

Assignment 2

- 1) Create a custom column that calculates the profit margin for each product. Use the formula: ProfitMargin = (ProductPrice- ProductCost) / ProductPrice. Name this column "ProfitMargin". Add a conditional column to classify products as "High Margin", "Medium Margin", or "Low Margin" based on their profit margin. Define the thresholds: High Margin (> 0.5), Medium Margin (0.2- 0.5), Low Margin (< 0.2).

The screenshot shows the Power BI Query Editor interface with the following details:

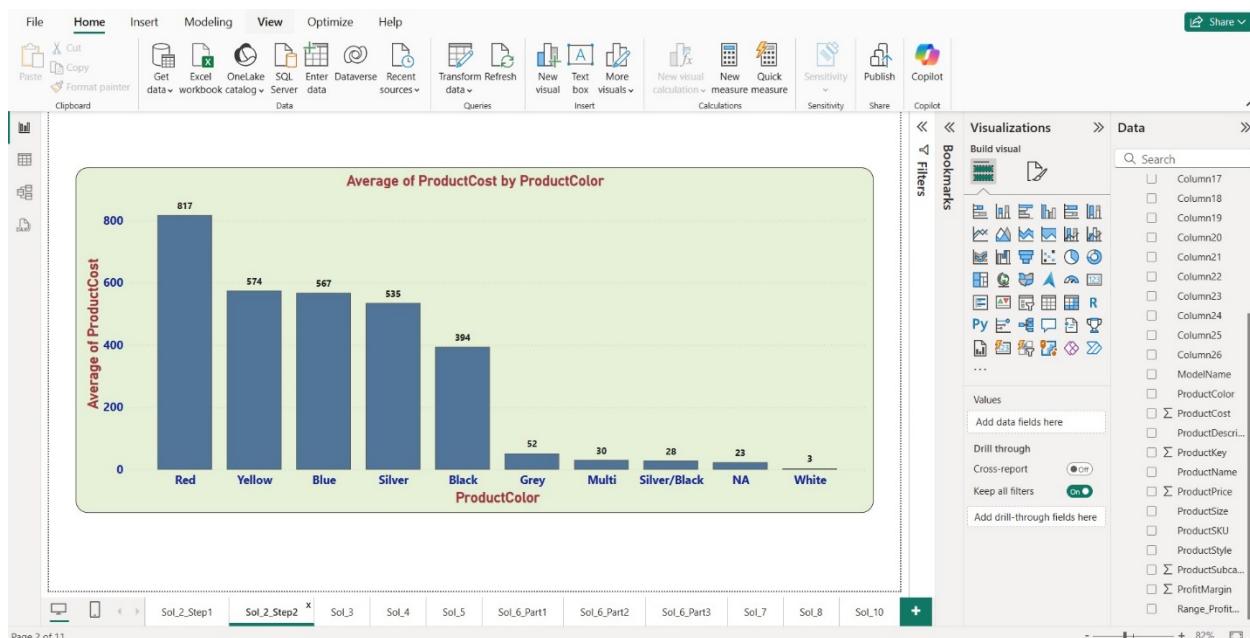
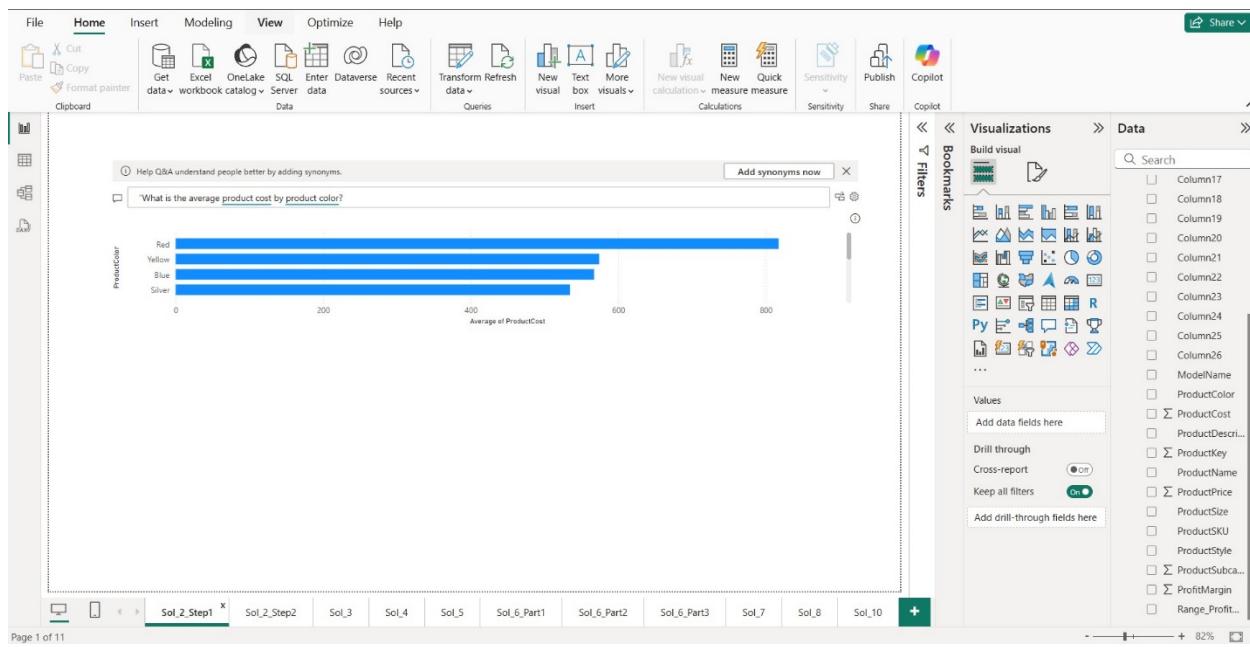
- File, Home, Transform, Add Column, View, Tools, Help** menu bar.
- Queries [2]** pane on the left showing two queries: **products** and **My_Measures**.
- Transform ribbon** with various options like Data Type, Merge Queries, Text Analytics, etc.
- Query Settings pane** on the right showing properties for the **products** query, applied steps (Source, Navigation, Promoted Headers, etc.), and a step for **Inserted First Characters**.
- Table Preview** showing the following data (partial view):

