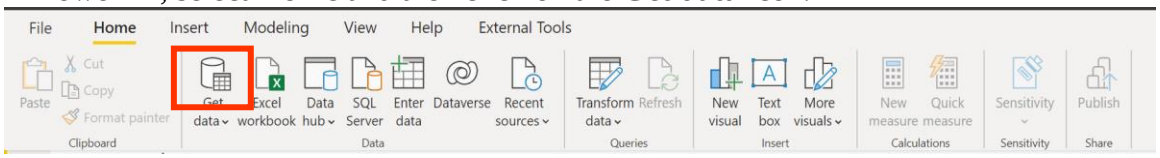
Laboratory 10
Power BI

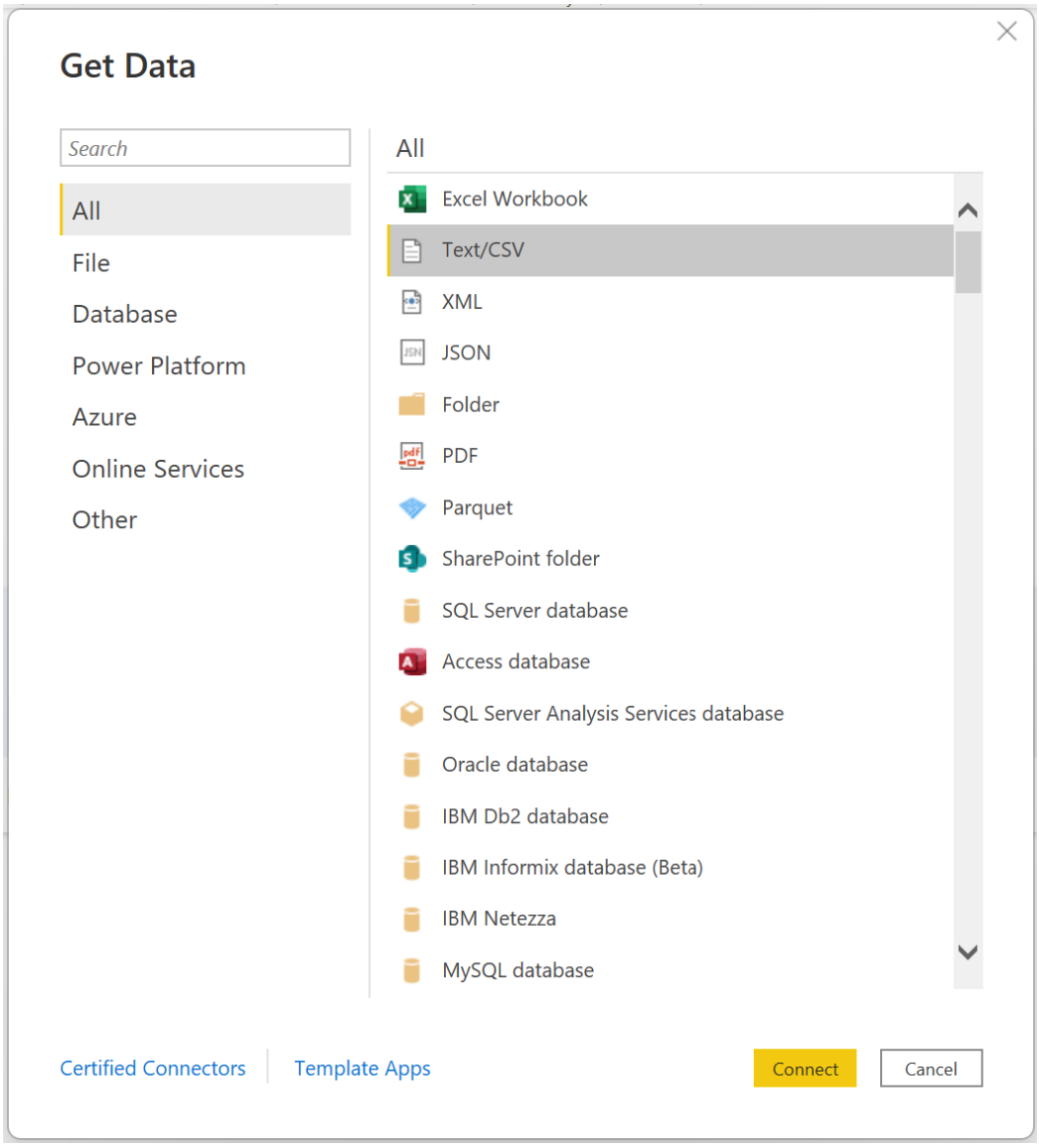
In this lab exercise, you are going to do data visualization using Power BI. The data warehouse's data (`Bookshop DW`) has been extracted from Oracle SQL and can be downloaded from Moodle under the Week 10 section.

