

# Module 4: Data Visualization

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## Demo - 1

**edureka!**

## Data Visualization and Key Performance Indicators

**Summary:** In the exercises for this module, we will use the setup so far to create some visualizations from the data and use the easy-to-use visualization methods available on the Power BI desktop.

**Scenario:** The data set is about a chocolate company. They provided five months of data for a single year. They want to increase their sales and identify the reason for sales growth.

**Data set:** You have been provided with a *1910\_m4\_demo\_dataset\_v1.0.xlsx* file which contains the data divided into four tables: **locations**, **people**, **products**, and **sales**. Each table contains data related to the chocolate company.

*locations* table:

- **Geo:** It represents the country.
- **Region:** Represent the region where the country lies, such as **Asia**, **America**, and **Europe**.

*people* table:

- **Salesperson:** The person who sells a particular product is called a salesperson.
- **Team:** The name of the team belongs to a salesperson. (**Yummies**, **Delish**, and **Juices**)

*products* table:

- **Category:** Types of chocolate they made. (**Bites**, **Bars**, and **Other**)
- **Cost per box:** Manufacturing cost of a particular box (N number product) in dollars.
- **Product:** Variants of different types of chocolate.

*sales* table:

- **Amount:** Sales made by the salesperson on a particular day in dollars.
- **Boxes:** Number of boxes sold by a salesperson.
- **Customers:** Number of different customers who bought that product.
- **Date:** Selling date of the product.
- **Geography:** It represents the country.
- **Product:** Variants of different types of chocolate.
- **Salesperson:** The person who sells a particular product is called a salesperson.

## Question

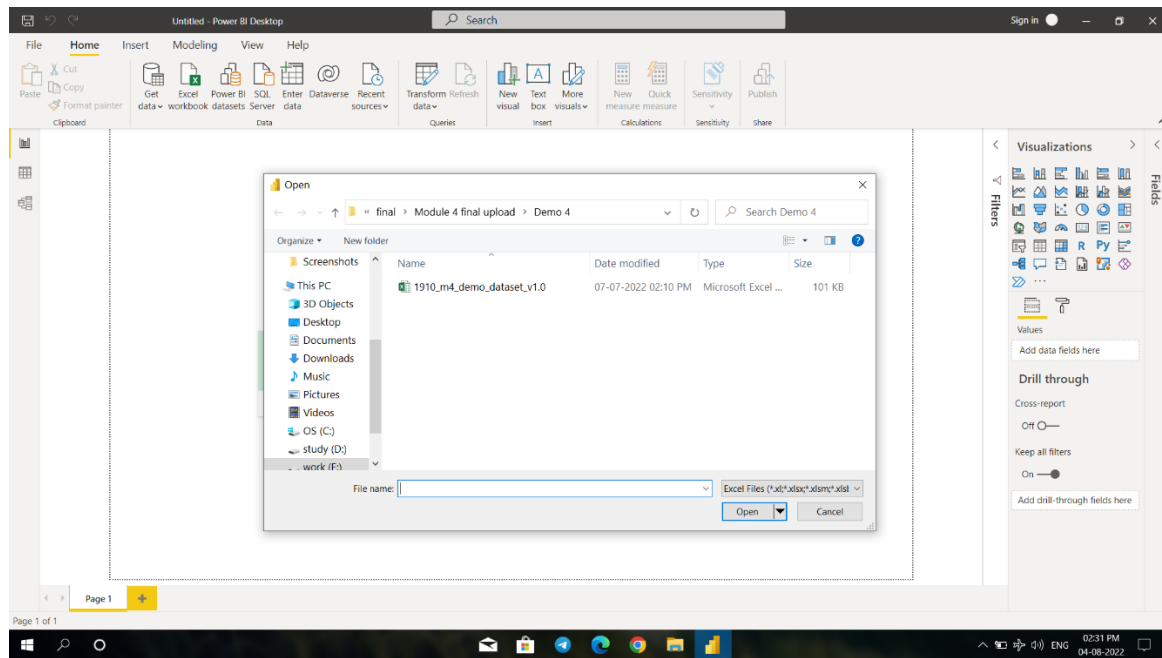
Follow the instructions, create a good dashboard, and solve the questions.

1. Import datasets and create a relationship between them based on standard fields.
  - i. from location (Geo) >> sales (geography)
  - ii. from people (salesperson) >> sales (salesperson)
  - iii. from Product(product) >> sales(product)
2. Based on the product cost price and the number of boxes sold by the salesperson, find out the cost price, create a new column, and store it in it.
3. Create new measures and find the “Total Cost” and “Total Amount”.
4. Based on “Total Cost” and “Total Amount” create a new measure, “Total profit” and find “Total Profit Margin” in percentage.
5. Create cards for “Total Cost”, “Total Amount”, “Total profit”, and “Total Profit Margin”.
6. Find out the “Manufacturing Cost” and “Total Selling Amount” by each country.
7. Find out the total boxes sold in each region of the world for each category of chocolate.
8. Find out the total selling contribution by each team.
9. With the help of a line chart, find out the total profit of each category of chocolate by each month.
10. Make KPI for how much it costs, and the total amount of chocolate sold and find out in may month’s target is achieved or not.
11. Find the total selling amount by each day and find a trend.
12. add a slicer for sales person’s name and months (Date).

