NIELSEN1 Data Connection

UNIVERSITY OF ARKANSAS SAM M. WALTON COLLEGE OF BUSINESS

TUTORIAL

Get Started with Tableau Desktop

Learn how to connect to data, create data visualizations, present your findings, and share your insights with others.

This tutorial walks you through features and functions of Tableau Desktop. As you work through this tutorial, you will create three views in a Tableau workbook. The steps you'll take is based on a Nielsen data set from the University of Arkansas Enterprise System group in the Information Systems Department.

Dataset Overview:

Table Name	Time Frame	Rows	Attributes	Size (GB)
FACT_Mkt2	n/a	29,317,123	31	11.431
FACT_Mkt4	n/a	32,524,761	32	12.682
FACT_Mkt5	n/a	29,471,326	31	11.491
FACT_Mkt8	n/a	39,468,344	31	15.388
MARKET	n/a	4	2	0.001
PERIOD	1/1/1900 to 1/1/2199	149	14	0.001
PRODUCT	n/a	530,794	22	0.282
7 TABLES			*163*	*51.277*
Platform data is currently available: Yes				

The dataset has a total of 131,312,501 records and 163 attributes distributed among 7 tables (to understand how FACT_Mkt Table relates to MARKET Table click here)

This tutorial shows you how to:

1. Connect directly to the NIELSEN1 dataset residing on the TERADATA system.
2. Prepare the dataset before working on it.
3. Create three visualizations based on an investigation of the sale value of products.

NOTE: This tutorial assumes you have been granted access to the University of Arkansas VMWare platform. Requesting access can be done from the Enterprise Systems website at the University of Arkansas (https://walton.uark.edu/enterprise/). The data used should not be downloaded to your personal drives. All files should remain on the Remote Desktop S: drive provided by the University of Arkansas. This is due to our agreement with the data providers. Questions can be directed to Ron Freeze at rfreeze@walton.uark.edu.

http://onlinehelp.tableau.com/current/guides/get-started-tutorial/en-us/get-started-tutorial- home.html

ESTIMATED COMPLETION TIME: 20-40 minutes

The Story

Suppose you are an employee for an information data company. You have just been hired as an analyst and are interested in understanding what products generate the most revenue in one of your customer companies (think a Walmart or a Target). More specifically you were asked to look at the East Census Trading Area (FACT_Mkt2 table).

First, you are interested in visualizing the revenue value of the Top 10 products and to which brands these belong. Next, you want to take the insights gained in the first visualization and find the total revenue generated by the brands that represent the Top 10 products. Then, you want to visualize the 10 types of product by quantity sold along with their revenue. Finally, you will filter this last visualization by the most valuable brand in the dataset which will be found in the second visualization.

In order to reach the desired visualizations, the following are the steps we will follow:

1. **CONNECTING TO THE DATA** (here)
   - Connect to **Teradata**
   - Connect to **NIELSEN1** database
   - Connect to the three tables: **PRODUCT, FACT_Mkt2** and **PERIOD**.

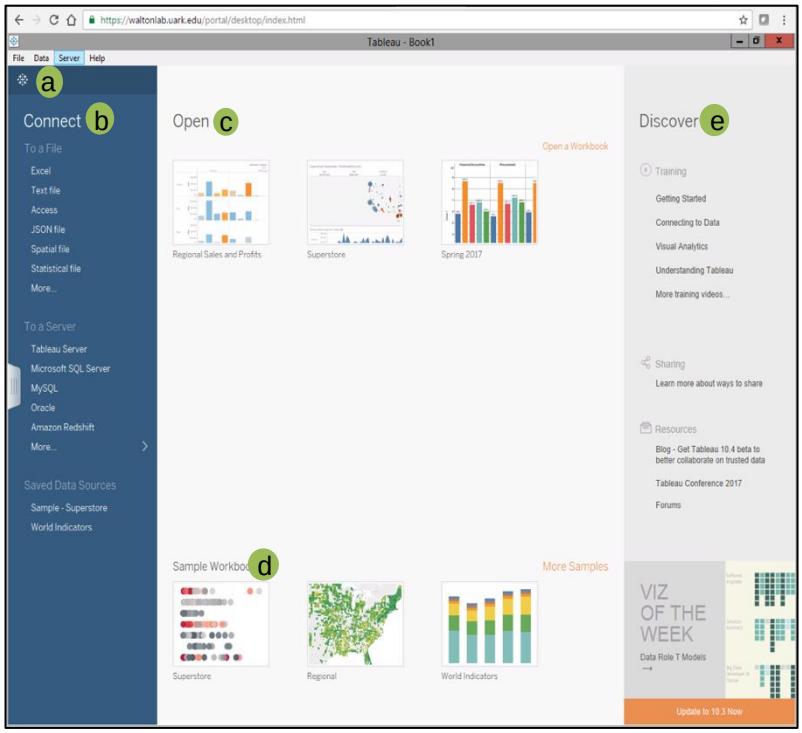
2. **PREPARING THE DATA** (here)
   - Use hide and filter tools to reach this list of attributes:
     - Dollars (Table: FACT_Mkt2)
     - Dollars Any Promo (Table: FACT_Mkt2)
     - Units (Table: FACT_Mkt2)
     - Period Short Desc (Table: PERIOD)
     - Period Level (Table: PERIOD)
     - Prod Short Desc (Table: PRODUCT)
     - Prod Brand Desc (Table: PRODUCT)
     - Level1 Desc (Table: PRODUCT)
     - Level2 Desc (Table: PRODUCT)
     - Level3 Desc (Table: PRODUCT)
     - Brand Owner Desc (Table: PRODUCT)

* For further understanding of the attributes listed above, please refer to the data dictionary appended at the end of the document.

3. **CREATE THE VISUALIZATIONS** (here)
   1. A column chart of the top 10 Products with their respective brands.
   2. Packed bubbles of Brands that represent the top 10 products.
   3. Side-by-side bars of top 10 types of products by quantity of units sold and their revenue.

Open Tableau Desktop and begin

This tutorial assumes that you have logged in to University of Arkansas VMWare platform. Select the **Start Windows** icon, look for **Tableau 2019.2** and click on it. Wait 10 seconds until the application opens. If an update Tableau window pops up, exit this window.



The first thing you see after you open Tableau Desktop is the **start PAGE**. Here, you select the connection that you want to use - how you will connect to your data

The start page gives you several options to choose from:

a. Click the Tableau icon in the  upper left-hand corner of any page to visit the start page at any time.

b. Under **Connect**, you can:

- Connect to data that is stored in a file, such as Microsoft Excel or Access.
- Connect to data that is stored on a server, such as Tableau Server, Microsoft SQL Server, or Google Analytics.
- Connect to a data source that you've connected to before.

*Tableau supports the ability to connect to a wide variety of data stored in a wide variety of places. The **Connect** pane lists the most common places that you might want to connect to, or click the **More…** link to see more options. **More on connecting to data sources** in the Learning Library (in the top menu).*

c. Under **Open**, you can open workbooks that you have already created.

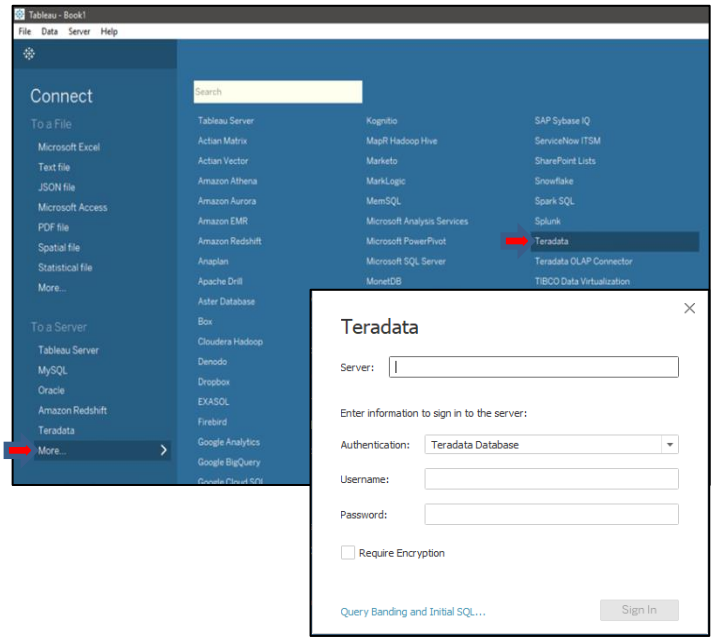
d. Under **Sample Workbooks**, view sample dashboards and worksheets that come with Tableau Desktop.

e. Under **Discover**, find additional resources like video tutorials, forums, or the "Viz of the week" to get ideas about what you can build.

NIELSEN1 Data Connection

Connect to Teradata

Under **Connect > To a Server**, select **More**. A new window will open, click on **Teradata** as shown in the figure alongside.