A. Connecting and Shaping Data

1. In Power BI, select **Home** and then click on the **Get data** icon.

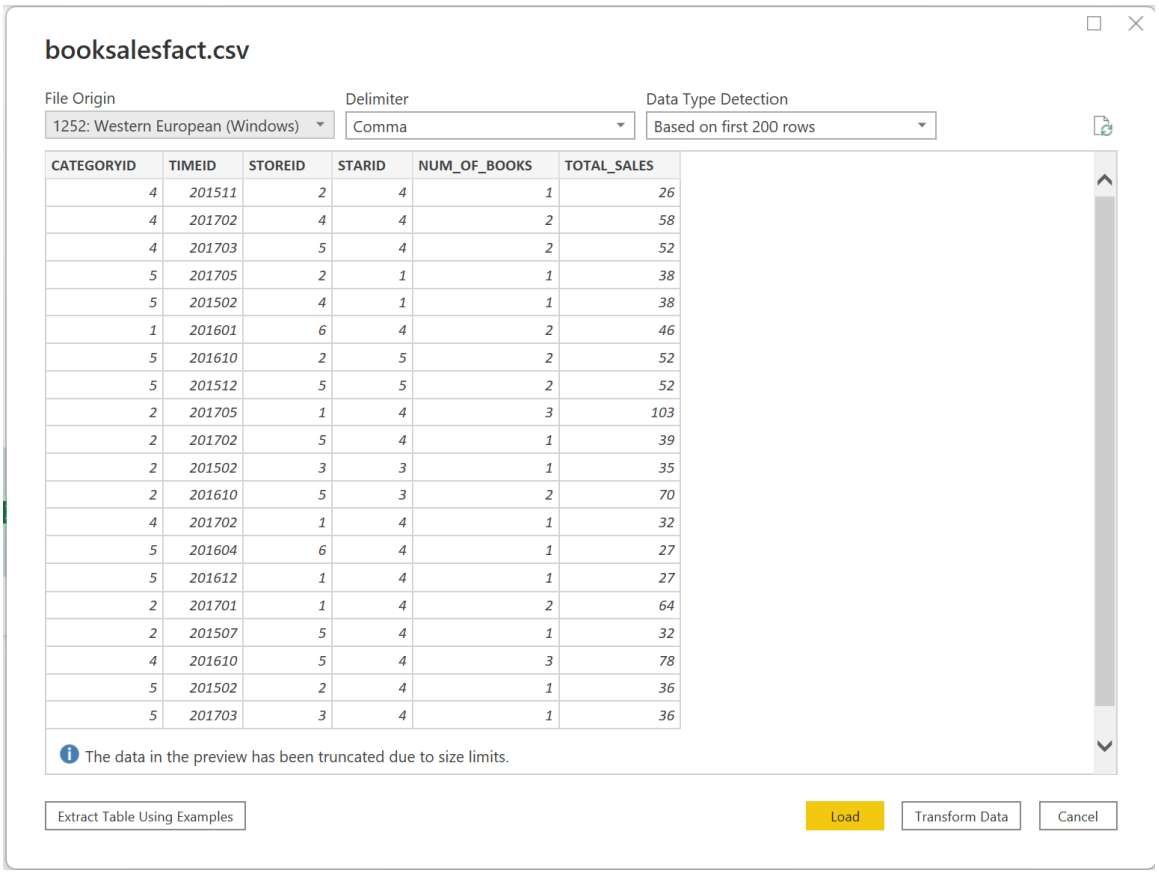


2. Select **Text/CSV** and then click **Connect**.

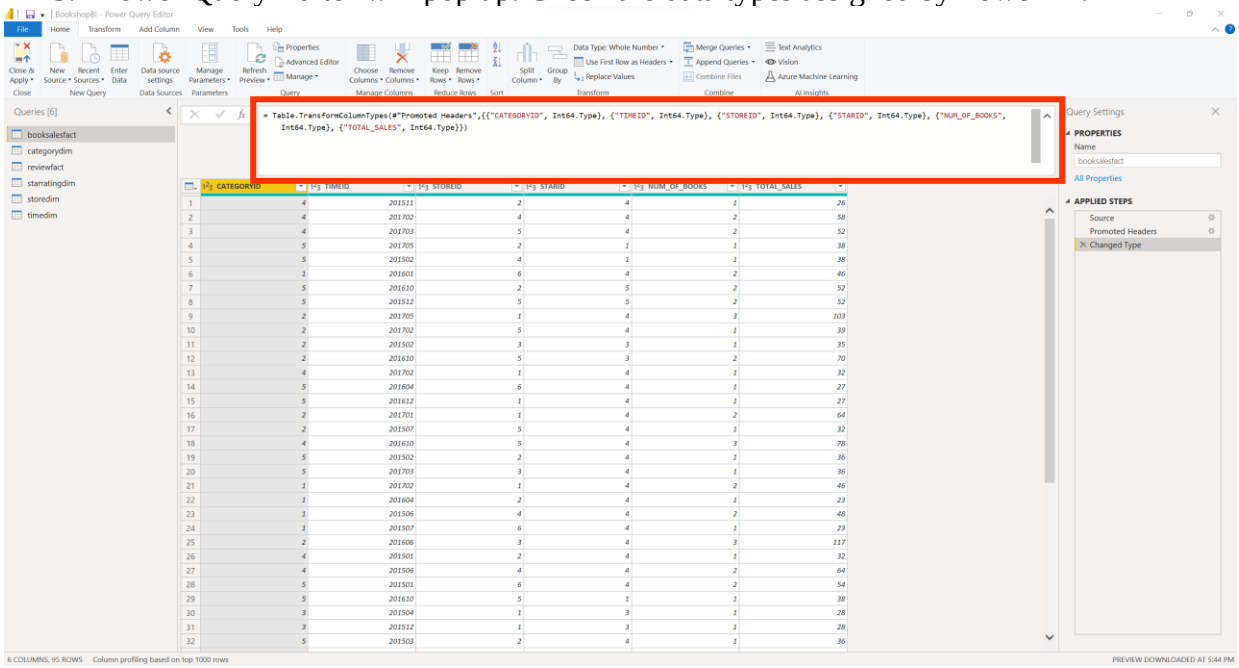


3. A pop-up window to select files will pop up. Select **booksalesfact.csv**.

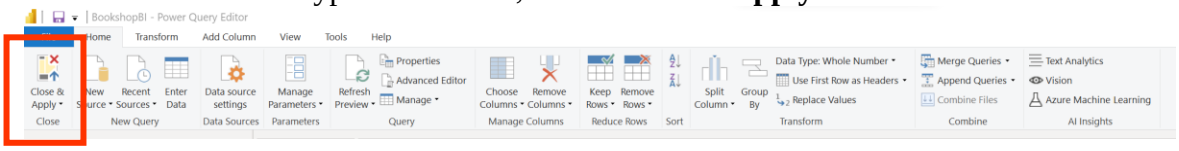
4. Select Transform Data.



5. Power Query Editor will pop up. Check the data types assigned by Power BI.

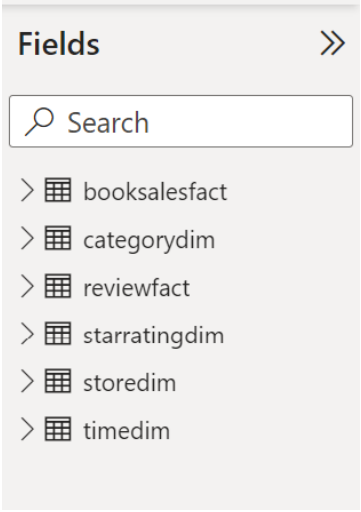


6. When all the data types are correct, select **Close & Apply**.

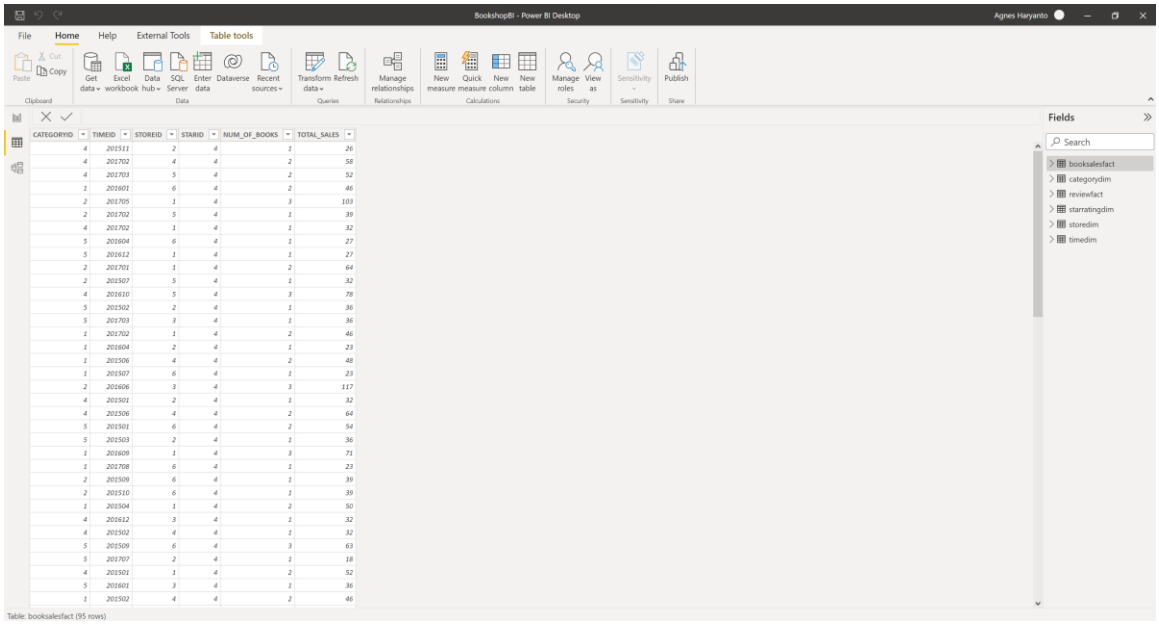


7. Repeat Step 1 to 6 to import the other CSV files: categorydim.csv, reviewfact.csv, reviewfact.csv, starratingdim.csv, storedim.csv, and timedim.csv.

