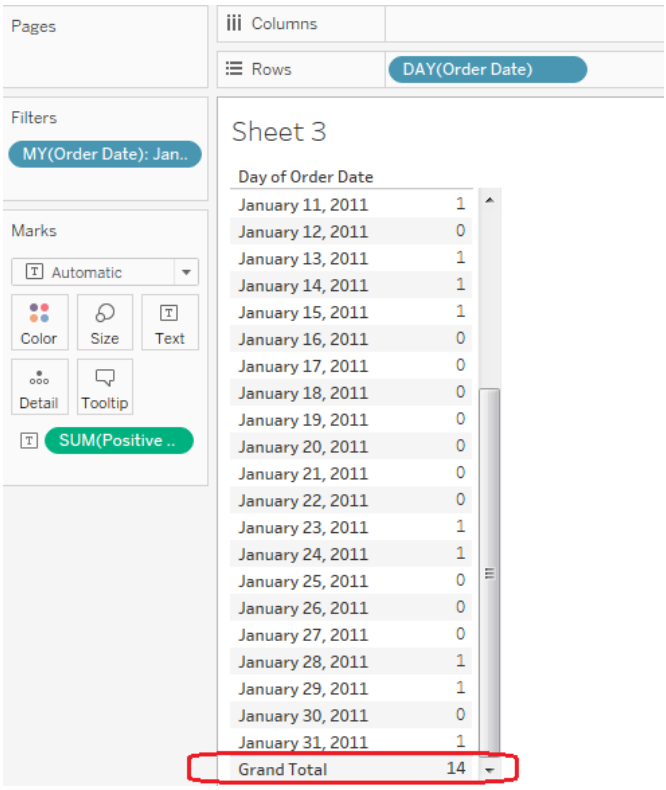


You should now have a view showing a 1 for the days with positive profit in 2011:



Use the “Totals” option to show the total days with positive profit:





Relationships

1. [Relationship] 1. Use the Team Events Fixed & All medalists sheet from Summer_Olympic_medallists_1896-2008. Find the country which has won total of at least 500 gold medals in all years. In how many Disciplines did that country win these gold medals?
    a. USA 33
    b. USA 45
    c. Soviet Union 45
    d. Canada 30

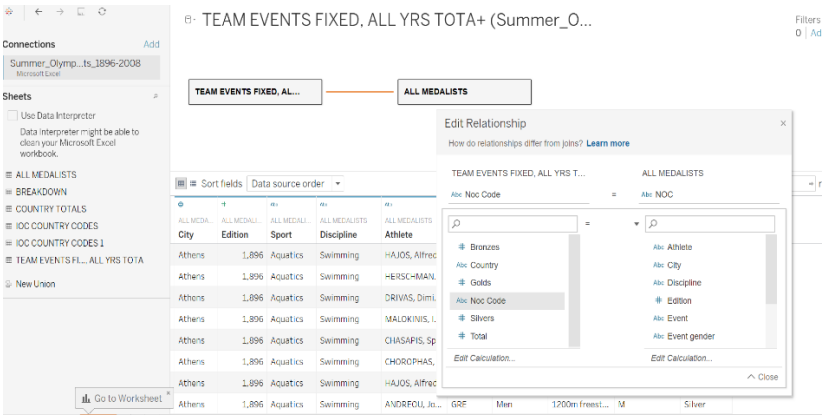
    As the table data are at different levels of granularity, blend or relationship must be used. But blending will not work when using COUNTD function to find the distinct disciplines. This is one of the functions not supported by blending for secondary data sources. Hence using relationship is the best & easy method to solve this. Tableau recommends using relationship as the first approach for combining data.