A window will ask you to enter the following information:

Server: 130.184.26.161

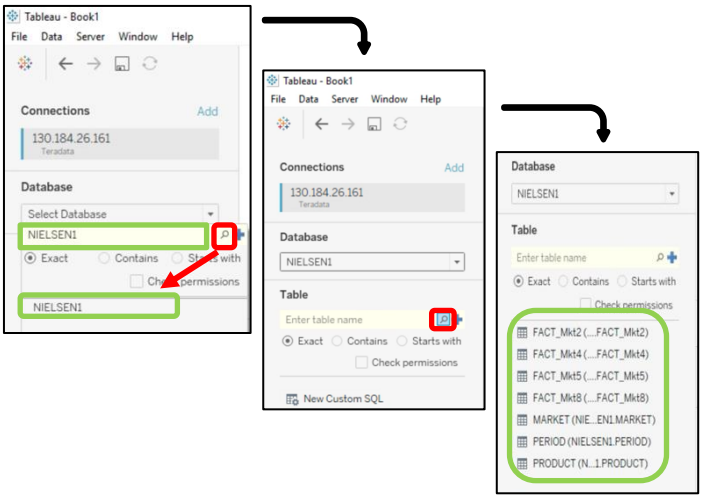
Username: *given to you by instructor*

Password: *given to you by instructor*

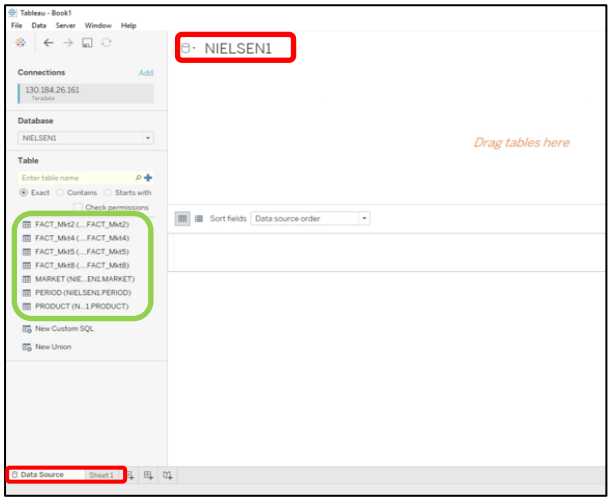
Connect to NIELSEN1

Now we have to access the **NIELSEN1** database through the panel to the left:

1. Type “NIELSEN1”, click on the search icon. A new “NIELSEN1” will appear below, click on it.
2. Once on the database, click on the search icon.
3. Finally, tables from the database should appear on the panel to the left.



Your window should look like the picture on the right. You are connected to NIELSEN1 database (circled in red). The left panel shows the tables (circled in green) in the database.



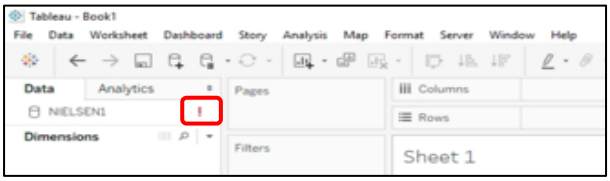
At the bottom left corner, there are two tabs named **Data Source** and **Sheet 1.** Click on **Sheet 1** and a window similar to the picture below will appear.

Sheet 1 does not currently have data. This is indicated by an exclamation point next to the database name (circled in red).

Updated by Matias Delay – Sept 2019

Created by Ron Freeze – June 2018

Click on the **Data Source** tab on the bottom left (circled in green). This will take you to the previous window where you connected to the Database and displayed the tables.

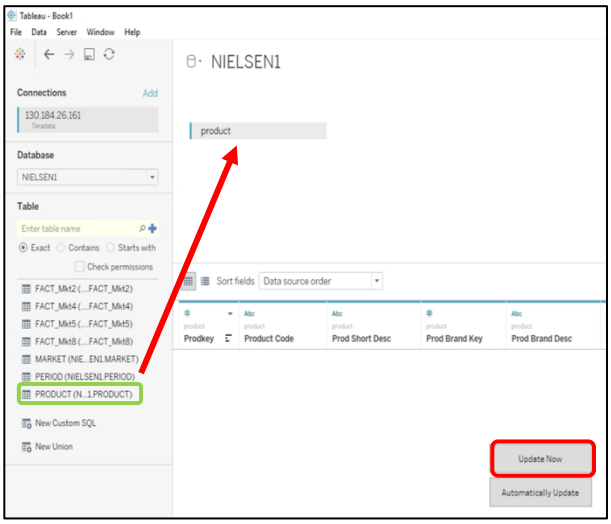


Connect to Product table

On the Data Source window:

4. Drag and drop the **PRODUCT** table on the left panel to the blank space at the top where is says "*Drag tables here*".
5. Click on **Update Now** (circled in green) and Tableau will fill the columns with data.
6. Click on **Sheet 1.**

   You will now note that you can see the table attributes assigned to **Dimensions** and **Measures**.



As a recap:

After you connect to your data, Tableau does the following:

- Opens a new worksheet. This is a blank slate where you create your first view.
- Automatically assigns data types (such as date, number, string, etc.) and roles (dimension or measures) to your data. (We'll talk more about these terms later.)
- Adds columns from your data source to the Data pane on the left-hand side. Columns are added as fields.

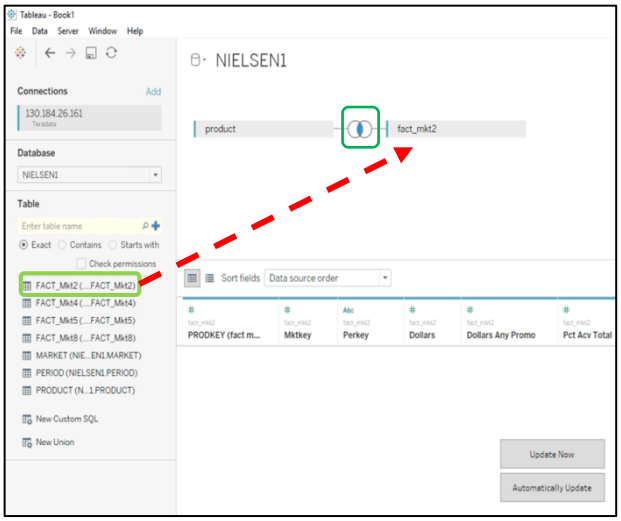
If you want to review details of your data, you can select the Data Source tab in the bottom left-hand corner. Here, you can view the first 1,000 rows of your data. What happens in Tableau stays in Tableau; the data is safe.

When you connect to your own data, you might need to do some prep work before connecting to it in Tableau. This is because Tableau makes assumptions about your data so that it can display it properly. With the FACT_Mkt2 table added, we have the first three variables needed for our analysis: Dollars, Dollars Any Promo, and Units.

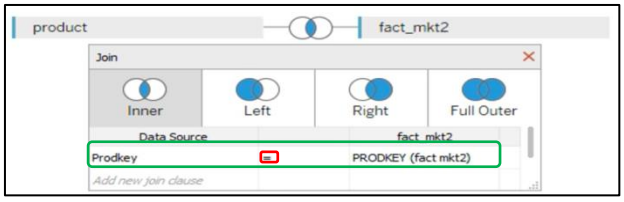
***Note**: If you navigated to Data Source to check out the details, just click on the tab for **Sheet 1** to get back to where you started.*

Add the FACT_Mkt2 table

To obtain the variables for the remainder of the analysis, we need to add and connect the **FACT_Mkt2** table to the **PRODUCT** table. The connection is possible since both tables share a single variable attribute: **Prodkey**.



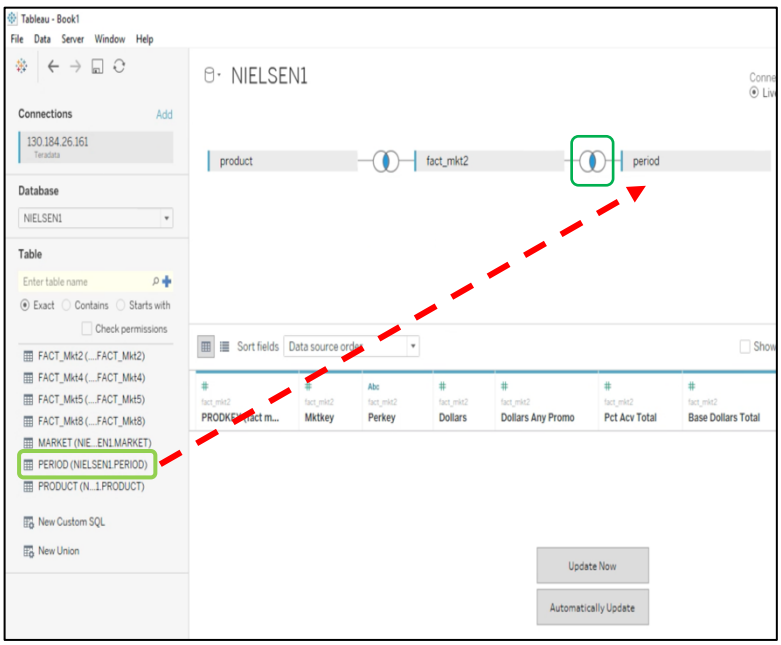
7. Return to the Data Source page.
8. Drag and drop **FACT_Mkt2** to the blank space like you did with **PRODUCT**.
9. The two intersecting circles (circled in green) mean that they were successfully connected. This is considered an inner join.
10. Right click on the join symbol. The popup shows all the different joins Tableau allows you to do. Here **PRODUCT** table is taken as 'Data Source' inner joining **FACT_Mkt2** table. Both have **ProdKey** as the common attribute joined by an equal sign (circled in red).

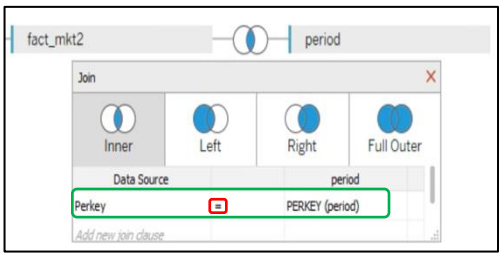


Now we have the attributes from both the **PRODUCT** table and the **FACT_Mkt2** table.