	1.2 ProductCost	1.2 ProductPrice	1.2 ProfitMargin	ABC 123 Range_ProfitMargin	ABC 123 Column12	ABC 123 Column13	ABC 123 Column14
1	13.0863	34.99	0.62599857	High	null	null	
2	12.0278	33.6442	0.64250042	High	null	null	
3	3.3963	9.5	0.64249473	High	null	null	
4	3.3963	9.5	0.64249473	High	null	null	
5	12.0278	33.6442	0.64250042	High	null	null	
6	5.7052	8.6442	0.33599576	Medium	null	null	
7	31.7244	48.0573	0.340000374	Medium	null	null	
8	31.7244	48.0573	0.340000374	Medium	null	null	
9	31.7244	48.0573	0.340000374	Medium	null	null	
10	31.7244	48.0573	0.340000374	Medium	null	null	
11	747.9682	1263.4598	0.40800001	Medium	null	null	
12	747.9682	1263.4598	0.40800001	Medium	null	null	
13	747.9682	1263.4598	0.40800001	Medium	null	null	
14	747.9682	1263.4598	0.40800001	Medium	null	null	
15	747.9682	1263.4598	0.40800001	Medium	null	null	
16	176.1997	297.6346	0.407999944	Medium	null	null	
17	176.1997	297.6346	0.407999944	Medium	null	null	
18	176.1997	297.6346	0.407999944	Medium	null	null	
19	181.4857	306.5536	0.407999841	Medium	null	null	
20	181.4857	306.5536	0.407999841	Medium	null	null	
21	181.4857	306.5536	0.407999841	Medium	null	null	
22	181.4857	306.5536	0.407999841	Medium	null	null	
23	181.4857	306.5536	0.407999841	Medium	null	null	
24	181.4857	306.5536	0.407999841	Medium	null	null	
25	352.1394	594.83	0.407999933	Medium	null	null	
26	352.1394	594.83	0.407999933	Medium	null	null	
27	352.1394	594.83	0.407999933	Medium	null	null	
28							

Ans) Both the columns are visible in the image above.

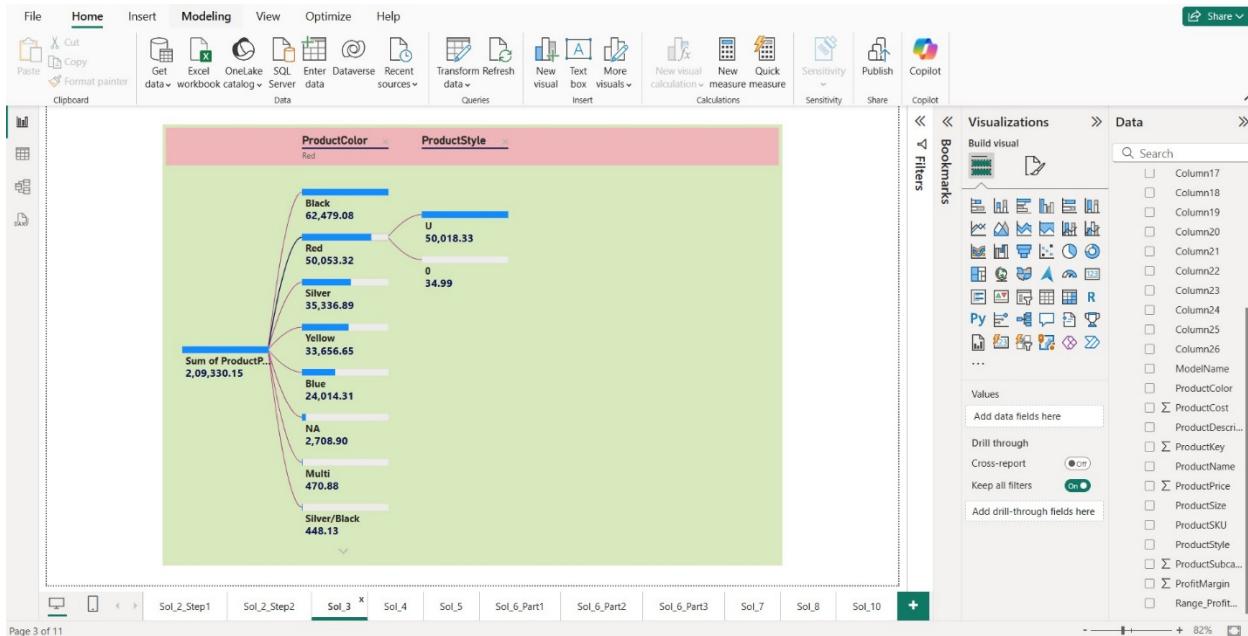
- ⑤ For the part 1 of the given question, I used **Custom Column option under Add Column** in the Power BI Query Editor and applied the given formula correctly.
- ⑤ For the part 2 of the given question, I used **Conditional Column option under Add Column** in the Power BI Query Editor and applied the given ranges correctly.

- 2) Use the Q&A feature to find out "What is the average product cost by product color?" and display the results as a bar chart.



From the above results we can see that the highest **Average Product Cost** is for the color 'Red' and the lowest is for the color 'White'.

3) Create a decomposition tree to analyze ProductPrice by ProductColor and further by ProductStyle. Identify key drivers for high prices.