    Documentation on blending error : https://help.tableau.com/current/pro/desktop/en-us/multipleconnections_troubleshooting.htm#cannot-blend-the-secondary-data-source-because-one-or-more-fields-use-an-unsupported-aggregation

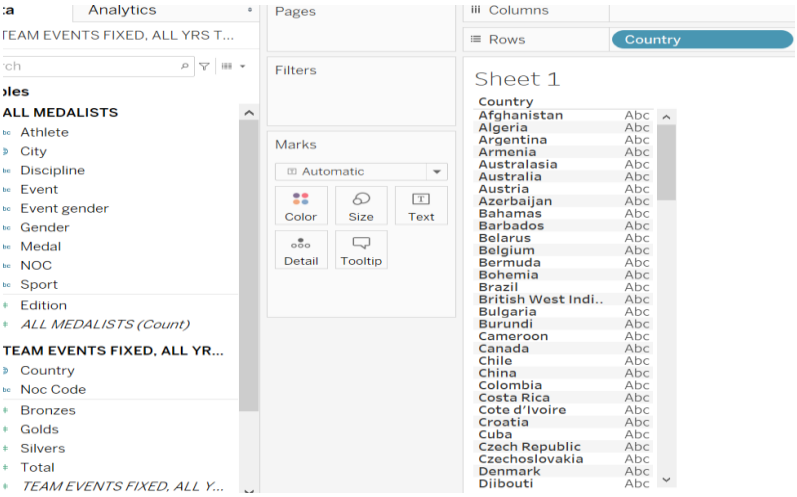
    Documentation on relationship: Relate Your Data - Tableau

    Solution using relationship:

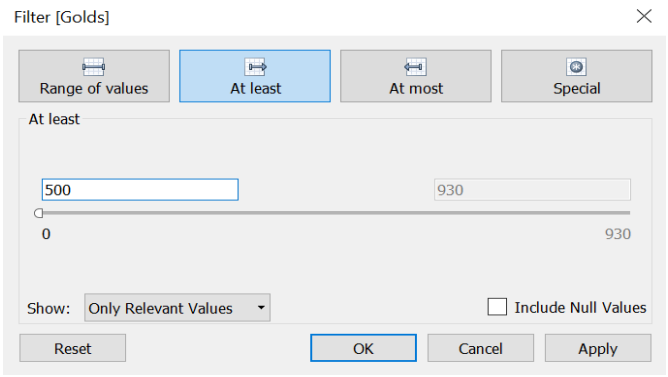
Connect to the “Summer_Olympic_medallists” excel file and drag the “Team Events fixed” sheet on to canvas. Drag the “All Medalists” sheet to form a relationship. Edit the relationship to relate both the tables with NOC Code.



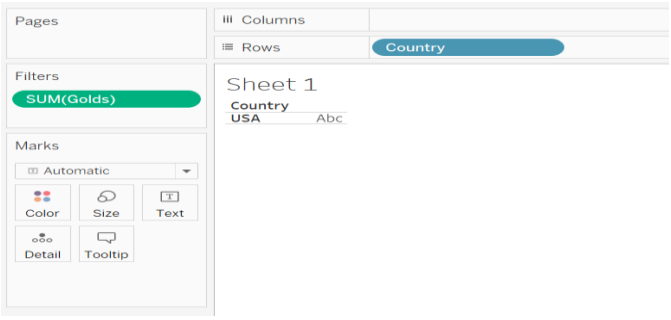
Go to Sheet1. Add the “Country” from “Team Events fixed” on to Rows.



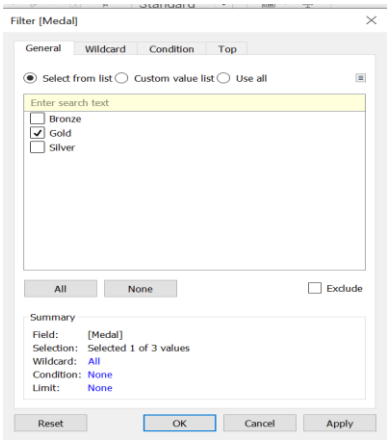
To filter countries with at least 500 gold medals, drag “Golds” from Team Events fixed to Filters. Choose SUM as aggregation. Click on “At least” and enter value 500. Click OK.