Add the PERIOD table

Finally, we need to add and connect the **PERIOD** table. Similar to what we just did, the connection will be with table **FACT_Mkt2.** This connection is possible since both tables share the single variable attribute: **Perkey**. Repeat the same steps as above:



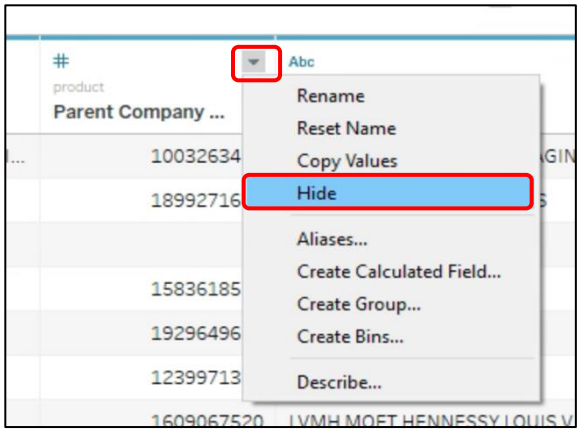


Preparing the Data

Hide Unneeded Fields

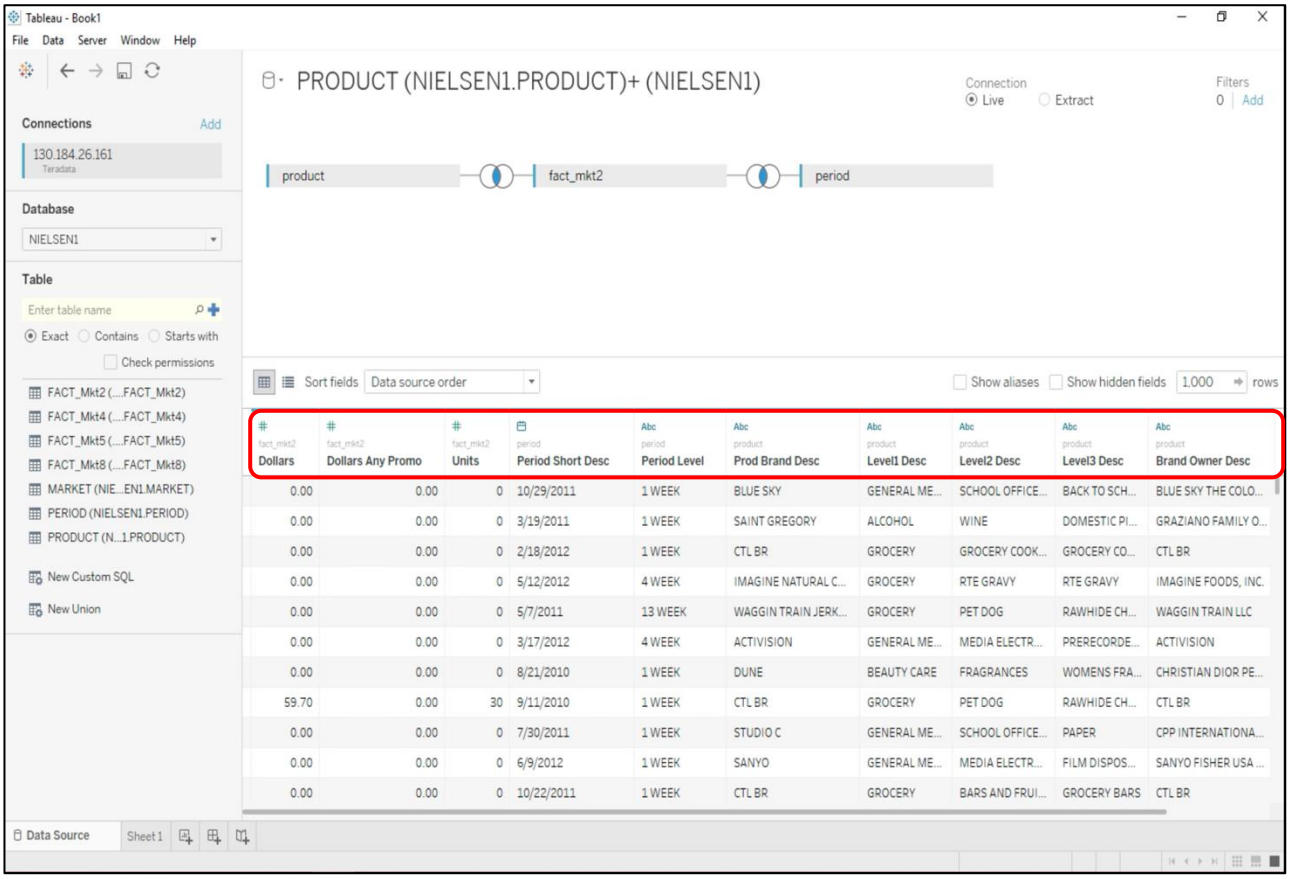
To get the list of attributes stated in The Story, we need to hide the ones we don't need:

1. Click the down arrow at the top right corner of each attribute not needed in the analysis.
2. Click on Hide and the attribute will no longer appear in the data.

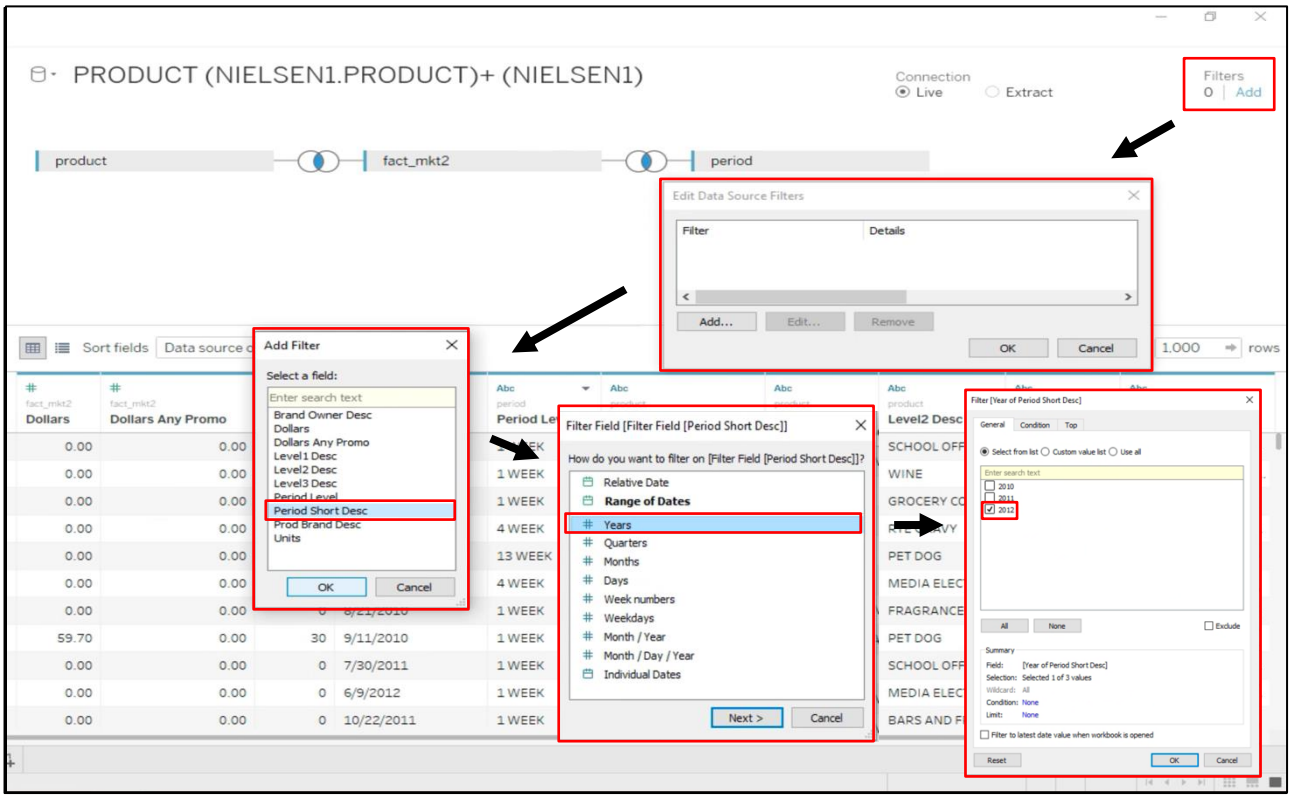


To undo this, click the 'Show hidden fields' box at the far right of the window and manually unhide the attribute.