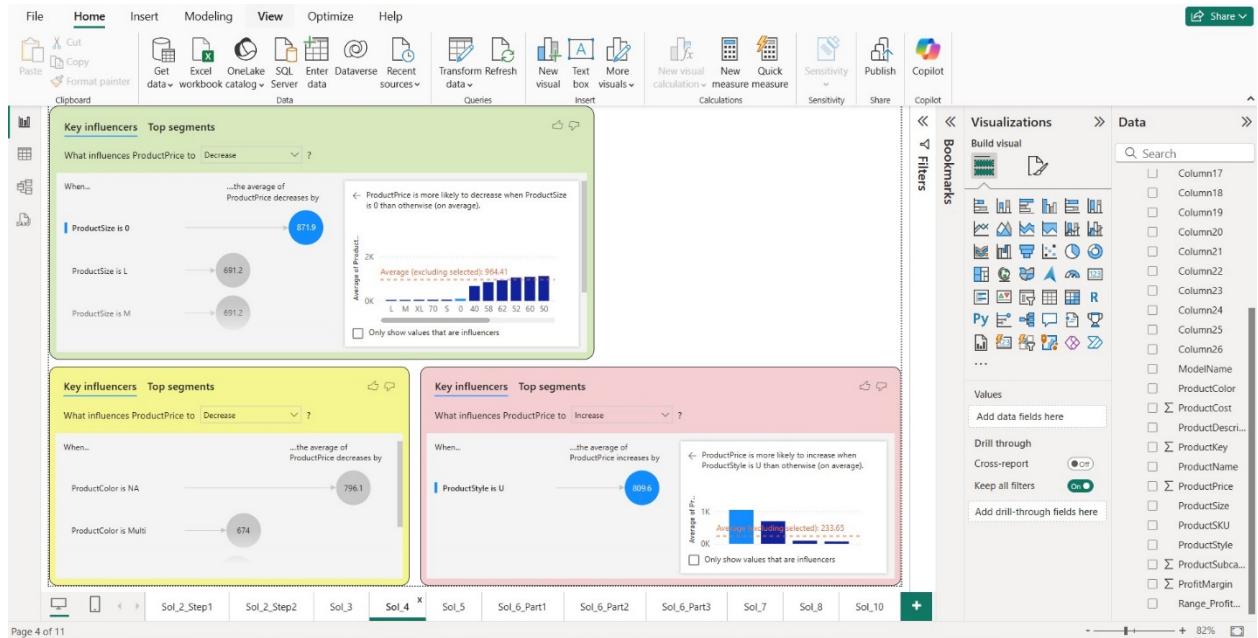


-> If we observe carefully the product pricess in descending order with respect to ProductColor and ProductStyle, we see that:

-> **Product Style U has the highest prices** with ProductColors – Red, Silver, Black, Yellow, and Blue.

(I have taken this conclusion in consideration with the help of Tree map and Q&A)

- 4) Use the Key Influencer visual to determine which factors (e.g., ProductColor, ProductSize, ProductStyle) influence high product prices. Provide a summary of your findings.



② For ProductPrice with respect to ProductSize, if we check keeping the dropdown as Increase under key influencers tab, we get no results.

(No influencers found). However, when we change it to decrease, we go get some substantial influencers.

However, as per the given question Increase is concerned not Decrease.

③ The same thing we observe for for ProductPrice with respect to ProductColor.

Hence, I'm not adding any text with respect to these two.

However, when we observe the influencer for ProductPrice with respect to ProductStyle under Increase, we do see that **style U has the highest Average of Product Price (1.04K) with count of products 174.**