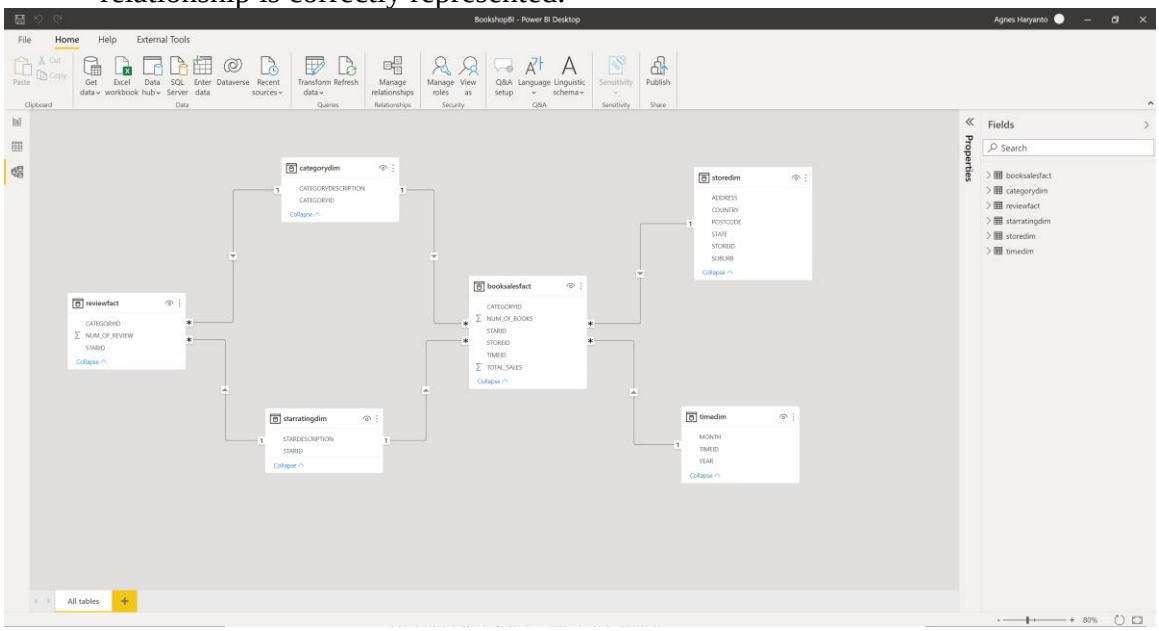
8. Once you imported, the tables should appear on the Fields section (right hand side of the Report View).



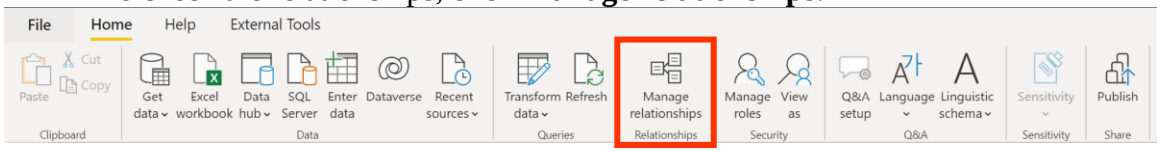
9. Select the Data view and observe the data in each table.



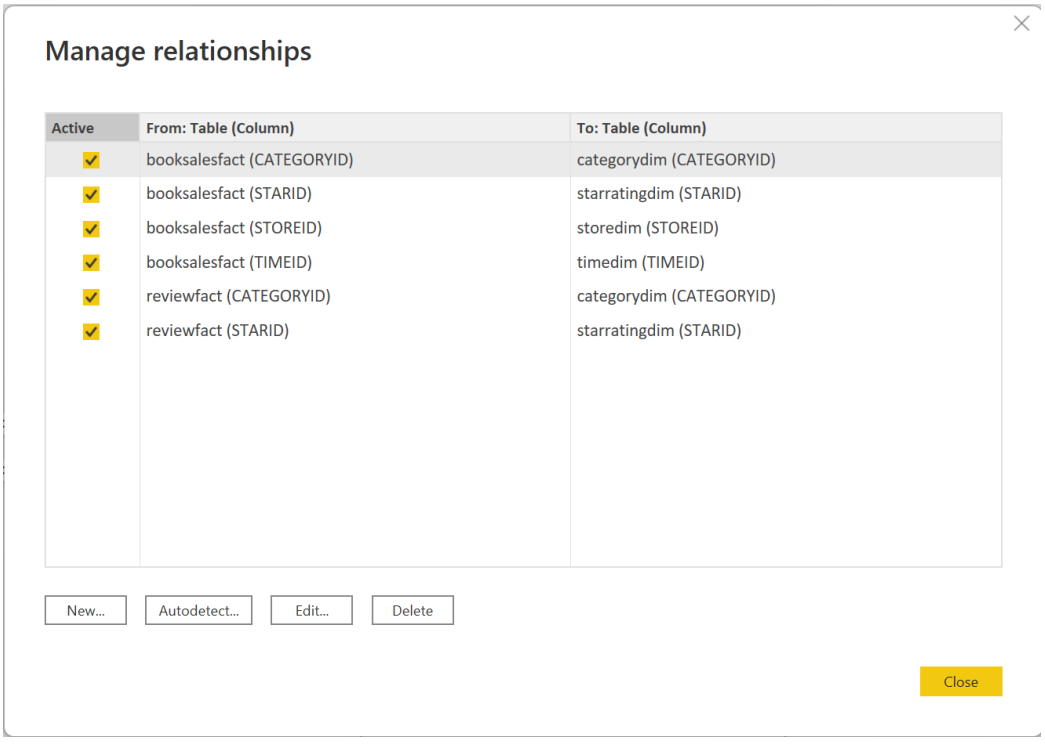
10. Select the Model view. Check relationships between tables. Normally the relationship is automatically assigned, however you should check if the relationship is correctly represented.



To check the relationships, click **Manage relationships**.

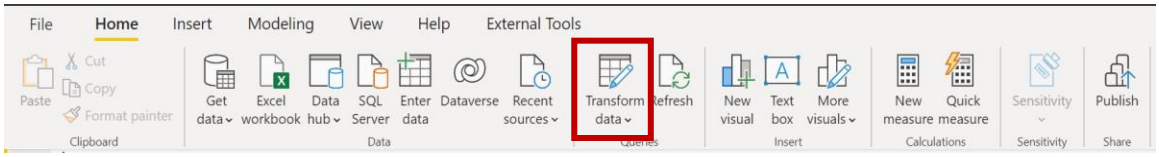


A window will pop up where you can edit or add new relationships of your star schema.

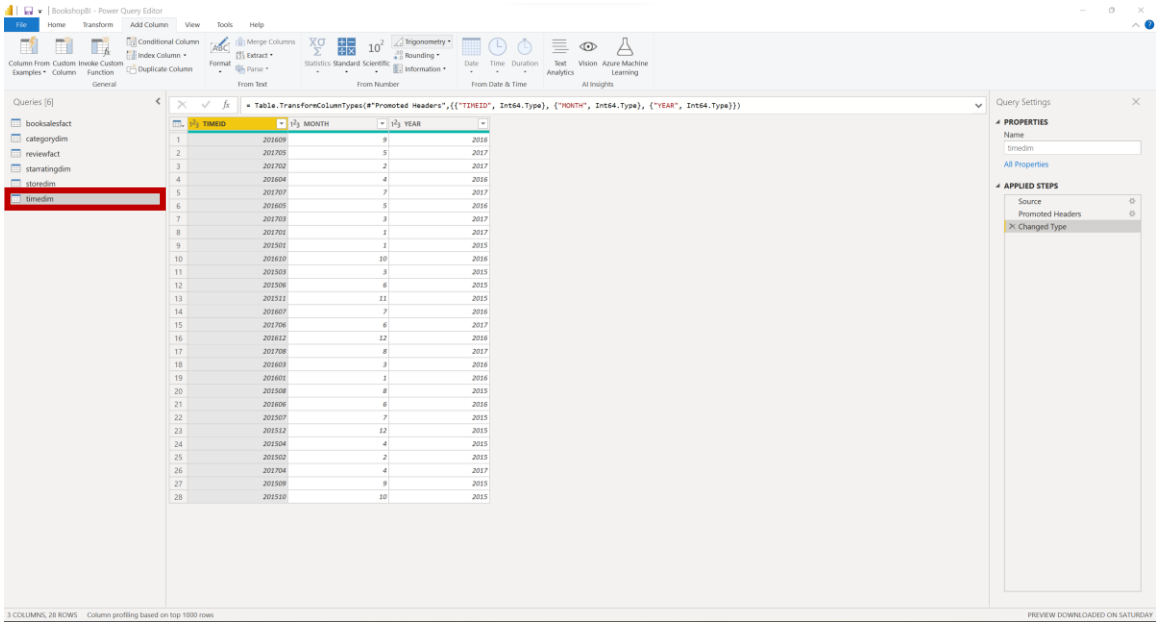


B. Modifying Data using Power Query Editor

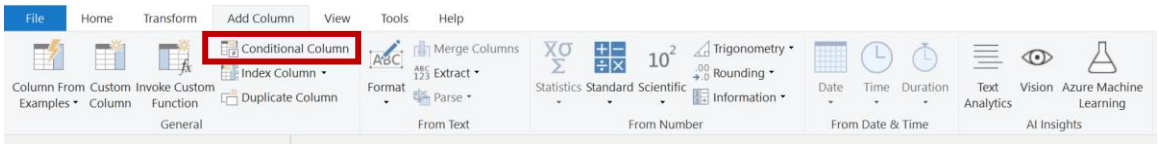
1. In the Report view, select **Transform data**.