After hiding all the unnecessary attributes and keeping only the ones mentioned (***Dollars, Dollars Any Promo, Units, Period Short Desc, Period Level, Prod Short Desc, Prod Brand Desc, Level1 Desc, Level2 Desc, Level3 Desc, Brand Owner Desc***) your screen should look like the following:



Filter Fields



On the picture above, at the top right corner, you can find a **Filters subtitle.**

3. Click on **Add.** A new window will open, click on **Add** again.
4. You are now in the 'Add Filter' window. Click on **Period Short Desc** and then **click OK.**
5. Your ae now in the 'Filter Field [Period Short Desc]' window. Click on **Years** (circled in red).
6. A window 'Filter [Period Short Desc]' will pop-up stating three are different values present in that field.
7. Click on the **2012 box** (circled in red) to only work with **Period Short Desc = 2012** and **click OK.** The data now is updated for only **Period Short Desc = 2012.**

We have finished organizing our data:

8. Click on **Sheet 1**, now you can start your visualizations.

Create the Visualizations

Top 10 Products by revenue

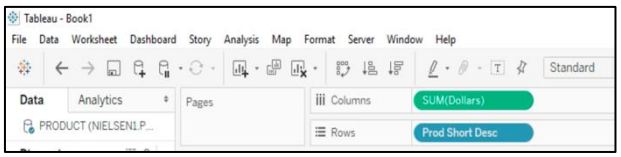
Create the column chart for the Top 10 Products in the dataset.

The following are the parameters you wanted for the exploration of the revenue value in your column chart.

- Top 10 Products in descending order.
- For the year 2012.
- The chart should be in US Dollars

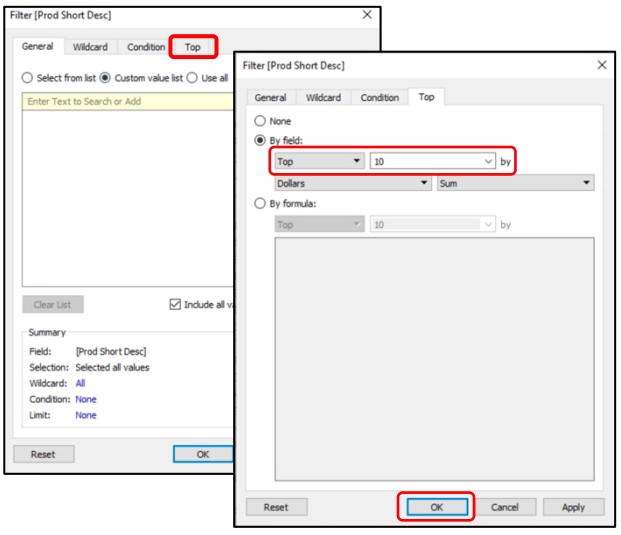
The parameters help set which dimensions and measures you are interested in using. Tableau will assume certain things for you as you create your visualization.

1. Start by dragging and dropping the measure of **Dollars** to the Columns cell and the **Prod Short Desc** measure to Rows cell.



Note: A warning message may appear when you drag Prod Short Desc to Rows. Click on 'Add all members' if this happens.

Since we only want the top 10 Products for the year 2012, we need to drag and drop, in order, the **Prod Short Desc** dimension and the **Period Short Desc** dimension to the Filters cell. A Filter [] pop-up will appear to select what is to be filtered.

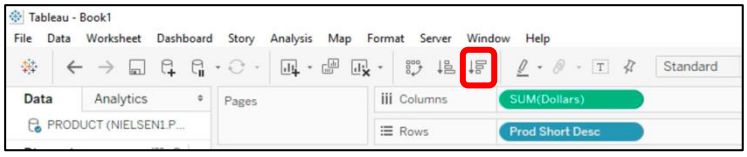


Drag **Prod Short Desc** to *Filters:*

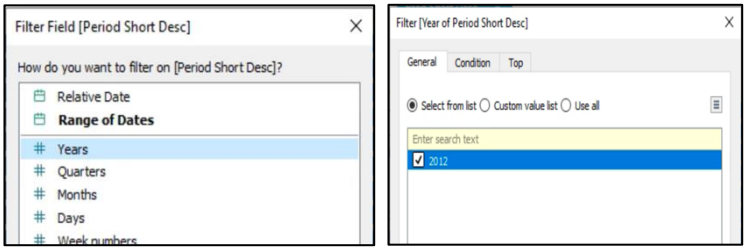
2. Select the *Top* tab (circled in red).
3. Select the radial button ***By field****:*
4. The Top 10 by **Dollars** Sum should already be selected.
5. Click *OK.*

The column is not currently in descending order.

6. Select descending on the top tool bar. (circled in red)
7. Drag **Period Short Desc** to *Filters*

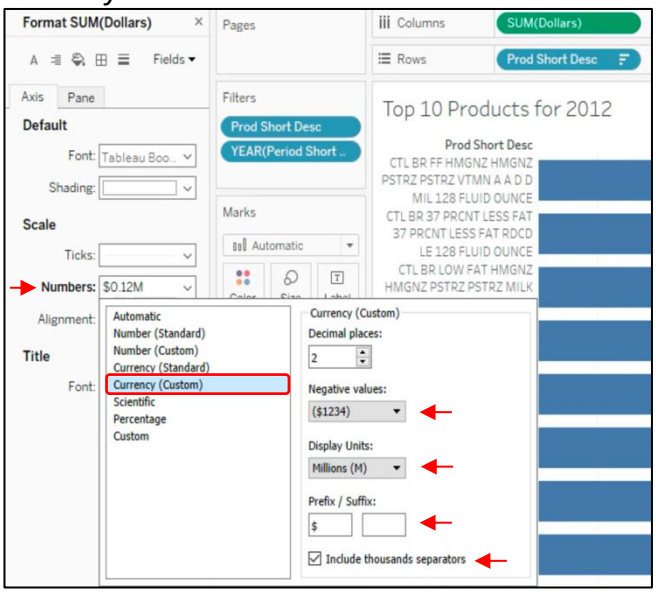


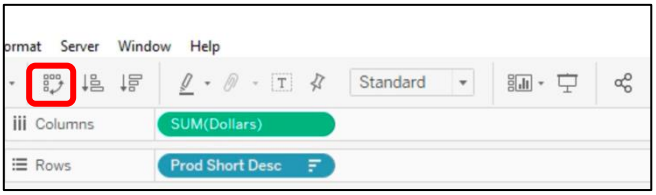
8. Select *Years* in Filter Field (highlighted in blue) and click Next.
9. You will notice that it is impossible to filter our data since is solely data for the year 2012. Select **2012,** Click *OK.*



At this point, we have our visualization but need to adjust the Title, the y-axis (currently our x-axis, see step 19) to reflect currency and the bars in order to see the Product spelling completely.

10. To adjust the Title, double click on the *Sheet 1* tab at the bottom
11. Rename *Sheet 1* to **Top 10 Products for 2012.**
12. Hit *enter* to complete.
13. To adjust the axis, right click on **Dollars** and select *Format* – The left navigation pane will change to allow you to format the y-axis.
14. Under Scale, select the down arrow on Numbers: and select Currency (Custom).
15. Change the *Decimal places:* to 0.
16. Change the *Units:* to Millions (M).
17. Verify the following (see screen shot):
    - Negative values: is ($1234).
    - Prefix / Suffix: is $.
    - Include thousands separators is checked.
18. Click off the pop-up to save settings and return to your worksheet.
19. To change the view of our column, click on the 'Swap rows to columns' box in the top tool bar (circled in red).



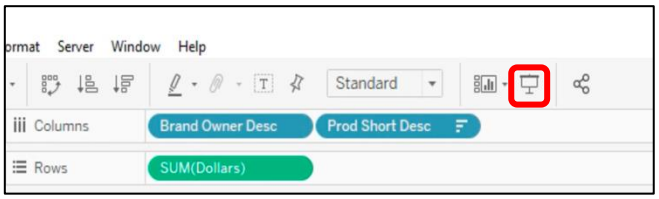


Currently, you have the 10 products in a column chart. Although, you may notice that the name of the products are way too long. We will add the **Brand Owner Desc** dimension to know what Brand these products belong to:

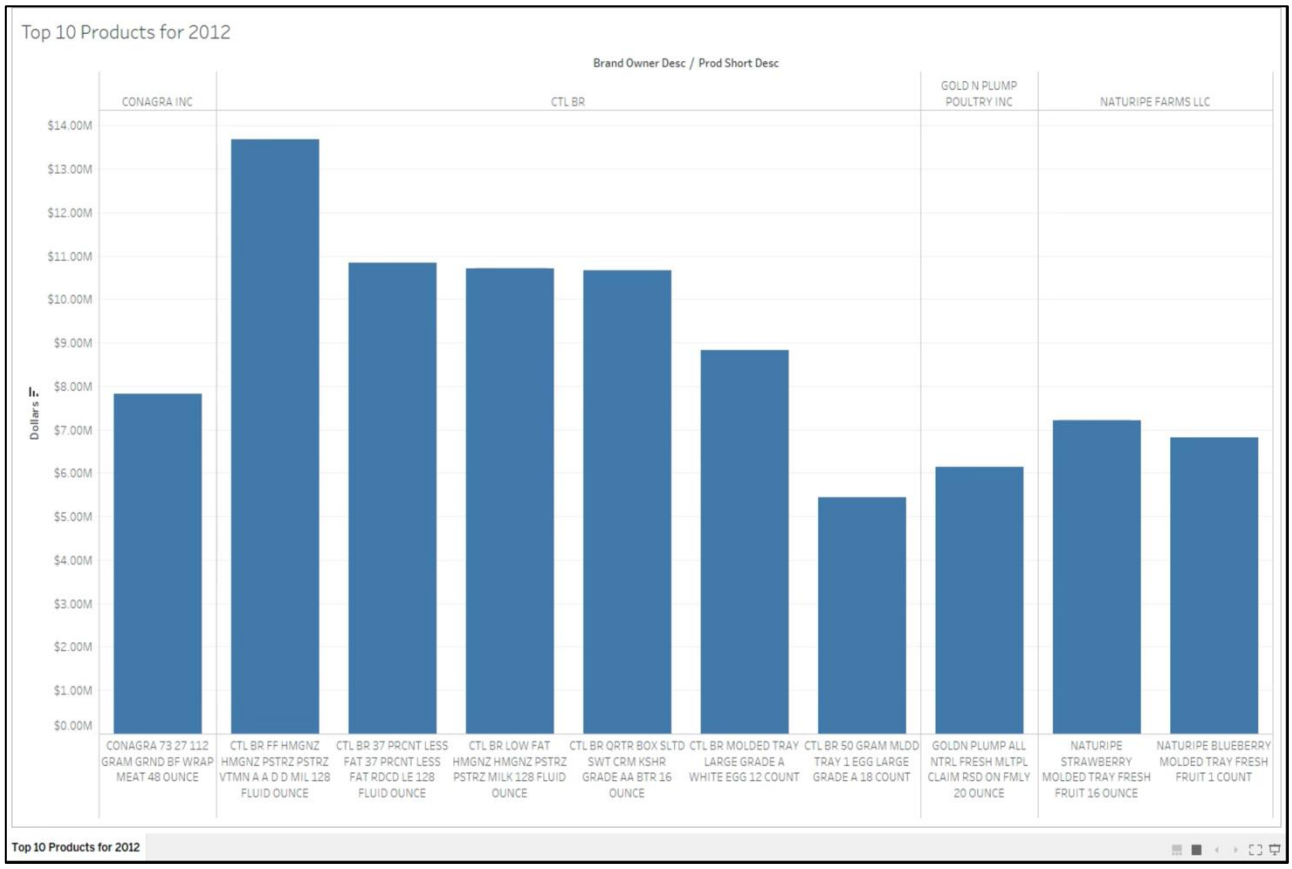
20. Drag **Brand Owner Desc** and drop it right before **Prod Short Desc** in the columns cell.