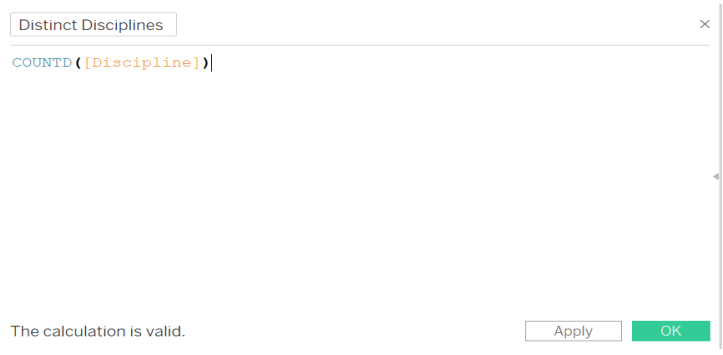
The filter will be applied on the “Country” and USA is the only country with at least 500 gold medals.



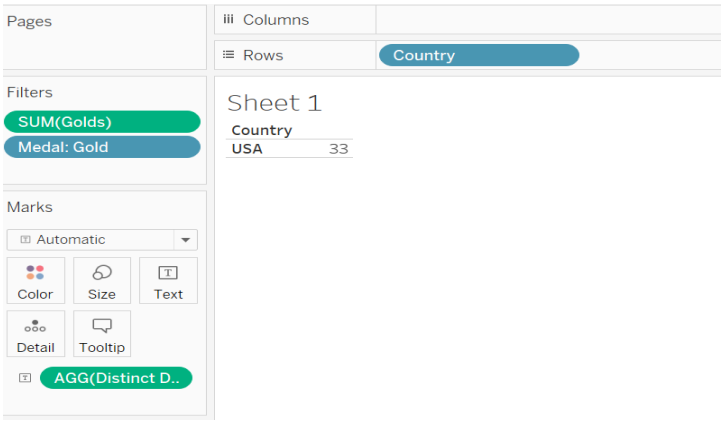
To ensure we are selecting the distinct disciplines for gold medal only, add “Medal” from “All Medalists” to filter and check “Gold”.



To get the number of Disciplines that USA has won gold medal in, create a calculated field “Distinct Disciplines” with COUNTD(Discipline). Click OK.

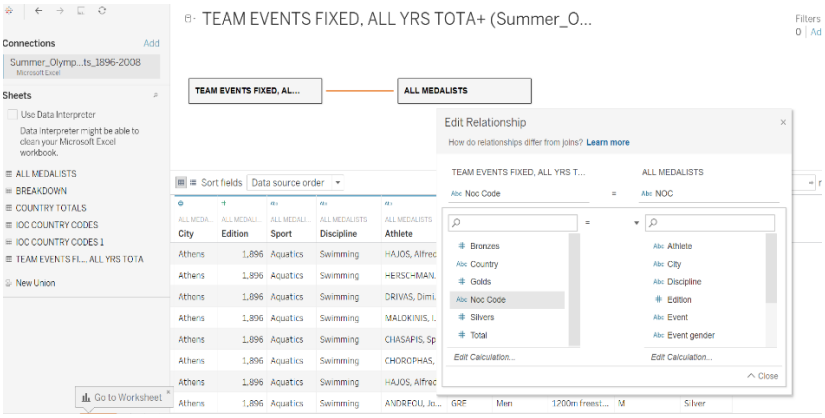


Double click the calculated field from data pane. Number of disciplines USA has won gold medal in is 33.

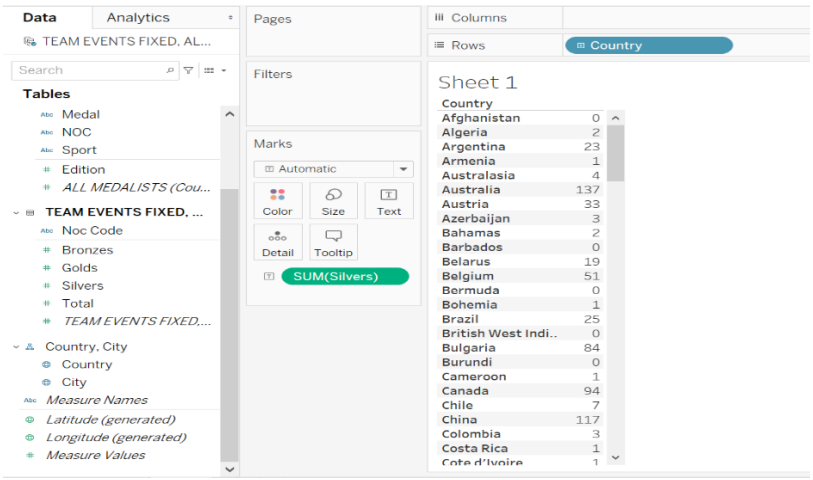


2. Use [Summer_Olympic_medallists_1896-2008]. From Team Events fixed sheet find the country with 5th highest total in Silver medal tally. In which year did this country win most silver medals?
    a. Sweden in 1912 62 Medals
    b. Italy in 2004 39 medals
    c. France in 1900 86 medals
    d. Sweden in 1920 36 medals