## Solution

1. Import data sets and create a relationship between them based on the standard fields.

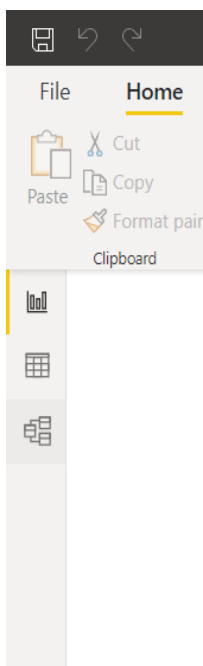
**Step 1:** Open **Power BI**, click on **Import data from excel** and locate your file. Then click on **Open**, select **Tables**, and then **Load**.

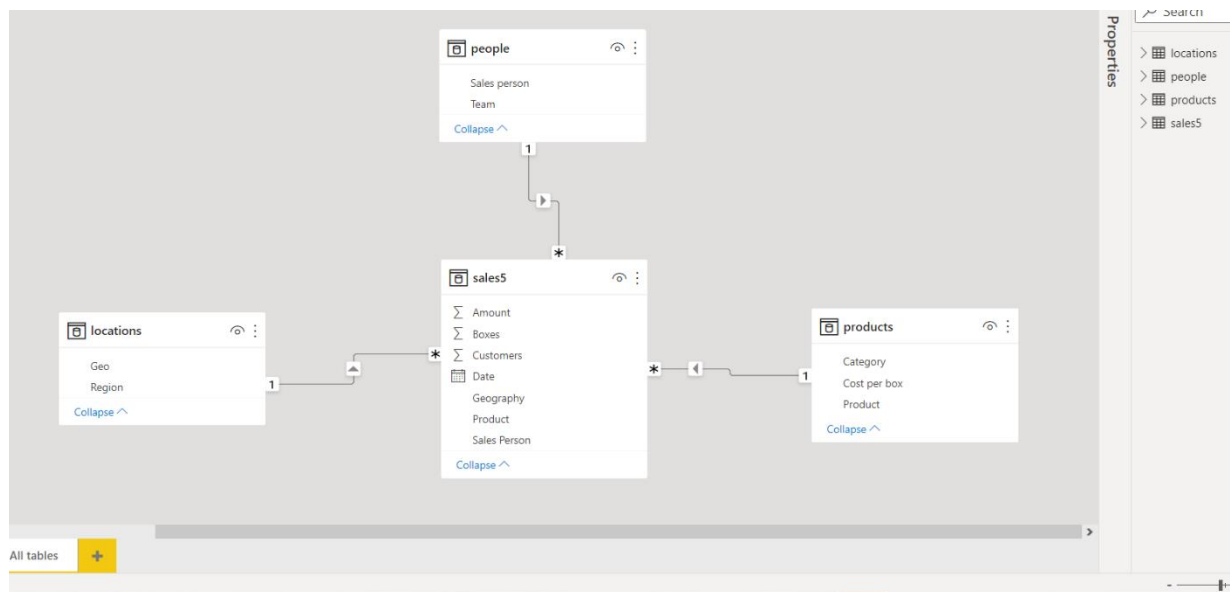


Create a relationship between them based on common fields:

- I. from location (Geo) >> sales (geography)
- II. from people (sales person) >> sales (sales person)
- III. from Product(product) >> sales(product)

**Step 2:** Go to the modeling area then drag all tables to the work area. Select the Common fields and drop on another table's column name (do it for each table), and then make a relationship as shown in the below figure.





- Based on the product cost price and the number of boxes sold by the salesperson, find the cost price, create a new column, and store it in it.

**Step 1:** Click on **Data**, then select **sales** table from the table list. Then click on the **New column**.

Sales Person	Geography	Product	Date	Amount	Customers	Boxes
Dennison Crosswaite	UK	Almond Choco	01 January 2021	2017	456	422
Barr Faughny	UK	Orange Choco	01 January 2021	9903	177	82
Husein Augar	UK	Caramel Stuffed Bars	01 January 2021	7518	174	9
Rufaelita Blackland	UK	Manuka Honey Choco	01 January 2021	5880	118	21
Kaine Padley	UK	Spicy Special Slims	01 January 2021	1148	165	285
Husein Augar	UK	After Nines	01 January 2021	10241	156	377
Dennison Crosswaite	UK	99% Dark & Pure	01 January 2021	3500	24	46
Curtice Advani	UK	Peanut Butter Cubes	01 January 2021	1652	248	221
Karlen McCaffrey	UK	Milk Bars	01 January 2021	5257	428	45
Curtice Advani	UK	Eclairs	04 January 2021	1862	92	334
Wilone O'Kieit	UK	Baker's Choco Chips	04 January 2021	4221	64	103
Gunar Cockshoot	UK	Baker's Choco Chips	04 January 2021	1680	356	609
Gunar Cockshoot	UK	Smooth Silky Salty	04 January 2021	5131	182	112
Beverie Moffet	UK	Almond Choco	04 January 2021	3633	57	212
Wilone O'Kieit	UK	Spicy Special Slims	04 January 2021	3815	52	424
Beverie Moffet	UK	99% Dark & Pure	04 January 2021	5670	81	122
Curtice Advani	UK	Baker's Choco Chips	04 January 2021	1225	291	348
Dotty Strutley	UK	Drinking Coco	06 January 2021	4410	209	141
Curtice Advani	UK	70% Dark Bites	06 January 2021	4865	220	106
Husein Augar	UK	99% Dark & Pure	06 January 2021	2331	322	625
Ches Bonnell	UK	After Nines	06 January 2021	259	350	486
Dennison Crosswaite	UK	Baker's Choco Chips	07 January 2021	3535	78	83
Brien Boise	UK	After Nines	08 January 2021	1428	241	220
Andria Kimpton	UK	Choco Coated Almonds	08 January 2021	532	66	155
Oby Sorrel	UK	Choco Coated Almonds	08 January 2021	1659	44	217
Barr Faughny	UK	Smooth Silky Salty	08 January 2021	1449	69	123
Wilone O'Kieit	UK	Manuka Honey Choco	08 January 2021	1554	5	320
Dotty Strutley	UK	Mint Chip Choco	11 January 2021	8911	31	12