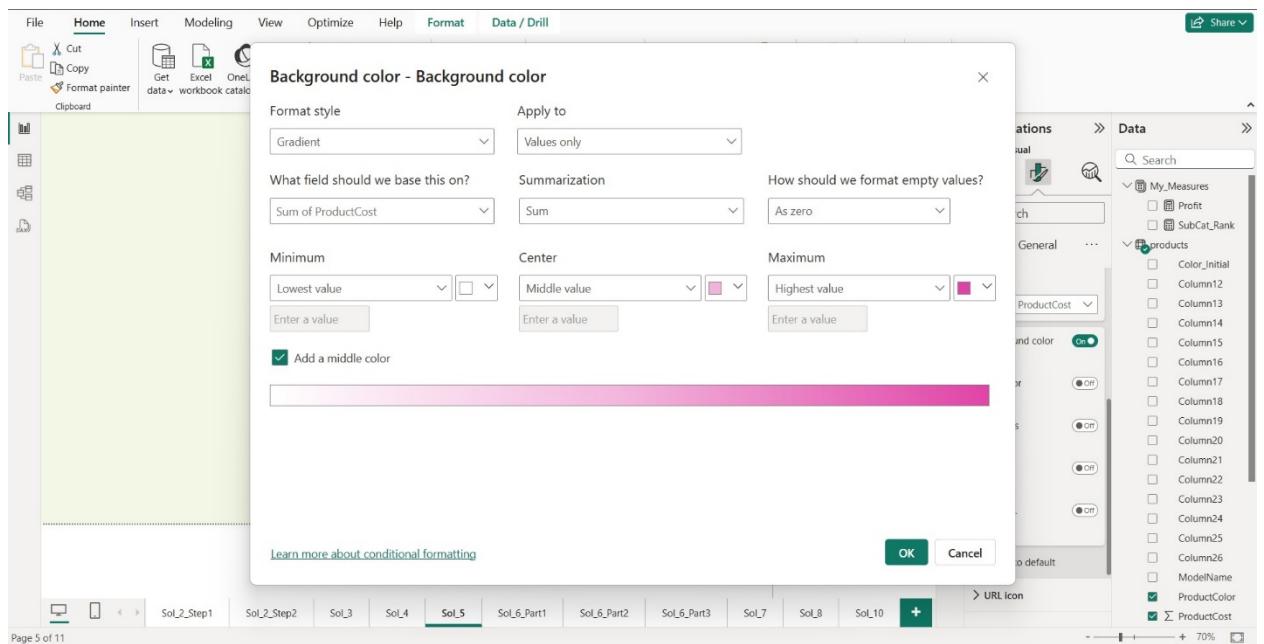
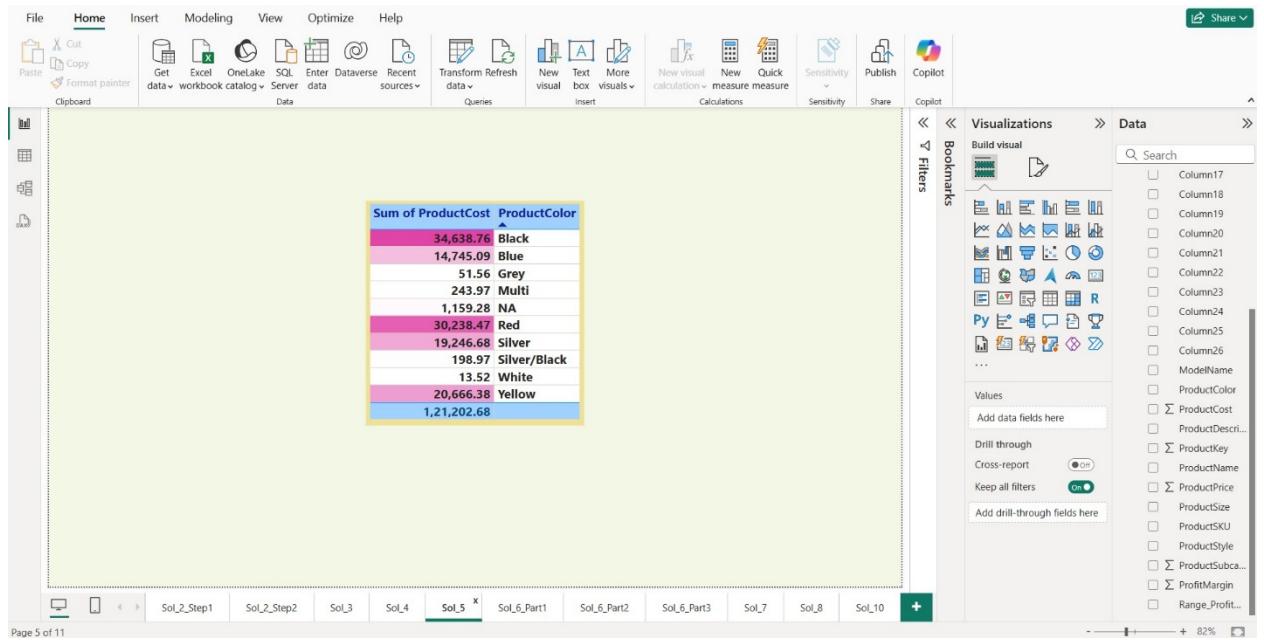
- 5) Create a new column using the "Column from Example" feature to extract the first letter from the product color column (eg: red should be R, etc). Create a table visual to display the total product cost by product color. Highlight the costs column using conditional formatting (highest costs in dark pink, medium costs in light pink and lowest costs in white).

The screenshot shows the Power BI Query Editor interface. The main area displays a table with the following columns and data:

	ProductKey	ProductSubcategoryKey	ProductSKU	ProductName	ModelName	ProductColor	Color_Initial	ProductSize	ProductStyle
1	Universal fit, well-vented, lightweight, snap-on visor.					Red	R		0
2	Universal fit, well-vented, lightweight, snap-on visor.					Black	B		0
3	Combination of natural and synthetic fibers stays dry and provides just...					White	W	M	U
4	Combination of natural and synthetic fibers stays dry and provides just...					White	W	L	U
5	Universal fit, well-vented, lightweight, snap-on visor.					Blue	B		0
6	Traditional style with a flip-up brim; one size fits all.					Multi	M		0 U
7	Unisex long-sleeve AWC logo microfiber cycling jersey					Multi	M	S	U
8	Unisex long-sleeve AWC logo microfiber cycling jersey					Multi	M	M	U
9	Unisex long-sleeve AWC logo microfiber cycling jersey					Multi	M	L	U
10	Unisex long-sleeve AWC logo microfiber cycling jersey					Multi	M	XL	U
11	Our lightest and best quality aluminum frame made from the newest a...					Red	R	62	U
12	Our lightest and best quality aluminum frame made from the newest a...					Red	R	44	U
13	Our lightest and best quality aluminum frame made from the newest a...					Red	R	48	U
14	Our lightest and best quality aluminum frame made from the newest a...					Red	R	52	U
15	Our lightest and best quality aluminum frame made from the newest a...					Red	R	56	U
16	The LL Frame provides a safe comfortable ride, while offering superior ...					Black	B	58	U
17	The LL Frame provides a safe comfortable ride, while offering superior ...					Black	B	60	U
18	The LL Frame provides a safe comfortable ride, while offering superior ...					Black	B	62	U
19	The LL Frame provides a safe comfortable ride, while offering superior ...					Red	R	44	U
20	The LL Frame provides a safe comfortable ride, while offering superior ...					Red	R	48	U
21	The LL Frame provides a safe comfortable ride, while offering superior ...					Red	R	52	U
22	The LL Frame provides a safe comfortable ride, while offering superior ...					Red	R	58	U
23	The LL Frame provides a safe comfortable ride, while offering superior ...					Red	R	60	U
24	The LL Frame provides a safe comfortable ride, while offering superior ...					Red	R	62	U
25	Made from the same aluminum alloy as our top-of-the-line HT frame, t...					Red	R	44	U
26	Made from the same aluminum alloy as our top-of-the-line HT frame, t...					Red	R	48	U
27	Made from the same aluminum alloy as our top-of-the-line HT frame, t...					Red	R	52	U
28									

Below the table, the status bar indicates "29 COLUMNS, 293 ROWS" and "Column profiling based on top 1000 rows". To the right, the "Query Settings" pane shows steps like "Reordered Columns" and "Inserted First Characters".

⑤ For the part 1 of the given question I have used **Column from Examples under Add Column** in the Power BI Query editor.