Now you have the top 10 products and you know to which Brand they belong.

21. To adjust the column widths, mouse over one of the separators between the brand owner desc at the top until you get the double ↔ arrow.
22. Right click and drag the column to the appropriate width.
23. Finally, to view your final product, click on Presentation Mode (F7) on the top tool bar (circled in red).



24. Your visualization should look similar to the following visualization:



You note that the product 'CLT BB FF HMGNZ HMGNZ PSTRZ PSTRZ VTMN A A DD MIL 128 FLUID OUNCE', which could potentially be 'Vitamin A D Milk' of 128 ounces from Brand 'CTL BR' is the product that generated the highest revenue at around $13.7 Million. You can drag the **Dollars** measure and drop it on the **Color** box under Marks. This will color your graph as the picture below. If you want to choose a different color, simply click on **Color** and change it to the one you prefer.

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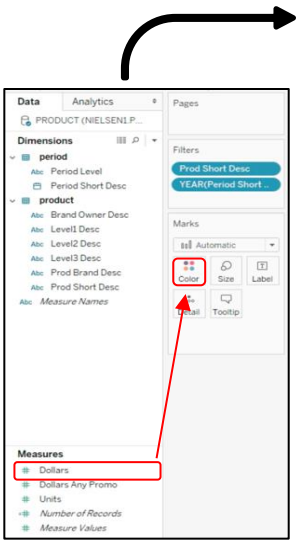
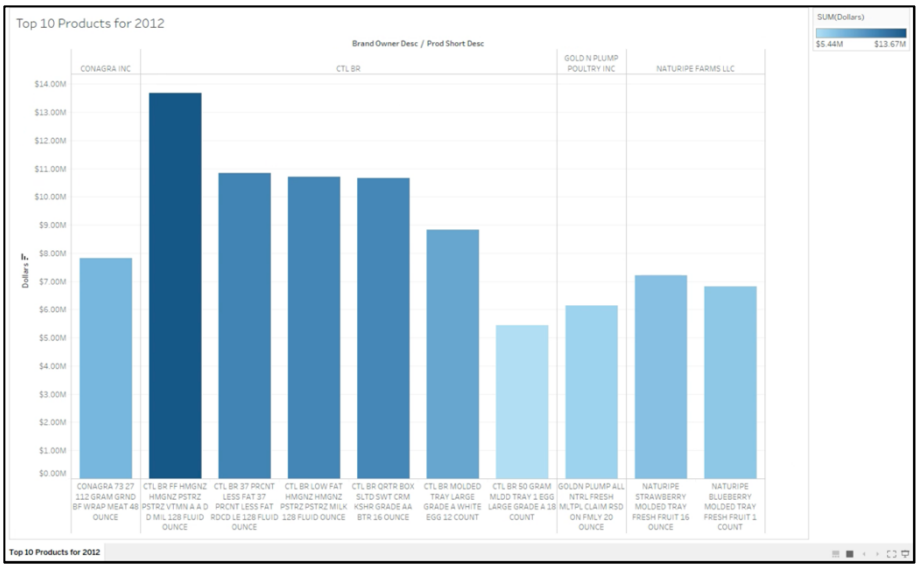
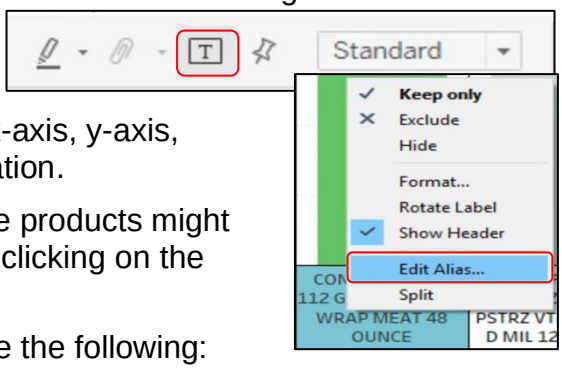


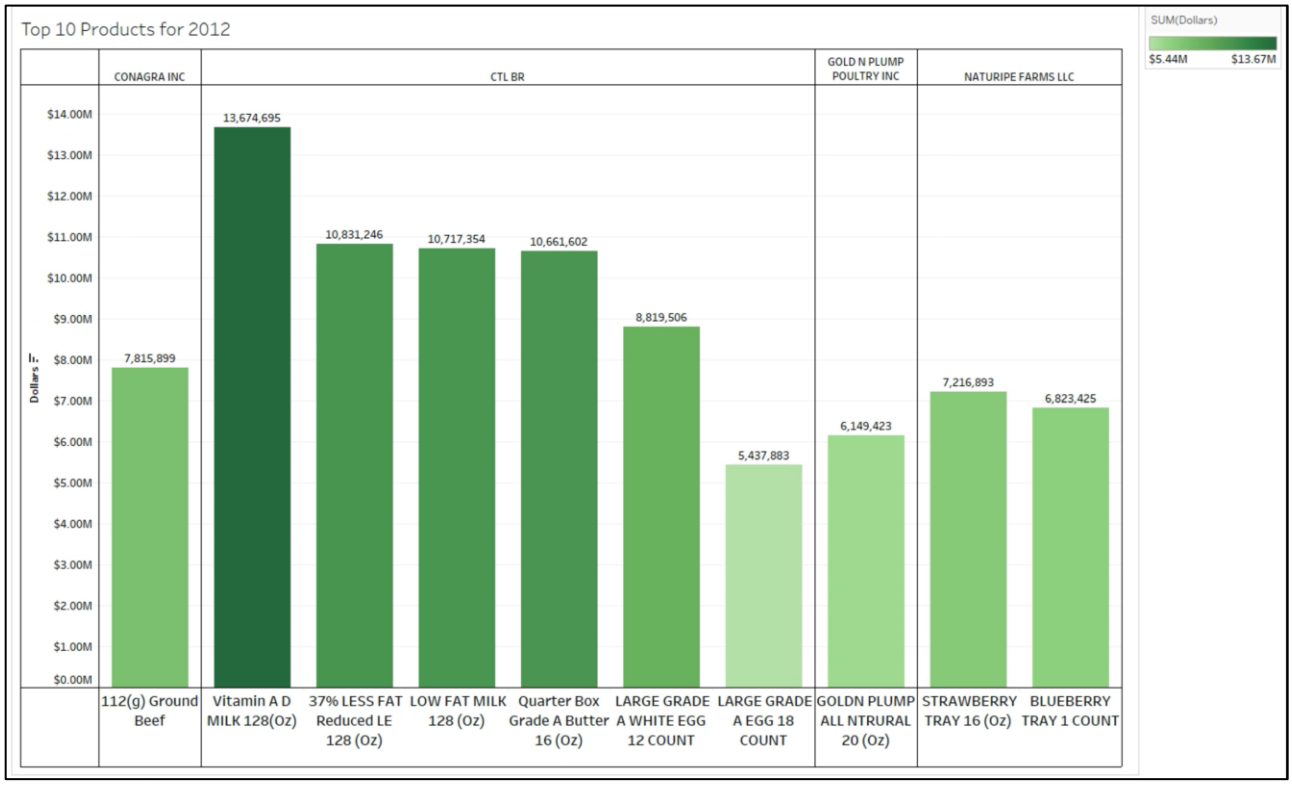


To make your visualization more appealing to your boss do the following:



25. Click on the label box at the top of the window above 'Columns')
26. Right click on different parts of your chart (x-axis, y-axis, inside your graph) and format your visualization.
27. Finally, since you know how the name of the products might be arranged, edit the alias of these by right-clicking on the names and changing them.