**Step 2:** Add the given formula, then press **Enter** → New column will be added.

Formula: Cost = [Boxes] \* RELATED(products[Cost per box])

Table: sales (2,036 rows)

Sales Person	Geography	Product	Date	Amount	Customers	Boxes	Cost
Dennison Crosswaite	UK	Almond Choco	01 January 2021	2037	456	422	2173.3
Barr Faughny	UK	Orange Choco	01 January 2021	9303	177	82	301.76
Husein Augar	UK	Caramel Stuffed Bars	01 January 2021	7518	174	9	75.87
Rafaelita Blakland	UK	Manuka Honey Choco	01 January 2021	5880	118	11	74.8
Kaine Padly	UK	Spicy Special Slims	01 January 2021	1148	165	285	2342.7
Husein Augar	UK	After Nines	01 January 2021	10241	156	377	3856.71
Dennison Crosswaite	UK	99% Dark & Pure	01 January 2021	3500	24	46	355.58
Curtice Advani	UK	Peanut Butter Cubes	01 January 2021	1652	248	221	585.65
Karlen McCaffrey	UK	Milk Bars	01 January 2021	5257	428	45	236.7
Curtice Advani	UK	Eclairs	04 January 2021	1862	92	334	2107.54
Wilone O'Kieit	UK	Baker's Choco Chips	04 January 2021	4221	64	103	1278.23
Gunar Cockshott	UK	Baker's Choco Chips	04 January 2021	1680	356	609	7557.69
Gunar Cockshott	UK	Smooth Silky Salty	04 January 2021	5131	182	112	309.12
Beverie Moffet	UK	Almond Choco	04 January 2021	3633	57	212	1091.8
Wilone O'Kieit	UK	Spicy Special Slims	04 January 2021	3815	52	424	3485.28
Beverie Moffet	UK	99% Dark & Pure	04 January 2021	5670	81	122	943.06
Curtice Advani	UK	Baker's Choco Chips	04 January 2021	1225	291	348	4318.68
Dotty Strutley	UK	Drinking Coco	06 January 2021	4410	209	141	1401.54
Curtice Advani	UK	70% Dark Bites	06 January 2021	4865	220	106	534.24
Husein Augar	UK	99% Dark & Pure	06 January 2021	2331	322	625	4831.25
Ches Bonnell	UK	After Nines	06 January 2021	259	350	486	4971.78
Dennison Crosswaite	UK	Baker's Choco Chips	07 January 2021	3535	78	83	1030.03
Brien Boise	UK	After Nines	08 January 2021	1428	241	220	2250.6
Andria Kimpton	UK	Choco Coated Almonds	08 January 2021	532	66	155	514.6
Oby Sorrel	UK	Choco Coated Almonds	08 January 2021	1659	44	217	720.44
Barr Faughny	UK	Smooth Silky Salty	08 January 2021	1449	69	123	339.48
Wilone O'Kieit	UK	Manuka Honey Choco	08 January 2021	1554	5	320	2176
Dotty Strutley	UK	Mint Chip Choco	11 January 2021	8911	31	12	68.64

3. Create new measures and find the “Total Cost” and “Total Amount”.
- Step 1:** Right-click on the sales table then click on **New measure**.

Table: sales (2,036 rows)