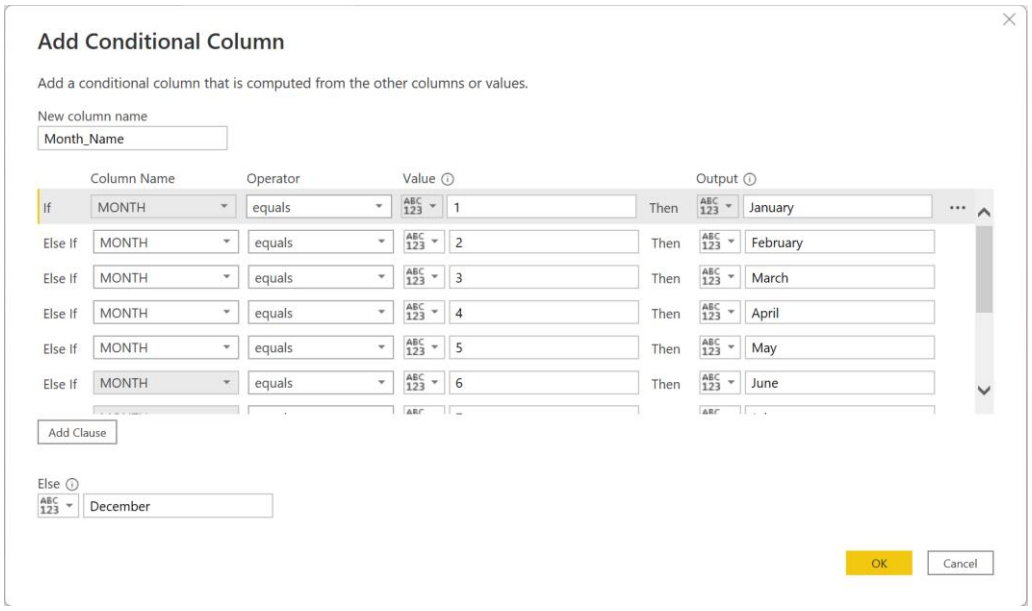
2. The Power Query Editor will appear. Select **timedim**.



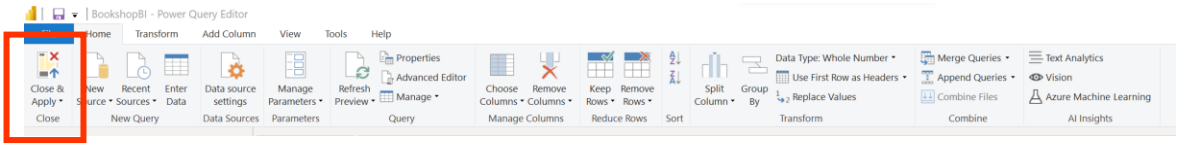
3. We are going to add a new column based on the current MONTH column in timedim. The new column will contain the individual month name (e.g. January, February, etc.). To do this, select **Add Column** tab and then **Conditional Column**.



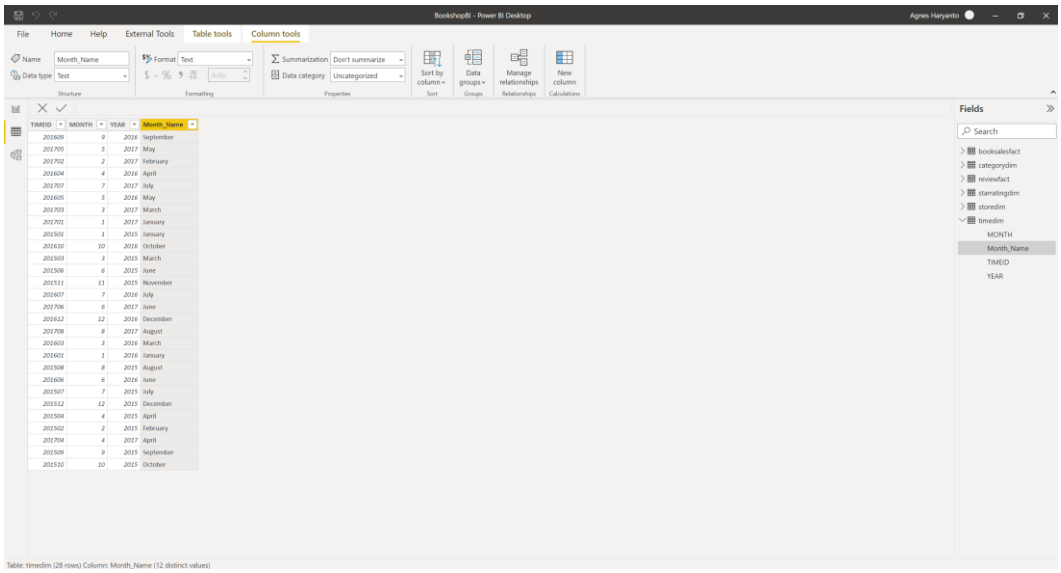
4. The conditional column pop-up window will appear. In the **New column name** section, insert Month_Name as the column name. In the clause section, select **MONTH** for Column Name, **equals** for the Operator, and insert each value to match the month name in the output. Your conditional column should look like the following screenshot. Once finish, click **OK**.



5. Go back to **Home** tab, then select **Close & Apply**.

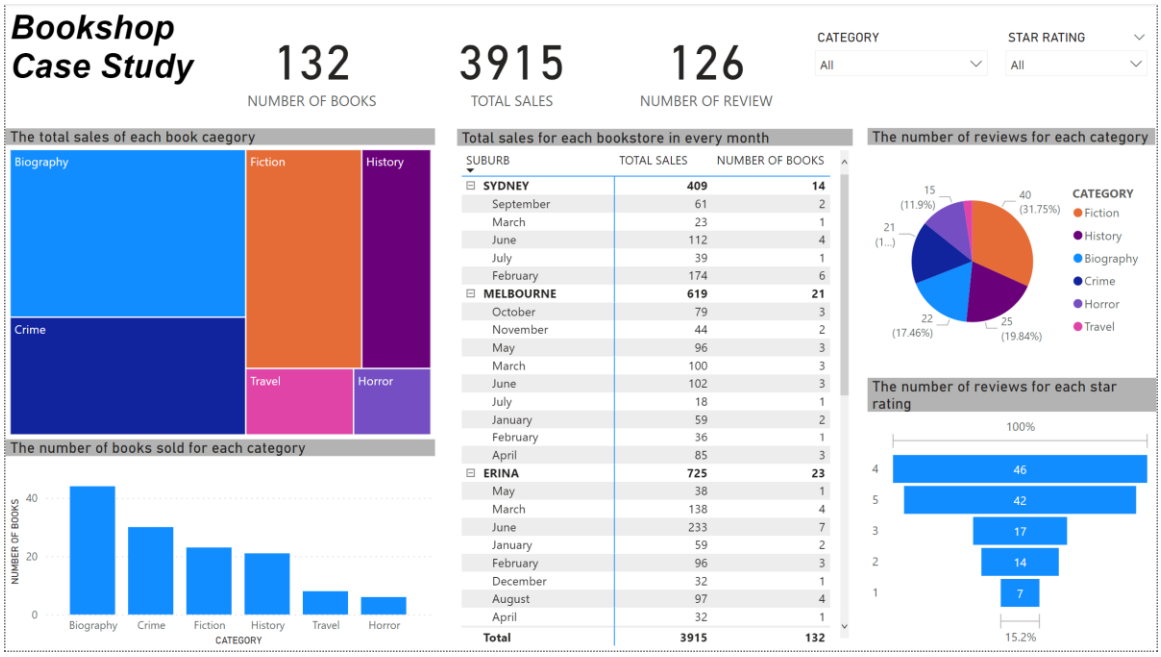


6. Go to Data view and select timedim. The Month_Name column is also reflected in the Data view.



C. Creating Reports

In this section, we are building the Bookshop dashboard as shown below.