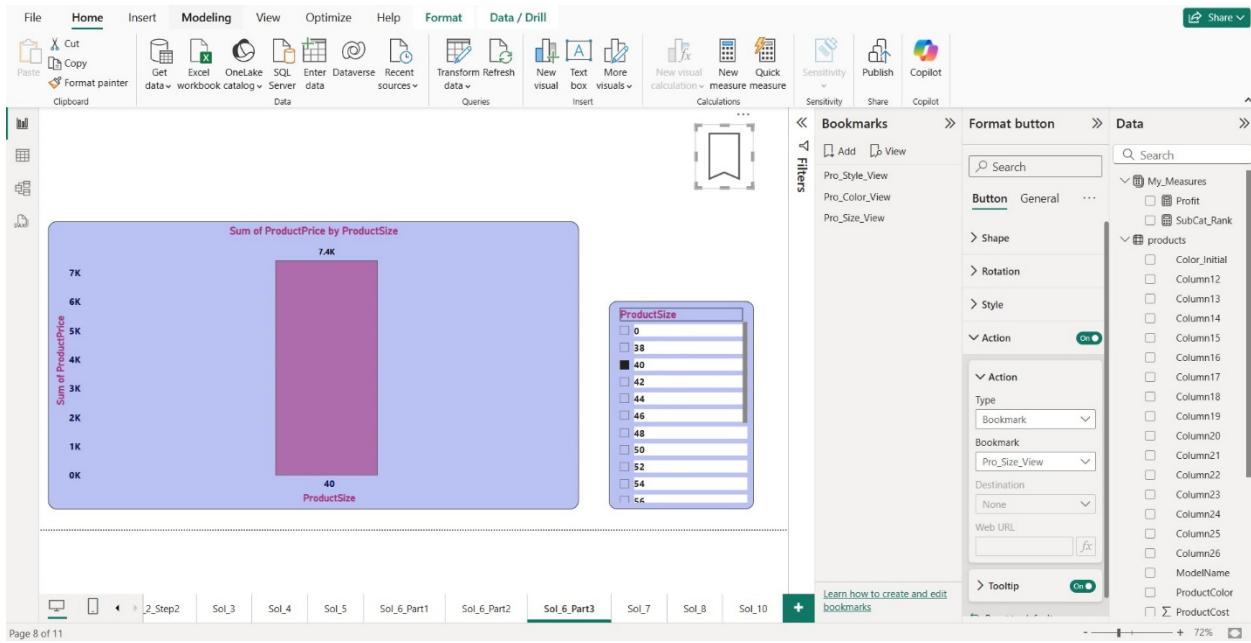


- ⑤ I have used the **cell element from the Format Pane** to do the required settings are per the given question (for the part 2 in the given question).
- ⑥ I have applied the settings for **background color**.

6) Set up bookmarks to save different views of your report. Create bookmarks for views by ProductStyle, ProductColor, and ProductSize based on your own set conditions or filters.

The screenshot shows the Power BI desktop interface. On the left, there's a bar chart titled "Sum of ProductPrice by ProductStyle". The chart has one bar labeled "M" with a value of 510. To the right of the chart is a dropdown filter for "ProductStyle" with options: O, M, U, W. The ribbon at the top is visible with tabs like File, Home, Insert, Modeling, View, Optimize, Help, Format, and Data / Drill. The "Format" tab is selected. On the right side, the "Data" pane is open, showing a tree view of data models. Under the "products" node, there are several columns listed: Color_Initial, Column12, Column13, Column14, Column15, Column16, Column17, Column18, Column19, Column20, Column21, Column22, Column23, Column24, Column25, Column26, ModelName, ProductColor, and ProductCost. A tooltip for "Action" indicates it's currently set to "Bookmark". The status bar at the bottom shows "Page 6 of 11" and "72%".

This screenshot is similar to the previous one but shows a different visualization. It features a bar chart titled "Sum of ProductPrice by ProductColor". The chart has one bar labeled "Silver" with a value of 35.3K. To the right is a dropdown filter for "ProductColor" with options: Black, Blue, Grey, Multi, NA, Red, Silver, Silver/Black, White, and Yellow. The ribbon and Data pane are identical to the first screenshot. The status bar at the bottom shows "Page 7 of 11" and "72%".



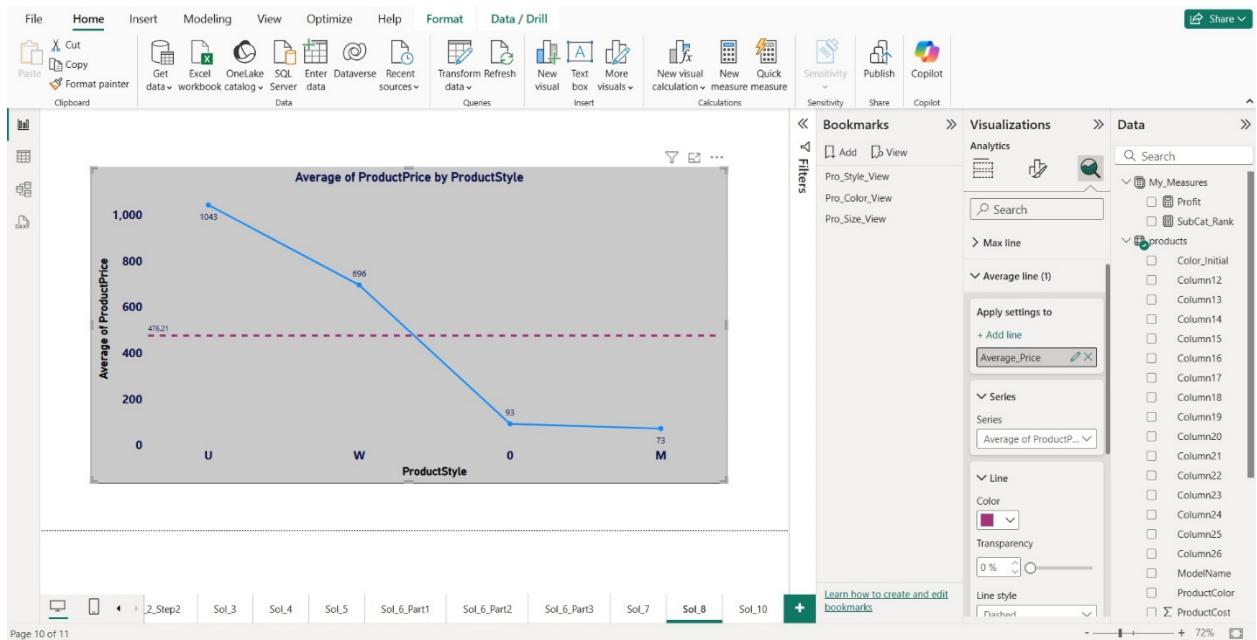
- > All the bookmarks work fine when we change the slicer option and then try out bookmark.
- > All the configurations are clearly visible in the screenshots above for better understanding of what settings are done for the same.
- > **I have used the button type ‘bookmark’, the slicer option, and the book mark option to add the name and then configure the bookmark page according to the requirement for different views.**