Sales Person	Geography	Product	Date	Amount	Customers	Boxes	Cost
Dennison Crosswaite	UK	Almond Choco	01 January 2021	2037	456	422	2173.3
Barr Faughny	UK	Orange Choco	01 January 2021	9303	177	82	301.76
Husein Augar	UK	Caramel Stuffed Bars	01 January 2021	7518	174	9	75.87
Rafaelita Blakland	UK	Manuka Honey Choco	01 January 2021	5880	118	11	74.8
Kaine Padly	UK	Spicy Special Slims	01 January 2021	1148	165	285	2342.7
Husein Augar	UK	After Nines	01 January 2021	10241	156	377	3856.71
Dennison Crosswaite	UK	99% Dark & Pure	01 January 2021	3500	24	46	355.58
Curtice Advani	UK	Peanut Butter Cubes	01 January 2021	1652	248	221	585.65
Karlen McCaffrey	UK	Milk Bars	01 January 2021	5257	428	45	236.7
Curtice Advani	UK	Eclairs	04 January 2021	1862	92	334	2107.54
Wilone O'Kieit	UK	Baker's Choco Chips	04 January 2021	4221	64	103	1278.23
Gunar Cockshott	UK	Baker's Choco Chips	04 January 2021	1680	356	609	7557.69
Gunar Cockshott	UK	Smooth Silky Salty	04 January 2021	5131	182	112	309.12
Beverie Moffet	UK	Almond Choco	04 January 2021	3633	57	212	1091.8
Wilone O'Kieit	UK	Spicy Special Slims	04 January 2021	3815	52	424	3485.28
Beverie Moffet	UK	99% Dark & Pure	04 January 2021	5670	81	122	943.06
Curtice Advani	UK	Baker's Choco Chips	04 January 2021	1225	291	348	4318.68
Dotty Strutley	UK	Drinking Coco	06 January 2021	4410	209	141	1401.54
Curtice Advani	UK	70% Dark Bites	06 January 2021	4865	220	106	534.24
Husein Augar	UK	99% Dark & Pure	06 January 2021	2331	322	625	4831.25
Ches Bonnell	UK	After Nines	06 January 2021	259	350	486	4971.78
Dennison Crosswaite	UK	Baker's Choco Chips	07 January 2021	3535	78	83	1030.03
Brien Boise	UK	After Nines	08 January 2021	1428	241	220	2250.6
Andria Kimpton	UK	Choco Coated Almonds	08 January 2021	532	66	155	514.6
Oby Sorrel	UK	Choco Coated Almonds	08 January 2021	1659	44	217	720.44
Barr Faughny	UK	Smooth Silky Salty	08 January 2021	1449	69	123	339.48
Wilone O'Kieit	UK	Manuka Honey Choco	08 January 2021	1554	5	320	2176
Dotty Strutley	UK	Mint Chip Choco	11 January 2021	8911	31	12	68.64

**Step 2:** Enter the formula in the formula bar and then press **Enter** → It will be added below the column names.

Formula:  $\text{Total Amount} = \text{SUM}(\text{sales}[\text{Amount}])$

The screenshot shows the Microsoft Power BI Desktop interface. The 'Name' field in the formula bar is 'Total Amount', and the 'Home table' is 'sales'. The formula is  $\text{Total Amount} = \text{SUM}(\text{sales}[\text{Amount}])$ . The 'Fields' pane on the right shows the 'Total Amount' measure created. The main view displays a table with columns: Sales Person, Geography, Product, Date, Amount, Customers, Boxes, and Cost. The table contains 2,036 rows of sales data.

**Step 3:** Repeat the same process for “Total Cost.”

Formula:  $\text{Total Cost} = \text{SUM}(\text{sales}[\text{Cost}])$

The screenshot shows the Microsoft Power BI Desktop interface. The 'Name' field in the formula bar is 'Total Cost', and the 'Home table' is 'sales'. The formula is  $\text{Total Cost} = \text{SUM}(\text{sales}[\text{Cost}])$ . The 'Fields' pane on the right shows the 'Total Cost' measure created. The main view displays a table with columns: Sales Person, Geography, Product, Date, Amount, Customers, Boxes, and Cost. The table contains 2,036 rows of sales data.



- Based on “Total Cost” and “Total Amount” create a new measure, “Total profit” and find “Total profit margin” in percentage.

**Step 1:** Right-click on the “sales” table then **New measure**.

**Step 2:** Enter the formula in the formula bar and then press **Enter**. → It will be added below the column names.

**Step 3:** Repeat the above process for the formulas given below:

Formula 1: Total Profit = [Total Amount] – [Total Cost]

Formula 2: Profit Margin = DIVIDE([Total Profit],[Total Amount])

Sales Person	Geography	Product	Date	Amount	Customers	Boxes	Cost
Denisson Crosswaite	UK	Almond Choco	01 January 2021	2037	456	422	\$2,173.3
Barr Faughny	UK	Orange Choco	01 January 2021	9303	177	82	\$302.76
Husein Augar	UK	Caramel Stuffed Bars	01 January 2021	7518	174	9	\$75.87
Rafaelita Blakland	UK	Manuka Honey Choco	01 January 2021	5880	118	11	\$74.8
Kaine Padly	UK	Spicy Special Slims	01 January 2021	1148	165	285	\$2,342.7
Husein Augar	UK	After Nines	01 January 2021	10241	156	377	\$3,856.71
Denisson Crosswaite	UK	99% Dark & Pure	01 January 2021	3500	24	46	\$355.58
Curtice Advani	UK	Peanut Butter Cubes	01 January 2021	1652	248	221	\$585.65
Karlen McCaffrey	UK	Milk Bars	01 January 2021	5257	428	45	\$236.7
Curtice Advani	UK	Eclairs	04 January 2021	1862	92	334	\$2,107.54
Wilone O'Kieit	UK	Baker's Choco Chips	04 January 2021	4221	64	103	\$1,278.23
Gunar Cockshott	UK	Baker's Choco Chips	04 January 2021	1680	356	609	\$7,557.69
Gunar Cockshott	UK	Smooth Silky Salty	04 January 2021	5131	182	112	\$308.12
Beverie Moffet	UK	Almond Choco	04 January 2021	3633	57	212	\$1,091.8
Wilone O'Kieit	UK	Spicy Special Slims	04 January 2021	3815	52	424	\$3,485.28
Beverie Moffet	UK	99% Dark & Pure	04 January 2021	5670	81	122	\$948.08
Curtice Advani	UK	Baker's Choco Chips	04 January 2021	1225	291	348	\$4,318.68
Dotty Stratley	UK	Drinking Coco	06 January 2021	4410	209	141	\$1,401.54
Curtice Advani	UK	70% Dark Bites	06 January 2021	4865	220	106	\$534.24
Husein Augar	UK	99% Dark & Pure	06 January 2021	2321	322	625	\$4,831.25
Ches Bonnell	UK	After Nines	06 January 2021	259	350	486	\$4,971.78
Denisson Crosswaite	UK	Baker's Choco Chips	07 January 2021	3535	78	83	\$1,030.03
Brien Boise	UK	After Nines	08 January 2021	1428	241	230	\$2,250.6
Andria Kimpton	UK	Choco Coated Almonds	08 January 2021	532	66	155	\$514.6
Oby Sorrel	UK	Choco Coated Almonds	08 January 2021	1659	44	217	\$720.44
Barr Faughny	UK	Smooth Silky Salty	08 January 2021	1449	69	123	\$389.48
Wilone O'Kieit	UK	Manuka Honey Choco	08 January 2021	1554	5	320	\$2,176
Dotty Stratley	UK	Mint Chip Choco	11 January 2021	8911	31	12	\$68.64