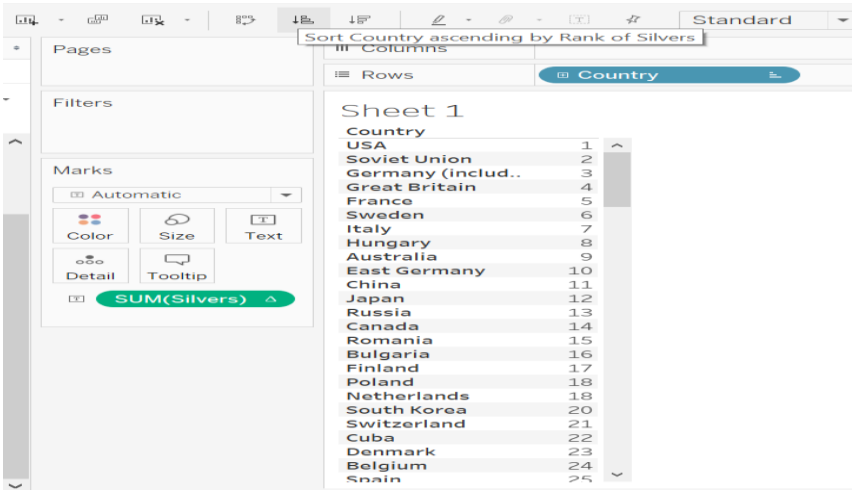
Connect to the "Summer_Olympic_medallists" excel file and drag the "Team Events fixed" sheet on to canvas. Drag the "All Medalists" sheet to form a relationship. Edit the relationship to relate both the tables with NOC Code.



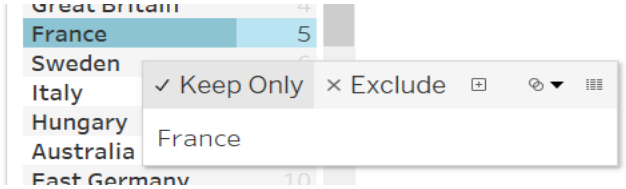
Go to Sheet1. Add the "Country" from "Team Events fixed" on to Rows. Double click on "Silvers"



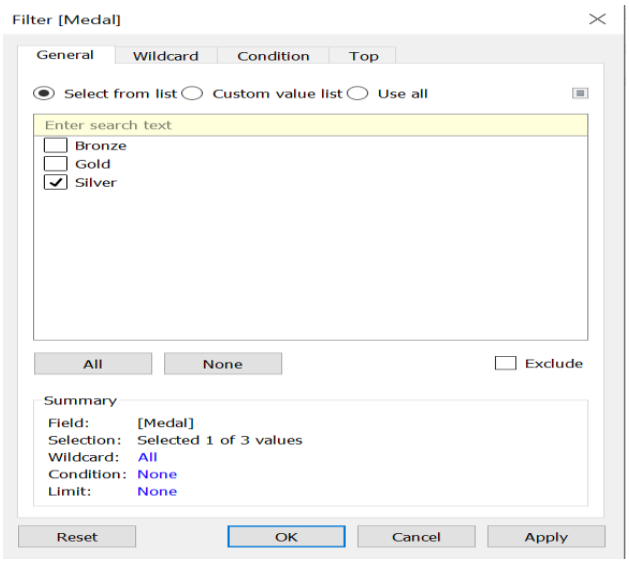
Right click on the SUM(Silvers) & go to Quick table calculation and change the table calculation to rank. Sort the data ascending.



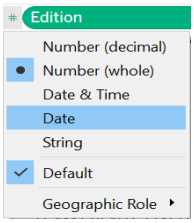
France is the country with 5th highest total Silver medal tally. Click on it & select keep only.