- 7) Create a single row card to display the total number of unique products in the dataset. Create a multi-row card to display the total product cost, total product price, and average profit margin.

The screenshot shows the Power BI desktop interface. At the top is the ribbon with tabs: File, Home, Insert, Modeling, View, Optimize, Help, Format, Data / Drill. Below the ribbon are various icons for data sources (Clipboard, Get data from Excel, OneLake, SQL, Enter Dataverse, Recent sources), data transformation (Transform Refresh data, New visual, Text box, More visuals, Insert), calculations (New visual calculation, New measure, Quick measure, Calculations), and sharing (Sensitivity, Share, Publish, Copilot). On the left is a navigation pane with items like Bookmarks, Visualizations, and Data. The main area displays two cards: a yellow card titled "Total no. of Unique Products" showing the value "293" and a pink card showing three measures: "Sum of ProductCost" (1,21,202.68), "Sum of ProductPrice" (2,09,330.15), and "Average of ProfitMargin" (0.48). The right side of the screen shows the "Data" pane with fields like "Sum of ProductCost", "Sum of ProductPrice", and "Average of ProfitMargin". A drill-through section is also visible.

- ⑤ To the left is the **Single Row Card in yellow** and to the right is the **Multi Row Card in pink**.

- 8) Add a reference line in a line chart to show the average product price over different product styles.



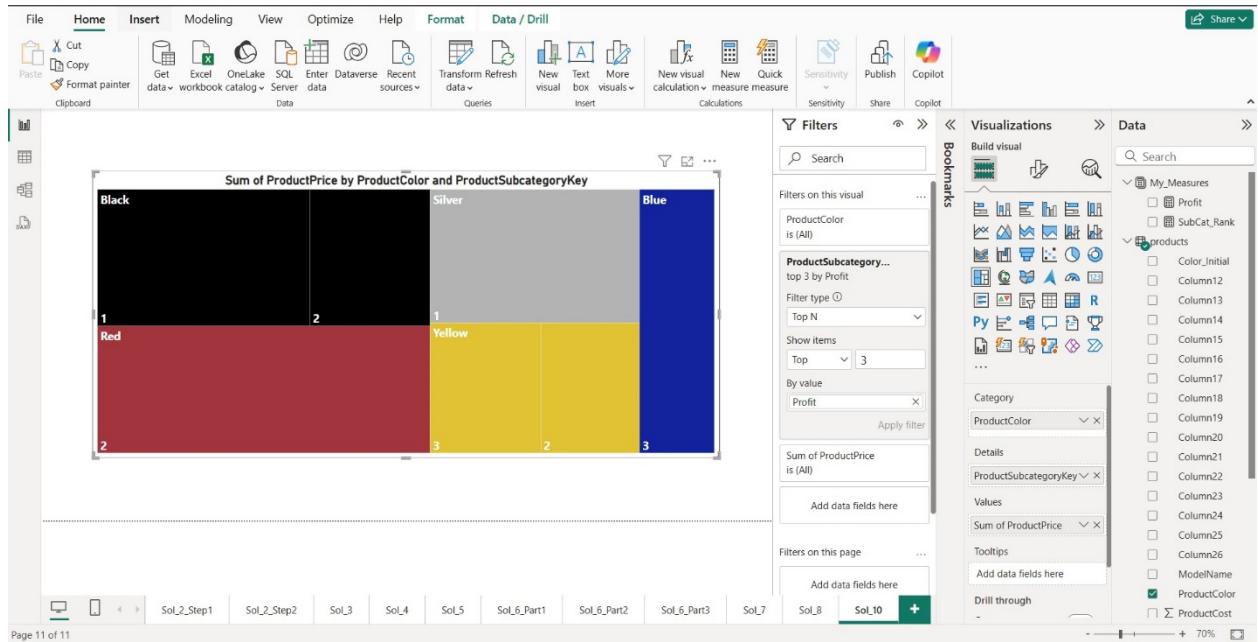
- ④ From the above graph we can clearly conclude that the **highest Average Product Price over different Product Styles** is for style 'U' and the least is for style 'M'.
The rest fall in between.
- ④ First, I added the line chart and then applied the reference line to it.
Then I customized the visualization aspects for both to make it appealing and readable.
- ④ I have added the data labels for better understanding.
Also, added markers for better clarity in understanding the data points.

9) Identify and remove any duplicate product records in the dataset.

The screenshot shows the Microsoft Power BI desktop interface. A table named "products" is open in the query editor. The table contains 293 rows and 6 columns: ProductKey, ProductSubcategoryKey, ProductSKU, ProductName, ModelName, and ProductDescription. The "APPLIED STEPS" pane on the right lists steps such as "Source", "Navigation", "Promoted Headers", "Changed Type", "Removed Duplicates", "Added Custom", "Reordered Columns", "Changed Type1", "Added Conditional Column", "Reordered Columns1", "Inserted First Characters", and "Reordered Columns2". The "Reordered Columns2" step is currently selected. The status bar at the bottom indicates "29 COLUMNS, 293 ROWS" and "Column profiling based on top 1000 rows".