File Home Help Table tools Measure tools

Name: Total Profit

Home table: sales

Format: Currency

Data category: Uncategorized

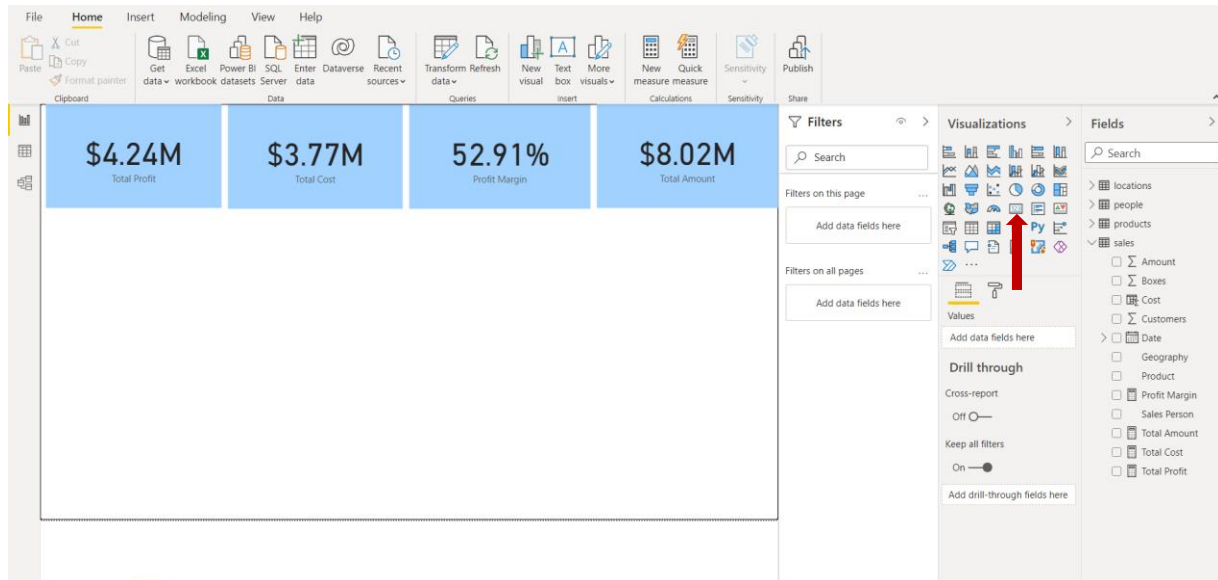
New measure Quick measure

- Create cards for “Total Cost”, “Total Amount”, “Total profit”, and “Total profit margin”.



**Step 1:** Go to **Visualization** and Select a single card from **visualization** then select **Measure**. → New card be automatically created.