On your own, try to make your visualization look like the following:



Updated by Matias Delay – Sept 2019 Created by Ron Freeze – June 2018

Brands that represent top 10 products

Now that you have the top 10 products by revenue generated in Dollars, you want to look more in depth at the companies that these products represent and how much revenue they generated with packed bubbles. In your previous visualization, you have the **Brand Owner Desc** of the top 10 products which will guide you in this part.

1. Click on the tab to the right of your **Top 10 Products for 2012** tab to create a *New Worksheet.*
2. Tableau creates a new *Sheet 2.*
3. Double click on *Sheet 2* and rename it to **2012 Brands that represent top 10 products.**

Tableau allows multiple ways to create visualizations. For each Dimension and Measure, you can double click on your selected variables and allow Tableau to place and create your visualization.

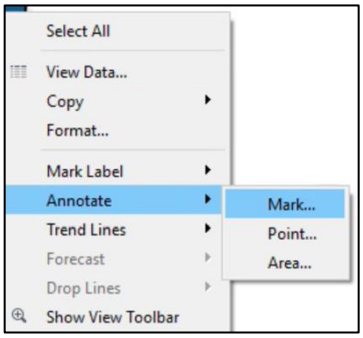
4. Double click on **Brand Owner Desc**.
5. Double click on **Dollars**.
6. Do not filter **Visit Date** since we discovered the only date available is 2012.

Tableau automatically populated a table with all Brands along with their aggregate revenue in Dollars. However, we are interested in a visualization to show each Brand as bubbles and that the size of these bubbles is related to the aggregate amount of revenue generated for all the products sold. To do this, we need to change the visualization to a packed bubbles representation.

7. Locate **Show Me** at the top right of the page and select the indicated visualization (circled in red).
8. Repeat the same step as above and drag and drop **Dollars** to the **Color** box under Marks.
9. Go to Presentation Mode (F7).

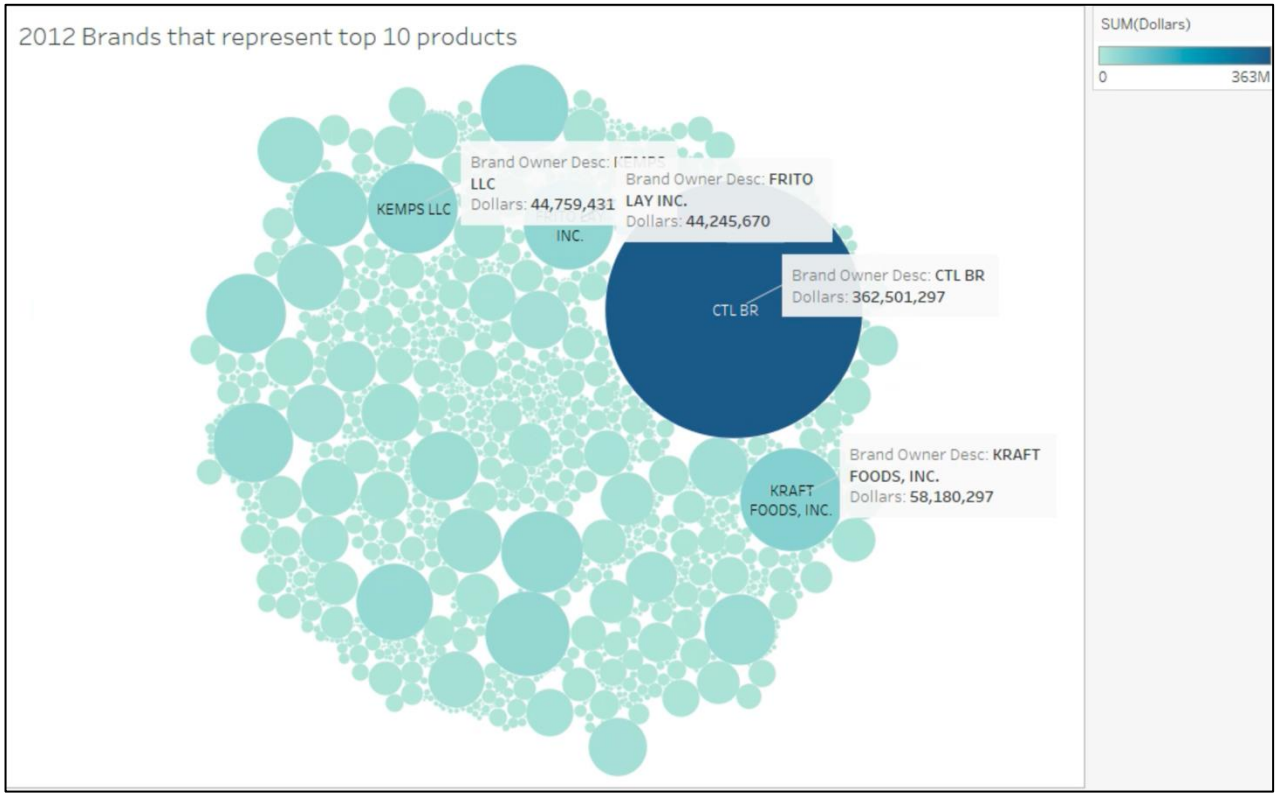
The visualization clearly defines CLT BR' as the brand that generated the highest revenue in 2012. For presentation purposes do the following:

10. On the top tool bar, locate the drop-down menu that says 'Standard' and change it to **Fit Width.**
11. Now, click on the **CLT BR** bubble and holding shift, click on the other bubbles where you see a text like 'Frito Lay Inc.' and 'Kraft Foods Inc.'.
12. Right click on any of the bubbles selected and click on **Annotate->Mark…** (highlighted in figure alongside)
13. An **Edit Annotation** window will show up where you



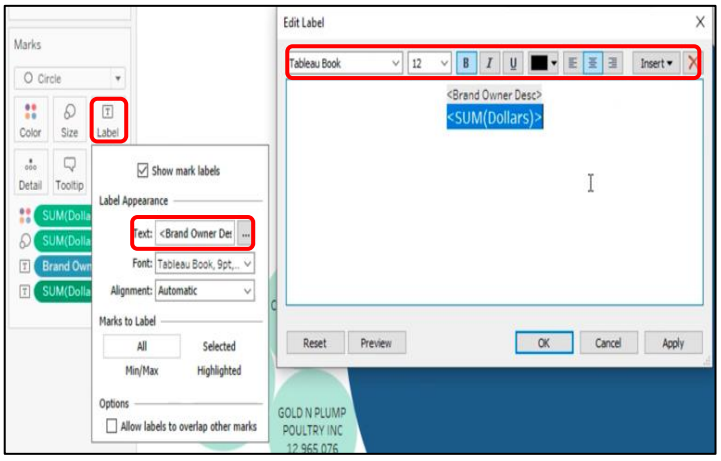
can modify how you want your annotation to look. Click Ok.

14. Your visualization should currently look like this:



For the purpose of this exercise, we need to filter our Brands by the ones that represent our top 10 products. In that sense, we need to filter our data:

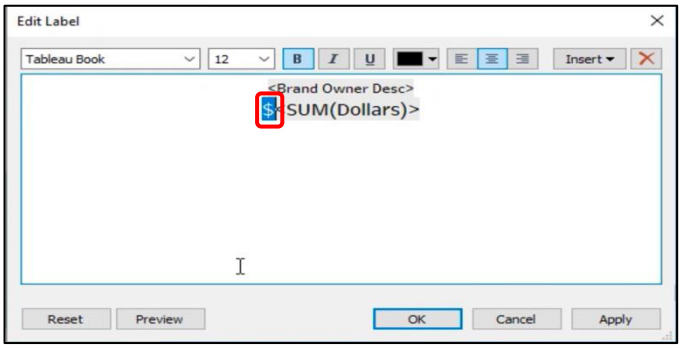
15. Drag **Brand Owner Desc** to Filters like we did above with Date.
16. Be sure that the you are in **General** tab and with **Select from list** clicked.
17. Click on **None** and find all the brands that represent the top 10 products and check their respective boxes.
18. Finally, drag **Dollars** from measure and drop it in the **Label** box under Marks palette.
19. Click on the **Label** box and modify the label of your **Dollars** variable as shown in the figure alongside.



Note: You can change several characteristics of your label. For the purpose of this exercise, I want to highlight the value amount of Dollars, so I decided to bold my **SUM(Dollars)** label.