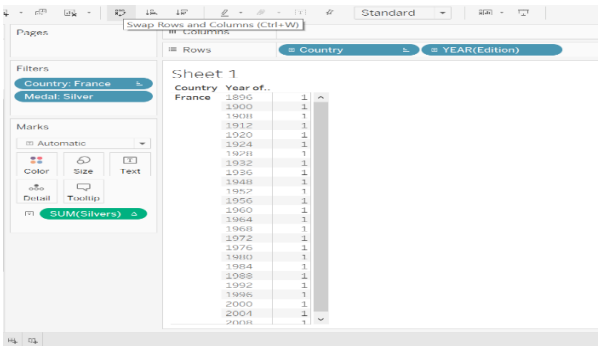
From “All Medalists” drag “Medal” to filter & check “Silver”. Click OK.



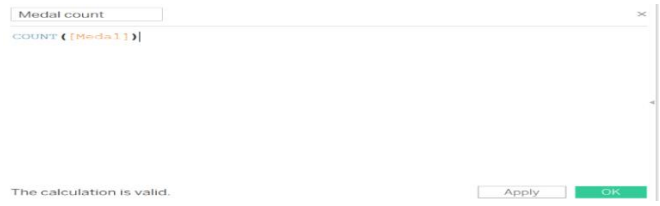
Change the data type of “Edition” to date.



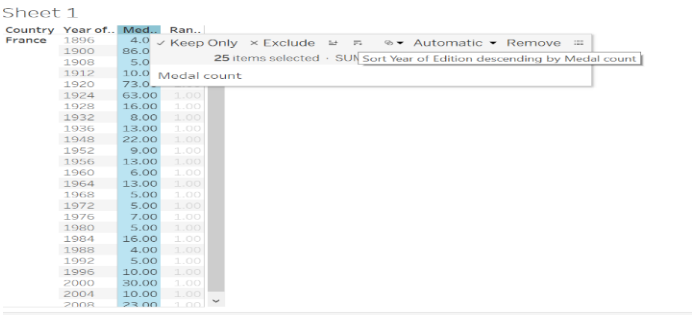
Add this Edition to rows. Swap the rows and columns. This will show the years in which France has won the Silver medals.



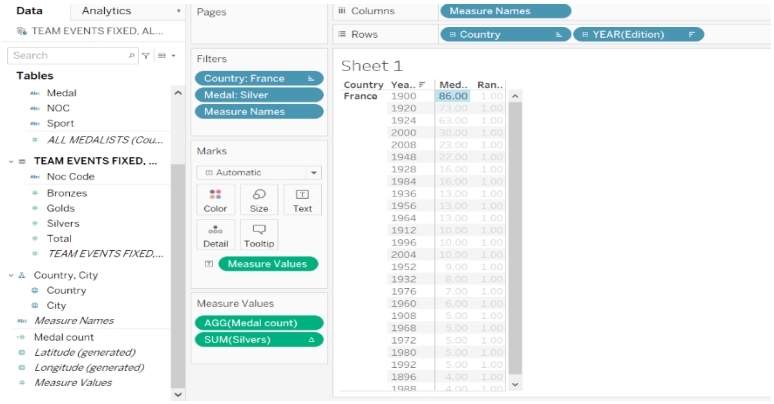
To find how many medals were won each year, create a calculated field for medal count.



Double click this to add this field to the sheet. Sort this field descending.



France won most Silver medals (86) in 1900.



If the 2 data sources are blended, with “All medalists” as secondary data source, * is displayed for “Edition”(year). This is because the Primary Data source field “country” has multiple possible values for secondary data source field “Edition” but blending can show only one matching value. This problem is avoided while using relationship.

Documentation: https://help.tableau.com/current/pro/desktop/en-us/multipleconnections_troubleshooting.htm#asterisks-show-in-the-sheet

3. What type of join is used by Tableau to show a viz with dimensions only when multi table data source is related?

a. Left join
b. Full outer join
c. Inner join
d. Right join

Documentation here: https://help.tableau.com/current/pro/desktop/en-us/relate_tables.htm#dimensiononly-visualizations