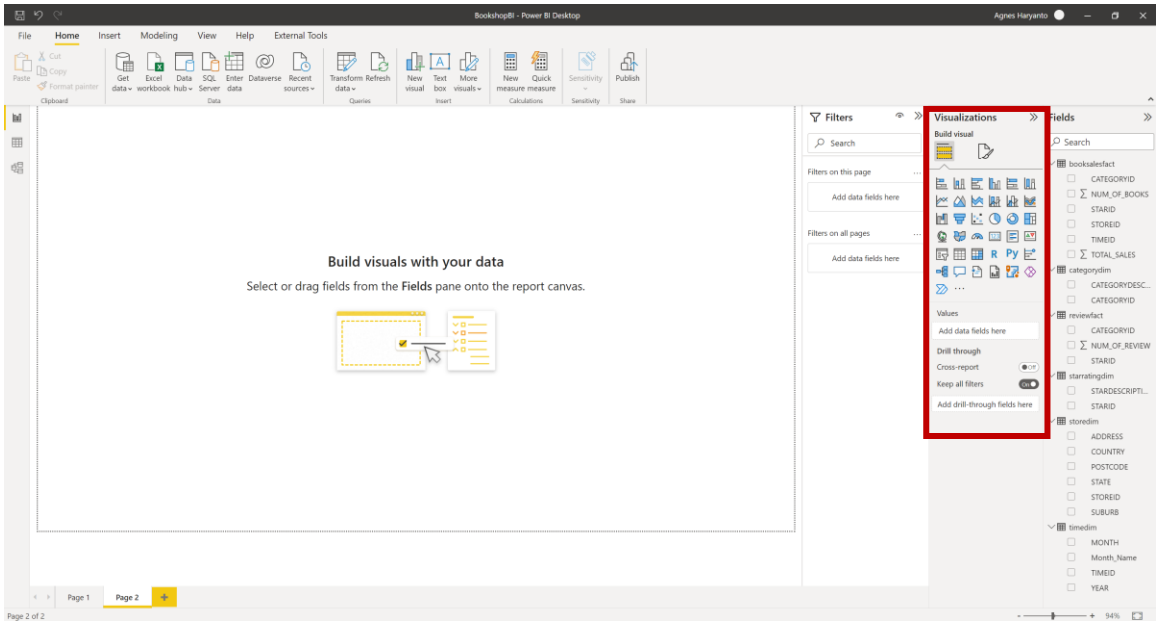


The dashboard should support the management's requirements, which are as follows:

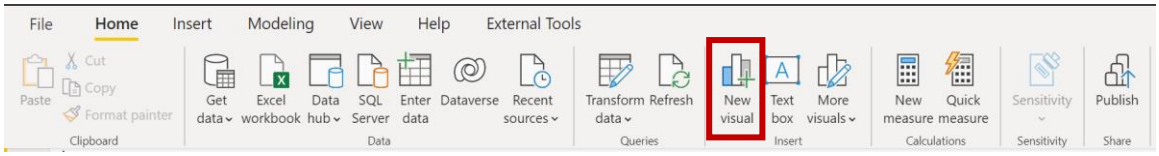
- What are the total sales for each bookstore in a month?
- What is the number of books sold for each category?
- What is the book category that has the highest total sales?
- What is the number of reviews for each category?
- How many 5-star reviews for each category?

C.1. Creating Chart

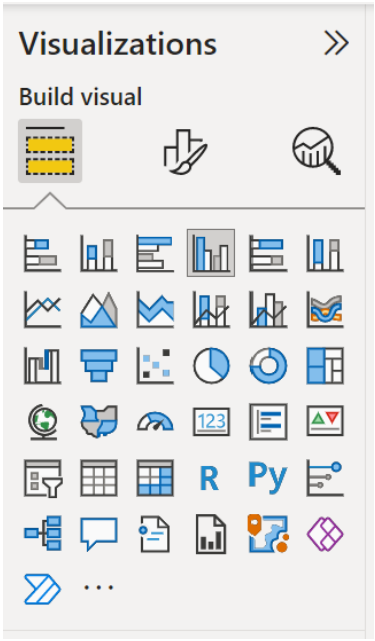
1. In the Report view, make sure that **Visualizations** is available.



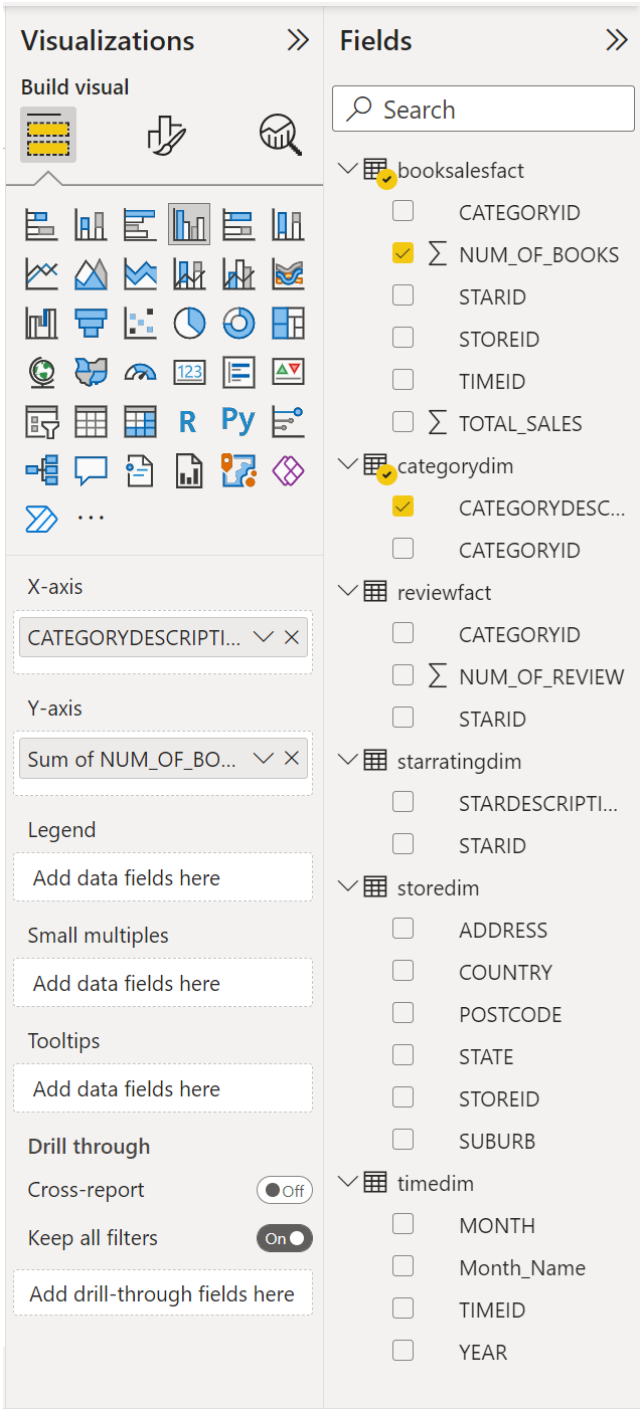
If **Visualizations** is not available, then select Home then choose **New visual**.