**Step 2:** Repeat the above process for each measure and change the background color and size.

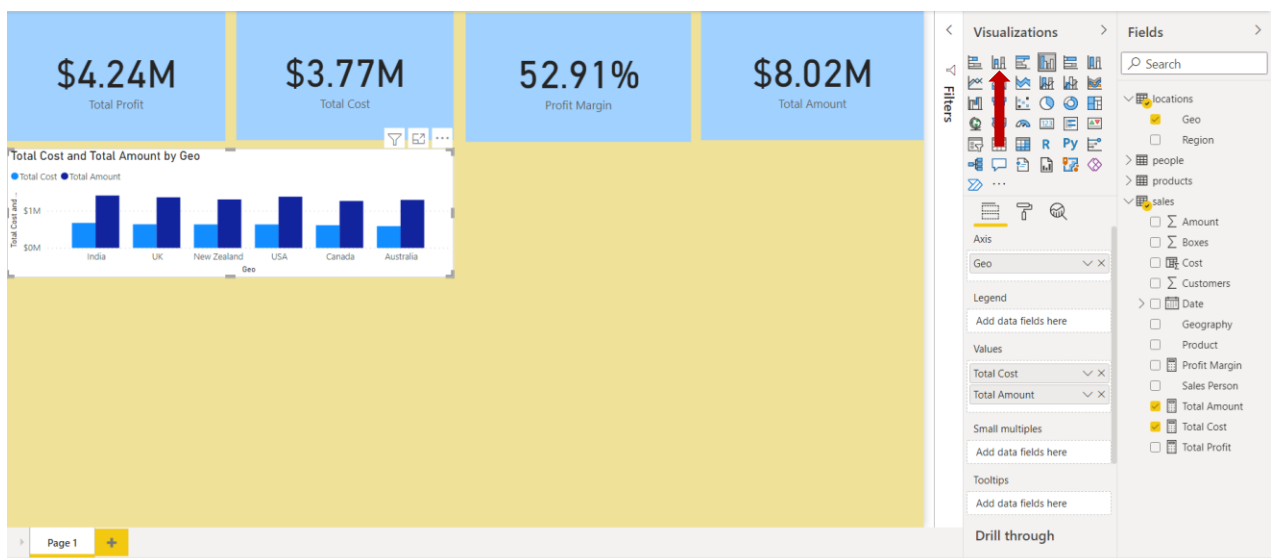


6. Find out "Manufacturing Cost" and "Total Selling Amount" by each country.

**Step 1:** Go to **Visualization** and select a **clustered column chart** from visualization.

**Step 2:** Select "Total amount", "Total Cost", and "Geography" from the sales table. → Visualization will be created.

The total amount represents how much they sold, and the total cost represents the total manufacturing cost.

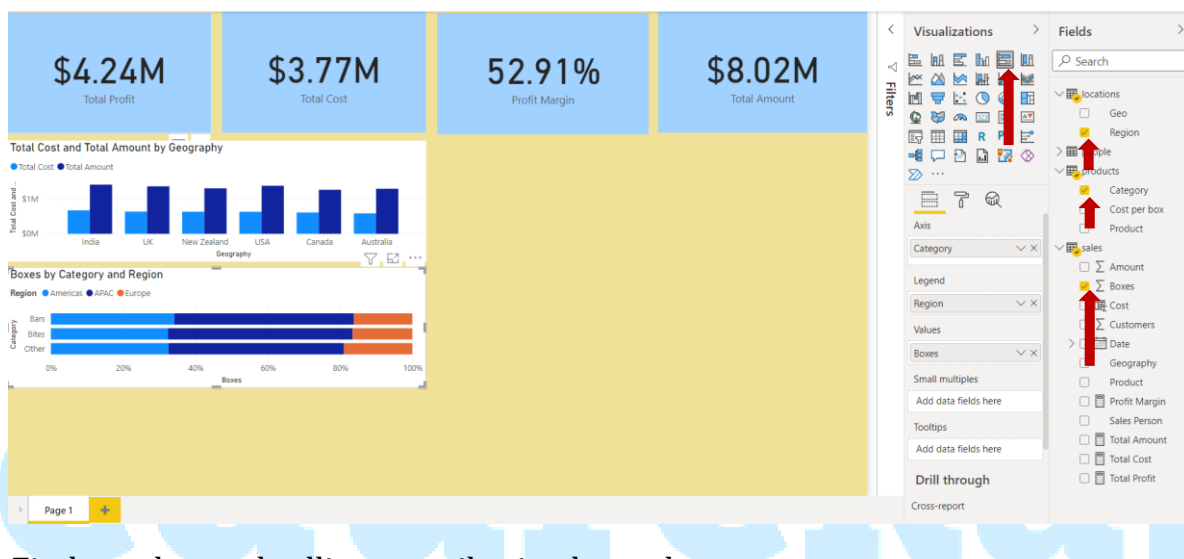


- Find out the total boxes sold in each region of the world for each category of chocolate.

**Step 1:** Go to **Visualization** and select a **100% stacked bar chart** from visualization.

**Step 2:** Select “Region” from the Location table,”Category” from the product, and “Boxes” from the sales table.

It will show in which region, which type of chocolate is sold more.

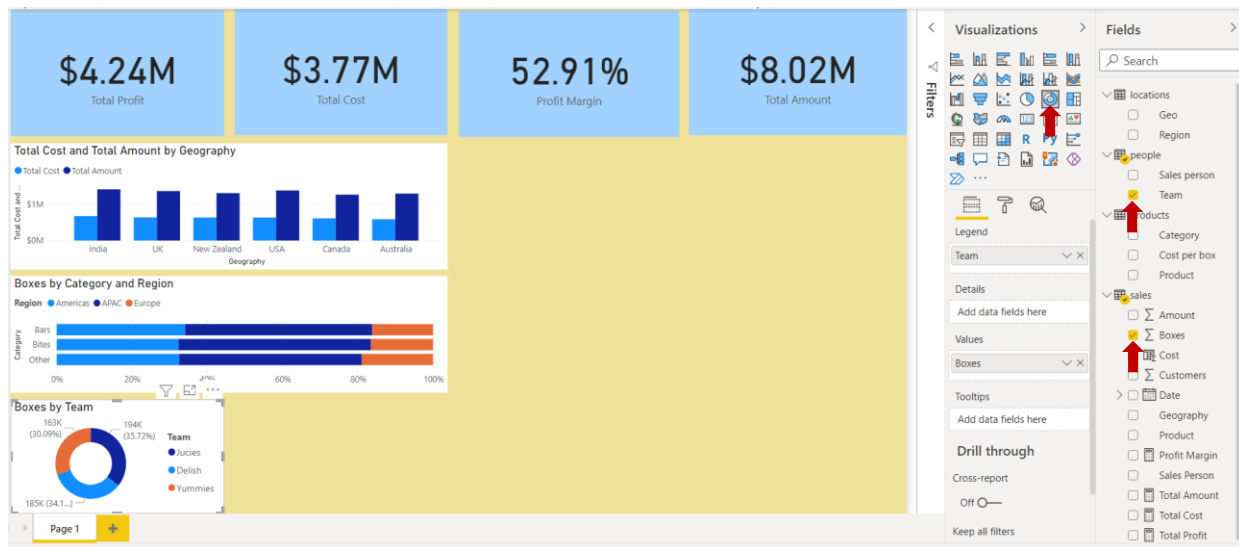


- Find out the total selling contribution by each team.