I have applied the asked to the duplicate entries with respect to **Product Key as it is a primary key in this table** and we know that primary key has to be unique (not repeated).

10) Create a Tree map to show product price for each color and subcategory. Also show the top 3 subcategories based on profit (price-cost).



From the above visual we can clearly see that the Top 3 Subcategories based on Profit are ordered as 1, 2, and 3 using the Top N filter on the Profit(measure).

The context is taken as Product Color and corresponding Sum of Product Price.

Below I have attached a couple of more images for clear understanding.

Kindly have a look.

④ First, I used the Tree map visual for this scenario.

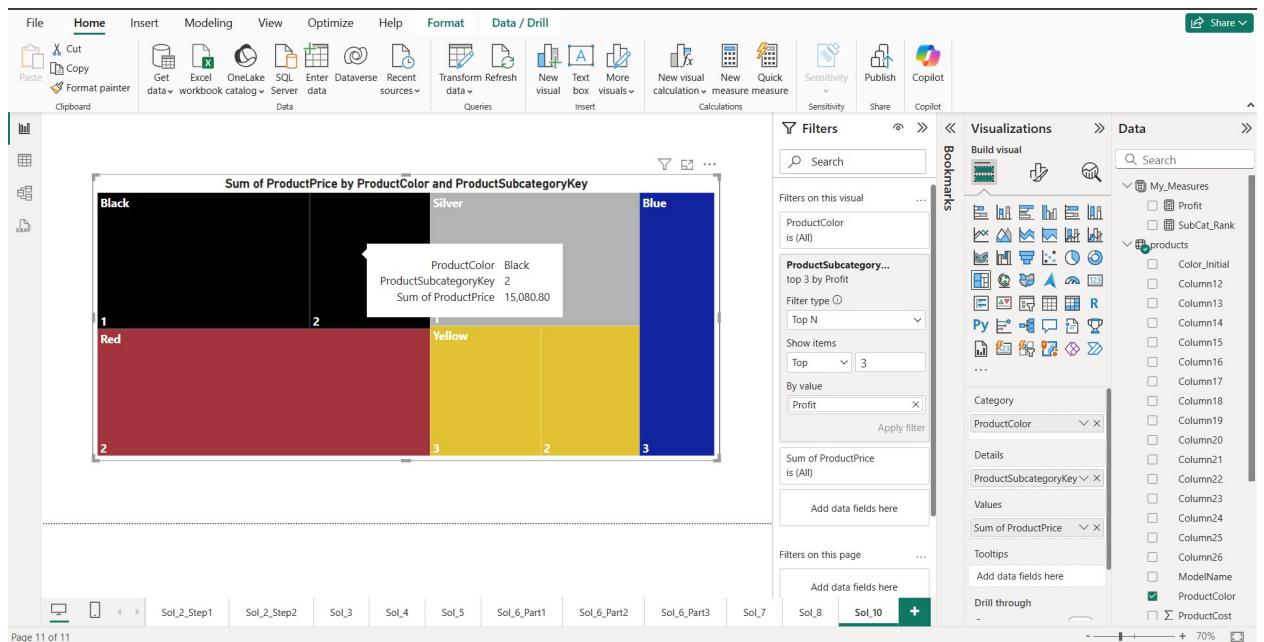
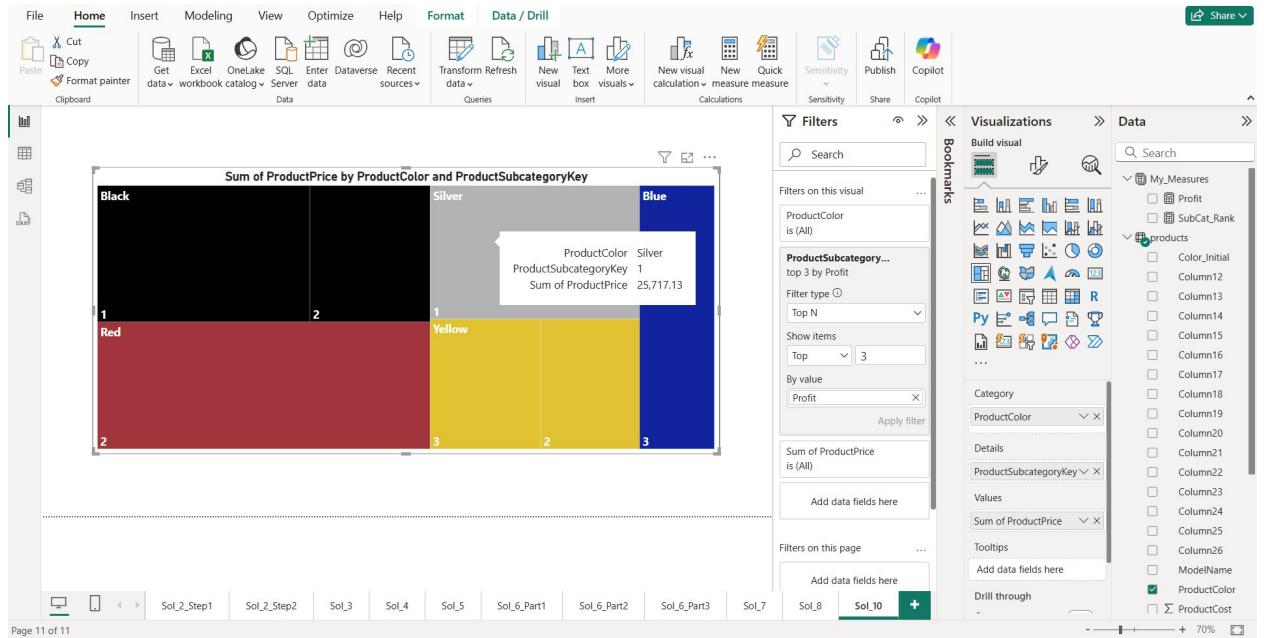
Then, I added the fields carefully which were mentioned in the given question.