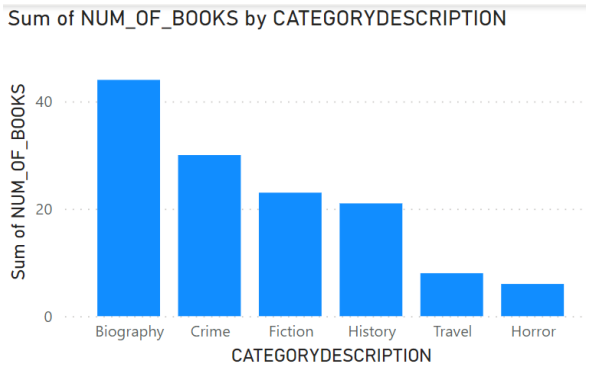
2. In the **Visualizations**, select **Clustered Column Chart**.



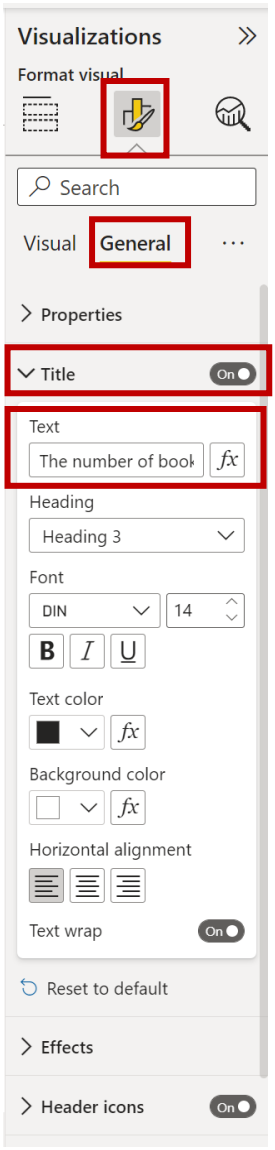
3. We are going to create a chart that displays the number of books sold for each category. In the **Fields** section, choose CATEGORYDESCRIPTION attribute and place it to the **X-axis**. Choose NUM_OF_BOOKS in the Fields section and place it to the **Y-axis**.



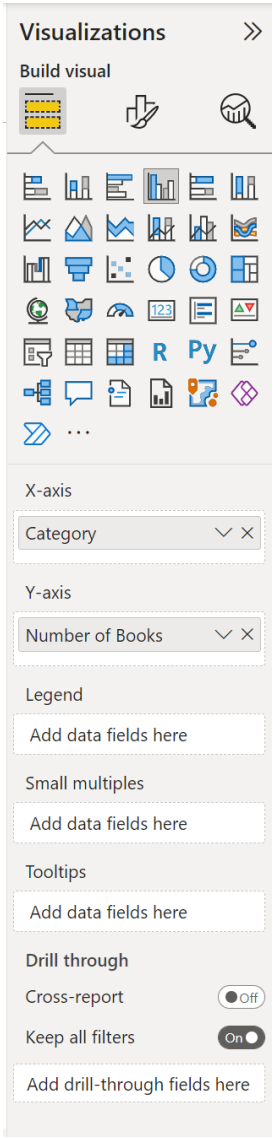
4. The visual you created would look like the following chart.



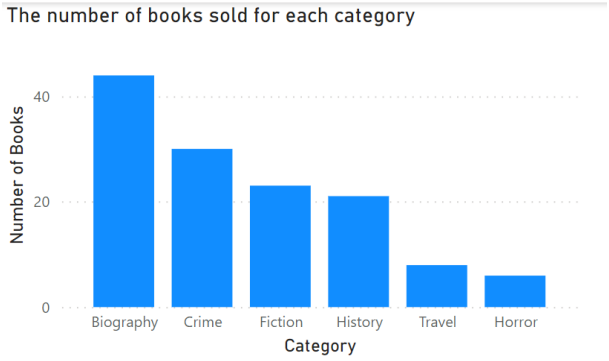
5. Change the title of the visual to a proper title by selecting the "**Format your visual**" option and then **General**. Expand the **Title** drop-down menu and then change the Title's **Text** to "The number of books sold for each category".



6. Go back to "**Add data to your visual**" and change CATEGORYDESCRIPTION in the **X-axis** to "Category". Change the Sum_of_NUM_OF_BOOKS in the **Y-axis** to "Number of books".

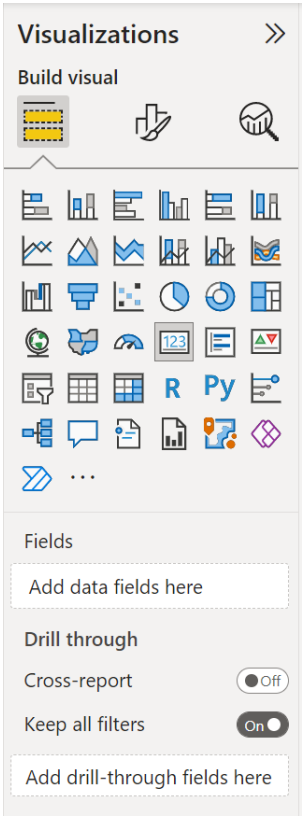


7. The visual will look like below.

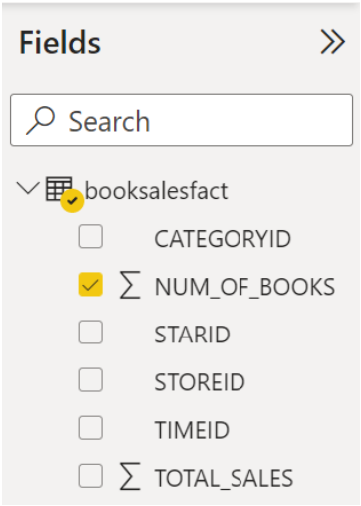


C.2. Creating Card

1. In the **Visualizations**, select **Card**.

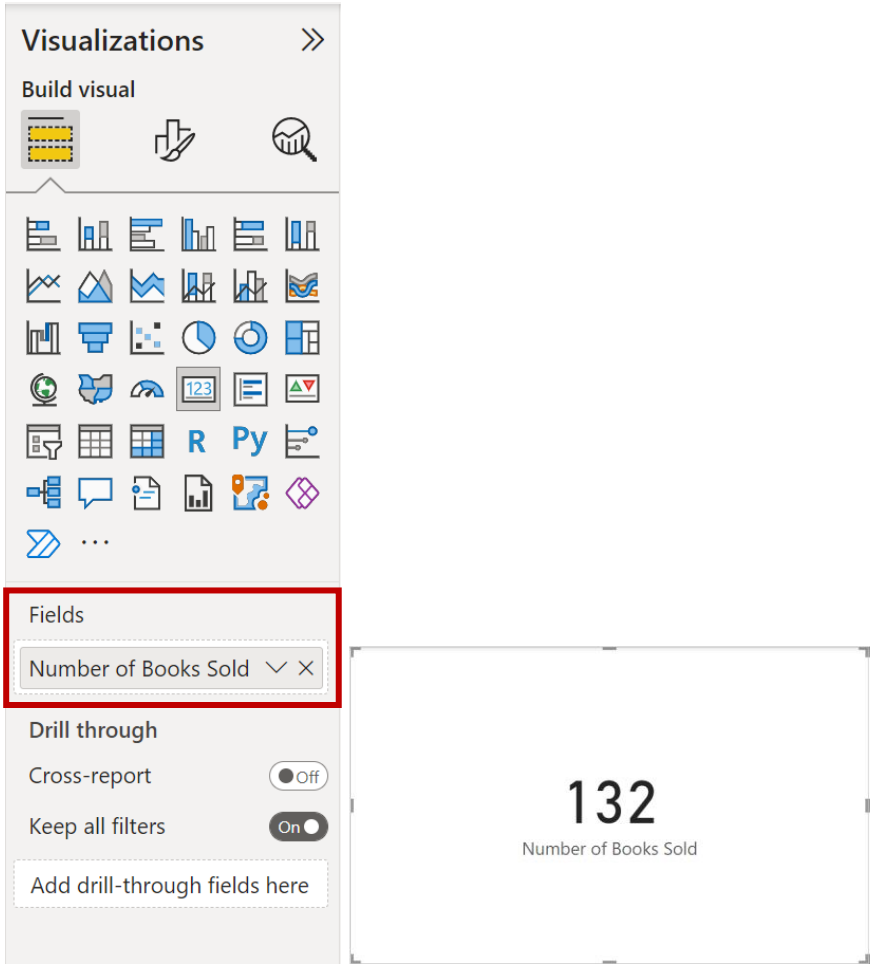


2. We are going to create a visual that displays the overall number of books sold. In the **Fields** section, choose NUM_OF_BOOKS attribute.