**Step 1:** Go to **Visualization** and select a **donut chart** from visualization.

**Step 2:** Select “Team” from People and “Boxes” from the sales table. → It will show asked insights.

**Note:** The donut chart is more useful when we need to show distribution with fewer categories.

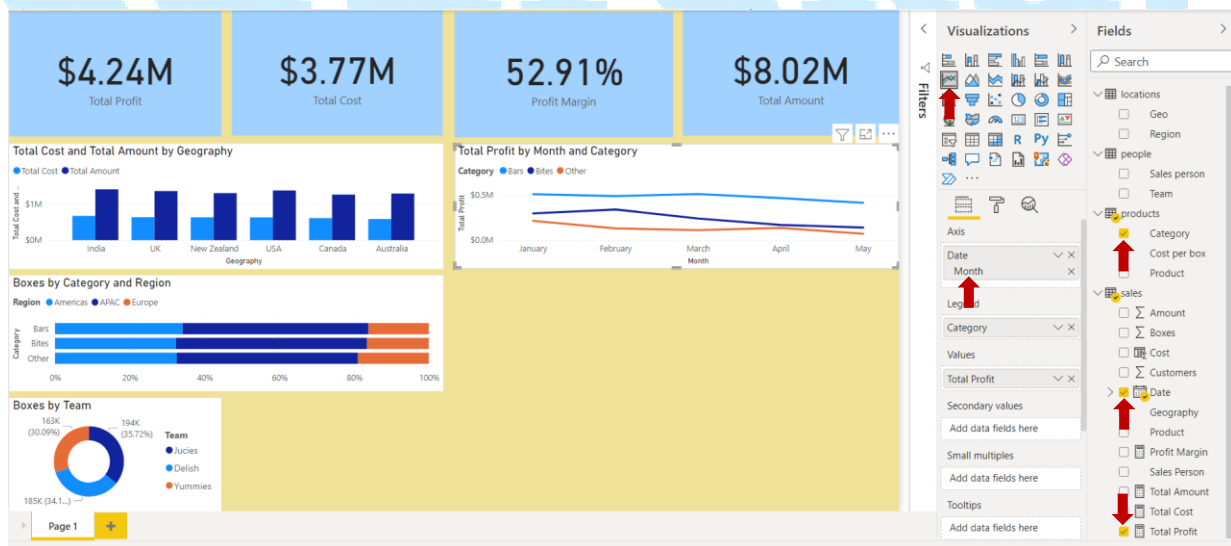


9. With the help of a line chart, find out the total profit of each category of chocolate by each month.

**Step 1:** Go to **Visualization** and select a **Line chart** from visualization.

**Step 2:** Select “Region” from the location table, “Category” from the product, and “Boxes” from the sales table.

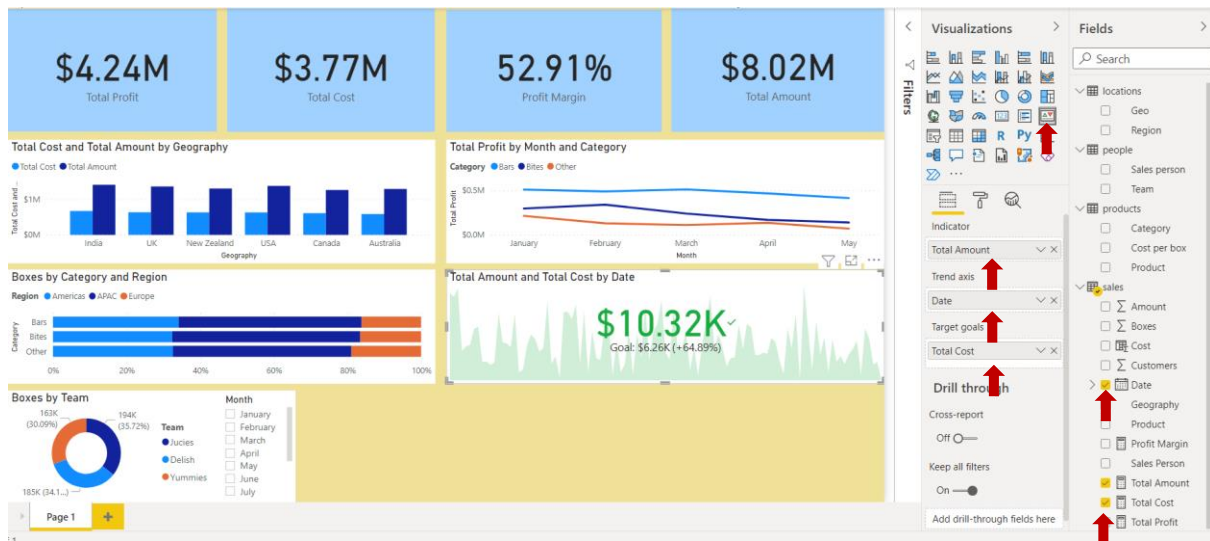
**Note:** From the date, remove year, day, and a quarter in the axis section.



10. Make KPI for how much it costs and the total amount of chocolate sold and find out in may month's target is achieved or not.