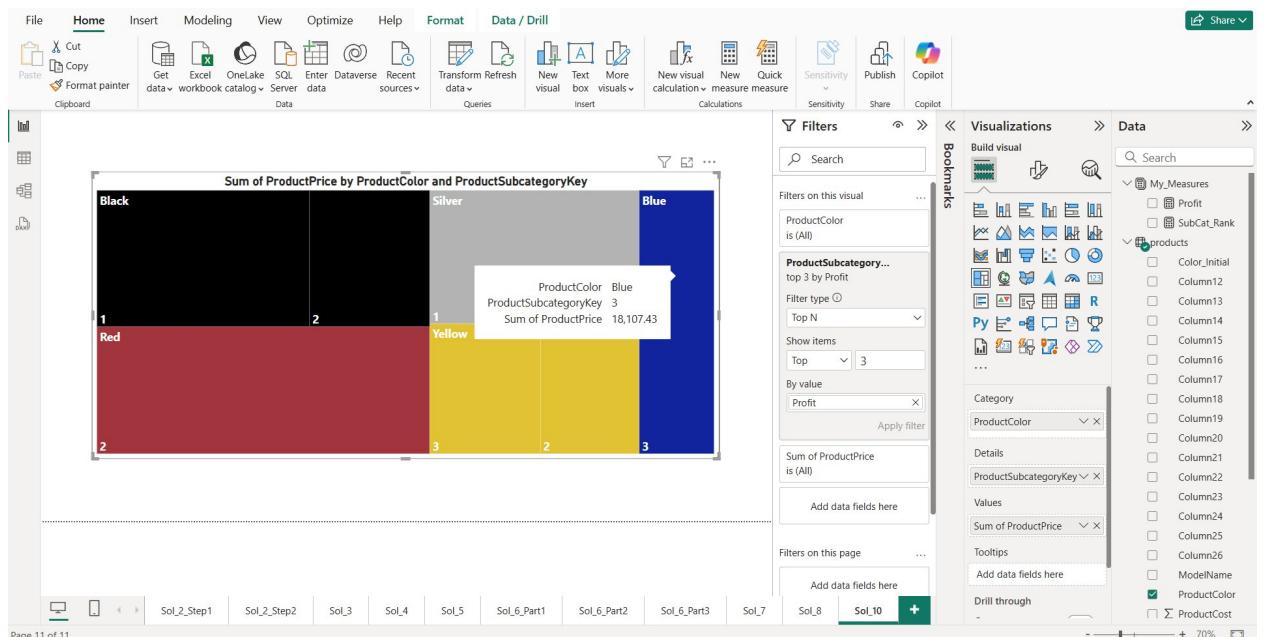
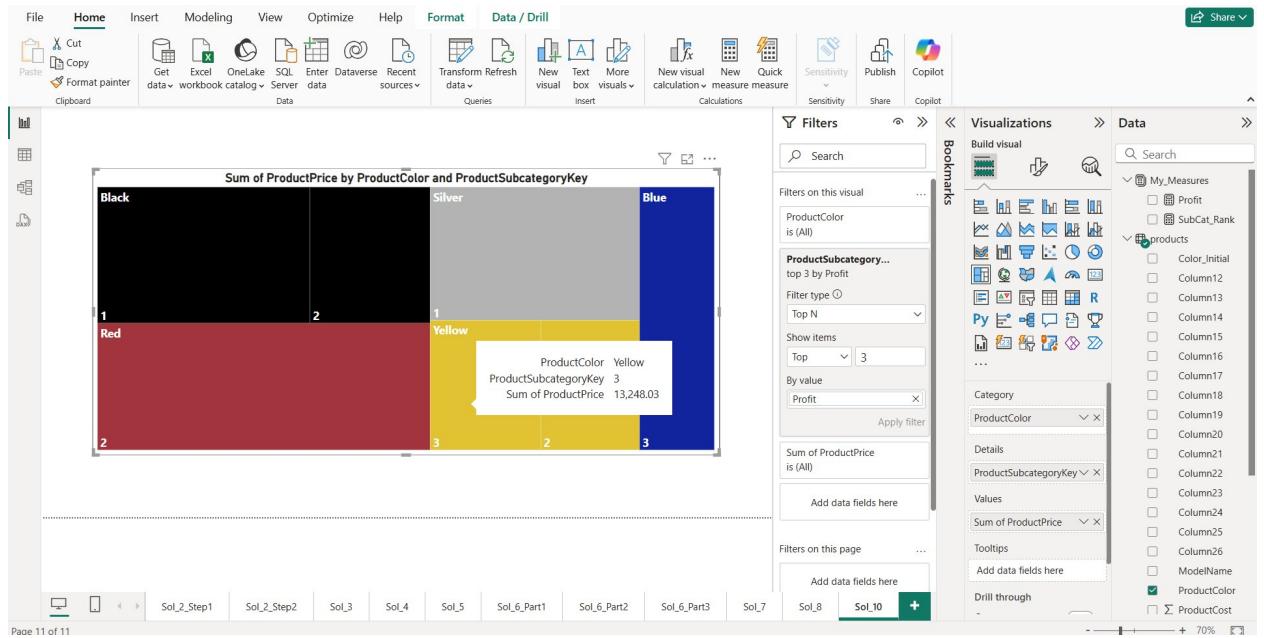
Then, finally I applied the top N filter on the Profit (the measure I had created).

Then, I set the colors for the sections which relate to the Product Color mentioned in that section.

Measure that I have created for this scenario:

$\text{SubCat_Rank} = \text{RANKX}(\text{ALL}(\text{products}[\text{ProductSubcategoryKey}]), [\text{Profit}], , \text{DESC}, \text{DENSE})$





It works likewise for all the sections in the Tree map.

Thank You.