3. The visual you created would look like the following.

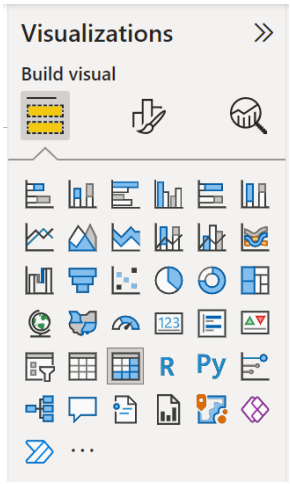
4. Change the card label from “Sum of NUM_OF_BOOKS” to “Number of Books Sold”



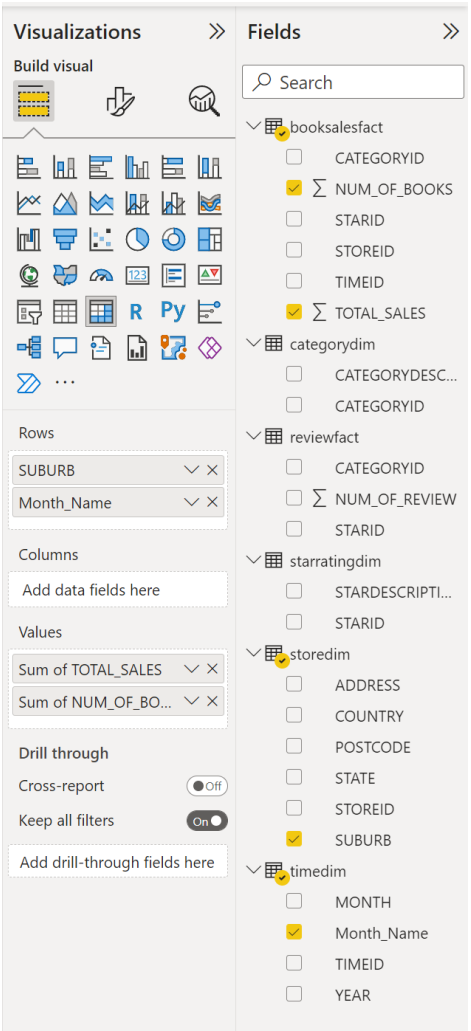
5. Create cards for Total Sales and Number of Reviews too.

C.3. Creating Matrix

1. In the **Visualizations**, select **Matrix**.



2. We are going to create a matrix that displays the total sales for each bookstore in every month. In the **Fields** section, drag SUBURB and Month_Name to **Rows**. Drag the NUM_OF_BOOKS and TOTAL_SALES to **Values**.



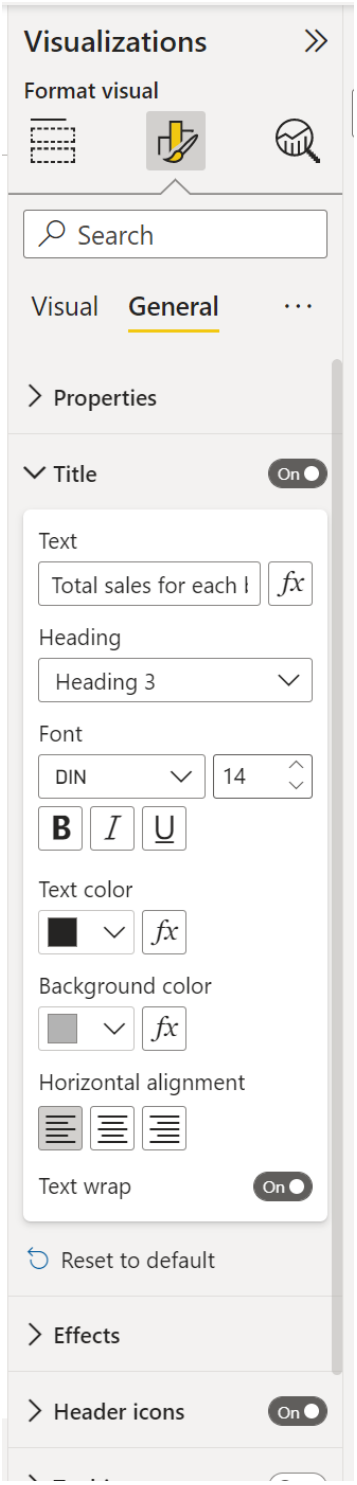
3. The visual you created would look like the following.

SUBURB	Sum of TOTAL_SALES	Sum of NUM_OF_BOOKS
⊞ BENTLEIGH	818	28
⊞ BLACK TOWN	747	26
⊞ CLAYTON	597	20
⊞ ERINA	725	23
⊞ MELBOURNE	619	21
⊞ SYDNEY	409	14
Total	**3915**	**132**

4. As we have included two attributes in the **Rows**, Power BI Matrix provides the expand option. You can expand the suburbs to look at every month's performance.

SUBURB	Sum of TOTAL_SALES	Sum of NUM_OF_BOOKS
⊟ **BENTLEIGH**	**818**	**28**
April	110	4
December	55	2
February	129	5
January	151	5
March	32	1
May	199	6
September	142	5
⊟ **BLACK TOWN**	**747**	**26**
April	56	2
August	62	2
January	282	10
July	23	1
June	32	1
March	32	1
October	62	2
September	198	7
⊞ **CLAYTON**	**597**	**20**
⊞ **ERINA**	**725**	**23**
⊞ **MELBOURNE**	**619**	**21**
⊞ **SYDNEY**	**409**	**14**
Total	**3915**	**132**

5. Add title to this Matrix by selecting the "**Format your visual**" option and then **General**. Enable the **Title**, then expand the drop-down menu. Change the Title's **Text** to "Total sales for each bookstore in every month". You can also change the Background color of the title.



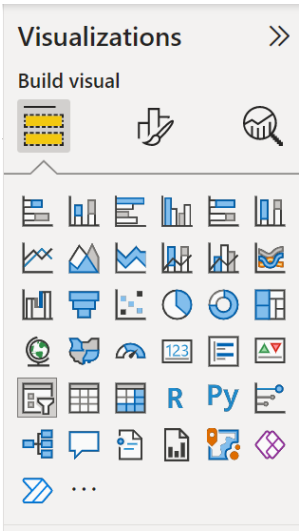
6. The final visual will look like below.

Total sales for each bookstore in every month

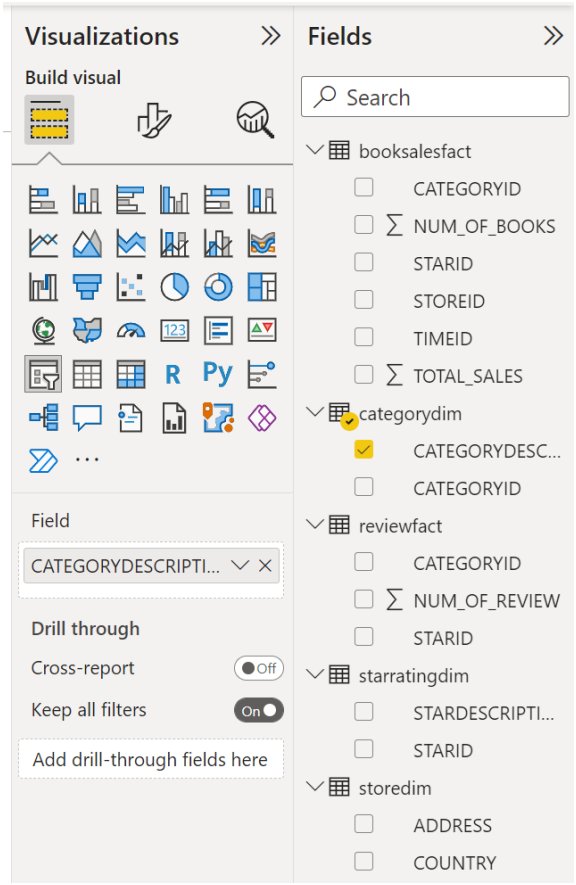
SUBURB	Sum of TOTAL_SALES	Sum of NUM_OF_BOOKS
BENTLEIGH	**818**	**28**
April	110	4
December	55	2
February	129	5
January	151	5
March	32	1
May	199	6
September	142	5
BLACK TOWN	**747**	**26**
April	56	2
August	62	2
January	282	10
July	23	1
June	32	1
March	32	1
October	62	2
September	198	7
CLAYTON	**597**	**20**
ERINA	**725**	**23**
MELBOURNE	**619**	**21**
SYDNEY	**409**	**14**
Total	**3915**	**132**