**Step 1:** Go to **Visualization** and select a **KPI** from visualization.

**Step 2:** Select “Date”, “Total Amount”, “Total Cost” from the sales table. → “Total Amount” to Indicator, “Date” to Trend axis, “Total Cost” to Target Goals.

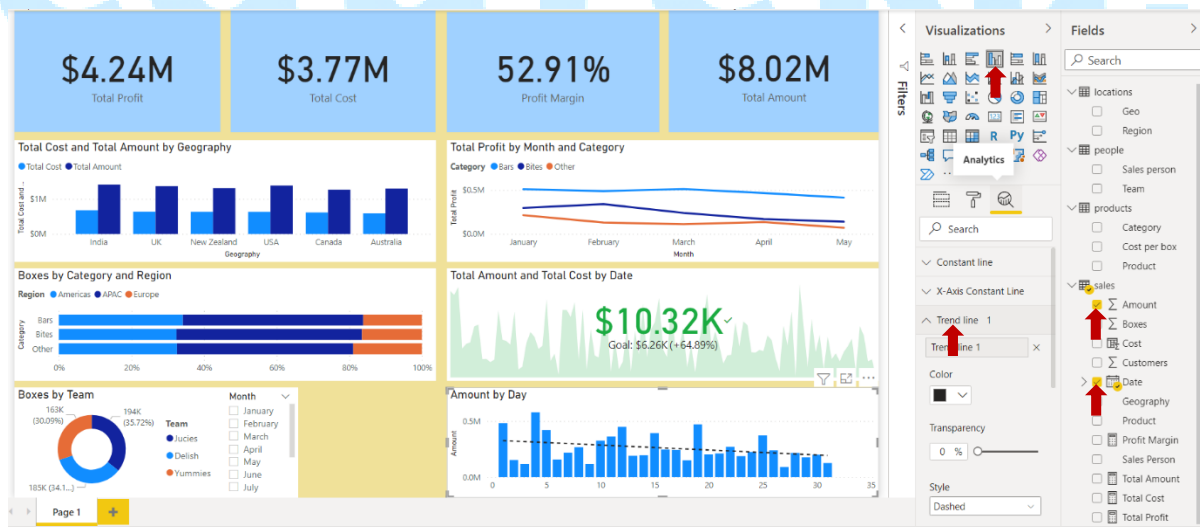


11. Find the total selling amount by each day and find a trend.

**Step 1:** Go to **Visualization** and select a **clustered column chart** from visualization.

**Step 2:** Select “Date” and “Amount” from the sales table, for “Date” select the day-wise filter

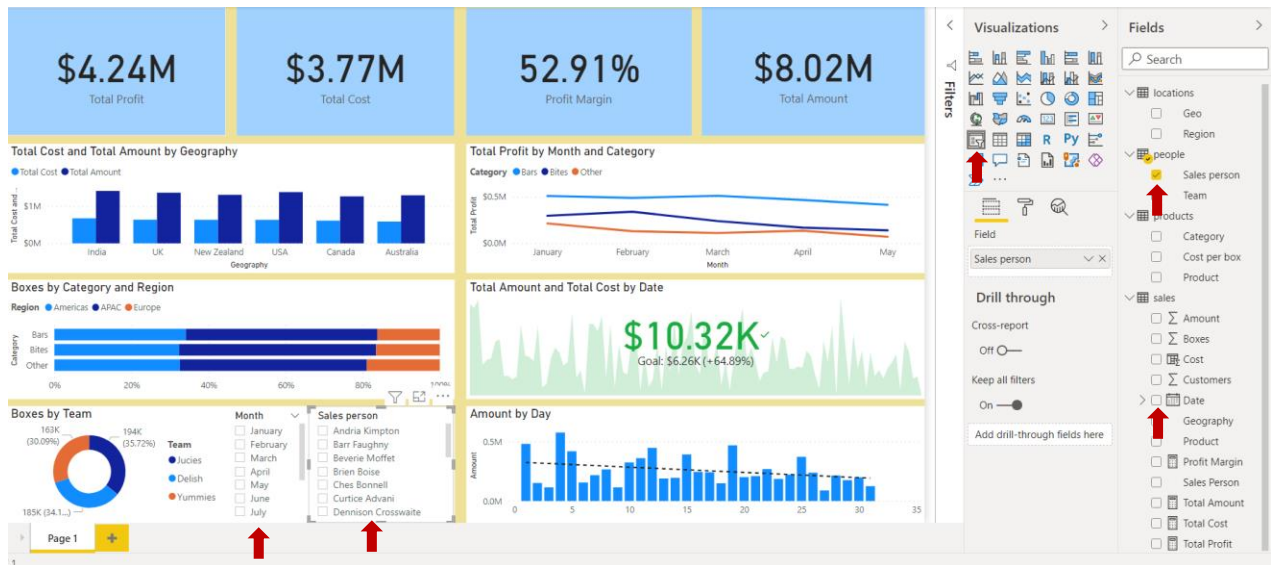
**Step 3:** Go to **Analytics** then click on the **Trend line**. Add a trend line with suitable color.



12. Add a slicer for sales person’s name and months (Date).

**Step 1:** Go to **Visualization** and select a  **slicer** two times from visualization.

**Step 2:** Select “Date” (months in the filter) for the first slicer and “Sales name” for the second slicer.



**Note:** For better visualization, make all charts transparent and change their color accordingly.