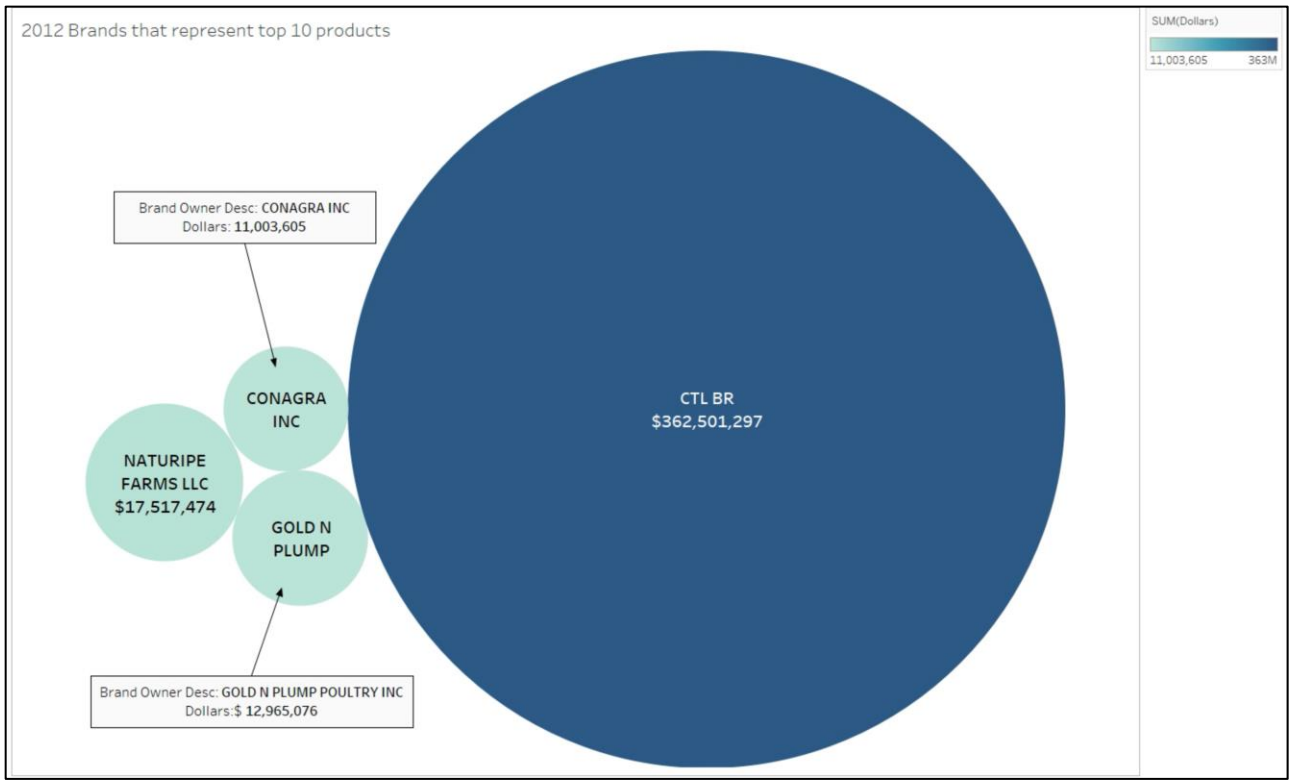
20. Add any annotation if needed, right click on the annotation

box and click on **Format.** In the left panel, you can format your annotation box.



Since we want our visualization to show the revenue in Dollars, repeat step 19 but now add a dollar sign ($) as on the picture alongisde:

21. Finally, to view your final product, click on Presentation Mode (F7).



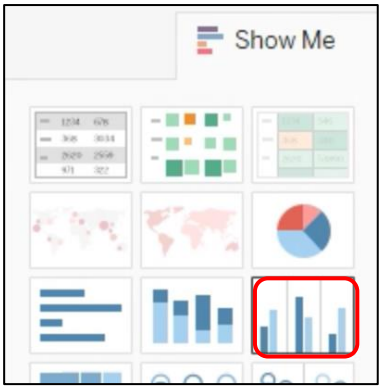
Top 10 type of products by units sold and their revenue

Using the **Level2** description, you want to know which type of products were sold the most during 2012. Moreover, you want to know the quantity and the revenue it generated.

1. Create a new worksheet and name it; **Top 10 type of products by units sold and their revenue for 2012**.
2. Move **Level2** dimension to Columns and **Units** measure to Rows.
3. Filter **Level2** dimension like we did above to the top 10 products per units sold.
4. Click on the descending order box on the tool bar.

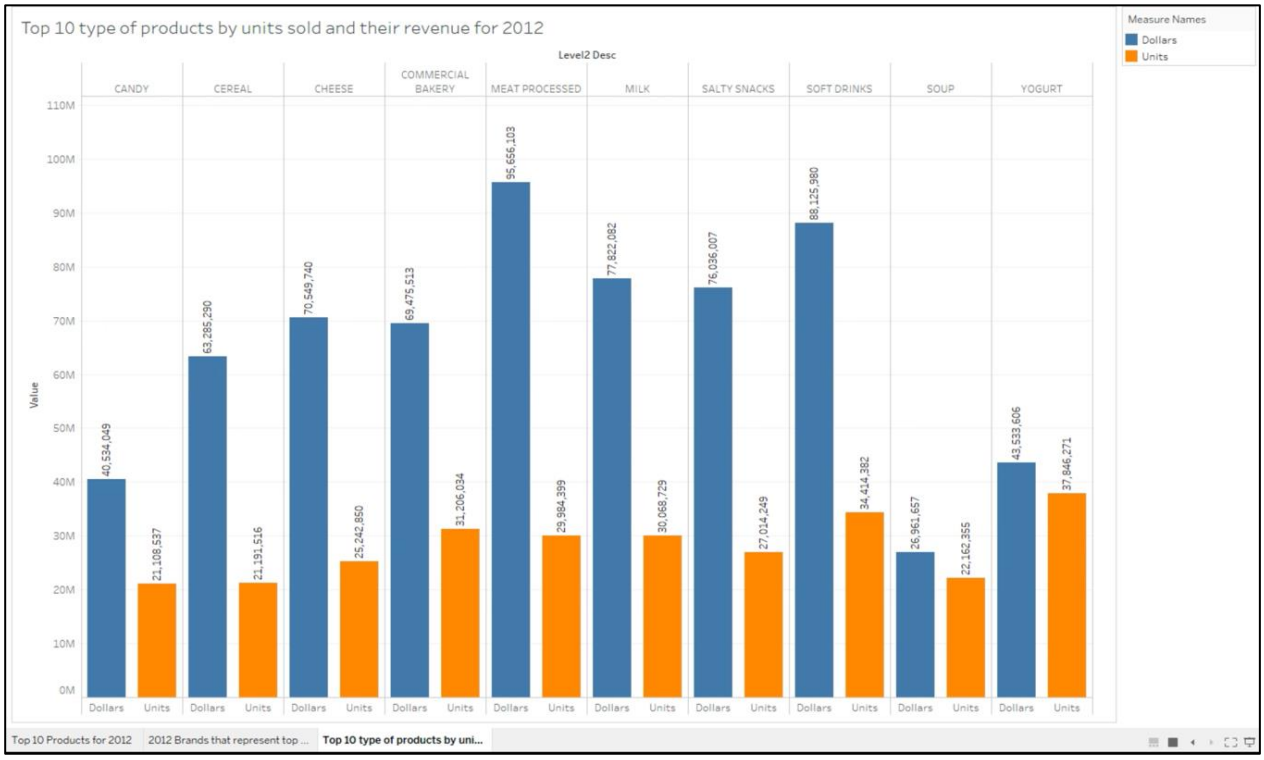
Now you should have a column chart with the top 10 products by units sold being: Yogurt, Soft Drinks, Commercial Bakery, Milk, Meat Processed, Salty Snacks, Cheese, Soup, Cereal, and Candy.

What you want to do now is to compare these results with the dollar amount raised per type of product.



5. Drag **Dollars** measure and place it next to **Units.**
6. Click on **Show me** like you did above and choose the figure shown alongside circled in red.
7. Click on the **Label** box and check the 'Show marks label' box.

Your window should now look like this:

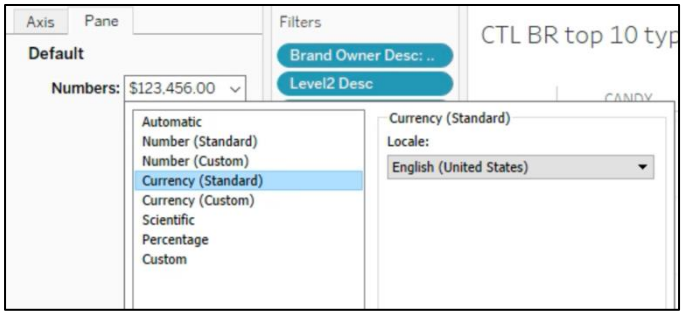


Now because you found that **CTL BR** is the brand that sells the most, you are interested in comparing these results to only CTL BR. Repeat the steps above, but before do the

following:

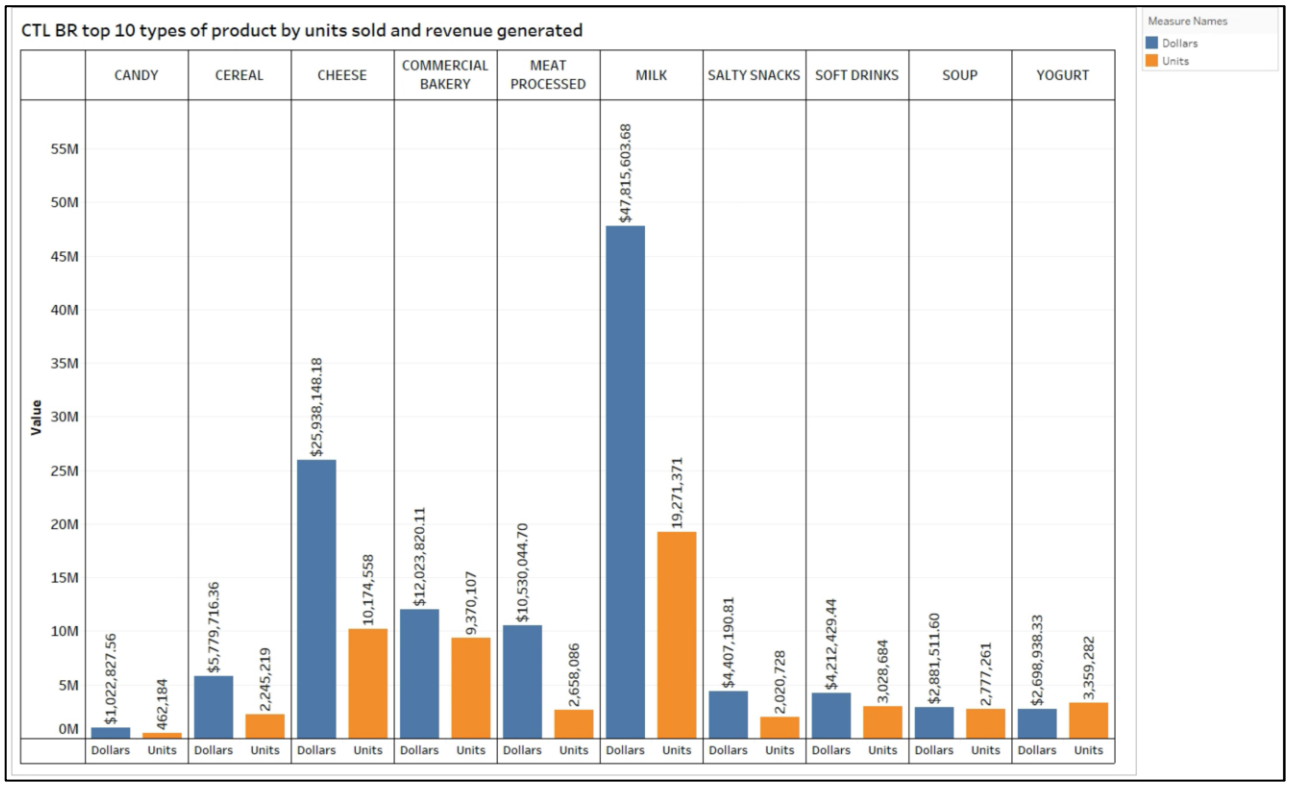
8. Create a new worksheet and name it: **CTL BR top 10 types of product by units sold and revenue generated.**

Before starting the steps above, filter **Brand Owner Desc** to only CTL BR.



9. Right click on '**SUM(Dollars)'** under Measure Values and change the **'**Numbers' to **Currency (Standard)** like on the figure alongside.

10. Finally, right click on different places of the visualization and change the format. You should aim to have a visualization that looks like the following:



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Data Dictionary

FACT_MKT Tables

FACT_MKT_Tables	Description	Example Value
PRODKEY	Unique identifier for consumer products	3,967,155
MKTKEY	Sales market identifier	5
PERKEY	Specific time period identifier for when products were sold	201102904
DOLLARS	Total Dollars raised from sale of a product in the defined time period	$1,000.32
DOLLARS_ANY_PROMO	Total Dollars raised from the sale of a product in the defined period among products under store promotion	$943.43
PCT_ACV_TOTAL	All Commodity Volume percentage	96
BASE_DOLLARS_TOTAL	Hypothetical Total Dollars expected to be raised in the absence of all store promotions	$904.41
UNITS	Total number of units sold of a given product in the defined time period	538
UNITS_ANY_PROMO	Total number of units sold of a given product in the defined time period among products under store promotion	430
BASE_UNITS_TOTAL	Hypothetical units expected to be sold in the absence of all store promotions	226
DOLLARS_PY	Total Dollars raised from sale of a product in the defined time period in the previous year	$956.65
DOLLARS_ANY_PROMO_PY	Total Dollars raised from sale of a product in the defined time period in the previous year among products under store promotion	$875.44
PCT_ACV_TOTAL_PY	All Commodity Volume percentage in the previous year	97
BASE_DOLLARS_TOTAL_PY	Hypothetical Total Dollars expected to be raised in the absence of all store promotions in the previous year	$768.54
UNITS_PY	Total number of units sold of a given product in the defined time period in the previous year	450
UNITS_ANY_PROMO_PY	Total Dollars raised from the sale of a product in the defined period among products under store promotion in the previous year	345
BASE_UNITS_TOTAL_PY	Hypothetical units expected to be sold in the absence of all store promotions in the previous year	222
DOLLARS_RM	Total Dollars raised from sale of a product in the defined time period in the rest of the market (all other companies)	$1,200

FACT_MKT_Tables	Description	Example Value
DOLLARS_ANY_PROMO_RM	Total Dollars raised from the sale of a product in the defined period among products under store promotion in the rest of the market (all other companies)	$1,100
PCT_ACV_TOTAL_RM	All Commodity Volume percentage in the rest of the market (all other companies)	84
BASE_DOLLARS_TOTAL_RM	Hypothetical Total Dollars expected to be raised in the absence of all store promotions in the rest of the market (all other companies)	$865.43
UNITS_RM	Total number of units sold of a given product in the defined time period in the rest of the market (all other companies)	900
UNITS_ANY_PROMO_RM	Total number of units sold of a given product in the defined time period among products under store promotion in the rest of the market (all other companies)	840
BASE_UNITS_TOTAL_RM	Hypothetical units expected to be sold in the absence of all store promotions in the rest of the market (all other companies)	600
DOLLARS_RM_PY	Total Dollars raised from sale of a product in the defined time period in the previous year in the rest of the market (all other companies)	$456.32
DOLLARS_ANY_PROMO_RM_PY	Total Dollars raised from sale of a product in the defined time period in the previous year among products under store promotion in the rest of the market (all other companies)	$345.21
PCT_ACV_TOTAL_RM_PY	All Commodity Volume percentage in the previous year in the rest of the market (all other companies)	73
BASE_DOLLARS_TOTAL_RM_PY	Hypothetical Total Dollars expected to be raised in the absence of all store promotions in the previous year in the rest of the market (all other companies)	$698.32
UNITS_RM_PY	Total number of units sold of a given product in the defined time period in the previous year in the rest of the market (all other companies)	485
UNITS_ANY_PROMO_RM_PY	Total Dollars raised from the sale of a product in the defined period among products under store promotion in the previous year in the rest of the market (all other companies)	432
BASE_UNITS_TOTAL_RM_PY	Hypothetical units expected to be sold in the absence of all store promotions in the previous year in the rest of the market (all other companies)	344
MARKET Table	Description	Example

MKTKEY	Sales market identifier	5
FACT_MKT_Tables	**Description**	**Example Value**
MARKET_DESC	Text description of the sales market	South Census TA
PERIOD Table	Description	Example
PERKEY	Specific time period identifier for when products were sold (Period Key)	2012012101
PERIOD_LONG_DESC	Text defining the Period Key	WEEK ENDING 2012-01-21
PERIOD_SHORT_DESC	Date when the Period Key ends	1/21/12
PERIOD_LEVEL	Length of the Period Key	1 WEEK
WEEK_END_DATE	Ending day of the Period Key	1/21/12
FOURWEEK_KEY	Four-week long Period Key identifiers	2012012104
FOURWEEK_END_DATE	Ending day of the four-week long Period Key	1/21/12
THIRTEENWEEK_KEY	Thirteen-week long Period Key identifiers	2012020413
THIRTEENWEEK_END_DATE	Ending day of the thirteen-week long Period Key	1/21/12
TWENTYSIXWEEK_KEY	Ending day of the twenty-six-week long Period Key	2012020426
TWENTYSIXWEEK_END_DATE	Ending day of the twenty-six-week long Period Key	1/21/12
FIFTYTWO_WEEK_KEY	Identifier of the given Period Key in the previous year period	2012080452
FIFTYTWO_WEEK_END_DATE	Ending day of the fifty-two-week long Period Key	1/21/12
PREVIOUS_YEAR	Fifty-two-week long Period Key identifiers	2011012201
PRODUCT Table	Description	Example
PRODKEY	Unique identifier for consumer products	3,777,132
PRODUCT_CODE	Unique identifier company code for products	7124917430
PROD_SHORT_DESC	Text description of products	Tyson Meat 80 Ounce
PROD_BRANK_KEY	Unique identifier for the brand to which a product belongs	1,695,403,212
PROD_BRAND_DESC	Text name of a product' brand	Tyson
BASE_SIZE	Numeric size of a given product	80
BASE_SIZE_DESC	Unit used for quantifying a product unit's size	Ounce
PACKAGE_DESC	Text code for the type of container used for the product	TRY IN WRP PLSTC

PACKAGE_SHAPE	Specific product container type	Tray in Wrap
LEVEL1_KEY	Unique product group identifier, Level 1	28
FACT_MKT_Tables	**Description**	**Example Value**
LEVEL1_DESC	Text description of the first level product group	Meat
LEVEL2_KEY	Text description of the second level product subgroup	307
LEVEL2_DESC	Unique product group identifier, Level 2	MEAT OFFALL
LEVEL3_KEY	Unique product group identifier, Level 3	1,492
LEVEL3_DESC	Text description of the third level product subgroup	POULTRY OFFALL
BRAND_OWNER_KEY	Unique identifier for the company owning the product's brand	459,840,321
BRAND_OWNER_DESC	Text name of the company owning the product's brand	Tyson Foods Inc
PARENT_COMPANY_KEY	Unique identifier for the brand owner's parent company	459,840,321
PARENT_COMPANY_DESC	Text name of the brand owner's parent company	Tyson Foods Inc
BRAND_HI_KEY	Unique Identifier for the brand owner's common name	1,695,403,212
BRAND_HI_DESC	Text name for the brand owner's common name	Tyson Foods Inc
BRAND_TYPE_IND	Binary indicator to indicate externally or internally produced products (0=External, 1=Internal)	0

FACT_MKT Tables Relationships