C.4. Creating filters using Slicer

1. You can use **Slicer** to create filters on your dashboard. In the **Visualizations**, select **Slicer**.

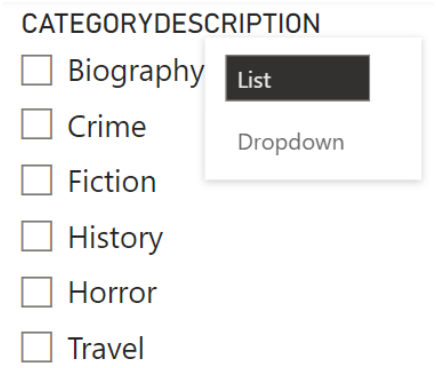


2. Drag CATEGORYDESCRIPTION in categorydim to the **Field**.

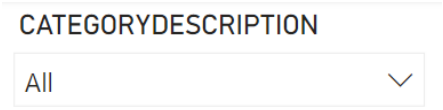


3. The Slicer will look like below.

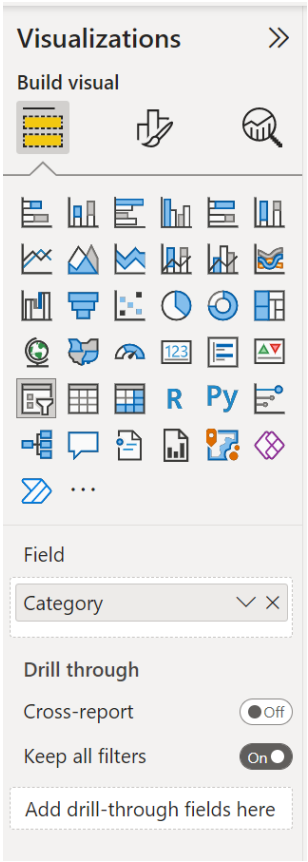
4. To change the Slicer type, click on the drop-down arrow. You can choose either List or Dropdown.



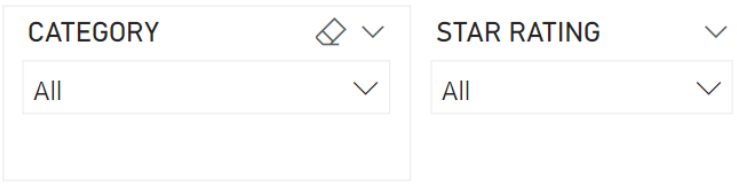
The Dropdown option will look like the following.



5. Change the field label from CATEGORYDESCRIPTION to Category.

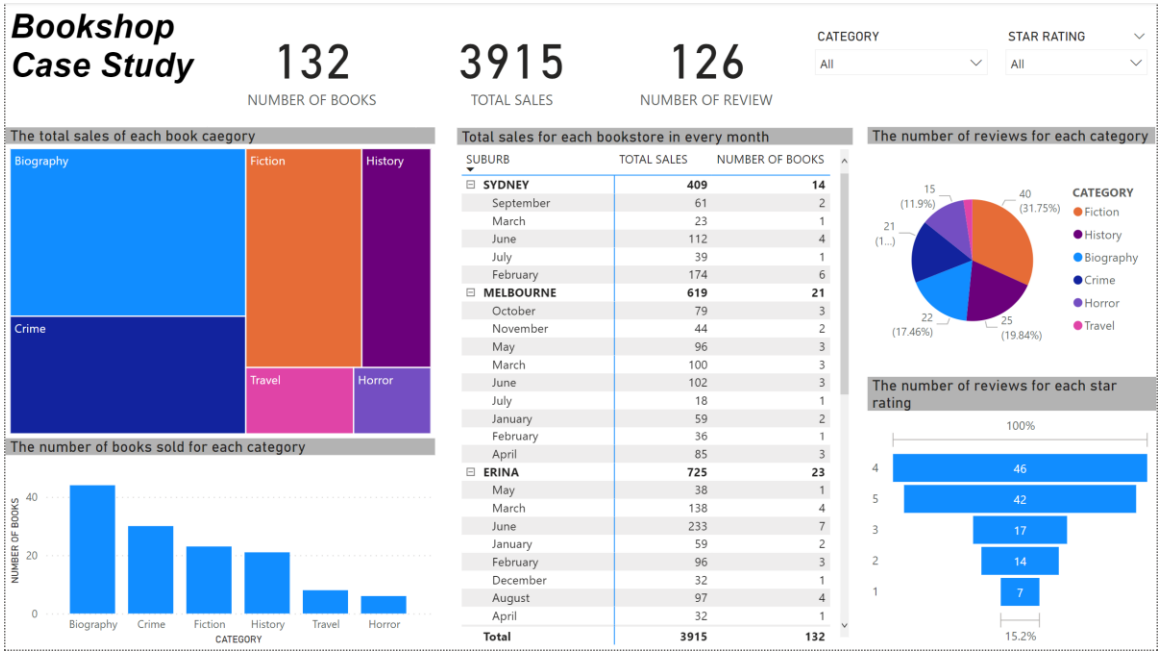


6. Create another Slicer to Star Rating,



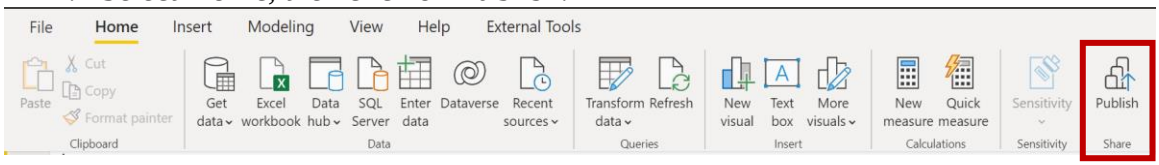
C.5. Task

Now you have some basic knowledge on how to create visuals in Power BI, hence, complete the dashboard to reflect the following.



D. Power BI Portal

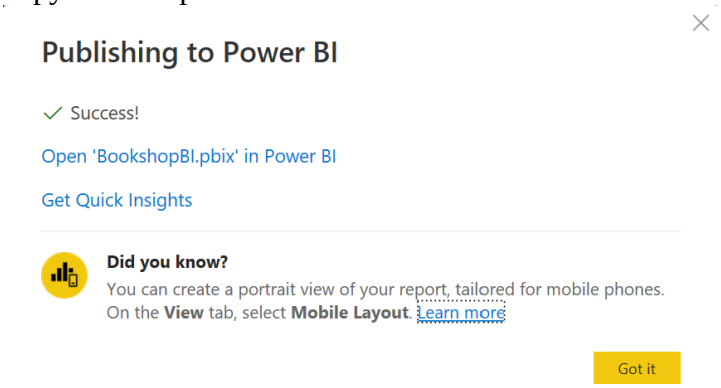
1. Select **Home**, then click on **Publish**.



2. Power BI will prompt you with a notification window to save your work. Click **save**.

3. Another window will pop up where you can choose where to publish your work. For now, select "**My workspace**".

4. Once published, Power BI will provide you with a link to your Power BI Cloud copy of the report.



5. Click on the link to get into the Power BI Cloud Portal.